LUSTRE CONSULTING

LAND AT ATTERBURY GARDENS - READING

PHASE 1 DESK STUDY

NON-TECHNICAL SUMMARY

ITEM	SUMMARY
Site	Land at Atterbury Gardens, Reading, Berkshire, RG7 5SE
Proposed Development	Construction of 3 No. low-rise residential properties with associated private gardens, access infrastructure, driveways and adjacent garage structures.
Current Use	Large rear garden of residential property No. 23 Richmond Road.
Site History	The site was undeveloped and formed part of a large agricultural field until the early-1910s. A gravel pit originally located off-site had extended onto the site by around 1913. The relatively shallow opencast works were described as a Gravel pit (central and north of the site) and a Chalk pit (southern periphery extending to the south-east and south-western areas of the site between the late-1930s and late-1950s). The southern section of the site was redeveloped and formed the rear garden of residential property No. 23 Richmond Road by the late-1950s.
Key Sources of Potential Contamination	On-site: Activities associated with open-cast quarrying of Gravel and Chalk and Made Ground of unknown type and chemical composition associated with the subsequent infilling of these pits. The following contaminants may be present: asbestos, metals, inorganics, PAHs, TPH, pH adjusters and SVOCs. Depending on the amount of organic matter and putrescible material present, the Made Ground may also represent a potential source of ground gas. Off-site: Extraction of Gravel and Chalk and subsequent infilling of quarries historically located approximately 200m north-east and 300m south-west of the site. The following contaminants may be present: asbestos, metals, inorganics, PAHs, TPHs, pH adjusters, SVOCs and potentially ground gases should significant quantities of organic matter and putrescible material be present.
Geology, Hydrogeology and Hydrology	BGS information shows the site to be underlain by Boyn Hill Gravel Superficial Deposits. The bedrock at the site is listed as the Seaford Chalk Formation / Newhaven Chalk Formation (Undifferentiated). BGS Recorded Mineral Sites are recorded on site and 10m south (which is also considered to have extended onto the site). Given the mineral extraction understood to have taken place on site, and subsequent infilling, significant depths of Made Ground could be present. A natural cavity is recorded 50m south of the site and relates to three sinkholes and six solution pipes within the Chalk Group. The Boyn Hill Gravel Member is a Secondary A Aquifer and the Seaford / Newhaven Chalk Formation (Undifferentiated) is a Principal Aquifer. No surface water features have been identified within 500m.
Risk Assessment	A **moderate risk** has been identified to future site occupants, site visitors, adjacent land users, perched groundwater, and shallow groundwater within the Superficial Aquifer from Made Ground potentially present as a result of the infilling of former opencast mining carried out on site. A **moderate risk** has been identified to buildings and site occupants from ground gases generated by on-site Made Ground and quarry infill. A **low to moderate risk** has been identified with regards to ground and construction workers, bedrock geology, flora and buried services / structures from Made Ground and quarry infill.
Conclusions and Recommendations	Based on the above risk ratings, further investigation is required to refine the risk assessment and validate the conceptual site model. A Phase 2 Site Investigation is therefore recommended which would aim to determine the contaminative status of the site as well as the ground gas regime. These works could be conditioned as part of a successful decision notice for the proposed development.

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PROJECT RECORD		
PROJECT NAME	LAND AT ATTERBURY GARDENS - READING	
CLIENT	BARAFUNDLE WHENUA LTD	
REPORT DETAILS		
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REGISTRATION OF AMENDMENTS

Revision and Date	Amendment Details	Revision Author	Revision Reviewer
RV1 06/02/20	Update to Proposed Site Plan Drawing TPO622-01-01 Issue Date 18.01.20	AR	JM

1.0 INTRODUCTION

1.1 This Phase 1 Desk Study has been prepared for the clearance and development of a site referred to as the Land at Atterbury Gardens, in Reading, Berkshire, RG7 5SE by Lustre Consulting Limited (Lustre) for Barafundle Whenua Ltd. The assessment has been undertaken in accordance with our fee proposal dated 11/04/2019, which was formally approved by Barafundle Whenua Ltd on 11/04/2019.

1.2 The site, L-shaped in plan, is centered at National Grid Reference 470360, 175940, and occupies an approximate area of 0.17 ha as shown in Figure 1. The site currently comprises the large rear garden of residential property No. 23 Richmond Road and is located within a residential area of Caversham. The site is located within the suburbs of Reading and lies approximately 3km to the north of Reading Town Centre. Barafundle Whenua Ltd require this Phase 1 Desk Study to support the proposed development scheme for the site which relates to the clearance of the site and subsequent construction of 3 No. low-rise residential properties with associated private gardens, access infrastructure, driveways and adjacent garage structures. Figure 2 illustrates the proposed development scheme.

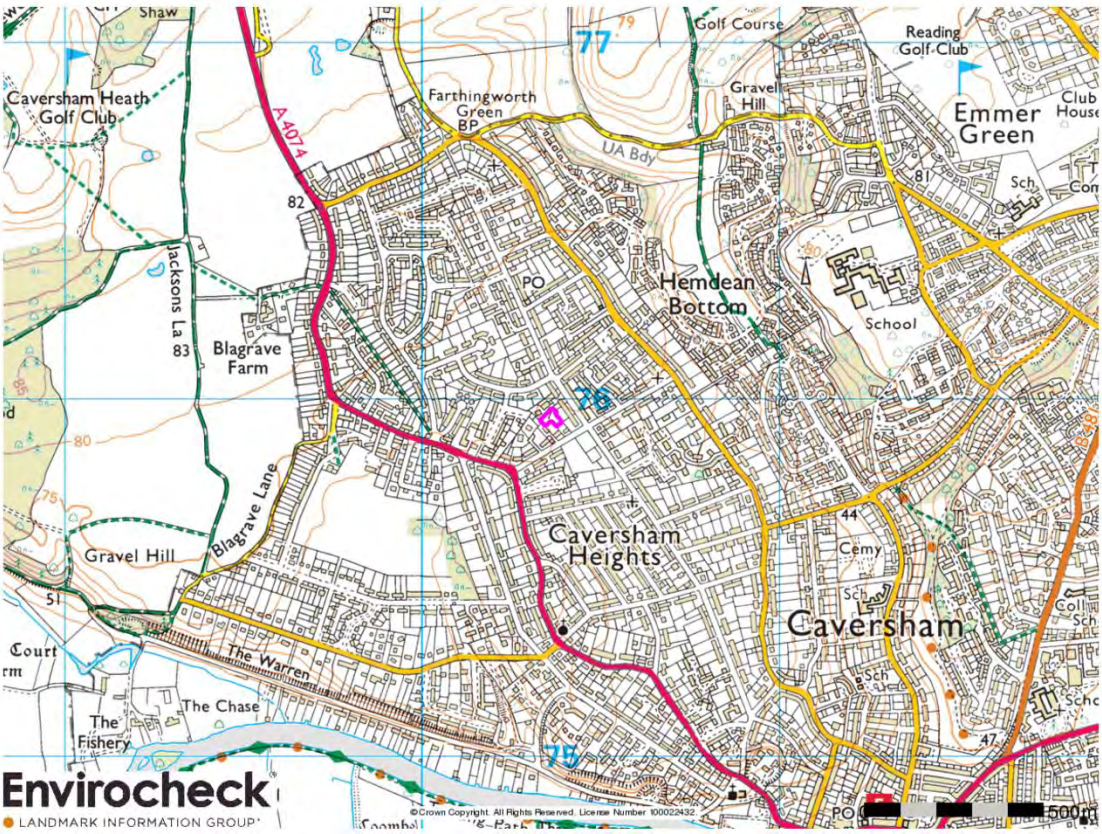

Figure 1: Site Location Plan

Figure 2: Proposed Site Layout

Objective

1.3 The objective of this Phase 1 Desk Study (also known as a Contaminated Land Assessment) is to determine the contaminative status of the site and to provide a general indication of the likely geoenvironmental issues which may be present on site or affect the site, as well as to provide guidance on any resultant liabilities. Information on likely geotechnical conditions and hazards is also to be assessed.

Scope of Works

1.4 The scope of works for the desk study is summarised below and overleaf:

- Review of available historical Ordnance Survey maps (dating back to the late-1870s) of the site and surrounding areas to identify current or former potential sources of contamination both on-site, and within the immediate surrounds;
- Review of published geological, hydrogeological and hydrological records to assess the environmental setting of the site and surrounding areas;
- Review of available public information and up-to-date regulatory information from relevant authorities to identify any potentially significant environmental issues at the site and surrounding areas;

- Review of any existing information and reports relating to the site and surrounding area, including any available plans, development layouts etc; and
- Development of a conceptual site model and risk assessment following the source-pathway-receptor pollution linkage.

1.5 The Phase 1 Desk Study has been prepared in keeping with best practice and current planning guidance. *The National Planning Policy Framework (NPPF)*[1] advises regulatory consultees to ensure that adequate site investigation information is provided at the initial planning stage, whilst the Environment Agency's *Model Procedures for the Management of Land Contamination (CLR11*[2]*)* requires a phased, risk-based approach when dealing with land affected by contamination in the UK.

1.6 This Phase 1 Desk Study forms the first stage of an iterative contaminated land assessment, to identify any potential sources of contamination before undertaking any further intrusive Phase 2 ground investigation works or remedial action, if required. The methodology adopted in this Phase 1 Desk Study is based on the source-pathway-receptor model as set out in *CLR11*[2]. More information on Lustre's approach to such assessments can be found at the following link: www.lustreconsulting.com/Services/ContaminatedLandAssessment.aspx.

Asbestos Containing Materials (ACM)

1.7 Under Regulation 4 of the Control of Asbestos Regulations 2012[3], those parties ("duty holders") who have control over the maintenance or repair of non-domestic premises are required to identify and manage any asbestos or presumed asbestos found in their premises. Where asbestos is or is liable to be present, the duty holder(s) shall ensure that they have an adequate management plan, undertake and review risk assessments and maintain an Asbestos Register detailing the probable exposure to all employees and site users. The duty holder may be the business owner, landlord, tenant, or others by virtue of a contract.

1.8 Regulation 5 requires duty holder(s) to identify asbestos prior to maintenance or any other work which exposes or is liable to expose employees to asbestos unless there has been a sufficient assessment. There is always a risk that asbestos will be present in soils, under hardstanding and below ground structures, and that it may spread particularly during clearance and demolition works. It is therefore essential that any asbestos or presumed asbestos is

[1] Department for Communities and Local Government, National Planning Policy Framework, February 2019.
[2] DEFRA / Environment Agency, Model Procedures for the Management of Land Contamination, CLR11, September 2004.
[3] Control of Asbestos Regulations (CAR) 2012

identified, managed, removed and disposed by a licensed remover (if licensable work) in accordance with relevant HSE guidance. It is the responsibility of the duty holder under Regulation 16 to ensure measures are put in place to prevent the 'spread' of asbestos.

1.9 Where ACM in existing structures (i.e. within the building fabric) is observed during the site walkover, a brief description will be included in this report in order to inform our assessment of Asbestos Containing Soils (ACS) (presented in Chapter 2.0). It must be noted however, that this Phase 1 Desk Study does not include detailed identification and assessment of ACM within existing structures both above and below ground (i.e. basements, services). This should be carried out by an appropriately experienced and qualified asbestos surveyor and is outside of our agreed scope of works.

1.10 Where ACM is present on proposed development sites, there is always a risk of impacting the underlying soils, particularly during clearance and demolition works. It is therefore essential that any ACM identified by the asbestos surveyor is appropriately managed, removed and disposed offsite by specialist contractors in accordance with good practise and current guidance. It is the responsibility of the duty holder and / or client to ensure measures are put in place to prevent contamination of the soils during such works.

Reliance and Limitations

1.11 This report has been prepared using published information and information provided by the Client made available at the time of writing only. Lustre Consulting accepts no liability for any information which has become available since this time.

1.12 Lustre Consulting owes no duty of care and has no liability to any Third Party who is not authorised by Lustre Consulting to use this report. Any unauthorised Third parties using information contained in this report do so at their own risk.

1.13 Whilst this report references observations made regarding the presence of features/ issues such as invasive species, ACM, site drainage and evidence of structural abnormalities, this report does not constitute specialist surveys on these matters. Should further specialist surveys be carried out in this regard, the findings of these should be reported to Lustre so that we may determine if this has any discernible impact on the findings of this report.

1.14 Third party information which has been reviewed and used to inform the assessments presented herein, including public records held by various regulatory authorities and environmental database data has been assumed to be true and accurate.

1.15 This assessment has been carried out to determine the potential risks posed to future end users, along with other key receptors, based on the current development. Should revisions in

the development proposals result in a change to any assessment parameters detailed in this report, a re-assessment of the risk should be carried out.

Report Structure

1.16 The report structure generally follows the pollution linkage approach described above. Chapter 2 of the report provides information relating to the **"source(s)"** of potential contamination through a study of current and historical land uses, whilst the sensitivity and anthropology information in Chapter 3 relates to the **"receptor"** and **"pathway"** components. Report conclusions and recommendations, including a summary of the conceptual site model and risk assessment Appendix, are set out in Chapter 4.

Figure 3: Aerial Photograph

2.0 LAND USE

Introduction

2.1 This Chapter identifies and provides information on any potential on-site and off-site **"sources"** of contamination within the source-pathway-receptor model. The chapter includes a review of information obtained from photographic records, publicly recorded information on environmental issues and controls within relevant distances of the site (which may indicate the presence of potential source(s) of contamination, such as licensed landfills), available planning records obtained from regulatory websites and OS historical mapping. A summary of the identified sources and potential contaminants are given at the end of the chapter.

Site Description

2.2 A site walkover was undertaken by a qualified consultant from Lustre on 15th April 2019. The home-owner (Vendor) was present throughout the site walkover.

2.3 The site is a residential lawned garden bound by adjoining residential properties. The site is generally flat, although a grassed soil mound approximately 2m high was present along the western site boundary. Towards the north-east of the site were three garden sheds containing various domestic items. Two of the sheds were of wooden construction, with rooves of corrugated metal (corroded) and asphalt sheeting respectively. The third shed was of brick construction, with an asphalt roof. Two concrete slabs were also present in this area which may have previously housed small sheds or outbuildings.

2.4 Vehicular access onto the site is possible from Atterbury Gardens via a gated entry point located mid-way along the northern site boundary. An area of gravel was noted across the north of the site immediately adjacent the entry point, presumably placed for geotechnical purposes. At the time of the site walkover, vegetative growth was observed penetrating the gravel in this area of the site.

2.5 The western section of the site was delineated along the southern boundary by an approximately 1m high brick wall, above which an additional wooden panel fence had been constructed. It appeared that the brick wall crossed the centre of the site, separating the western section from the remaining sections. This wall had been demolished, however evidence of the former structure in the form of a linear brick substrate was noted at ground level.

2.6 Aside from the brick shed described in Section 2.3, no permanent structures were recorded on site.

View north along the site

Soil mound along western boundary

Observations on Ground Stability and Structural Damage

2.7 No evidence of ground stability hazards or structural damage was observed on site; however, this report does not constitute a structural survey or similar survey.

Bulk Storage of Fuels and Hazardous Material

2.8 Lustre has not been made aware of, or observed, any current or former bulk above ground fuel storage areas or hazardous material storage on site. No evidence of any current underground fuel tanks (e.g. unexplained manhole covers, vents, fill points etc) was noted during the site walkover.

Asbestos Containing Soils (ACS)

2.9 The only structures recorded on site were garden sheds of various construction types. No potential asbestos containing materials (ACMs) were observed within any of these structures.

2.10 Soil contamination from asbestos can be caused through inappropriate use and poor care of ACM in the building fabric and curtilage causing cross contamination during historic demolition or renovation works. ACS can also be encountered within infilled land and / or imported sub base / fill materials associated with previous construction or renovation works (such as the construction of a new hardstanding).

Waste

2.11 Based on the site use, potentially contaminative waste streams are not considered likely. No significant fly tipping or informal waste disposal was identified during the site walkover. The

embankment recorded alongside the western site boundary appeared engineered, rather than a product of informal disposal.

Drainage

2.12 No drainage was observed on site.

Persistent Organic Pollutants (POPs, inc. Polychlorinated Biphenyls (PCBs))

2.13 No electrical sub-stations, high voltage cables (in excess of 100kV) or other potential sources of PCBs were identified at the site.

2.14 No other specific POP point sources were identified during the site inspection that could have adversely impacted soils on site.

Invasive Species

2.15 No invasive species (e.g. Japanese knotweed, Giant Hogweed, Himalayan Balsam) were identified during the site walkover, however the site visit conducted does not constitute a full 'injurious weeds and invasive plants' survey.

Potential Off-site Sources / Points of Interest

2.16 The area surrounding the site is predominantly residential in character, and the site is bound on all sides by residential properties with private gardens on all sides. Direct access is possible to the residential property (No. 23 Richmond Road) beyond the southern site boundary. An area of recreational grassland (Albert Road Park), with associated tennis courts and a bowling green was recorded approximately 50m south-east of the site beyond Richmond Road.

Further Surveys

2.17 Whilst the site walkover discussion references observations made regarding the presence of features / issues such as invasive species, ACM, site drainage and evidence of structural abnormalities, this report does not constitute specialist surveys on these matters. Should further specialist surveys be carried out in this regard, the findings of these should be reported to Lustre so that we may determine if this has any discernible impact on the findings of this report.

Public Record Information

2.18 Information on potentially significant environmental issues and controls at the site and surrounding area may be held on public records by various regulatory authorities. Information

referenced in this Chapter has been sourced directly from the regulatory authorities and from the Landmark database (data summarised within relevant distances of the site centre). A copy of the Envirocheck report is attached at Appendix A. A summary of the significant environmental issues and controls in the Envirocheck report is summarised in the following table.

Public Record	Features
Environmental Permits and Controls	No Local Authority Pollution Prevention and Controls have been identified within 250m of the subject site.
Pollution Incidents to Controlled Waters	No pollution incidents to controlled waters have been identified within 250m of the subject site.
Hazardous Substances	There are no hazardous substances (e.g. Control of Major Accident Hazards (COMAH), Notification of Installations Handling Hazardous Substances (NIHHS) or Planning Hazardous Substance Consents) recorded within 250m.
Landfill Sites	A single historical landfill site has been identified within 1km from the subject site: Silverthorne Drive: 660m north. The operator details were not provided. The licence reference was EAHLD13249 with landfilling reportedly taking place between 31st December 1950 and 31st December 1959. The record states that deposited waste included inert and industrial wastes. No Local Authority recorded landfill sites have been identified within 1km of the subject site. No registered landfill sites have been identified within 1km of the subject site.
Waste Management Facilities	No Licensed Waste Management Facilities have been identified within 250m of the subject site. No Registered Waste Transfer Sites have been identified within 250m of the subject site. No Registered Waste Treatment or Disposal Sites have been identified within 250m of the subject site.
Contemporary Trade Directory Entries	A single contemporary trade directory entry is listed within 250m of the subject site: 85m south-west for filtration systems & services (Reading Filter Services Ltd) which is listed as active.
Petrol Filling Stations (PFS)	No fuel station entries have been identified within 250m of the subject site.

The approximate bearing of identified features is abbreviated with the first letter(s) (e.g. south-west = SW).

Review of Regulatory Information

2.19 A review of the planning records held by Reading Borough Council has revealed a previous planning application submitted in support of development works at the site on 10th October 2014.

2.20 The original planning submission proposed the construction of 2 No. detached residential properties with associated gardens, detached garages and access infrastructure on site. The

planning boundary occupied the northern and western periphery of the current site. The application was refused on 8th December 2014, in part due to the potential for contamination at the site associated with a former gravel pit and any potential associated infill.

2.21 Pre-application advice from Reading Borough Council was sought in January 2017 with respect to the current amended proposal. Whilst providing general guidance with respect to the requirement for a contaminated land assessment, the potential presence of a gravel pit at the site was specifically referenced in the formal response received on 26th January 2017.

2.22 A request for further information regarding environmental issues was submitted to the Local Authority in May 2019. The subsequent response (dated 20th May - correspondence reference: 64673) again identified the potential for contamination at the site as a result of a former, potentially infilled gravel pit. According to the Local Authority response, the site has also been identified for future investigation under the Council's Part 2A inspection strategy, although it is understood that pending the findings of this investigation the site has been classified as 'low risk'. No investigation work had been scheduled by Reading Borough Council as of the 20th May 2019.

Site History

2.23 The site history has been assessed by reviewing historical Ordnance Survey maps provided by Landmark and aerial photographic imagery from Google Earth. Relevant maps are reproduced in Appendix B. The historical development of the site and the surrounding area are summarised in the following tables. Where features are identified as having a potential impact on the proposed development, an indication of potential contaminants has been provided at the end of the Chapter.

2.24 It is noted that the mapping process adopted in generating the historical Ordnance Survey records (mapping intervals / frequency, scale, inclusion / exclusion of features etc.) may result in an incomplete account of a site's history. Changes in land use between mapping dates, or small yet potentially contaminative land uses, may not be identified from the records. The following account is therefore based solely on the information provided in the mapping records and the dates listed should be considered as approximate.

On Site Land Use	Date Feature Present	Date Feature Removed
The site was undeveloped and formed part of a large agricultural field which extended off site in all directions.	1878	1898
The site remained undeveloped agricultural land. The size of the field unit had diminished significantly.	1898	Circa 1913
A gravel pit originally located off-site to the east had extended onto the site by this time. Based on the recorded slope breaks shown on the mapping, a relatively shallow pit occupied almost the entire site. The opencast works were described at this time as both a 'Gravel pit' (central and north of the site), and a 'Chalk pit' (southern periphery).	Circa 1913	1936
Further opencast quarrying had occurred within the 'Chalk pit' cross the south-east and south-western sections of the site. The nature of works at the site were not formally recorded at this time.	1936	Circa 1957
The southern section of the site had been redeveloped and formed the rear garden of residential property No. 23 Richmond Road which had been constructed by this time. The eastern and southern sections of the site appeared sub-divided from the northern and western sections. The embankment located alongside the western boundary had been constructed. A number of small outbuildings were shown towards the north and north-east of the site. The nature of these structures was not recorded.	Circa 1957	2019
The 2019 OS map shows the site to still be sub-divided, with the northern and western areas separated from the southern and eastern areas of the site.	2019	N/A

Approximate distances are interpreted from historical mapping and in metres.

2.25 Environmentally pertinent historical information from the immediate surrounding area (within 250m) has been summarised in the following table.

Surrounding Land Use	Distance / Bearing	Date Feature Present	Date Feature Absent
Gravel pit (extending onto site by 1913 as detailed in Section 2.24).	20m / east	1898	Circa 1957
Residential use (properties and associated gardens).	Adjacent / all directions	Circa 1957	Present
Recreation ground.	50m / south-east	1932	Present
Additional gravel pit (large) which appears to have been infilled by 1932.	200m / north-east	1898	1932
Ashcroft Farm.	250m / north-east	1878	1932
Electricity Sub-station.	250m / east	1967	Present

Approximate distances are interpreted from historical mapping and in metres.

2.26 In addition to the activities within 250m of the site described above, an additional 'Chalk pit' was recorded approximately 300m to the south-west between 1878 and 1967. Extraction from this working appeared to have ceased prior to the earliest available historic map. It is unclear whether the former pit was infilled or landscaped after 1967, as the area is shown as a small coppice.

Summary of Identified Potential Sources of Contamination

2.27 This section has assessed both the current and historical uses of the site and surrounding areas, as well as publicly available regulatory information. In accordance with *CLR11,* this assessment has allowed potential sources of contamination to be identified.

2.28 Based on our understanding, it is considered that some potential sources can be discounted at this stage of the assessment. Potential sources of contamination have only been discounted where sufficient evidence has been gathered to indicate that the particular source, for reasons relating to the viability of its presence/significance, need not be considered further.

- Ashcroft Farm located 250m to the north-east is not considered likely to significantly impact the site, due to the relative distance of this facility from the site, the date of subsequent redevelopment (1932) and the relatively minor contaminative potential of the land use. As a result, this potential source has not been considered further.

- Contamination associated with the electricity sub-station located 250m east of the site is unlikely to affect the site. The principal contaminant associated with electrical sub-stations (PCBs) are not significantly mobile in the environment. Given the distance of this facility from the site, the associated risk is therefore considered to be very low, and this source has not been considered further.

- The recreation ground located approximately 50m to the south-east of the site whilst considered a potential receptor, is unlikely to be significantly contaminative, and has not been further considered as a source.

- Residential use of the site and immediate surrounds are considered unlikely to cause significant contamination during normal circumstances. Again, whilst considered as a potential receptor, this land use is not considered further as a potential source of contamination that could affect the redevelopment of the site.

2.29 Viable potential sources of contamination noted in this chapter, which will be carried forward into the conceptual model and risk assessment, include:

- On-site: Activities associated with open-cast quarrying of Gravel and Chalk and Made Ground of unknown type and chemical composition associated with the subsequent infilling of these pits. It is considered as a worst-case scenario that these activities / materials may have resulted in the presence of contaminants including; asbestos, metals, inorganics, Poly-Aromatic Hydrocarbons (PAHs), Total Petroleum Hydrocarbons (TPH), pH adjusters and Semi-Volatile Organic Compounds (SVOCs). Depending on the amount of organic matter and putrescible material present in these soils, the Made Ground may also represent a potential source of ground gas;

- Off-site: Extraction of Gravel and Chalk and subsequent infilling of quarries historically located approximately 200m north-east and 300m south-west of the site. These facilities were recorded on historical Ordnance Survey maps until approximately 1932 and 1967 respectively. As with the on-site facility, it is considered that contamination present at these sites may include asbestos, metals, inorganics, PAHs, TPHs, pH adjusters and SVOCs, and could also represent a source of ground gases should significant quantities of organic matter and putrescible material be present.

3.0 SENSITIVITY & ANTHROPOLOGY

Introduction

3.1 This chapter provides information relating to on-site and off-site **'pathways'** and **'receptors'** and includes a review of the geology, hydrogeology, hydrology and ecological setting of the site. A general assessment and review of the site anthropology, such as identified human / built environment receptors, including current and future site occupiers, below ground structures, flora etc is also provided. A summary of identified receptors and site-specific pollutant linkages is given at the end of the chapter. Any pathways (contaminant migration, exposure pathways), which can be discounted in conceptual terms (i.e. considering the unviable nature of the pathway given the proposed development setting or local geology / hydrogeology etc), are discussed at the end of the chapter.

Geology

3.2 The 1:50,000 British Geological Survey (BGS) map (Sheet 268)[4] and the BGS website (National Geoscience Information Service)[5] show the site to be directly underlain by Superficial Deposits from the Boyn Hill Gravel Member of Quaternary age. These materials are fluvial in origin, detrital and typically comprise Sands and (predominantly flint) Gravels, with possible lenses of Silt, Clay or Peat. Locally this material is recorded to be between 1m and 9m in thickness, exhibiting an average of thickness of approximately 5m.

3.3 The bedrock geology at the site is listed as the Seaford Chalk Formation / Newhaven Chalk Formation (Undifferentiated). These deposits are shallow-marine in origin, biogenic and detrital, generally comprising carbonate material (coccoliths) forming distinctive Chalk beds.

3.4 Given the mineral extraction understood to have taken place at the site, and subsequent in-filling, significant depths of Made Ground could be present at the site. In addition, the thickness of the Superficial Deposits may be locally reduced.

3.5 Historic excavation records have been identified relating to boreholes drilled within the general vicinity of the site and the surrounding area. The closest historic excavation was a trial pit recorded approximately 305m north-east of the site (exploratory hole reference:

[4] BGS Solid and Drift Map Sheet 268 'Reading'
[5] Information from BGS website: www.bgs.ac.uk consulted in month of report issue

SU77NW183). A summary of ground conditions encountered is provided below and a copy of the trial pit log is included in Appendix C. It should be noted that whilst the recorded geological sequence in this location is similar to the site, given the distance of the trial pit caution is advised when drawing conclusions regarding on-site conditions.

- Topsoil (no description provided) recorded to 0.2m below ground level (bgl).
- Dense red brown silty sandy Gravel with pockets of soft 'Clay and Gravel' recorded to the base of the excavation at 2.6m bgl. These materials appear consistent with descriptions of the Boyn Hill Gravel Member. The composition of the gravel was not included in the description of the material.
- No groundwater was encountered during excavation.
- No in-situ geotechnical testing was undertaken.

Ground Hazards

3.6 BGS data has also been reviewed to determine potential ground stability hazards which may affect the site. The table below summarises the ground stability hazards anticipated on the subject site based upon the expected ground model.

Details	On-Site Hazard Potential
Coal Mining Affected Area	None
Non-Coal Mining Affected Area	Rare
Potential for Collapsible Ground Stability Hazards	Very Low
Potential for Compressible Ground Stability Hazards	No Hazard
Potential for Ground Dissolution Stability Hazards	Low
Potential for Landslide Ground Stability Hazards	Very Low
Potential for Running Sand Ground Stability Hazards	Very Low
Potential for Shrinking or Swelling Clay Ground Stability Hazards	No Hazard

3.7 It should be noted that despite the low hazard potential recorded by Envirocheck with regards to ground dissolution features, several natural cavities referred to as 'sinkholes' and 'solution pipes' are recorded locally in areas comprising a similar geological sequence to that underlying the site. The closest of these features is located 50m to the south-west of the site. A full list of identified dissolution features and natural cavities is provided in Section 3.8.

3.8 The BGS also holds data on non-coal mining areas, natural cavities and radon, and the Coal Authority holds data on coal mining affected areas for the UK. Data collated by Landmark on these matters (sites / features within 1km of the subject site) are presented below.

Category	Details
BGS Recorded Mineral Sites	Seven BGS Recorded Mineral Sites have been identified within 1km of the subject site: • On-Site at Ashcroft Gravel Pit. Mineral site operated as an opencast site extracting soils from the Boyn Hill Gravel Member. Status is listed as ceased. • 10m south at Ashcroft Chalk Pit. Mineral site operated as an opencast site extracting soils from the White Chalk Subgroup. Status is listed as ceased. Based on historical OS maps, it is considered likely that this quarry overlapped onto the southern site periphery. • 250m north-east at Ashcroft Gravel Pit. Mineral site operated as an opencast site extracting soils from the Boyn Hill Gravel Member. Status is listed as ceased. • 395m south-west at West Dene Chalk Pit. Mineral site operated as an opencast site extracting soils from the White Chalk Subgroup. Status is listed as ceased. • 665m north-west (2 No. records) at Farthingworth Green Gravel Pit. Mineral site operated as an opencast site extracting soils from the Black Park Gravel Member, Thames Valley Formation. Status is listed as ceased. • 915m east at Emmer Green Chalk Mine. Mineral site operated as an underground site extracting soils from the White Chalk Subgroup. Status is listed as ceased.
Man-Made Mining Cavities	One man-made mining cavity has been identified within 1km of the subject site: • 910m east relating to an adit and shaft entry pillar and stall chalk mine. Geological unit(s) associated with this cavity include the Lambeth Group, Upper Chalk Formation / Black Park Gravel.
Natural Cavities	5 natural cavities have been identified within 500m of the subject site: • 50m south-west relating to 3 No. sinkholes and 6 No. solution pipes. Geological unit(s) associated with this cavity include the Chalk Group overlain by Boyn Hill Gravel. • 225m south relating to a sinkhole. Geological unit(s) associated with this cavity include the Chalk Group, overlain by Boyn Hill Gravel. • 315m east relating to a solution pipe. Geological unit(s) associated with this cavity include the Chalk Group overlain by Boyn Hill Gravel. • 345m south (2 No. Records) relating to a solution pipe. Geological unit(s) associated with this cavity include the Chalk Group overlain by Boyn Hill Gravel. • 425m NE relating to a sinkhole. Geological unit(s) associated with this cavity include the Chalk Group overlain by Boyn Hill Gravel.

	An additional 24 features are recorded between 500m and 1km from the site.
Radon Potential - Radon Affected Areas	No radon protective measures are necessary in the construction of new dwellings or extensions.

Hydrogeology

3.9 The Groundwater Vulnerability Map of England and the Environment Agency website[6] have been reviewed to determine the aquifer designations. The Boyn Hill Gravel Member is listed as a Secondary A Aquifer. These are permeable strata capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. The Seaford / Newhaven Chalk Formation (Undifferentiated) is listed as a Principal Aquifer. These are layers of rock or drift deposits that have high intergranular and / or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and / or river base flow on a strategic scale.

3.10 The Environment Agency has defined Source Protection Zones (SPZs) for groundwater sources used for public drinking water supply. These zones show the risk of contamination from any activities that might cause pollution in the area. The maps show three main zones (inner, outer and total catchment) and a fourth zone of special interest.

3.11 No groundwater Source Protection Zones have been identified within 1km of the subject site.

3.12 No groundwater abstractions are recorded within 1km of the site.

3.13 No groundwater discharge consents are recorded within 250m of the site.

[6] Information from Environment Agency Website: www.environment-agency.gov.uk consulted in month of report issue

Hydrology

3.14 No surface water features have been identified within 500m of the site.

3.15 The closest surface water feature recorded by Envirocheck is located approximately 755m west of the site. The presence, identity, location and flow direction of this feature could not be corroborated on available any of the Ordnance Survey Maps.

3.16 The River Thames flows west to east through the region passing the site to the south at a distance of approximately 1km.

3.17 River quality information is not available within 1km of the subject site.

3.18 No surface water abstractions are recorded within 1km of the site.

3.19 No surface water discharge consents are recorded within 250m of the site.

Environmental Statutory Designations

3.20 A review of the environmental sensitive receptors' database indicates that the site is not located within an ecologically sensitive area. There are no Special Protection Areas, Sites of Special Scientific Interest, Ramsar Sites, Local Nature Reserves or other Environmentally Sensitive Areas within 250m of the site.

3.21 The site is located within the Thames Wellingford to Caversham Nitrate Vulnerable Zone (NVZ).

Environmental Sensitivity

3.22 The sensitivity of each of the identified receptors is rated depending upon the environmental setting of the site, the likelihood for pollutant linkages to be present and potential consequence of those potential pollutant linkages. The assessment approach adopted is based on guidance set out in the *NHBC R&D 66*[7] document.

3.23 Groundwater within the Boyn Hill Gravel Member is considered to have Low (L1) groundwater sensitivity, which is described in the guidance as comprising “Permeable strata / minor aquifer near surface, but no apparent use and low vulnerability (may also be a significant aquifer but

[7] Guidance for the Safe Development of Housing on Land Affected by Contamination R&D66, NHBC, 2008

downgraded by long-term / permanent degradation of water quality). May provide pathway to surface watercourse at distance."

3.24 Groundwater within the Seaford Chalk Formation / Newhaven Chalk Formation (Undifferentiated) is considered to have Moderately High (M1) groundwater sensitivity, which is described in the guidance as being a "Recognised major or minor aquifer, moderately vulnerable, with probable use (either direct or via baseflow to a sensitive watercourse). Within formal protection zone or catchment of authorised abstractions for potable or other high-quality uses. Minor, short-term releases of contaminants may be tolerable".

3.25 The site is considered to have a low ecological sensitivity given the absence of any statutory designated ecological receptors either on-site or within proximity to the site.

3.26 The sensitivity classifications noted above have been taken into consideration in the development of the conceptual model presented at the rear of this report.

Anthropology

3.27 Proposed anthropological receptors at the site are considered to include future residents and visitors. In the short term, ground workers and construction personnel will also be considered.

Summary of Identified Receptors and Site-Specific Pollutant Linkages

3.28 A review of the environmental sensitivity and proposed anthropological use of the site has identified the following **receptors**, as detailed below.

Identified receptors:

- Future site residents and visitors,
- Ground and construction workers,
- Shallow / perched groundwater within Made Ground,
- Shallow groundwater within the Boyn Hill Gravel Member (Secondary A Aquifer),
- Groundwater within the Seaford Chalk Formation / Newhaven Chalk Formation (Undifferentiated) (Principal Aquifer),
- Surface waters,
- Adjacent land (including neighboring residential dwellings),
- Flora,
- Below ground structures and foundations, and
- Potable water pipes.

Viable pathways and pollution linkages:

3.29 A number of **viable migration and exposure pathways** and potential pollutant linkages have been identified, whereby a receptor may be exposed to a source. The viable pollutant linkages have then been used to develop a conceptual model. The following is a summary of **viable,** site specific pathways and pollutant linkages to be considered further:

- In areas of open ground, the following exposure pathways to humans are considered to be active:
  - Inhalation of contaminated dust,
  - Dermal contact and direct ingestion of contaminated soils, and
  - Indirect ingestion of contaminated soils sorbed to home-grown produce.

    It is noted that these exposure pathways are only active in soft landscaped areas; permanent hardstanding breaks the potential pathways.
- Hazardous ground gases, potentially generated by Made Ground / quarry infill or carbonate-rich natural soils / bedrock, may migrate into above ground structures and accumulate within building voids and enclosed spaces (resultant risk of asphyxiation and / or explosion).
- Shallow soil contamination has the potential to vertically migrate downwards into the underlying natural soils and perched or shallow groundwater by leaching and infiltration. These processes are enhanced in areas of soft landscaping / residential gardens due to an increased infiltration potential. Conversely, areas of hardstanding reduce infiltration potential and leaching rates, which results in a lower mobility of any shallow contamination.
- Vertical mixing of groundwater (assumed to be in hydraulic continuity) between the shallow aquifer (Secondary A Aquifer) and deeper groundwater (Principal Aquifer) units.
- Lateral migration of site-borne contaminants to off-site receptors (down hydraulic gradient), including adjacent residential land use and surface waters (via surface water runoff and baseflow).
- Lateral migration of potentially contaminated shallow groundwater from off-site sources (up hydraulic gradient), impacting on-site groundwater.
- Flora grown within areas of soft landscaping may be exposed to contaminants through root uptake mechanisms.
- Below ground concrete structures and foundations are susceptible to chemical attack from aggressive ground conditions (pH and water-soluble sulphate).
- Potable water pipes are susceptible to chemical attack from shallow soil contamination. Ground gases generated off-site may also migrate through the Made Ground and permeable underlying soils and bedrock onto site.

4.0 CONCLUSIONS & RECOMMENDATIONS

Geoenvironmental Considerations

4.1 A conceptual model and qualitative risk assessment have been included at the end of this report. The risk ratings assigned in the risk table, and summarised in this Chapter, are based on information obtained through desk-based research, a site walkover and on our experience in assessing risks from similar sites. The proposed end use of the site, anticipated ground conditions, environmental receptors and viable exposure pathways have been considered.

4.2 In summary, this Phase 1 Desk Study has determined that there is a potential for contamination to be present on site in a circumstance which could lead to risks to identified receptors. Identified sources of potential contamination have been identified on site including made ground resulting from the infill of historical opencast mineral extraction undertaken at the site.

4.3 As illustrated in the risk assessment table, some of the risks attributable to viable pollutant linkages were considered to be low and very low. **The risk ratings identified in this assessment are not considered prohibitive for the development and can be effectively managed in accordance with CLR11.** The risks which require further consideration in this regard are detailed below:

- A **moderate risk** has been identified to future site occupants, site visitors, adjacent land users, perched groundwater, and shallow groundwater within the Superficial Aquifer from Made Ground potentially present as a result of the infilling of former opencast mining carried out on site. This is largely due to the limited available information with regards to the ground conditions at the site and has been adopted as a worst-case scenario pending confirmation of the presence and contaminative status of any Made Ground present on site. The underlying geological strata are likely to be significantly permeable and readily allow vertical and lateral transmission of contaminants. The proposed end-use is equivalent to a residential with plant uptake end-use scenario and will include areas of soft landscaping allowing contact between any contamination on site and human health receptors, as well as allowing infiltration.

- A **moderate risk** has been identified to buildings and site occupants from ground gases generated by on-site Made Ground and quarry infill. The gas generation potential of the underlying Made Ground is currently unknown and as a conservative approach, is assumed to be significant in the absence of further information. The underlying geological strata are likely to allow the storage and transmission of ground

gases. As a carbonate, the Chalk bedrock also has the potential to generate carbon dioxide.

- A **low to moderate risk** has been identified with regards to ground and construction workers, bedrock geology, flora and buried services / structures from Made Ground and quarry infill. The lower risk with regards to ground and construction workers is a reflection of occupational, rather than residential exposure, and can be further reduced through the use of appropriate PPE and other precautionary measures. The risks to the underlying bedrock are considered to be slightly lower than the Superficial Aquifer due to the lower permeability of the Boyn Hill Gravel Member which is likely to attenuate vertical contaminant migration. Aggressive ground conditions (sulphate and pH) may occur due to contamination within the Made Ground.

4.4 The qualitative nature of the risk assessment is not absolute. Furthermore, although very low and low risks may have been assigned to various pollutant linkages, the risk cannot be eliminated (i.e. “no risk”) at this stage of the assessment and residual risks will remain which should not be discounted on the basis that the risk is low.

4.5 Based on the above risk ratings, no further environmental assessment or investigation is Based on the above risk ratings, further investigation is required to refine the risk assessment and validate the conceptual site model. A Phase 2 Site Investigation is therefore recommended which would aim to determine the presence of Made Ground and infill materials at the site, the contaminative status of the site soils as well as the preliminary ground gas regime. These works could be conditioned as part of a successful decision notice for the proposed development.

4.6 A suitable asbestos survey should be undertaken of the structures on site prior to the start of any site refurbishment / demolition works, if not already completed. If encountered, asbestos and asbestos containing materials, should be dealt with in accordance with CAR 2012.

Comments on Waste Classification

4.7 Separate to the human health and wider environmental risks from potential contamination, the presence of some contaminants can also impact the waste spoil disposal costs. Depending on the chemical composition of the Made Ground and any contaminants present and their distribution, soils may require different levels classification for waste disposal purposes. For example, the presence of asbestos within the Made Ground or any historic demolition waste can significantly change the classification of waste soils which could incur greater disposal costs. The Client should consider the impacts that this may have the overall waste disposal strategy for the site.

4.8 Should there be a need for the disposal of soils as part of the development, it is recommended that the Client consider the need for undertaking a waste spoil assessment as part of any intrusive works. This may include an assessment of the hazardous nature of the soil by virtue of any contamination (in accordance with the Waste Framework Directive and the Environment Agency's *Technical Guidance WM3 Hazardous Waste*[8]), and Waste Acceptance Criteria (WAC) testing.

Preliminary Ground Model

4.9 The BGS information shows the site to be underlain by Superficial Deposits from the Boyn Hill Gravel Member. These materials typically comprise Sands and (predominantly flint) Gravels, with possible lenses of Silt, Clay or Peat. The bedrock at the site is listed as the Seaford Chalk Formation / Newhaven Chalk Formation (Undifferentiated). These deposits generally comprise distinctive Chalk beds.

4.10 Given the mineral extraction understood to have taken place at the site, and subsequent in-filling, significant depths of Made Ground could be present on site. In addition, the thickness of the Superficial Deposits may be locally reduced. The Made Ground and fill material present are anticipated to comprise overburden materials and inert soils.

4.11 Perched groundwater may be present within the Superficial Deposits, particularly above any low-permeability horizons. The groundwater table within the Chalk on site is expected to be at a significant depth below ground level.

4.12 One BGS Recorded Mineral Site is listed on site, and is referred to as Ashcroft Gravel pit, a former opencast site extracting soils from the Boyn Hill Gravel Member. Ashcroft Chalk Pit listed within the Envirocheck Report 10m south of the site is considered likely to have overlapped onto the southern site periphery. Chalk was abstracted from the White Chalk Subgroup in this location via an opencast working and all operations are listed to have ceased.

4.13 A further four BGS mineral sites have been identified between 250m and 1km from the site boundary. The status of all of the sites is listed as ceased.

4.14 Five natural cavities were listed within 500m of the site. The closest entry is recorded 50m south of the site and relates to three sinkholes and six solution pipes. The geological units associated with this cavity are the Chalk Group, overlain by the Boyn Hill Gravel. Due to the

[8] Technical guidance WM3: Guidance on the Classification and Assessment of Waste (1st Edition 2015). Environment Agency.

presence of natural cavities within 1km of the site consideration should be given to obtaining a natural cavity occurrence database report and probability assessment for the site to provide further information on the likely risk from identified ground hazards.

4.15 A geotechnical site investigation will likely be required to inform foundation design and can be combined with an environmental investigation.

Statutory Designation

4.16 The *National Planning Policy Framework (NPPF)* states that "land should be suitable for its new use and as a minimum, after carrying out remediation (if required), the land should **not** be capable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990". It is our opinion that, based on the findings of this Phase 1 Desk Study, it is unlikely the site would be designated as statutory contaminated land by the Local Authority under the provision of the published Statutory Guidance. It is advisable however, that any recommendations made in this report are implemented in line with current guidance and good practice, especially where verification of the risk assessment is necessary.

CONCEPTUAL MODEL & RISK ASSESSMENT

ENVIRONMENTAL RISK ASSESSMENT

Introduction

This section assesses the significance of the environmental issues that have been identified on the site or in the surrounding area. This is achieved by developing an initial conceptual model for the site and undertaking a qualitative risk assessment.

The objective of the conceptual model is to identify potential contaminant "source(s)", "pathways" and target "receptors" relating to the site and surrounding area. The information obtained is described in detail in the Land Use Chapter and the Sensitivity & Anthropology Chapters. This information is then collated and a qualitative risk assessment[9,10] undertaken to assess the source-pathway-receptor linkages. The potential for a pollution event to occur is evaluated using a risk classification tool[11.] The level of risk is assigned by considering the likelihood that a pollution event might occur with the consequence of its occurrence. The consequence is essentially a measurement of the severity of a hazard (or source) and sensitivity of the receptor (e.g. aquifer type or end user).

The Table presented overleaf details the various components of the site conceptual model and evaluates the risks associated with each viable potential pollution linkage. Where additional explanation is required, Justification Notes have been given at the end of the Table. The risks associated with each potential pollution linkage are also discussed within the report conclusions.

Methodology

The qualitative risk assessment firstly considers the source of contamination and potential contaminants associated with the source(s) (or hazards). As well as the type of source, the extent, concentration and availability of a contaminant is also assessed.

The effect of a hazard on an identified receptor is largely governed by the sensitivity of a receptor. Receptors may typically include people, buildings, animals, plants and local resources (such as groundwater, surface waters, mines etc). A change in the receptor should be considered if the end-use of the site changes, for example, if a commercial site is to be redeveloped into a residential housing estate as a residential occupier is considered more sensitive than a commercial occupier. The presence of contamination (as a potential hazard) does not necessary mean that there is a risk. It is the exposure pathway and the quantity of contamination that reaches the receptor which may determine the effect on a receptor (such as the integrity of a barrier between a contamination source and receptor).

The risk classifications for both likelihood and consequence is based on methodology presented in Contaminated Land Risk Assessment, A Guide to Good Practice (CIRIA C552, 2001) and has been developed from procedures outlined in the EA's CLR11 Model Procedures. The Department for the Environment Transport and the Regions (DETR), with the EA and Institute of Environment & Health, has also published guidance on risk assessment (Guidelines for Environmental Risk Assessment and Management). The guidance states that the designation of risk is based upon a consideration of both:

- The magnitude of the potential consequence (severity) of risk occurring which takes into account both the potential severity of the hazard and the sensitivity of the receptor; and
- The likelihood of an event occurring (probability) which takes into account the both the presence of the hazard and receptor and the integrity of the pathway.

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[9] Guidance for the Safe Development of Housing on Land Affected by Contamination R&D66, NHBC, 2008.
[10] Construction Industry Research and Information Association (CIRIA). Contaminated Land Risk Assessment. A Guide to Good Practice. CIRIA C552 2001.
[11] Department of the Environment, Transport and the Regions, Environment Agency and Institute of Environmental Health. Guidelines for Environmental Risk Assessment and Management. HMSO July 2000.

The magnitude of consequence (severity) and likelihood (probability) is defined in the CIRIA guidance, together with examples. The two classifications are then compared (as shown on Table 1) to obtain an estimation of risk for each pollution linkage, ranging from "very high risk" to "very low risk". A description of the risks and likely actions required is presented in Table 2. The benefit of estimating the risk in this way is that it can be revised after each investigation phase as the conceptual model and corresponding pollution linkages are refined.

Table 1: Comparison of Consequence VS. Probability

		Consequence			
		Severe	**Medium**	**Mild**	**Minor**
Likelihood	**High likelihood**	Very high risk	High risk	Moderate risk	Moderate/ low risk
	Likely	High risk	Moderate risk	Moderate/ low risk	Low risk
	Low likelihood	Moderate risk	Moderate/ low risk	Low risk	Very low risk
	Unlikely	Moderate/ low risk	Low risk	Very low risk	Very low Risk

Table 2: Description of the Classified Risks and Likely Action Required

Level of Risk	Description of Classification
Very High Risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, or, there is evidence that severe harm to a designated receptor is currently happening. If this risk is realised, it is likely to result in significant environmental and financial liability to current and/ or future site owners/ occupiers. Urgent investigation (if not already undertaken) and remediation is likely to be required.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard. If risk is realised, it is likely to present a sizeable environmental and financial liability to current and/ or future site owners/ occupiers. Urgent investigation is required and remediation work may be necessary in the short term and likely over the longer term.
Moderate Risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely the harm would be relatively mild. Investigation is normally required to clarify the risk and determine the potential environmental liability. Some remedial works may be required over the longer term.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild. Limited investigation may be recommended to clarify the risk, dependant on the sensitivity of the receptor and view point of those of interest. Any remedial works are likely to be fairly limited.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is likely to be mild or minor.

The acceptability of risk will always depend upon the view point of those of interest, whether it is an occupier of a site, a regulator or stakeholder. As a result, it could be that action will be required to deal with a level of risk even if it is classified as very low.

CONCEPTUAL SITE MODEL					QUALITATIVE RISK ASSESSMENT			
Source		Pollutant	Pathway	Receptor	Likelihood of Occurrence	Consequence (severity)	Potential Risk	Justification of Risk
On-site	Made Ground/Quarry Infill	Asbestos, metals, inorganics, PAH, TPH, SVOCs	Inhalation of contaminated dusts, gases and vapours, dermal contact and direct ingestion of contaminated soils, and indirect ingestion of contaminated soils sorbed to home-grown produce	Future site occupants and site visitors	Likely	Medium	Moderate	See Notes: 1, 2, 3
On-site	Made Ground/Quarry Infill	Asbestos, metals, inorganics, PAH, TPH, SVOCs	Inhalation of contaminated dusts, gases and vapours, dermal contact and direct ingestion of contaminated soils	Ground / construction workers	Low Likelihood	Medium	Moderate/ low	See Notes: 1, 4, 3
On-site	Made Ground/Quarry Infill	Metals, inorganics, PAH, TPH, SVOCs	Vertical migration downwards via leaching and/or saturation of contaminated soils	Shallow / perched groundwater within Made Ground	Likely	Medium	Moderate	See Notes: 1, 5, 6, 3
On-site	Made Ground/Quarry Infill	Metals, inorganics, PAH, TPH, SVOCs	Vertical migration downwards via leaching	Shallow groundwater within the superficial geology	Likely	Medium	Moderate	See Notes: 1, 7, 6, 3
On-site	Made Ground/Quarry Infill	Metals, inorganics, PAH, TPH, SVOCs	Vertical migration downwards via leaching	Deep groundwater within the bedrock geology	Low Likelihood	Medium	Moderate/ low	See Notes: 1, 8, 6, 3
On-site	Made Ground/Quarry Infill	Metals, inorganics, PAH, TPH, SVOCs	Lateral migration of contaminants to down hydraulic gradient suface water (baseflow)	Surface water	Unlikely	Medium	Low	See Notes: 1, 9, 3
On-site	Made Ground/Quarry Infill	Metals, inorganics, PAH, TPH, SVOCs	Lateral migration of ground gas in permeable unstaurated ground	Adjacent land	Likely	Medium	Moderate	See Notes: 1, 3, 10, 3
On-site	Made Ground/Quarry Infill	Copper, nickel, zinc	Root uptake mechanisms	Flora	Low Likelihood	Medium	Moderate/ low	See Notes: 1, 3, 11
On-site	Made Ground/Quarry Infill	pH, sulphates, TPH	Chemical attack from aggressive ground conditions (pH and water soluble sulphate) and shallow contamination	Buried services and below ground structures and foundations	Likely	Mild	Moderate/ low	See Notes: 1, 3, 12

CONCEPTUAL SITE MODEL & QUALITATIVE RISK ASSESSMENT
3170
Land at Atterbury Gardens, Reading

Report Ref: 3170_FP01.0-CSM

CONCEPTUAL SITE MODEL					QUALITATIVE RISK ASSESSMENT			
Source		Pollutant	Pathway	Receptor	Likelihood of Occurrence	Consequence (severity)	Potential Risk	Justification of Risk
On-site	Made Ground/Quarry Infill	Methane, Carbon Dioxide	Migration and accumulation within building voids and enclosed spaces	Building and site occupants	Likely	Medium	Moderate	See Notes: 1, 13, 14
Off-site	Made Ground/Quarry Infill	Metals, inorganics, PAH, TPH, SVOCs	Lateral migration of contaminants to down hydraulic gradient areas in groundwater	On site groundwater	Unlikely	Medium	Low	See Notes: 1, 10, 6
Off-site	Made Ground/Quarry Infill	Methane, Carbon Dioxide	Migration and accumulation within building voids and enclosed spaces	Building and site occupants	Unlikely	Medium	Low	See Notes: 15, 16

JUSTIFICATION NOTES:

1 site with unspecified material
2 Private gardens and soft landscaping proposed, communal use, potential for exposure to shallow soils
3 Contamination may be significant and / or widespread
4 Construction workers - use of appropriate PPE and awareness of potential hazards through 'toolbox' talks
5 No abstractions listed in 1km
6 Not located in SPZ and no potable abstractions within 1km
7 Site underlain by Secondary A Aquifer
8 A Principal Aquifer is present at depth
9 Surface water at significant distance. Impact likely to be negligible
10 High permeability soils - potential of lateral transmission of pollutants
11 Landscaped garden areas, exposure of flora to shallow soils likely
12 Potable water pipes likely laid in Made Ground
13 Significant thickness / potential for putrescible materials possible
14 Potential for accumulation of any ground gases in poorly ventilated areas
15 Historical gravel extraction and infilling, although given the time since last recorded deposition, gas generation likely reduced
16 Distance to offsite gas sources (i.e. from 200m).

APPENDIX A: ENVIROCHECK REPORT

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
201739248_1_1

Customer Reference:
3170

National Grid Reference:
470360, 175940

Slice:
A

Site Area (Ha):
0.17

Search Buffer (m):
1000

Site Details:

23, Richmond Road
Caversham
READING
RG4 7PR

Client Details:

Mr J May
Lustre Consulting (South West) Ltd
7 Unity Street
Bristol
BS1 5HH

Envirocheck®
LANDMARK INFORMATION GROUP®

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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 this 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 v53.0

Envirocheck®
LANDMARK INFORMATION GROUP®

Summary

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	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1			2	6
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			1	
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 3				Yes
Pollution Incidents to Controlled Waters	pg 3				2
Prosecutions Relating to Authorised Processes	pg 4				1
Registered Radioactive Substances					
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions	pg 4				(*28)
Water Industry Act Referrals					
Groundwater Vulnerability Map	pg 11	Yes	n/a	n/a	n/a
Groundwater Vulnerability - Soluble Rock Risk	pg 11	1	n/a	n/a	n/a
Groundwater Vulnerability - Local Information			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 11	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 11	Yes	n/a	n/a	n/a
Source Protection Zones					
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
OS Water Network Lines					

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Summary

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	pg 12				1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Landfill Coverage	pg 12	1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)	pg 12	1	1	1	3
Potentially Infilled Land (Water)	pg 12		1	1	5
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					

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Summary

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 14	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 14	Yes	Yes		Yes
BGS Recorded Mineral Sites	pg 15	1	2	1	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	pg 16	Yes	n/a	n/a	n/a
Man-Made Mining Cavities	pg 16				1
Natural Cavities	pg 16		2	4	24
Non Coal Mining Areas of Great Britain	pg 21	Yes		n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 21	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards	pg 21	Yes	Yes	n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 21	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 21	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards				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 22		1	9	16
Fuel Station Entries					
Points of Interest - Commercial Services	pg 24			4	2
Points of Interest - Education and Health					
Points of Interest - Manufacturing and Production	pg 24				1
Points of Interest - Public Infrastructure	pg 24				3
Points of Interest - Recreational and Environmental	pg 25		2		
Gas Pipelines					
Underground Electrical Cables					

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Ancient Woodland					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty	pg 26				1
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 26	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	A13SE (SW)	0	1	470362 175945
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SE (W)	329	1	470000 175945
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14NW (E)	439	1	470800 176100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14NW (NE)	443	1	470750 176200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14NW (NE)	460	1	470800 176150
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A19SW (NE)	466	1	470700 176300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14NW (NE)	472	1	470750 176250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14NW (E)	485	1	470850 176100
1	**Discharge Consents** Operator: Mrs Worthington Property Type: DOMESTIC PROPERTY (SINGLE) (INCL FARM HOUSE) Location: 8a Knowle Close Caversham Reading Berkshire Rg4 7lh Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Cawm.0598 Permit Version: 1 Effective Date: 20th January 2003 Issued Date: 27th January 2003 Revocation Date: 15th February 2006 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Land/Soakaway Receiving Water: Land **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A12SE (SW)	353	2	470020 175770
1	**Discharge Consents** Operator: Dr & Mrs G D Green Property Type: DOMESTIC PROPERTY (SINGLE) (INCL FARM HOUSE) Location: 8a Knowle Close Caversham Reading Berkshire Rg4 7lh Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Cawm.0598 Permit Version: 2 Effective Date: 16th February 2006 Issued Date: 27th January 2003 Revocation Date: 31st March 2018 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Land/Soakaway Receiving Water: Land **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A12SE (SW)	353	2	470020 175770

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
2	**Discharge Consents** Operator: Groom Estates Limited Property Type: DOMESTIC PROPERTY (MULTIPLE) (INCL FARM HOUSES) Location: Plots 1-5 At Outlands Outlands Upper Warren Avenue Caversham Reading Rg4 7eb Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Npswqd009583 Permit Version: 2 Effective Date: 21st December 2012 Issued Date: 21st December 2012 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Land/Soakaway Receiving Water: Gw Via Soakaway **Status: Varied under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	915	2	469585 175409
2	**Discharge Consents** Operator: Groom Estates Limited Property Type: DOMESTIC PROPERTY (MULTIPLE) (INCL FARM HOUSES) Location: Plots 1-5 At Outlands Outlands Upper Warren Avenue Caversham Reading Rg4 7eb Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Npswqd009583 Permit Version: 1 Effective Date: 3rd March 2010 Issued Date: 3rd March 2010 Revocation Date: 20th December 2012 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Land/Soakaway Receiving Water: Gw Via Soakaway **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	915	2	469585 175409
3	**Discharge Consents** Operator: Thames Water Utilities Ltd Property Type: PUMPING STATION ON SEWERAGE NETWORK (WATER COMPANY) Location: Surley Row, Readingsurley Rowreading Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Temp.2027 Permit Version: 1 Effective Date: 2nd November 1989 Issued Date: 2nd November 1989 Revocation Date: 27th January 1997 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Thames **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 100m	A14NE (E)	922	2	471300 176100
4	**Discharge Consents** Operator: Mr. S.C. & Mrs. M.E. Smith Property Type: DOMESTIC PROPERTY (SINGLE) (INCL FARM HOUSE) Location: Newlyn Cottage, The Warren, Caversham, Reading, Berks Authority: Environment Agency, Thames Region Catchment Area: Not Given Reference: CTWC.2000 Permit Version: 1 Effective Date: 9th November 1987 Issued Date: 9th November 1987 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Onto Land Receiving Water: Alluvium Overlying Upperchalk **Status: Transferred from COPA 1974** Positional Accuracy: Located by supplier to within 100m	A7SE (SW)	974	2	469960 175030

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Discharge Consents** Operator: Ms. R.B. Spencer-Thomas Property Type: DOMESTIC PROPERTY (SINGLE) (INCL FARM HOUSE) Location: 151b The Warren, Caversham, Reading, Berkshire Authority: Environment Agency, Thames Region Catchment Area: Not Given Reference: CTCU.1781 Permit Version: 1 Effective Date: 10th August 1984 Issued Date: 10th August 1984 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Land/Soakaway Receiving Water: Alluvium O/L Chalk Strata **Status: Transferred from Water Resources Act 1963** Positional Accuracy: Located by supplier to within 100m	A7SE (SW)	986	2	469820 175090
5	**Discharge Consents** Operator: Ms. R.B. Spencer-Thomas Property Type: DOMESTIC PROPERTY (SINGLE) (INCL FARM HOUSE) Location: 151a The Warren, Caversham, Reading, Berkshire Authority: Environment Agency, Thames Region Catchment Area: Not Given Reference: CTCU.1780 Permit Version: 1 Effective Date: 10th August 1984 Issued Date: 10th August 1984 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Land/Soakaway Receiving Water: Alluvium O/L Chalk Strata **Status: Transferred from Water Resources Act 1963** Positional Accuracy: Located by supplier to within 100m	A7SE (SW)	991	2	469810 175090
6	**Local Authority Pollution Prevention and Controls** Name: Vag Autoworks Location: 113a Kidmore Road, Caversham, Rg4 7nh Authority: Reading Borough Council, Environmental Health Department Permit Reference: Not Supplied Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A13NE (NE)	308	3	470501 176251
	Nearest Surface Water Feature	A12NW (W)	754	-	469639 176242
7	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: CAVERSHAM Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 5th August 1990 Incident Reference: WE900487 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	A7SE (S)	986	2	470001 175001
7	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: CAVERSHAM Authority: Environment Agency, Thames Region Pollutant: Miscellaneous - Unknown Note: Confirmed As A Pollution Incident Incident Date: 2nd October 1991 Incident Reference: WE910535 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	A7SE (S)	991	2	470001 174996

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
8	**Prosecutions Relating to Authorised Processes** Location: Hunters Chase, Caversham, READING, Berkshire, RG4 7X? Prosecution Text: EA Data 02/01/1999, Flytipping soil at Hunters Chase on 28th May 1998. Prosecution Act: EPA90 s33(1a) Hearing Date: 12th January 1999 Verdict: Guilty Fine: 250 Costs: 137.5 Positional Accuracy: Manually positioned to the road within the address or location	A18SE (N)	552	2	470573 176486
	Water Abstractions Operator: Caversham Heath Golf Club Licence Number: Th/039/0023/003/R01 Permit Version: 1 Location: Caversham Heath Golf Course, Mapledurham Authority: Environment Agency, Thames Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 March Authorised End: 31 October Permit Start Date: 6th May 2016 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16NE (NW)	1331	2	469250 176720
	Water Abstractions Operator: Caversham Heath Golf Limited Licence Number: Th/039/0023/003 Permit Version: 1 Location: Caversham Heath Golf Course, Mapledurham Authority: Environment Agency, Thames Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 March Authorised End: 31 October Permit Start Date: 31st March 2010 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16NE (NW)	1331	2	469250 176720
	Water Abstractions Operator: Caversham Heath Golf Club Ltd Licence Number: 28/39/23/0186 Permit Version: 1 Location: Caversham Heath Golf Course, Mapledurham Authority: Environment Agency, Thames Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Caversham Heath Golf Course Authorised Start: 01 March Authorised End: 31 October Permit Start Date: 30th July 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16NE (NW)	1331	2	469250 176720
	Water Abstractions Operator: Mr D A Drayton Licence Number: 28/39/23/0070 Permit Version: 100 Location: Little John'S Farm, Reading (D) Authority: Environment Agency, Thames Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Little John'S Farm, Reading Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 9th January 1967 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A3NW (S)	1348	2	470100 174600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Mr & Lady J & A Eyston Licence Number: 28/39/23/0139 Permit Version: 101 Location: Chazey Court Farm, Mapledurham Authority: Environment Agency, Thames Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 16 Yearly Rate (m3): 2273 Details: Chazey Court Farm, Mapledurham Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 9th September 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6SE (SW)	1401	2	469140 175200
	Water Abstractions Operator: Mr & Lady J & A Eyston Licence Number: 28/39/23/0139 Permit Version: 101 Location: Chazey Court Farm, Mapledurham, - Tubewell 'A' Authority: Environment Agency, Thames Region Abstraction: Private Water Supply: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Chazey Court Farm, Mapledurham Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 9th September 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6SE (SW)	1427	2	469110 175200
	Water Abstractions Operator: J. J. Eyston & Lady A. P. Eyston Licence Number: 28/39/23/0097 Permit Version: Not Supplied Location: New Farm & Chazey Farm, MAPLEDURHAM Authority: Environment Agency, Thames Region Abstraction: Agriculture (General) Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 16 Yearly Rate (m3): 5819 Details: Not Supplied Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A6SE (SW)	1488	2	469105 175095
	Water Abstractions Operator: The Club Company (Uk) Ltd Licence Number: 28/39/23/0174 Permit Version: 106 Location: Mapledurham Golf Club 2010 Authority: Environment Agency, Thames Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 1st April 2010 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A22SW (NW)	1500	2	469508 177206

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: The Club Company (Uk) Ltd Licence Number: 28/39/23/0174 Permit Version: 105 Location: Mapledurham Golf Club Authority: Environment Agency, Thames Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Mapledurham Golf Club Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 7th September 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A22SW (NW)	1500	2	469500 177200
	Water Abstractions Operator: Clubhaus Plc Licence Number: 28/39/23/0174 Permit Version: 104 Location: Mapledurham Golf Club Authority: Environment Agency, Thames Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Mapledurham Golf Club Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 1st November 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A22SW (NW)	1500	2	469500 177200
	Water Abstractions Operator: Clubhaus Plc Licence Number: 28/39/23/0174 Permit Version: 103 Location: Mapledurham Golf Club Authority: Environment Agency, Thames Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 64 Yearly Rate (m3): 8920 Details: Mapledurham Golf Club Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 21st September 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A22SW (NW)	1500	2	469500 177200
	Water Abstractions Operator: Reading Golf Club Ltd Licence Number: 28/39/23/0169 Permit Version: 100 Location: Reading Golf Club, Emmer Green Authority: Environment Agency, Thames Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 227 Yearly Rate (m3): 31823 Details: Reading Golf Club Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 15th April 1991 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A25SW (NE)	1598	2	471460 177140

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Mr D A Drayton Licence Number: 28/39/23/0070 Permit Version: 100 Location: Little John'S Farm, Reading (E) Authority: Environment Agency, Thames Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Little John'S Farm, Reading Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 9th January 1967 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A3SW (S)	1644	2	470100 174300
	Water Abstractions Operator: Mr D A Drayton Licence Number: 28/39/23/0070 Permit Version: 100 Location: Little Johm'S Farm, Reading (B) Authority: Environment Agency, Thames Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 27 Yearly Rate (m3): 9819 Details: Little John'S Farm, Reading Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 9th January 1967 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A2SE (SW)	1656	2	469700 174400
	Water Abstractions Operator: Mr D A Drayton Licence Number: 28/39/23/0070 Permit Version: 100 Location: Little John'S Farm, Reading (C) Authority: Environment Agency, Thames Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Little John'S Farm, Reading Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 9th January 1967 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A2SE (SW)	1656	2	469700 174400
	Water Abstractions Operator: British Road Services Ltd Licence Number: 28/39/23/0024 Permit Version: Not Supplied Location: Cardiff Road, READING Authority: Environment Agency, Thames Region Abstraction: Vehicle Washing Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 14 Yearly Rate (m3): Not Supplied Details: River Gravel; Licence Status: Revoked; Lapsed Or Cancelled Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(S)	1738	2	470600 174200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Reading Borough Council Licence Number: 28/39/23/0199/Tr Permit Version: 1 Location: River Thames - Christchurch Meadows Authority: Environment Agency, Thames Region Abstraction: Environmental: Non-remedial River/Wetland Support: Transfer between sources Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Christchurch Meadows, Caversham Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 10th September 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A5SW (SE)	1817	2	471440 174450
	Water Abstractions Operator: Reading Borough Council Licence Number: 28/39/23/0196 Permit Version: 1 Location: Thames At Christchurch Meadow Authority: Environment Agency, Thames Region Abstraction: Environmental: Non-remedial River/Wetland Support: Lake & Pond Throughflow Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: At Christchurch Meadows Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A5SW (SE)	1817	2	471440 174450
	Water Abstractions Operator: Reading Borough Council Licence Number: 28/39/23/0137 Permit Version: 100 Location: Scours Lane, Reading (A - R) Authority: Environment Agency, Thames Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 5 Yearly Rate (m3): 1000 Details: Scours Lane, Reading Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 17th November 1976 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A1NE (SW)	1818	2	469100 174600
	Water Abstractions Operator: Hillier Group Of Companies Licence Number: 28/39/23/0128 Permit Version: 100 Location: Cardiff Road, Reading Point A Authority: Environment Agency, Thames Region Abstraction: Metal: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 27 Yearly Rate (m3): 6682 Details: Cardiff Road, Reading Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(S)	1823	2	470400 174100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Manrose Manufacturing Ltd Licence Number: 28/39/23/0167 Permit Version: 101 Location: Meadow Road, Reading, Berkshire Authority: Environment Agency, Thames Region Abstraction: Commercial/Industrial/Public Services: 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: Meadow Road Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 30th June 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(S)	1897	2	470900 174100
	Water Abstractions Operator: Manrose Manufacturing Ltd Licence Number: 28/39/23/0167 Permit Version: 101 Location: Meadow Road, Reading, Berkshire Authority: Environment Agency, Thames Region Abstraction: Other Industrial/Commercial/Public Services: Non-Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Meadow Road Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 30th June 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(S)	1897	2	470900 174100
	Water Abstractions Operator: Manrose Manufacturing Ltd Licence Number: 28/39/23/0167 Permit Version: 100 Location: Meadow Road, Reading, Berkshire Authority: Environment Agency, Thames Region Abstraction: Commercial/Industrial/Public Services: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 364 Yearly Rate (m3): 4546 Details: Meadow Road Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 10th February 1997 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(S)	1897	2	470900 174100
	Water Abstractions Operator: Manrose Manufacturing Ltd Licence Number: 28/39/23/0167 Permit Version: 100 Location: Meadow Road, Reading, Berkshire Authority: Environment Agency, Thames Region Abstraction: Other Industrial/Commercial/Public Services: Non-Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Meadow Road Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 10th February 1997 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1897	2	470900 174100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Cox & Wyman Ltd Licence Number: 28/39/23/0041 Permit Version: 100 Location: Cardiff Road, Reading, Berkshire Authority: Environment Agency, Thames Region Abstraction: Other Industrial/Commercial/Public Services: Non-Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 82 Yearly Rate (m3): 20366 Details: At Cardiff Road, Reading Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 11th July 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1897	2	470900 174100
	Water Abstractions Operator: Cox & Wyman Ltd Licence Number: 28/39/23/0041 Permit Version: 100 Location: Cardiff Road, Reading, Berkshire Authority: Environment Agency, Thames Region Abstraction: Commercial Private Water Undertaking: 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: At Cardiff Road Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 11th July 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1897	2	470900 174100
	Water Abstractions Operator: Mr D A Drayton Licence Number: 28/39/23/0070 Permit Version: 100 Location: Little John'S Farm, Reading (A) Authority: Environment Agency, Thames Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Little John'S Farm, Reading Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 9th January 1967 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(SW)	1921	2	469500 174200
	Water Abstractions Operator: Hillier Group Of Companies Licence Number: 28/39/23/0128 Permit Version: 100 Location: Cardiff Road, Reading Point B Authority: Environment Agency, Thames Region Abstraction: Metal: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Cardiff Road, Reading Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1936	2	470600 174000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Groundwater Vulnerability Map Combined Classification: Principle Bedrock Aquifer - High Vulnerability Combined Vulnerability: High Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Intermediate Bedrock Flow: Well Connected Fractures Dilution: 300-550 mm/year Baseflow Index: >70% Superficial Patchiness: <90% Superficial Thickness: 3-10m Superficial Recharge: High	A13SE (SW)	0	4	470362 175945
	Groundwater Vulnerability - Soluble Rock Risk Classification: Significant Risk - Low Possibility	A13SE (SW)	0	4	470362 175945
	Bedrock Aquifer Designations Aquifer Designation: Principal Aquifer	A13SE (SW)	0	4	470362 175945
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13SE (SW)	0	4	470362 175945
	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				
	OS Water Network Lines None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
9	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Reading, Berkshire Name: Silverthorne Drive Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD13249 First Input Date: 31st December 1950 Last Input Date: 31st December 1959 Specified Waste Type: Deposited Waste included Inert and Industrial Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 0345/0109 BGS Ref: Not Supplied Other Ref: TP0517, RDG16	A18SW (N)	662	2	470138 176595
	Local Authority Landfill Coverage Name: Reading Unitary Council - Has supplied landfill data		0	5	470362 175945
	Local Authority Landfill Coverage Name: Oxfordshire County Council - Has supplied landfill data		662	7	469671 175880
	Local Authority Landfill Coverage Name: South Oxfordshire District Council - Landfill data has been supplied by another authority		662	6	469671 175880
10	**Potentially Infilled Land (Non-Water)** Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1991	A13SE (SW)	0	-	470362 175945
11	**Potentially Infilled Land (Non-Water)** Bearing Ref: NE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1991	A13NE (NE)	140	-	470498 176031
12	**Potentially Infilled Land (Non-Water)** Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1991	A13SW (SW)	392	-	470051 175665
13	**Potentially Infilled Land (Non-Water)** Bearing Ref: NW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A18SW (NW)	576	-	470058 176463
14	**Potentially Infilled Land (Non-Water)** Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A18SW (N)	598	-	470156 176535
15	**Potentially Infilled Land (Non-Water)** Bearing Ref: S Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1991	A8SE (S)	678	-	470448 175249
16	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1932	A13NE (NE)	98	-	470464 176005
17	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1932	A14SW (E)	367	-	470753 175868
18	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1900	A8SE (S)	707	-	470524 175232
19	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1932	A8SW (S)	741	-	470305 175185
20	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1961	A8SW (S)	831	-	470293 175096
21	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1932	A14NE (E)	975	-	471367 175955

Waste

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
22	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1914	A8SE (S)	988	-	470639 174971

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: White Chalk Subgroup	A13SE (SW)	0	1	470362 175945
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (SW)	0	1	470362 175945
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (N)	26	1	470362 176000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NW (NE)	529	1	470807 176268
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (E)	627	1	471000 175783
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19SW (NE)	756	1	471003 176384
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9NW (SE)	783	1	471000 175443

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (N)	934	1	470537 176892
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8SW (S)	951	1	470180 174987
23	**BGS Recorded Mineral Sites** Site Name: Ashcroft Gravel Pit Location: Caversham, Berkshire Source: British Geological Survey, National Geoscience Information Service Reference: 28004 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Boyn Hill Gravel Member Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A13NE (NE)	0	1	470370 175950
23	**BGS Recorded Mineral Sites** Site Name: Ashcroft Chalk Pit Location: Caversham Heights, Caversham, Reading, Berkshire Source: British Geological Survey, National Geoscience Information Service Reference: 137507 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: White Chalk Subgroup Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A13SE (S)	10	1	470365 175923
24	**BGS Recorded Mineral Sites** Site Name: Ashcroft Gravel Pit Location: Caversham Heights, Caversham, Berkshire Source: British Geological Survey, National Geoscience Information Service Reference: 28005 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Boyn Hill Gravel Member Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A13NE (NE)	248	1	470595 176080
25	**BGS Recorded Mineral Sites** Site Name: West Dene Chalk Pit Location: Caversham Heights, Caversham, Reading, Berkshire Source: British Geological Survey, National Geoscience Information Service Reference: 137482 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: White Chalk Subgroup Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A13SW (SW)	393	1	470048 175667

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
26	**BGS Recorded Mineral Sites** Site Name: Farthingworth Green Gravel Pit Location: Farthingworth Green, Caversham, Reading, Berkshire Source: British Geological Survey, National Geoscience Information Service Reference: 137483 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Black Park Gravel Member, Thames Valley Formation Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A18SW (N)	665	1	470214 176621
27	**BGS Recorded Mineral Sites** Site Name: Farthingworth Green Gravel Pit Location: Farthingworth Green, Caversham, Reading, Berkshire Source: British Geological Survey, National Geoscience Information Service Reference: 137484 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Black Park Gravel Member, Thames Valley Formation Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A18SW (NW)	665	1	470059 176565
28	**BGS Recorded Mineral Sites** Site Name: Emmer Green Chalk Mine Location: Emmer Green, Reading, Berkshire Source: British Geological Survey, National Geoscience Information Service Reference: 220261 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: White Chalk Subgroup Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A14NE (E)	917	1	471309 175972
	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				
	Mining Instability Mining Evidence: Conclusive Rock Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A13SE (SW)	0	-	470362 175945
	Man-Made Mining Cavities Easting: 471300 Northing: 175950 Distance: 907 Quadrant Reference: A14 Quadrant Reference: NE Bearing Ref: E Cavity Type: Adit and Shaft Entry Pillar and Stall Chalk Mine Commodity: Chalk Solid Geology Detail: Lambeth Group, Upper Chalk Formation Superficial Geology Detail: Black Park Gravel	A14NE (E)	907	8	471300 175950
	Natural Cavities Easting: 470300 Northing: 175900 Distance: 50 Quadrant Reference: A13 Quadrant Reference: SW Bearing Ref: SW Cavity Type: Sinkhole x 3, Solution Pipe x 6 Solid Geology Detail: Chalk Group Superficial Geology Detail: Boyne Hill Gravel	A13SW (SW)	50	8	470300 175900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Natural Cavities Easting: 470400 Northing: 175700 Distance: 224 Quadrant Reference: A13 Quadrant Reference: SE Bearing Ref: S Cavity Type: Sinkhole x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Boyne Hill Gravel	A13SE (S)	224	8	470400 175700
	Natural Cavities Easting: 470700 Northing: 176000 Distance: 314 Quadrant Reference: A14 Quadrant Reference: NW Bearing Ref: E Cavity Type: Solution Pipe Solid Geology Detail: Chalk Group Superficial Geology Detail: Boyne Hill Gravel	A14NW (E)	314	8	470700 176000
	Natural Cavities Easting: 470500 Northing: 175600 Distance: 346 Quadrant Reference: A8 Quadrant Reference: NE Bearing Ref: S Cavity Type: Solution Pipe Solid Geology Detail: Chalk Group Superficial Geology Detail: Boyne Hill Gravel	A8NE (S)	346	8	470500 175600
	Natural Cavities Easting: 470500 Northing: 175600 Distance: 346 Quadrant Reference: A8 Quadrant Reference: NE Bearing Ref: S Cavity Type: Sinkhole x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Boyne Hill Gravel	A8NE (S)	346	8	470500 175600
	Natural Cavities Easting: 470770 Northing: 176130 Distance: 424 Quadrant Reference: A14 Quadrant Reference: NW Bearing Ref: NE Cavity Type: Sinkhole x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Boyne Hill Gravel	A14NW (NE)	424	8	470770 176130
	Natural Cavities Easting: 470686 Northing: 176392 Distance: 526 Quadrant Reference: A18 Quadrant Reference: SE Bearing Ref: NE Cavity Type: Solution Pipe x 7 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel, Head	A18SE (NE)	526	8	470686 176392
	Natural Cavities Easting: 469980 Northing: 176350 Distance: 537 Quadrant Reference: A17 Quadrant Reference: SE Bearing Ref: NW Cavity Type: Unknown x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A17SE (NW)	537	8	469980 176350

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Natural Cavities Easting: 470200 Northing: 176500 Distance: 552 Quadrant Reference: A18 Quadrant Reference: SW Bearing Ref: N Cavity Type: Solution Pipe x 4 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A18SW (N)	552	8	470200 176500
	Natural Cavities Easting: 469800 Northing: 176200 Distance: 589 Quadrant Reference: A12 Quadrant Reference: NE Bearing Ref: NW Cavity Type: Sinkhole x 1, Solution Pipe x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A12NE (NW)	589	8	469800 176200
	Natural Cavities Easting: 469950 Northing: 176400 Distance: 593 Quadrant Reference: A17 Quadrant Reference: SE Bearing Ref: NW Cavity Type: Sinkhole x 1, Solution Pipe x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A17SE (NW)	593	8	469950 176400
	Natural Cavities Easting: 470170 Northing: 176550 Distance: 608 Quadrant Reference: A18 Quadrant Reference: SW Bearing Ref: N Cavity Type: Sinkhole x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A18SW (N)	608	8	470170 176550
	Natural Cavities Easting: 470230 Northing: 176570 Distance: 612 Quadrant Reference: A18 Quadrant Reference: SW Bearing Ref: N Cavity Type: Solution Pipe Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A18SW (N)	612	8	470230 176570
	Natural Cavities Easting: 470230 Northing: 176570 Distance: 612 Quadrant Reference: A18 Quadrant Reference: SW Bearing Ref: N Cavity Type: Solution Pipe Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A18SW (N)	612	8	470230 176570
	Natural Cavities Easting: 470220 Northing: 176570 Distance: 614 Quadrant Reference: A18 Quadrant Reference: SW Bearing Ref: N Cavity Type: Solution Pipe Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A18SW (N)	614	8	470220 176570

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Natural Cavities Easting: 470270 Northing: 176580 Distance: 614 Quadrant Reference: A18 Quadrant Reference: SW Bearing Ref: N Cavity Type: Sinkhole x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A18SW (N)	614	8	470270 176580
	Natural Cavities Easting: 470260 Northing: 176580 Distance: 616 Quadrant Reference: A18 Quadrant Reference: SW Bearing Ref: N Cavity Type: Sinkhole x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A18SW (N)	616	8	470260 176580
	Natural Cavities Easting: 470290 Northing: 176590 Distance: 621 Quadrant Reference: A18 Quadrant Reference: SW Bearing Ref: N Cavity Type: Sinkhole x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A18SW (N)	621	8	470290 176590
	Natural Cavities Easting: 470290 Northing: 176590 Distance: 621 Quadrant Reference: A18 Quadrant Reference: SW Bearing Ref: N Cavity Type: Sinkhole x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A18SW (N)	621	8	470290 176590
	Natural Cavities Easting: 470270 Northing: 176590 Distance: 624 Quadrant Reference: A18 Quadrant Reference: SW Bearing Ref: N Cavity Type: Sinkhole x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A18SW (N)	624	8	470270 176590
	Natural Cavities Easting: 470260 Northing: 176590 Distance: 626 Quadrant Reference: A18 Quadrant Reference: SW Bearing Ref: N Cavity Type: Sinkhole x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A18SW (N)	626	8	470260 176590
	Natural Cavities Easting: 470270 Northing: 176600 Distance: 634 Quadrant Reference: A18 Quadrant Reference: SW Bearing Ref: N Cavity Type: Sinkhole x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A18SW (N)	634	8	470270 176600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Natural Cavities Easting: 470290 Northing: 176610 Distance: 641 Quadrant Reference: A18 Quadrant Reference: SW Bearing Ref: N Cavity Type: Sinkhole x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A18SW (N)	641	8	470290 176610
	Natural Cavities Easting: 470280 Northing: 176610 Distance: 642 Quadrant Reference: A18 Quadrant Reference: SW Bearing Ref: N Cavity Type: Sinkhole x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A18SW (N)	642	8	470280 176610
	Natural Cavities Easting: 469700 Northing: 176200 Distance: 681 Quadrant Reference: A12 Quadrant Reference: NE Bearing Ref: W Cavity Type: Unknown x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A12NE (W)	681	8	469700 176200
	Natural Cavities Easting: 470700 Northing: 175300 Distance: 702 Quadrant Reference: A9 Quadrant Reference: NW Bearing Ref: SE Cavity Type: Sinkhole x 1, Solution Pipe x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Boyne Hill Gravel	A9NW (SE)	702	8	470700 175300
	Natural Cavities Easting: 470900 Northing: 175400 Distance: 739 Quadrant Reference: A9 Quadrant Reference: NW Bearing Ref: SE Cavity Type: Solution Pipe Solid Geology Detail: Chalk Group Superficial Geology Detail: Boyne Hill Gravel	A9NW (SE)	739	8	470900 175400
	Natural Cavities Easting: 469800 Northing: 176600 Distance: 842 Quadrant Reference: A17 Quadrant Reference: SE Bearing Ref: NW Cavity Type: Sinkhole x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A17SE (NW)	842	8	469800 176600
	Natural Cavities Easting: 469800 Northing: 176600 Distance: 842 Quadrant Reference: A17 Quadrant Reference: SE Bearing Ref: NW Cavity Type: Sinkhole x 1 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A17SE (NW)	842	8	469800 176600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Natural Cavities Easting: 470000 Northing: 176800 Distance: 903 Quadrant Reference: A17 Quadrant Reference: NE Bearing Ref: NW Cavity Type: Solution Pipe x 10 Solid Geology Detail: Chalk Group Superficial Geology Detail: Black Park Gravel	A17NE (NW)	903	8	470000 176800
	Non Coal Mining Areas of Great Britain Risk: Rare Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	470362 175945
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	470362 175945
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	470362 175945
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	470362 175945
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	205	1	470485 176142
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	242	1	470628 175994
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	470362 175945
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	470362 175945
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	470362 175945
	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	A13SE (SW)	0	1	470362 175945
	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	A13SE (SW)	0	1	470362 175945

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
29	**Contemporary Trade Directory Entries** Name: Reading Filter Services Ltd Location: 41, Richmond Road, Caversham, READING, RG4 7PR Classification: Filtration Systems & Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	85	-	470305 175849
30	**Contemporary Trade Directory Entries** Name: Grosvenor Motor Co Ltd Location: 109, Kidmore Road, Caversham, Reading, RG4 7NH Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	267	-	470543 176174
30	**Contemporary Trade Directory Entries** Name: Frozen Animal Foods Location: A, 109, Kidmore Road, Caversham, Reading, RG4 7NH Classification: Pet Foods & Animal Feeds **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	280	-	470522 176206
31	**Contemporary Trade Directory Entries** Name: Vag Autoworks Ltd Location: 113a, Kidmore Road, Caversham, Reading, RG4 7NH Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (N)	272	-	470458 176230
31	**Contemporary Trade Directory Entries** Name: V A G Auto Works Location: 113a, Kidmore Road, Caversham, Reading, RG4 7NH Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (N)	272	-	470458 176230
32	**Contemporary Trade Directory Entries** Name: Kebava Ltd Uk Location: 6, Woodcote Way, Caversham, Reading, RG4 7HE Classification: Engineering Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (W)	280	-	470051 175966
33	**Contemporary Trade Directory Entries** Name: Lantronix Location: 10, Uplands Road, Caversham, Reading, RG4 7JG Classification: Computer Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	344	-	470371 176318
34	**Contemporary Trade Directory Entries** Name: Caversham Cleaning Location: 142, Kidmore Road, Caversham, Reading, RG4 7NB Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (E)	365	-	470738 176055
35	**Contemporary Trade Directory Entries** Name: Classic Time Ltd Location: 70, Albert Road, Caversham, Reading, RG4 7PF Classification: Clocks & Watches - Manufacturers & Wholesalers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SE (SE)	409	-	470683 175649
36	**Contemporary Trade Directory Entries** Name: A M Print Associates Location: 10, Ilkley Road, Caversham, Reading, RG4 7BD Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NE (S)	481	-	470418 175444
37	**Contemporary Trade Directory Entries** Name: Dash & Eco Ltd Location: 2, Kennet Court, St. Andrews Road, Caversham, Reading, RG4 7PJ Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A14SW (SE)	541	-	470888 175719
38	**Contemporary Trade Directory Entries** Name: Chemex Location: 4, Bramblings, Caversham, Reading, RG4 7XB Classification: Cleaning Materials & Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	587	-	470441 176556

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
39	**Contemporary Trade Directory Entries** Name: Clean Green Living Location: 38, Sheridan Avenue, Caversham, Reading, RG4 7QD Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A14SW (E)	606	-	470997 175885
40	**Contemporary Trade Directory Entries** Name: Mum & Me Cleaning Services Location: 4, Sandcroft Road, Caversham, Reading, RG4 7NP Classification: Commercial Cleaning Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	625	-	470235 176585
41	**Contemporary Trade Directory Entries** Name: Ta Domestic & Commercial Location: 28, Silverthorne Drive, Caversham, Reading, RG4 7NS Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	657	-	470050 176551
42	**Contemporary Trade Directory Entries** Name: Holistic & Beauty Location: 302, Kidmore Road, Caversham, Reading, RG4 7NG Classification: Electrolysis **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	659	-	470303 176630
43	**Contemporary Trade Directory Entries** Name: Carpet & Fabric Care Uk Ltd Location: 19, Woodcote Road, Caversham, Reading, RG4 7BA Classification: Carpet, Curtain & Upholstery Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A8SE (S)	668	-	470442 175259
44	**Contemporary Trade Directory Entries** Name: M C I (Uk) Ltd Location: 6, Garden House, St. Peters Avenue, Caversham, Reading, RG4 7DH Classification: Electronic Component Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (S)	696	-	470319 175229
45	**Contemporary Trade Directory Entries** Name: M D Products Location: 64, St. Peters Avenue, Caversham, Reading, RG4 7DH Classification: Fishing & Angling Equipment - Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SE (S)	713	-	470423 175212
45	**Contemporary Trade Directory Entries** Name: Omnia Books Ltd Location: 37, St. Peters Avenue, Caversham, Reading, RG4 7DH Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A8SE (S)	744	-	470405 175180
46	**Contemporary Trade Directory Entries** Name: Bobbles Dry Cleaners Location: 326, Hemdean Road, Caversham, Reading, RG4 7QS Classification: Dry Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (E)	764	-	471148 175826
47	**Contemporary Trade Directory Entries** Name: Property Preservation Ltd Location: 24, Shepherds Lane, Caversham, Reading, RG4 7JL Classification: Damp & Dry Rot Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	806	-	469954 176668
48	**Contemporary Trade Directory Entries** Name: Forensic Document Services Ltd Location: Chiltern Court, 37, St Peters Avenue, Reading, RG4 7DH Classification: Laboratories **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SE (S)	816	-	470446 175110
49	**Contemporary Trade Directory Entries** Name: Caversham Stained Glass Location: 8, Kidmore Road, Caversham, Reading, RG4 7LU Classification: Stained Glass Designers & Producers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	847	-	470974 175321

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
50	**Contemporary Trade Directory Entries** Name: Spraytech Mobile Body Repairs Location: 2, Grove Hill, Emmer Green, Reading, RG4 8PN Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A14SE (E)	898	-	471287 175851
51	**Contemporary Trade Directory Entries** Name: Simon R Hostler Yacht & Boatbuilding Ltd Location: Flat 2, Leighton Hall, The Warren, Caversham, Reading, RG4 7TQ Classification: Boatbuilders & Repairers **Status: Active** Positional Accuracy: Automatically positioned to the address	A8SW (S)	947	-	470152 174998
52	**Points of Interest - Commercial Services** Name: Grosvenor Motor Co Ltd Location: 109 Kidmore Road, Caversham, Reading, RG4 7NH Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13NE (NE)	267	9	470543 176174
52	**Points of Interest - Commercial Services** Name: Grosvenor Motor Co Ltd Location: 109 Kidmore Road, Caversham, Reading, RG4 7NH Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13NE (NE)	267	9	470543 176174
53	**Points of Interest - Commercial Services** Name: Vag Autoworks Ltd Location: 113a Kidmore Road, Caversham, Reading, RG4 7NH Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13NE (N)	272	9	470458 176230
53	**Points of Interest - Commercial Services** Name: V A G Auto Works Location: 113a Kidmore Road, Caversham, Reading, RG4 7NH Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13NE (N)	272	9	470458 176230
54	**Points of Interest - Commercial Services** Name: Abel Clean Location: 67 Woodcote Way, Caversham, Reading, RG4 7HL Category: Contract Services Class Code: Pest and Vermin Control Positional Accuracy: Positioned to address or location	A12NE (NW)	535	9	469870 176216
55	**Points of Interest - Commercial Services** Name: Spraytech Mobile Body Repairs Location: 2 Grove Hill, Emmer Green, Reading, RG4 8PN Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	898	9	471286 175849
56	**Points of Interest - Manufacturing and Production** Name: Tank Location: RG4 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A19SE (NE)	917	9	471151 176453
57	**Points of Interest - Public Infrastructure** Name: Cemetery Location: RG4 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A9NE (SE)	910	9	471228 175575
57	**Points of Interest - Public Infrastructure** Name: Cemetery Location: RG4 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A9NE (SE)	924	9	471204 175495
57	**Points of Interest - Public Infrastructure** Name: Cemetery Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A9NE (SE)	930	9	471212 175496

Industrial Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
58	**Points of Interest - Recreational and Environmental** Name: Play Area Location: Albert Road, RG4 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A13SE (SE)	92	9	470459 175874
58	**Points of Interest - Recreational and Environmental** Name: Play Area Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A13SE (SE)	98	9	470468 175875

Sensitive Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
59	**Areas of Outstanding Natural Beauty** Name: Chilterns Multiple Areas: Y Total Area (m2): 838304032.53 Designation Date: 30th March 1990 Source: Natural England	A12SW (W)	662	10	469670 175882
60	**Nitrate Vulnerable Zones** Name: Thames Wallingford To Caversham Nvz Description: Surface Water Source: Environment Agency, Head Office	A13SE (SW)	0	4	470362 175945

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Reading Borough Council - Environmental Health Department	April 2014	Annual Rolling Update
Wokingham District Council - Environmental Health Department	February 2013	Annual Rolling Update
South Oxfordshire District Council - Environmental Health Department	January 2015	Annual Rolling Update
West Berkshire Council - Environmental Health Department	November 2014	Annual Rolling Update
Discharge Consents		
Environment Agency - Thames Region	January 2019	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Thames Region	March 2013	Annual Rolling Update
Integrated Pollution Controls		
Environment Agency - Thames Region	October 2008	Variable
Integrated Pollution Prevention And Control		
Environment Agency - South East Region - West Thames Area	January 2019	Quarterly
Environment Agency - Thames Region	January 2019	Quarterly
Local Authority Integrated Pollution Prevention And Control		
South Oxfordshire District Council - Environmental Health Department	June 2014	Variable
Wokingham District Council - Environmental Health Department	June 2014	Variable
West Berkshire Council - Environmental Health Department	June 2015	Variable
Reading Borough Council - Environmental Health Department	October 2014	Variable
Local Authority Pollution Prevention and Controls		
South Oxfordshire District Council - Environmental Health Department	June 2014	Annual Rolling Update
Wokingham District Council - Environmental Health Department	June 2014	Not Applicable
West Berkshire Council - Environmental Health Department	June 2015	Not Applicable
Reading Borough Council - Environmental Health Department	October 2014	Not Applicable
Local Authority Pollution Prevention and Control Enforcements		
South Oxfordshire District Council - Environmental Health Department	June 2014	Variable
Wokingham District Council - Environmental Health Department	June 2014	Variable
West Berkshire Council - Environmental Health Department	June 2015	Variable
Reading Borough Council - Environmental Health Department	October 2014	Variable
Nearest Surface Water Feature		
Ordnance Survey	January 2019	
Pollution Incidents to Controlled Waters		
Environment Agency - Thames Region	September 1999	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - Thames Region	March 2013	Annual Rolling Update
Prosecutions Relating to Controlled Waters		
Environment Agency - Thames Region	March 2013	Annual Rolling Update
Registered Radioactive Substances		
Environment Agency - Thames Region	June 2016	
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	January 2019	Quarterly
Environment Agency - Thames Region - South East Area	January 2019	Quarterly
Environment Agency - Thames Region - West Area	January 2019	Quarterly
Water Abstractions		
Environment Agency - Thames Region	January 2019	Quarterly

Data Currency

Agency & Hydrological	Version	Update Cycle
Water Industry Act Referrals Environment Agency - Thames Region	October 2017	Quarterly
Groundwater Vulnerability Map Environment Agency - Head Office	June 2018	Annually
Groundwater Vulnerability - Soluble Rock Risk Environment Agency - Head Office	June 2018	Annually
Bedrock Aquifer Designations Environment Agency - Head Office	January 2018	Annually
Superficial Aquifer Designations Environment Agency - Head Office	January 2018	Annually
Source Protection Zones Environment Agency - Head Office	January 2019	Quarterly
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	February 2019	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	February 2019	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	February 2019	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	February 2019	Quarterly
Flood Defences Environment Agency - Head Office	February 2019	Quarterly
OS Water Network Lines Ordnance Survey	January 2019	Quarterly
Surface Water 1 in 30 year Flood Extent Environment Agency - Head Office	October 2013	Annually
Surface Water 1 in 100 year Flood Extent Environment Agency - Head Office	October 2013	Annually
Surface Water 1 in 1000 year Flood Extent Environment Agency - Head Office	October 2013	Annually
Surface Water Suitability Environment Agency - Head Office	October 2013	Annually
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	Annually

Data Currency

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	July 2018	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	July 2018	Quarterly
Environment Agency - Thames Region - South East Area	July 2018	Quarterly
Environment Agency - Thames Region - West Area	July 2018	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - South East Region - West Thames Area	January 2019	Quarterly
Environment Agency - Thames Region - South East Area	January 2019	Quarterly
Environment Agency - Thames Region - West Area	January 2019	Quarterly
Local Authority Landfill Coverage		
Oxfordshire County Council	May 2000	Not Applicable
Reading Borough Council - Planning	May 2000	Not Applicable
South Oxfordshire District Council - Environmental Health Department	May 2000	Not Applicable
West Berkshire Council - Environmental Health Department	May 2000	Not Applicable
Wokingham District Council - Environmental Health Department	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
Oxfordshire County Council	May 2000	Not Applicable
Reading Borough Council - Planning	May 2000	Not Applicable
South Oxfordshire District Council - Environmental Health Department	May 2000	Not Applicable
West Berkshire Council - Environmental Health Department	May 2000	Not Applicable
Wokingham District Council - Environmental Health Department	October 2005	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	March 2003	Not Applicable
Environment Agency - Thames Region - West Area	March 2003	Not Applicable
Registered Waste Transfer Sites		
Environment Agency - Thames Region - South East Area	March 2003	Not Applicable
Environment Agency - Thames Region - West Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites		
Environment Agency - Thames Region - South East Area	March 2003	Not Applicable
Environment Agency - Thames Region - West Area	March 2003	Not Applicable

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH) Health and Safety Executive	April 2018	Bi-Annually
Explosive Sites Health and Safety Executive	March 2017	Annually
Notification of Installations Handling Hazardous Substances (NIHHS) Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
Oxfordshire County Council	February 2016	Variable
South Oxfordshire District Council - Planning Department (West)	February 2016	Variable
West Berkshire Council	February 2016	Variable
Wokingham District Council	February 2016	Variable
Reading Borough Council - Planning	May 2016	Variable
Planning Hazardous Substance Consents		
Oxfordshire County Council	February 2016	Variable
South Oxfordshire District Council - Planning Department (West)	February 2016	Variable
West Berkshire Council	February 2016	Variable
Wokingham District Council	February 2016	Variable
Reading Borough Council - Planning	May 2016	Variable

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	Annually
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	November 2018	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	Annual Rolling Update
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	January 2019	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	Annually
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	Annually

Data Currency

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	January 2019	Quarterly
Fuel Station Entries Catalist Ltd - Experian	March 2019	Quarterly
Gas Pipelines National Grid	July 2014	
Points of Interest - Commercial Services PointX	November 2018	Quarterly
Points of Interest - Education and Health PointX	November 2018	Quarterly
Points of Interest - Manufacturing and Production PointX	November 2018	Quarterly
Points of Interest - Public Infrastructure PointX	November 2018	Quarterly
Points of Interest - Recreational and Environmental PointX	November 2018	Quarterly
Underground Electrical Cables National Grid	December 2015	

Data Currency

Sensitive Land Use	Version	Update Cycle
Ancient Woodland Natural England	August 2018	Bi-Annually
Areas of Adopted Green Belt South Oxfordshire District Council Wokingham District Council	March 2019 March 2019	As notified As notified
Areas of Unadopted Green Belt South Oxfordshire District Council Wokingham District Council	March 2019 March 2019	As notified As notified
Areas of Outstanding Natural Beauty Natural England	August 2018	Bi-Annually
Environmentally Sensitive Areas Natural England	January 2017	
Forest Parks Forestry Commission	April 1997	Not Applicable
Local Nature Reserves Natural England	March 2019	Bi-Annually
Marine Nature Reserves Natural England	January 2018	Bi-Annually
National Nature Reserves Natural England	August 2018	Bi-Annually
National Parks Natural England	April 2017	Bi-Annually
Nitrate Vulnerable Zones Environment Agency - Head Office Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	December 2017 October 2015	Bi-Annually
Ramsar Sites Natural England	April 2019	Bi-Annually
Sites of Special Scientific Interest Natural England	March 2019	Bi-Annually
Special Areas of Conservation Natural England	August 2018	Bi-Annually
Special Protection Areas Natural England	April 2019	Bi-Annually

Data Suppliers

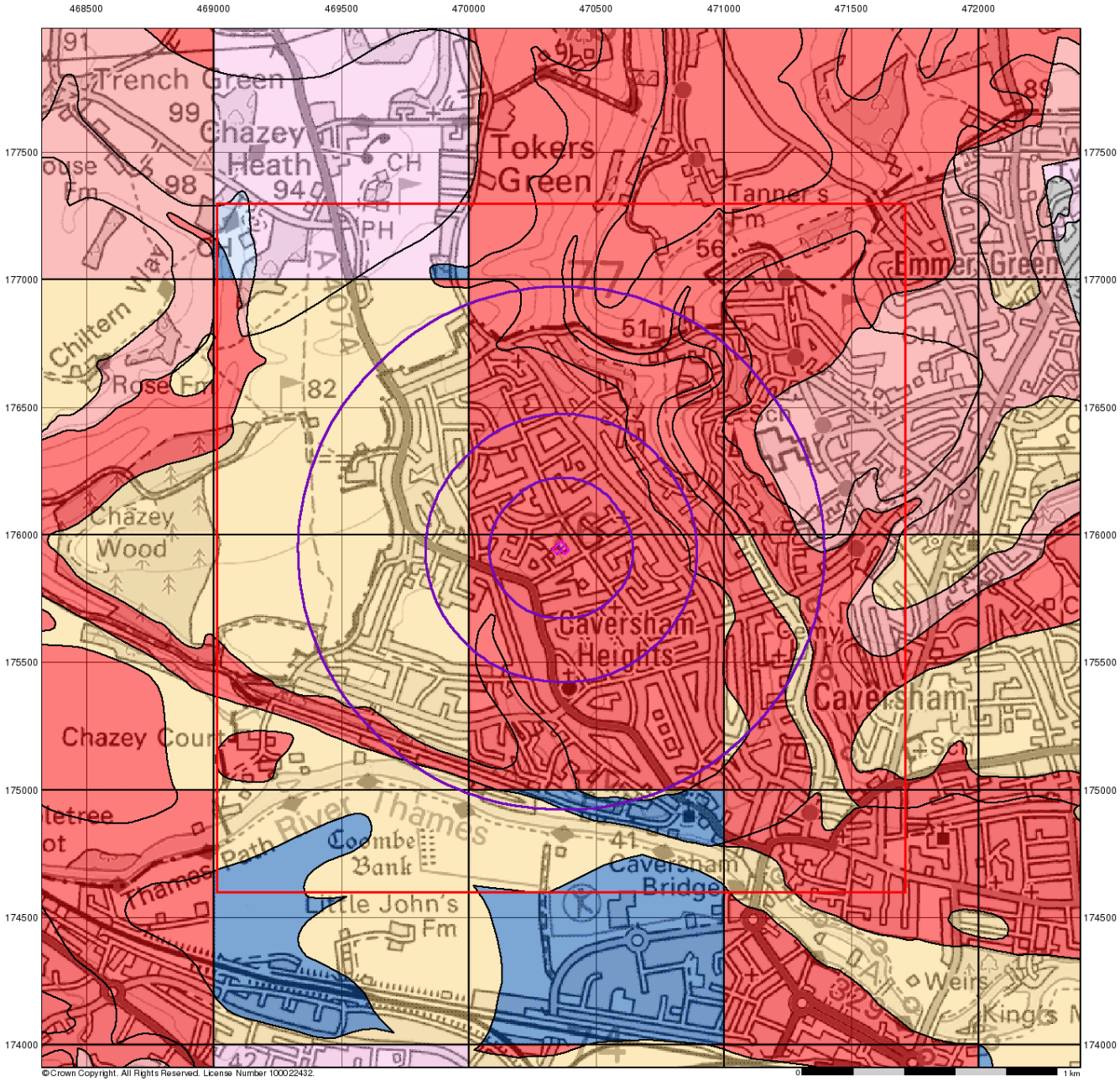
A selection of organisations who provide data within this report

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

Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
3	**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
4	**Environment Agency - Head Office** Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
5	**Reading Borough Council - Planning** Civic Centre, READING, Hampshire, RG1 7TD	Telephone: 0118 939 0900 Fax: 0118 958 9770 Website: www.reading.gov.uk
6	**South Oxfordshire District Council - Environmental Health Department** Council Offices, P O Box 92, Crowmarsh, Wallingford, Oxfordshire, OX10 8NY	Telephone: 01491 823000 Fax: 01491 823001 Email: env.health@southoxon.gov.uk Website: www.southoxon.gov.uk
7	**Oxfordshire County Council** County Hall, New Road, Oxford, Oxfordshire, OX1 1ND	Telephone: 01865 792422 Fax: 01865 810106 Email: environmental.services@oxfordshire.gov.uk Website: www.oxfordshire.gov.uk
8	**Peter Brett Associates** Caversham Bridge House, Waterman Place, Reading, Berkshire, RG1 8DN	Telephone: 0118 950 0761 Fax: 0118 959 7498 Email: reading@pba.co.uk Website: www.pba.co.uk
9	**PointX** 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
10	**Natural England** County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
-	**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.



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Groundwater Vulnerability

General

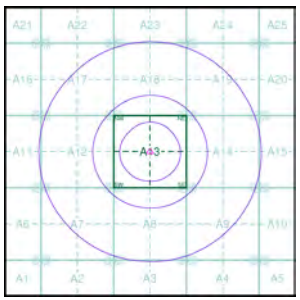
Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

Agency and Hydrological

Bedrock Aquifers	Superficial Aquifers
High Vulnerability, Principal Aquifer	High Vulnerability, Principal Aquifer
High Vulnerability, Secondary Aquifer	High Vulnerability, Secondary Aquifer
Medium Vulnerability, Principal Aquifer	Medium Vulnerability, Principal Aquifer
Medium Vulnerability, Secondary Aquifer	Medium Vulnerability, Secondary Aquifer
Low Vulnerability, Principal Aquifer	Low Vulnerability, Principal Aquifer
Low Vulnerability, Secondary Aquifer	Low Vulnerability, Secondary Aquifer

Unproductive Aquifer
Soluble Rock

Site Sensitivity Context Map - Slice A



N

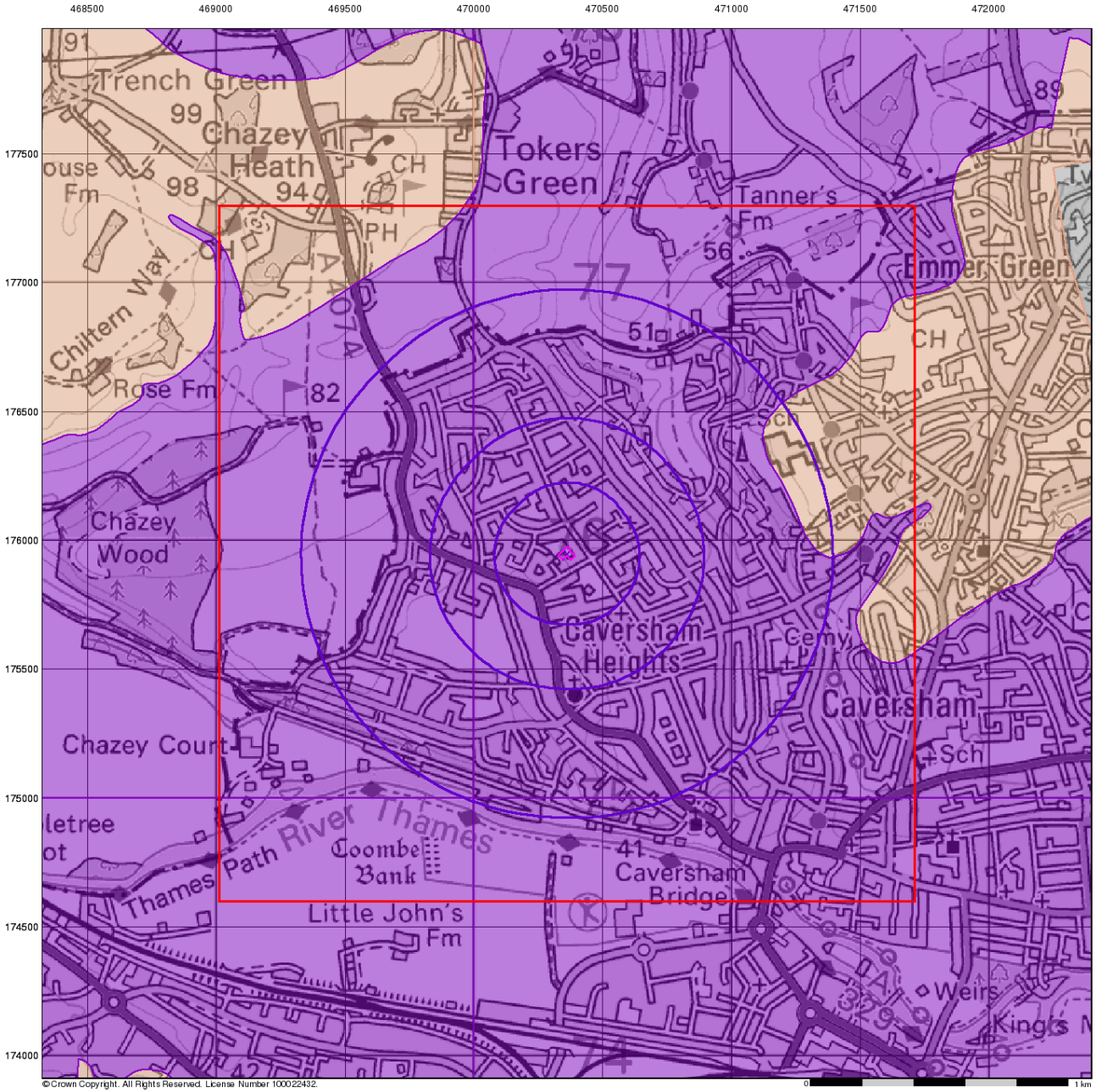
Order Details

Order Number:	201739248_1_1
Customer Ref:	3170
National Grid Reference:	470360, 175940
Slice:	A
Site Area (Ha):	0.17
Search Buffer (m):	1000

Site Details

23, Richmond Road, Caversham, READING, RG4 7PR

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Envirocheck®

LANDMARK INFORMATION GROUP®

Bedrock Aquifer Designation

General

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

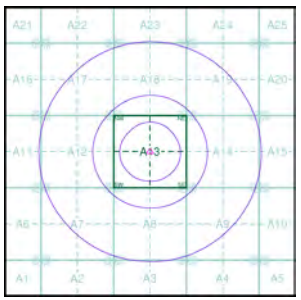
Slice | Map ID

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



N

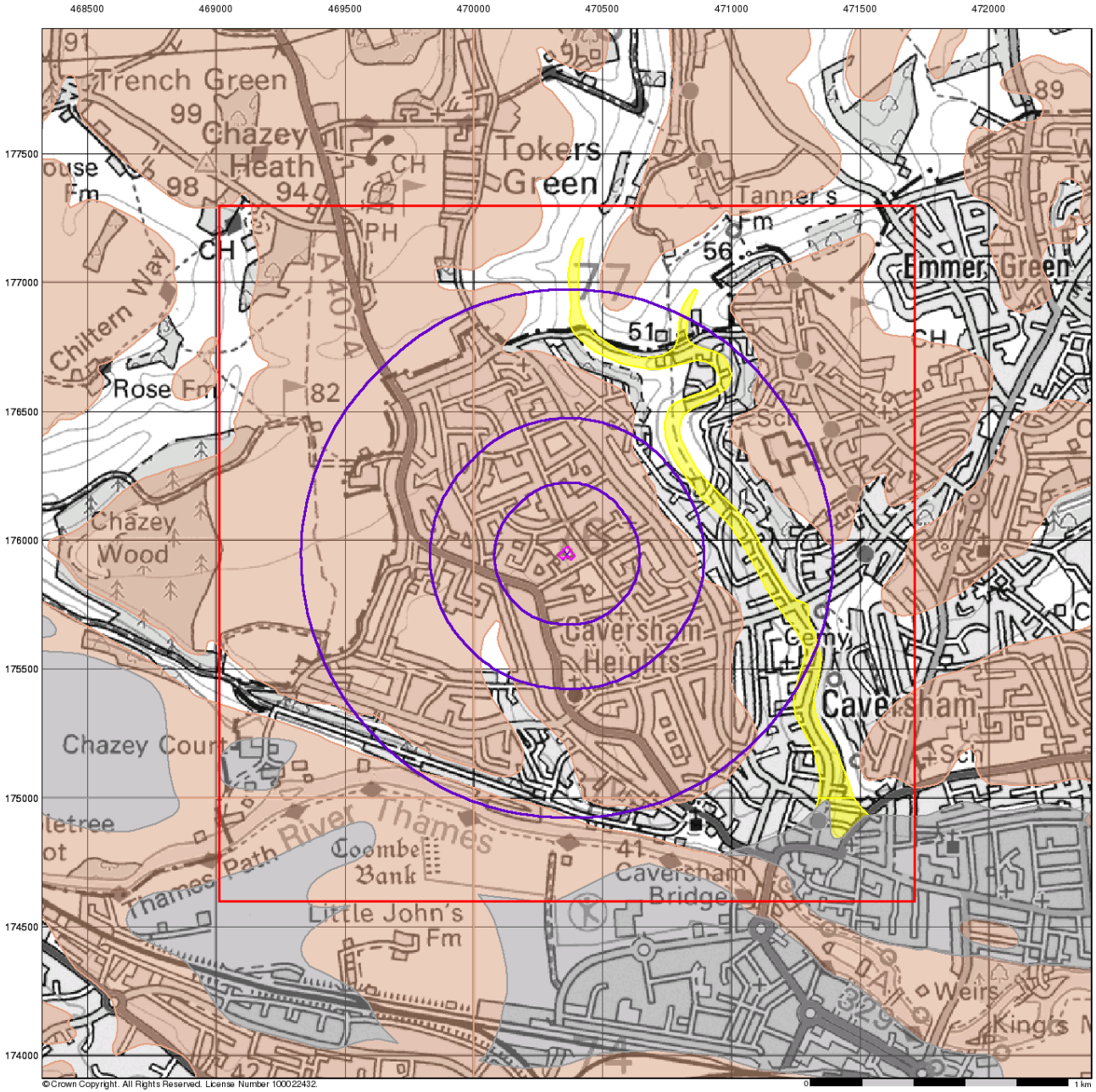
Order Details

Order Number:	201739248_1_1
Customer Ref:	3170
National Grid Reference:	470360, 175940
Slice:	A
Site Area (Ha):	0.17
Search Buffer (m):	1000

Site Details

23, Richmond Road, Caversham, READING, RG4 7PR

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Superficial Aquifer Designation

General

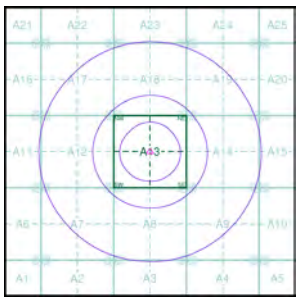
Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

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



N

Order Details

Order Number:	201739248_1_1
Customer Ref:	3170
National Grid Reference:	470360, 175940
Slice:	A
Site Area (Ha):	0.17
Search Buffer (m):	1000

Site Details

23, Richmond Road, Caversham, READING, RG4 7PR

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

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Source Protection Zones

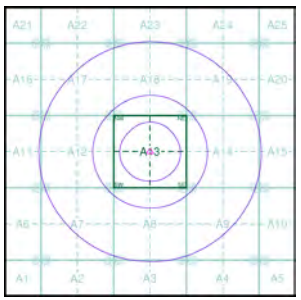
General

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)

Site Sensitivity Context Map - Slice A



N

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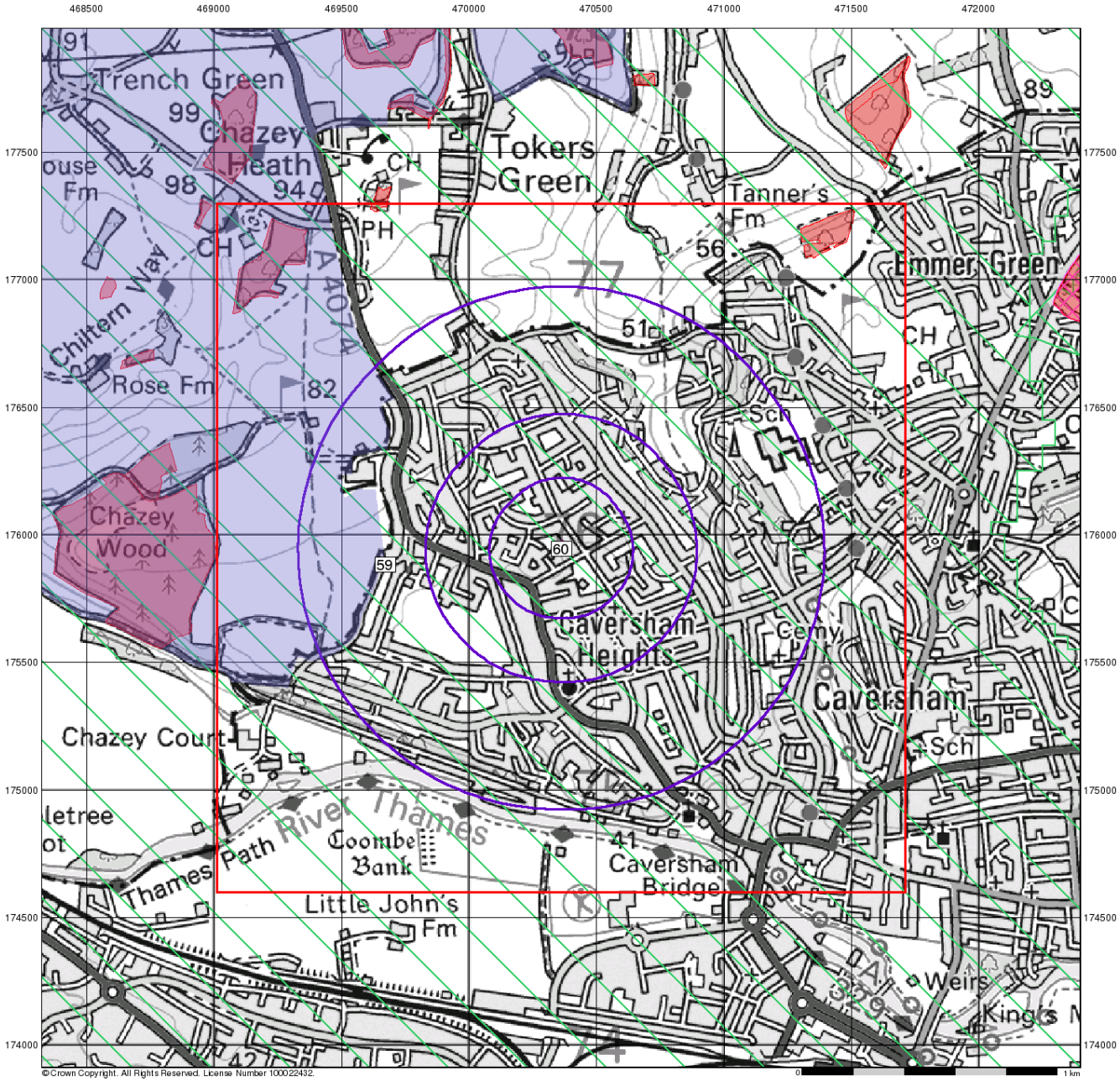

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Sensitive Land Uses

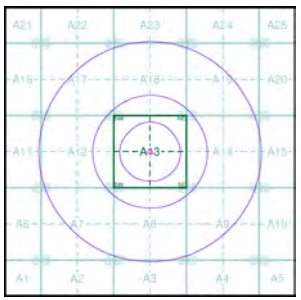
General

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



N

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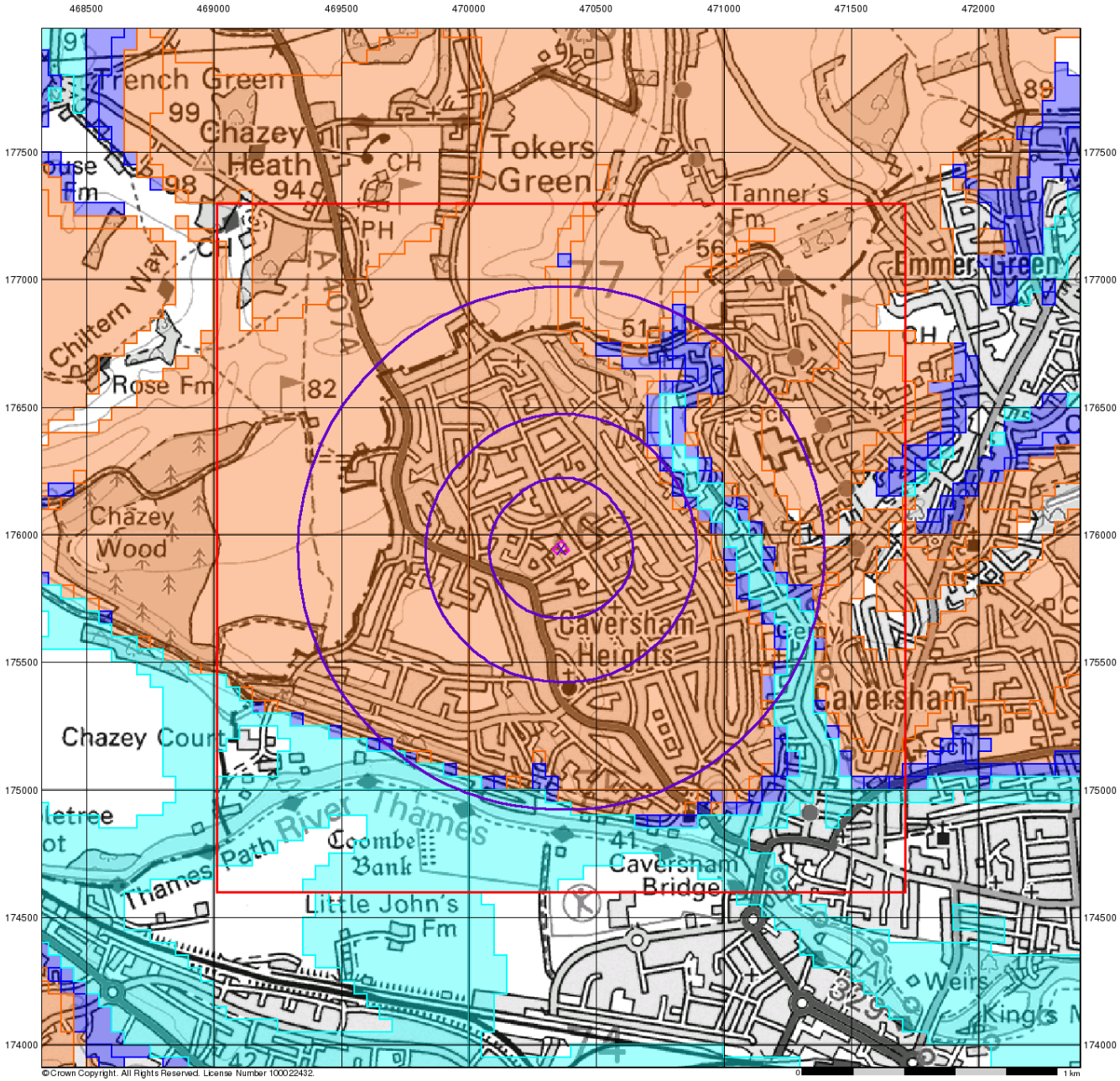

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BGS Flood GFS Data

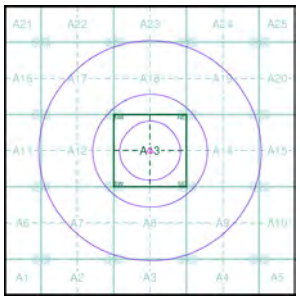
General

Specified Site
Specified Buffer(s)
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



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