

Desk Study Report

Project Name: Caversham Park

Location: Peppard Rd., Caversham RG4 8TZ

Client: Beechcroft Developments Ltd

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SUMMARY

The site known as Caversham Park, currently comprises a registered Park and Garden which occupies an area of approximately 40 hectares and contains a Grade II listed Manor House and the surrounding grounds. It is proposed to redevelop parts of site with new dwellings.

Geological records indicate the vast majority of the site to be underlain by a bedrock geology of the Lambeth group with the extreme southern part possibly underlain by the underlying Seaford Chal Formation and Newhaven Chalk Formation (undifferentiated). Overlying superficial deposits of the Black Park Gravel member broadly cover the northern two-third of the site. No superficial deposits are indicated over the southern third of the site.

A desk study was carried out and indicates that the site has a history of usage as a manor house with associated grounds until 1938 after which it was used as an oratory school with a sanatorium in the western corner of site. The BBC acquired the building and grounds in 1943 to the present day.

An Unexploded Ordnance (UXO) risk assessment was not undertaken by a specialist subcontractor as part of these works.

The preliminary conceptual site model site indicates that potentially contaminative activities have been carried out on the site and the immediate surrounding areas. There is potential that the identified contaminants associated with these activities may have affected the soil and could pose unacceptable risks to the proposed development. It is recommended that a Phase 2 investigation is carried out to determine the nature and extent of any contamination and to assess the significance of the potential risks to human health, groundwater and the as-built environment.

The investigation was conducted and this report has been prepared for the sole internal use and reliance of Beechcroft Development Ltd and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Southern Testing Laboratories Ltd. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The findings and opinions conveyed via this investigation report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Ltd. believes are reliable. Nevertheless, Southern Testing Laboratories Ltd. cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

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A INTRODUCTION

1 Authority

Our authority for carrying out this work is contained in ST Consult Project Order Form completed by Beechcroft Developments Ltd and dated 27th October 2021 further to our quotation Q21-1733 dated 26th October 2021.

2 Location

The site is located on Peppard Road, Caversham, approximately 0.5km to the north of Reading Cemetery and Crematorium. The approximate National Grid Reference of the site is SU 72404 76265. The site location is indicated on Figure 1 within Appendix A.

3 Proposed Construction

The proposed redevelopment of the site comprises:

- 64 assisted living units (Class C2) for the over 55's through conversion of Caversham Park House;
- 64 bed care home (Class C2);
- 61 age restricted retirement dwellings (class C3);
- 5 market dwellings (class C3);
- 28 affordable dwellings (class C3); and
- refurbishment and extension of the existing pavilion to provide enhanced changing facilities, café/studio and sports provision comprising 2no.croquet lawns, 2no.bowling greens, an additional tennis court, refurbishment of the existing tennis court and associated parking and landscaping following the demolition of unsympathetic extensions and associated outbuildings to the main house and removal of twentieth century satellite dishes and associated infrastructure

The layout of the proposed development is included in Figures 2 and 2a in Appendix A).

For the purposes of the contamination risk assessment, the proposed development land use is classified in parts as Residential with/without consumption of Homegrown Produce, Public Open Space (residential), Public Open Space (park) CLEA Model Ref [1] / C4SL Report Ref [2].

The gas sensitivity of the proposed development is rated as Low to High CIRIA C665 Ref [3].

4 Object

This is a Phase 1 Desk Study and Walkover investigation (Tier 1).

The purpose of the Desk Study is to determine sources of contamination, identify potential contaminants and allow the development of a conceptual understanding of the site to ensure that any intrusive investigation required addresses all the issues identified.

5 Scope

This report presents our desk study findings and our interpretation of these data.

A UXO risk assessment was not requested within our brief for the investigation.

The findings and opinions conveyed via this investigation report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Ltd. believes are reliable. Nevertheless, Southern Testing Laboratories Ltd. cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

The investigation was conducted and this report has been prepared for the sole internal use and reliance of Beechcroft Developments Ltd. and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Southern Testing Laboratories Ltd. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The recommendations contained in this report may not be appropriate to alternative development schemes.

B DESK STUDY AND WALKOVER SURVEY

6 Desk Study

A desk study has been carried out. Reference has been made to the following information sources.

- Online Geological Maps Ref [4] & Ref [5]
- Online Hydrogeological Maps Ref [6]
- Aerial Photographs
- Historical Ordnance Survey Maps
- Environmental Databases
- BGS Online Historical Borehole Records Ref [7]
- Search on Local Authority Planning Portal for planning history
- MAGIC website mapping Ref [8]
- Environment Agency / Gov.UK Website Flood Risk Ref [9]
- UK Radon Ref [10] and BRE Radon Ref [11]
- Google Earth (for old aerial photographs)
- BBC.co.uk

The environmental databases search report compiled for this desk study contains site-specific environmental data drawn from data sets that comprise publicly available information together with data from third parties, some of which is under review. Accordingly, Southern Testing Laboratories Limited does not warrant its accuracy, reliability or completeness.

The full report is included in Appendix C and D, a summary of the salient features is included in the following sections of this report.

6.1 Geology

Geological records indicate the northern half of site is underlain by Black Park Gravel Member over the Lambeth Group and the southern by the Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated). vast majority of the site to be underlain by a bedrock geology of the Lambeth group with the extreme southern part possibly underlain by the underlying Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated). Overlying superficial deposits of the Black Park Gravel member broadly cover the northern 2/3 of the site. No superficial deposits are indicated over the southern 1/3 of the site.

6.1.1 Black Park Gravel Member

The Black Park Gravel Member comprises deposits of sands and gravels with subordinate layers of finer grained clayey and silty sands. Lenses of silt, clay or peat may also be present. This is the oldest member of a sequence of River Terrace Deposits associated with the Thames. These gravels were laid down in a large braided river channel and can be quite variable in their composition.

River Terrace Deposits were commonly worked in the past, often on a piecemeal basis in 'borrow pits' as well as larger mineral workings. Old pits may have been infilled with poor quality or waste materials, and can contain contamination.

6.1.2 Lambeth Group

The Lambeth Group comprises a vertically and laterally very variable sequence of multicoloured and mottled clays and sands. The sands are greenish yellow or brown, and generally alternate with the multicoloured mottled clays and sometimes bands of lignite. Pebble Beds, locally cemented into conglomerate, and some bands of concretionary ironstone may also be present. Shells are frequently found in the clays and are sometimes locally cemented into a limestone bed that may form an obstruction to pile borings. At the base of the formation there can be layer of greenish sands with flint pebbles where they rest directly above the Thanet Beds.

Clays within this group are known to contain pyrite.

6.1.3 White Chalk Subgroup (Seaford Chalk Formation & Newhaven Chalk Formation)

The Seaford Chalk Formation comprises a fairly homogeneous white chalk with regular and conspicuous flint bands. These flints are commonly laterally very continuous and traceable over large distances. Some of the flints can be very large. A few marl seams are present within the lower parts of the formation.

The Newhaven Chalk Formation is characterised by firm white chalk with common marl seams and widely spaced flint bands, and by numerous inclined conjugate shear fractures, normally slickensided and frequently containing sheet flint. In eastern Kent an overlying secondary unit, the Margate Chalk Member, is typically homogenous with no marl seams and few flints

The White Chalk outcrop in particular is frequently highly fractured and highly permeable, and usually has good infiltration characteristics. On the other hand, Chalk Head, highly weathered Chalk and Chalk under a low permeability superficial cover may have very poor infiltration characteristics.

Chalk is slightly soluble in water and, while it has excellent bearing properties when unweathered, this solubility can lead to deep weathering and softening, and the upper layers of chalk often have an irregular boundary with overlying strata

The Chalk may be softened by solution to a depth of 5 to 15 metres and bearing capacities and engineering properties improve with depth. Where there is an outcrop of impermeable soil overlying the chalk there may be a dramatically increased solution effect due to concentrated surface water flow to the Chalk close to the outcrop boundary.

Solution features are common in the Chalk, and these can present significant difficulties to development on affected sites.

6.2 Historical Borehole Records

A search of previous exploratory hole records from the online British Geological Survey database [7], revealed 11 records within the site boundaries. 3No of the boreholes are located on the western part of the site, 2No to the southwest, 2No to the northwest, 2No to the northeast, 1No each to the south and north.

The BGS borehole records from the BGS website (<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>) accessed on 08/11/2021 are summarised in the table below.

Strata	Approximate Base (mbgl)	Typical Description
Made Ground	0.8 – 4.3	Variable strata comprising loose stones, clay, brick and chalk fragments; clay with gravel, ash and bricks and brown sand and gravel with occasional brick fragments
Black Park Gravel Member	2.8 – 7.1	Variable strata comprising soft brown sandy silty Clay with some flints, loose brown slightly clayey sand and gravel and medium dense orangish brown slightly clayey fine to coarse sand and gravel.
Lambeth Group	12.8 – 15.2	Variable strata consisting firm brown sandy Clay, stiff to very stiff grey and red silty clay with very weak siltstone lithorelicts, orange brown silty fine to coarse Sand and greenish brown clayey fine to coarse Sand with frequent shells

Strata	Approximate Base (mbgl)	Typical Description
White Chalk Subgroup	>14	White weak to moderately weathered Chalk.

In summary, the soils on site comprise Made Ground between 0.85m and 4.3m underlain sequentially by Black Park Gravel Member to a maximum depth of 7.1m, Lambeth Group to a maximum depth of 15.2m and weathered Chalk.

It should be noted that the Black Park Gravel Member was not encountered in two boreholes on the western part of the site. In general, the base of the Black Park Gravel Member Gravel across the site is recorded around 3.0m to 3.6m except in boreholes to the northeast and south where the base was recorded at depths over 4.0m bgl.

6.3 Geological Hazards and Mining Activities

Data from various sources relating to potential geological hazards at the site are summarized below. The Hazard Potentials listed for the BGS data are as presented in the Envirocheck report, derived from various generic BGS sources, **which are not considered as site-specific**. It is important that this information is considered in context of the actual site topography, ground conditions encountered during future investigation, and development proposals.

Data Source	Hazard	Hazard Potential to Site	Remarks
BGS	Potential for Collapsible Ground Stability Hazard	Very Low	
	Potential for Compressible Ground Stability Hazard	No Hazard	
	Potential for Ground Dissolution Stability Hazard	Low to Moderate	
	Potential for Landslide Ground Stability Hazard	Very Low	
	Potential for Running Sand Ground Stability Hazard	Very Low	
	Potential for Swelling or Shrinkage Clay Ground Stability Hazard	Very Low to Moderate	
	Shallow Mining Hazard	No Hazard	
	BGS recorded mineral site	Very low	Springfield Gravel Pit (Ceased) 231m west.
ARUP [Ref [12]]	Mining Instability	Very low	Grid square SU77, Pillar and stall Chalk mines via shaft entry
CCS [Ref [13]] KURG [Ref [14]]	Underground Openings	Low	Sinkhole x1, Solution Pipe x1 in Chalk Group, Lambeth Group 171m east. 6 records within 500m.
PBA	Natural & Mining Cavities	Moderate	Sinkhole x1, Solution Pipe x1 in Chalk Group, Lambeth Group 171m east. 6 records within 500m.

6.4 Radon Risk

With reference to the Envirocheck report, UK Radon Ref [10] and BRE Radon Ref [11] guidance, no radon protection is required on this site.

6.5 Hydrology and Hydrogeology

Data from the Environment Agency and other information relating to controlled waters is summarised below.

Data		Remarks	Possible Hazard to/from Site (Y/ N)
Aquifer Designation	Superficial Deposits	Secondary A Aquifer (Black Park Gravel Member)	Y
	Bedrock	Secondary A Aquifer (Lambeth Group) Principal Aquifer (White Chalk Subgroup)	Y Y
Groundwater Vulnerability		High Vulnerability for the superficial aquifer and intermediate vulnerability for the bedrock aquifer.	Y
Nearest Surface Water		A surface water feature is mapped on site to the northeast. This relates to a drainage ditch. A pond is also present towards the south west of the site.	Y
Abstractions	Surface Water	None listed within 500m of the site.	N
	Groundwater	None listed within 500m of the site.	N
Source Protection Zones		The site lies within both SPZ Zone II and Zone III.	Y
Groundwater Flood Risk		Limited Potential for Groundwater flooding to occur. Potential for Groundwater Flooding of Property Situated Below Ground Level in north and west of site.	Y
Surface Water Flood Risk*		The site is shown being at very low risk of flooding.	N
Marine / Fluvial Flood Risk*		The site is not shown within/adjacent to an area mapped as being at risk.	N
Reservoir Flood Risk*		The site is not shown within/adjacent to an area mapped as being at risk.	N
Discharge Consents		None listed within 250m of site.	N

* These sections are provided for information only, this report does not constitute a formal flood risk assessment and specialist advice should be sought in relation to potential flooding issues.

6.6 Historical Ordnance Survey Maps

Copy extracts of historical Ordnance Survey plans dating from 1878 to 2021 were obtained and are presented in Appendix C. A summary of the salient features is presented below

From the 1878 OS historical map the site is shown as a Caversham Park comprising a large building across the central section of the site with surrounding gardens, a number of trees, a fish pond within a woodland to the southwest of the building and a spring southeast of the building. A small building (Lodge) is located at the site entrance to the west. The 1898 map shows a Boat House located on the western end of the fish pond.

On the map dated 1932, the main building is shown as Oratory school with a Chapel on the eastern wing of the building and a number of outbuildings to the west including a Gym. The Oratory School Sanatorium occupies the western end of the site. North of the main building is shown as a playing field with a pavilion and a tennis court.

By 1956, the main building is no longer known or shown as a school. A tank is shown immediately to the north of the main building. A tennis court and an electricity substation are located next to the tank and adjacent north of the main building. Four additional buildings are shown along the access road to the site.

By 1964, the tennis court and the tanks are no longer shown immediately north of the main building. There have been no significant changes shown on the subsequent maps to the present day. A written history of the Park was displayed inside the reception area of the main building and is presented in Appendix C along with the historic maps.

6.7 Environmental Databases

Data Source	Distance (m)	Direction	Details	Possible Hazard to Site (Y/N)
Historical Industrial Land Use	0	NE	Tanks (1956 – 1972)	Y
	0	N	Electricity sub-station (1956 – 1972)	Y
	100	NW	Carpark.	N
	124	SW	Quarrying pits (1900 - 1932.	N
	150	NW	Dairy Farm.	N
	170	NW	Garage.	N
	200	NW	Smithy.	N
	230	NW	Timber Yard.	N
	230	NW	Builders Yard.	N
	239	W	Quarrying of sand and clay, sand and gravel pits.	N
	248	W	Quarrying of sand and clay, sand and gravel pits.	N
Current Industrial Land Use	16	W	Car Body Repairs.	Y
	63	S	Domestic Appliances – Servicing, Repairs and Parts.	N
	128	E	Carpet Curtain and Upholstery Cleaners.	N
	132	SW	Petrol Filling Station.	N
	168	N	Carpet, Curtain and Upholstery Cleaners.	N
	171	E	Cleaning Services – Domestic.	N
	180	SW	Petrol Filling Services.	N
	190	NE	Printers.	N
	208	NW	Car Dealers.	N
	221	W	Cleaning Services – Domestic.	N
	221	E	Food Products – Manufacturers.	N
	238	E	Tyre Dealers.	N
	247	E	Pest and Vermin Control.	N
Current and Historical Landfills	/	/	None within 250m of site.	N
Potentially Infilled Land	85	NW	Potentially Infilled Land (Water)	Y
	124	SW	Potentially Infilled Land (Non-Water) - 1991	N
	171	NW	Potentially Infilled Land (Water) - 1961	Y
	207	N	Potentially Infilled Land (Water) - 1961	Y
	214	NW	Potentially Infilled Land (Water) - 1932	Y
	239	W	Potentially Infilled Land (Non-Water)	N
	248	W	Potentially Infilled Land (Non-Water)	N
Fuel Sites	180	SW	Open	N
	208	NW	Obsolete	N

Data Source	Distance (m)	Direction	Details	Possible Hazard to Site (Y/N)
Pollution Incidents	165	W	Category 3 – Minor Incident.	N
	168	W	Category 3 – Minor Incident.	N
	299	NE	Category 3 – Minor Incident.	N
IPPC/LAPPC Authorisations	180	SW	PG1/14 Petrol Filling Station	N
Hazardous Substances Consents	/	/	None within 250m	N
Sensitive Land Uses	0	NW	Nitrate Vulnerable Zones	N
	122	N	Nitrate Vulnerable Zones	N
	280	N	Ancient Woodland	N
	280	N	Local Nature Reserves	N

The historical maps and other historical data indicate that the buildings on the site have undergone a number of modifications and rebuilds over the history of the site. Made Ground containing potential contamination is expected to be present on parts of the site. A potential risk to the proposed development from potential contaminants within any Made Ground cannot be discounted at this stage.

The tank and electricity substation are considered potential sources of localised contamination. The contamination associated with these types of sources is not normally widespread beyond the source.

Only mobile phase contaminants from off-site sources could impact the site via groundwater and vapour/gas pathways.

With the exception of potential ground gas from the infilled grounds located within 250m of the site and a garage located 16m to the west of the site, no significant off site sources of contamination have been identified.

A number of potentially infilled grounds have been within 250m to the north, west and southwest of the site with the closest located 85m to the north. The nature of the infilled material is unknown, therefore, these are considered potential source of ground gas. However, the potentially permeable geology of Black Park Gravel Member is only mapped in the northern part of the site and therefore any potential lateral migration of ground gas from off-site sources could only be from the north, or within the site itself. Given the age of the backfill, the potential risks from these sources to the proposed development are considered low.

Furthermore, the local topography and the anticipated groundwater flow in a southerly direction indicates that any potential ground gas migration through the unsaturated zones or as dissolved gas from sources in the west and south are unlikely to impact the site.

6.8 Planning Application History

A search of Reading Borough Council's Planning Portal [http://planning.reading.gov.uk/fastweb_PL/welcome.asp, accessed 11/11/2021] shows the following planning applications for the site from 2010 to the present day.

Application Number	Application Date	Proposal Details / Comments	Decision
101643	26/04/2010	Replacement of plant room and allocation of associated solar water heating system features, namely 7 solar collectors plus thermal pipe work run in the featured encasement along one of the side elevations.	Received

Application Number	Application Date	Proposal Details / Comments	Decision
101644	26/04/2010	Replacement of plant room and allocation of associated solar water heating system features, namely; 7 solar collectors plus thermal pipe work run in the featured encasement along one of the side elevations.	Received
110206	21/04/2011	Provision of 4.5m TVRO Antenna and re-instate 2 x 1.2m dishes in the grounds of Caversham Park, Peppard Road.	Received
110773	29/07/2011	Alterations and refurbishment works to the existing kitchen and servery.	Received
111758	14/12/2011	Internal and external alterations to building for heating and ventilation systems, including roof plants.	Received
111759	14/12/2011	Internal and external alterations to building for heating and ventilation systems, including roof plants.	Received
121376	04/05/2012	External redecoration works comprising of cleaning, painting and repairing.	Received
130121	02/02/2013	Conversion of discussed kitchen space to form a computer room and provision of new external plant compound for location of chiller units.	Received
130124	02/02/2013	Conversion of disused kitchen space to form a computer room and provision of new external plant compound for location of chiller units.	Received
130635	30/04/2013	Construction of a plant room to house water based fire suppression system.	Received
131548	06/11/2013	Non material change to planning permission 130635/FUL	Received
151382	03/08/2015	Retrospective application for refurbishment of 5 no w/c's replacing sanitary ware and decoration.	Received
172290	19/12/2017	Small maple tree.	Received
191117	09/07/2019	Boundary line G1 – Boundary Line – Elm scrub and Oak – Prune all lateral branches back to boundary line along fence of neighbouring property with a reduction of 2m. All waste to be stacked within woodland. Oak Tree – WAC T1 – Oak Tree – Failing – ¾ tree dead of dying – evidence of decay at base – Spider MEWP to be employed to sectional fell tree to ground level. All core waste and chip to be transported to main grounds of site and deposited within woodpile as instructed.	Received

6.9 Ground Gas Risk

There are no historical or current landfill sites within 250m of the site and off-site contamination is unlikely to migrate onto site. Some made ground is likely to be present within the site itself. However, the likely ground gas risk to the proposed development is low.

6.10 Other Information

Information obtained from the BBC website [<https://www.bbc.com/historyofthebbc/buildings/caversham-park/>] accessed on 12th November 2021 indicates that in 1943 the BBC commandeered Caversham Park, which was being used as a hospital at the time, in order to monitor Nazi broadcasts during the Second World War. The BBC has continued to use the site with operations winding down in recent years.

6.11 Anecdotal Information

Information obtained from the groundsman in charge of the Park indicates that infilled ground is present along the southern part of the lake.. It is understood that the filled materials comprise demolition rubble from the ruins of WWII and household waste from the London area.

It is also understood that Lake is full of broken glasses and bottles.

6.12 UXO Risk Management

The agreed scope of work did not allow for either a preliminary or detailed UXO risk assessment.

The possibility of unexploded ordnance (UXO) being encountered on a site falls within the category of a potentially significant risk and should be addressed as a legal duty under the Construction (Design and Management) Regulations by the Client as early as possible in a project.

The CIRIA publication C681 Ref [15] has been developed to provide a consistent framework for the management of potential risks posed by UXO during site investigation and groundwork phases of construction. The process adopts a tiered approach, divided into four distinct stages; Preliminary risk assessment, Detailed risk assessment, Risk mitigation and Implementation.

7 Site Walkover Survey

A site walkover survey was carried out on 10th November 2021, at the time of the site investigation works.

7.1 General Site Description and Boundaries

The site is located within Caversham Park which comprises a Grade II listed Manor House that is set within approximately 40ha of grounds. The area under investigation comprises The Manor house and landscaped garden which are situated in the northern half of the park and lie on a plateau, at the top of a south-east facing slope. The southern part of the site consists of gently sloping meadow land.

The site is bounded on the north, east and west via vehicular roads; Peppard Road on the western boundary and Lowfield Road on the north and east. There is currently one vehicular access into the Caversham Park grounds and Manor House which is situated on Peppard Road. The entrance is fronted by a gate leading onto Caversham Park Drive. The site is in the ownership of the BBC, with the Manor House used as offices, occupied by BBC Monitoring and BBC Radio.

7.2 Topography and Drainage

The area under consideration comprises the northern section of the site and sits upon a plateau at an average elevation of about 82m AOD and slopes downward to the south of the Manor House to the lowest point at around 72m AOD.

There are a number of drainage Manhole covers across the site. A pond is located approximately 100m to the southeast of the Manor House and there is a lake situated just to the south west of the main house, surrounded by woodland.

7.3 Vegetation

The area of the park under consideration consists of a substantial amount of green open space, as well as some significant tree cover. The northern section of the site is largely covered by playing fields with trees present around the northern perimeter. A large car park takes up a significant proportion of land directly in front of the house. There is a further car park to the northwest and nearer the entrance gate.

A well-kept garden is located immediately south of the main building and flanked on the east and west by wooded areas. Further south is a dense tree line beyond which is a large open meadow. There is a woodland surrounding the Lake to the southwest.

7.4 Buildings and Land Use on Site and Nearby

The existing buildings on the site comprise the main Grade II listed Manor House, a small collection of post-war outbuildings that are located on the western wings of the main house, and former gatekeeper and staff houses beside the gatehouse.

The eastern site of the main building comprises a 'Satellite field' where there are a number of satellite dishes and a dis-used greenhouse. There is also an allotment in this field. An empty mobile bowser (possibly for water) was noted between the allotment and greenhouse.

Immediately to the north of the Manor House is a paying field with a pavilion and tennis court to the northwest.

7.5 Inaccessible Site Areas

With the exception of the wooded areas and inside of the existing buildings, most areas of the site were accessible.

7.6 Site Photographs

A series of photographs showing the site is included in Appendix B.

C PRELIMINARY SITE MODELS

8 Conceptual Engineering Geological Ground Model

From the desk study information and walkover undertaken at this site the following conceptual ground model has been formulated.

Data Source	Comments
Geology	The recorded soils beneath the site comprise the Lambeth Group with a superficial covering of the Black Park Gravel Member. Made Ground is anticipated to be present and in the region of 1-2m in thickness. The gravel is anticipated to be in the region of up to 3-6m in thickness. In general shallow trench fill foundations could potentially be adopted for the site, subject to the findings of a Ground Investigation. Depending of the loading of the proposed structure, deeper foundations may be required
Former Site Use	The history of the site suggests that unknown made ground or footings of historical buildings could be present. Founding on these materials could result in potential structural issues including differential settlement.
Groundwater	The depth of groundwater beneath the site is, at this stage, unknown. However based on the groundwater levels shown on the BGS borehole records for the area, groundwater is anticipated to be in the region of 4-5m bgl.
Surface Water	The site is not located within an area at risk of surface water flooding.
Potential Geo-hazards	The White Chalk Subgroup was encountered at approximately 12.50 – 15.50m bgl. Both bedrock and superficial geology at surface interfaces that have the potential to cause chalk dissolution. Chalk mines are present in the area and further investigation will be essential.

On the basis of the available information the geotechnical categorization for the proposed structures is considered to fall within Geotechnical Category 2 – Conventional structure with no exceptional risk or difficult ground or loading conditions; Eurocode 7 Ref [16].

9 Conceptual Site Model

In the context of this report, the conceptual model summarises the potential pollutant linkages identified for the site and forms the basis of the risk assessment for the site. The preliminary model comprises the potential sources of contamination, receptors that could be harmed and exposure pathways identified from the desk study and walkover survey. These potential linkages form the basis upon which the investigation is designed and reported.

9.1 Potential Sources of Contamination

The site has a history of use as the official residence for prominent persons in England, as a school, government offices and recently as premises for the BBC and is located within an area of mixed-residential and commercial land uses.

A number of potentially contaminative uses have been identified, both on site and in the locality.

Potential contaminants associated with these uses have been compiled from DoE industry profiles and our experience of such sites.

9.1.1 On-Site Sources

Potential Source	Potential Contaminants
Made Ground (across the site)	A wide range of contaminants including: metals/metalloids, polycyclic aromatic hydrocarbons, petroleum hydrocarbons and asbestos.
Historical tank	Oils/Fuel
Historical electricity substation	PCBs
Building fabric	Asbestos Containing Materials.
Greenhouse within the satellite field	Pesticides/herbicides and heavy metals.

During the walkover survey, there was no evidence of the historical tanks on site. There was also no evidence of an electricity substation on site. The potential risk from these historical sources is considered Low.

The potential risks from the Made Ground across the site, potential ACM within the buildings fabric and the greenhouse are considered Low to Moderate.

9.1.2 Off-Site Sources

The site may be impacted by contamination migrating from beyond the site boundary. The following potential off-site sources have been identified.

Potential Source	Distance from Site Boundary	Direction	Potential Contaminants	Likely hazard to Site
Car Body Repairs	16	W	Metals/Metalloids, PAHs, TPHs, SVOCs, VOCs.	Low
Infilled ground	85	NW	Land gas	Low
	171	NW	Land gas	Low
	207	N	Land gas	Low
	214	NW	Land gas	Low