

# PHASE 1 DESK STUDY

Site

THE COURTYARD, WISLEY LANE,  
WISLEY, SURREY GU23 6QL

Client

CAVENDISH GREEN LIMITED

Report Ref

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The recommendations made and opinions expressed in this Report are based on the strata conditions revealed by the fieldworks as indicated on the exploratory records, together with an assessment of the data from in situ and laboratory tests. No liability can be accepted for conditions which have not been revealed by the fieldworks, for example, between exploratory positions. While this Report may offer opinions on the possible configuration of strata, both between the excavations and below the maximum depth achieved by the investigation, these comments are for guidance only and no liability can be accepted for their accuracy. The data obtained relate to the conditions which are relevant at the time of the investigation.

The groundwater observations entered on exploratory records are those noted at the time of the investigation. The normal rate of progress does not usually permit the recording of any equilibrium water level for any one water strike. It should be noted that groundwater levels are prone to seasonal variation and to changes in local drainage conditions. The word 'none' indicates that groundwater was sealed off by the borehole casing or that no water was observed in the exploratory hole upon completion.

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REPORT REF: 23/12738/JAM  
 CONTRACT: WISLEY LANE, WISLEY

TABLE OF CONTENTS

1 INTRODUCTION..... 1

    1.1 Objectives..... 1

    1.2 Proposed Development ..... 1

2 THE SITE..... 1

    2.1 Site Location..... 1

    2.2 Site Topography ..... 1

3 SITE HISTORY ..... 2

    3.1 Historical Mapping ..... 2

    3.2 Aerial Imagery ..... 3

    3.3 Archaeological Constraints ..... 4

    3.4 UXO Risk ..... 4

4 GEOLOGY ..... 4

    4.1 Published Geology ..... 4

    4.2 Historical Borehole Records..... 5

    4.3 Hydrogeology ..... 5

    4.4 Radon ..... 5

5 ENVIRONMENTAL SETTING ..... 6

    5.1 Hydrology & Flood Risk ..... 6

    5.2 Landfill Data ..... 6

    5.3 Recent & Current Land Use..... 6

    5.4 Ecologically Sensitive Receptors ..... 6

6 SITE RECONNAISSANCE ..... 6

7 PRELIMINARY RISK ASSESSMENT ..... 7

    7.1 Conceptual Site Model..... 7

    7.2 Groundwater..... 8

    7.3 Geotechnical Hazards ..... 8

    7.4 Conclusions & Recommendations ..... 9

REFERENCES

LIST OF ABBREVIATIONS

FIGURES

- 1 Site Layout Plan
- 2 Site Photographs

APPENDICES

- 1 Envirocheck Data

# 1 INTRODUCTION

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## 1.1 Objectives

The Desk Study comprises a review of the readily available geological, historical and environmental sources for information about the site, together with a walkover survey of the area, and includes the commissioning of an Envirocheck report supplied by Landmark Information Group. This report presents the findings of the Desk Study together with an outline Conceptual Site Model and preliminary risk assessment, based upon identified potential sources of contamination which may pose a significant risk to receptors or end-users of the site.

In preparing this report reference has been made to relevant guidance, which includes the 'Investigation of potentially contaminated sites. Code of Practice.' (BSI, 2011) and the Land Contamination: risk management (LCRM) guidance (2020).

## 1.2 Proposed Development

The Client proposes to convert the existing offices to residential flats at The Courtyard, Wisley Lane, Wisley ("the site").

# 2 THE SITE

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## 2.1 Site Location

The site covers an area of 950m<sup>2</sup> and is located at Ordnance Survey National grid reference 505740, 159580. The site is occupied by a number of offices at ground level within the northern part of the site. The rest of the site is covered by tarmacadam and gravel parking areas or soft landscaping. There are residential properties on the northern and south-eastern boundaries with a church on the western/northern boundary. There are commercial properties/construction works on the southern boundary with Wisley Lane present on the north-eastern boundary.

## 2.2 Site Topography

The topographic survey, provided by the Client, demonstrates that the site is relatively flat, with a gentle slope from the north-east to south-west. The levels in the north-east are 17.54m while in the south-west they are 16.75m. Additionally, the site slopes from the centre to both the north-west and south-east, with levels of 17.20m in the centre and 16.89m and 16.77m in the north-west and south-east, respectively.

### 3 SITE HISTORY

#### 3.1 Historical Mapping

The historical Ordnance Survey mapping contained within the Envirocheck report has been reviewed. The maps reviewed are included in Appendix 1.

Table 1 - Historical Mapping Summary			
Date	Source Scale	Relevant Information	
		On Site	Off Site
1843	Tithe Map	The site forms part of two plots – plot 13 and plot 17. Plot 13 is listed as barnyard and buildings, while plot 17 is identified as Bream – arable land.	The land surrounding the site is arable farm land, with the farmhouse just to the north-west of site. There is a church on the eastern/northern boundary.
1870	1:2500	There are footpaths through the site. There is a well and a pump in the northern section of the site. There are structures built within the northern section of the site. The structures are identified as Wisley Farm.	The River Wey is situated 200m to the south-east of the site. There is a river/brook located 55m to the south. There is a road fronting the north-eastern boundary of the site. Graveyard to the west.
1872	1:10,560	No significant change.	No significant change.
1896	1:2500	The pump is no longer present on-site.	There is a pond 40m to the south-east of the site.
1897	1:10,560	No significant change.	No significant change.
1914	1:2500	Well no longer present. Wisley Farm is now Wisley Church Farm.	Byfleet and Pyrford Sewage works is present 200m to the north-east. The river/brook to the south is identified as flowing to the west/north-west. The site of a Romano-British (Roman) Pottery Kiln is situated 340m to the north-east.
1919-1920	1:10,560	No significant change.	No significant change.
1934-1935	1:10,560	There are more structures within the central part of the site.	There is a structure 20m to the south-east. The sewage works has expanded and is now 170m to the north-east. There is a site of a Neolithic and early Iron-age village 180m to the east/north-east.
1936	1:2500	The structures are now identified as Church Farm.	No significant change.
1938	1:10,560	No significant change.	No significant change.
1961	1:10,560	More structures have been constructed on-site.	Structures have been constructed on the south-eastern boundary.
1964*	1:10,560	No significant change.	No significant change.

1973	1:2500	A redevelopment of the site has occurred which includes the demolition of several of the structures and construction of new structures, including a large structure on the south-eastern boundary. A circular structure in the south-western area of the site is referenced tank, possibly for water.	The road fronting the north-east is identified as Wisley Lane. There is an electrical sub-station 135m to the north-east. The church is now identified as Wisley Church. The sewage works have expanded to the east and is now 70m to the east.
1975-1977	1:10,000	No significant change.	No significant change.
1989	1:2500	The structures in the east of the site have been redeveloped.	The M25 is now present 485m to the north-east.
1992	1:2500	No significant change.	No significant change.
1993	1:2500	All structures, with the exception of those in the northern area of the site, have been demolished. Tank no longer recorded.	A structure has been constructed on the south-eastern boundary and the pond to the south-east has been infilled. There is now a pond 50m to the south and a drain within 40m to the south.
1999	1:10,000	No significant change.	No significant change.
2006	1:10,000	The area in the northern part of the site appears to have been redeveloped.	No significant change.
2023	1:10,000	No significant change.	No significant change.

\*indicates partial mapping coverage

At the time of the earliest mapping the site formed part of farmland. The existing courtyard structures were constructed c.1870 and initially contained a pump and well system, which was removed around 1914. Structures were built within the central area of the site c.1934-1935 and redevelopments occurred in this area of site around 1961, 1973 and 1989. All structures, with the exception of the existing courtyard structures, were demolished in 1993. The courtyard structures appeared to have been redeveloped in 2006.

### 3.2 Aerial Imagery

Consideration of the modern aerial imagery contained within Google Earth and the Envirocheck report have been reviewed in the table below.

The Historic England website has also been reviewed for any historical aerial imagery of the site. An image taken by the RAF in 1955 shows the existing courtyard structures are present, as well as around eight structures in the central area of the site. The site and surrounding area appears to be used for agriculture.

Table 2 - Modern Aerials Summary		
Date	Relevant Information	
	On Site	Off Site
1945-1948	The structures are present on-site.	The sewage works are present. The surrounding area appears to have an agricultural use.
1999	The structures are no longer present, with the exception of the existing courtyard structures.	The sewage works has expanded. The surrounding area in the immediate vicinity is no longer used for arable land. There are structures along the southern and south-eastern boundaries.
2002-2022	The structure in the north has been redeveloped and there is now a fountain in the centre.	The area on the southern boundary appears to have large mounds of spoil/aggregate.

### 3.3 Archaeological Constraints

It should be noted that the site is in an area where archaeological findings have been found. The site of a neolithic and early iron-age village is situated 180m to the east/north-east. The site of a Roman Pottery Kiln is located 340m to the north-east. In addition, neolithic flint implements were found 430m to the north-east as well as an “ancient British boat” 595m to the north-east. There is a Roman Burial located 630m to the south-east.

The proposed development for the site is a conversion from commercial to residential use, therefore, no intrusive works are expected. Should intrusive works be carried out, it would be prudent to first carry out an archaeological study of the site due to the findings in the area.

### 3.4 UXO Risk

The site is deemed to be in an area at low risk in regards to UXO according to ZeticaUXO, however, it should be noted that a former WW2 decoy site was located 600m to the south of the site. Given that the site had been developed by the time of the Second World War and has been developed multiple times since the war, the risk of a UXO find is deemed to be low as any ordnance would have likely been noted at the time.

## 4 GEOLOGY

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### 4.1 Published Geology

An examination of the 1:50,000 British Geological Map, sheet no. 285, reveals that the site is underlain by the Kempton Park Gravel Member of Quaternary age. These superficial deposits are underlain at depth by the Bagshot Formation of Eocene age. Locally to the east and south are areas of made ground and landscaped ground.

## 4.2 Historical Borehole Records

The records of the BGS have been reviewed and one relevant borehole, reference TQ05NE318, is located 100m to the west/north-west. The borehole demonstrated that the first 0.50m below surface level was topsoil over brown sand. At 0.50m this became light yellow sand, which continued to a depth of 1.00m before becoming sand and gravel. At 3.00m depth the stratigraphy became a gravelly sand. Brown sand was encountered at 4.00m, becoming a grey fine silty sand at 6.00m. The grey silty sand became a grey clay at 8.00m, which was proven to the end of the borehole at 10.00m. Groundwater was noted to be struck at 4.00m, with a final resting level of 2.80m.

Based upon these the anticipated ground conditions beneath the site are summarised in tabular form below.

Table 3 - Anticipated Ground Conditions		
Strata	Thickness m	Depth to Base m
Made Ground	TBC by SI	TBC by SI
Kempton Park Gravel Member	4	4
Bagshot Formation	4	8
London Clay Formation	2+	10+

## 4.3 Hydrogeology

The site is underlain by a superficial Principal aquifer of high vulnerability associated with the underlying Kempton Park Gravel Member and the Bagshot Formation is classed as a Secondary A aquifer. The London Clay Formation present at depth is considered to be an unproductive stratum. The site is not underlain by a drinking water Source Protection Zone [SPZ].

The nearest groundwater abstraction is at The Wisley Golf Club, 789m to the south, for irrigation use relating to the golf course.

## 4.4 Radon

The Envirocheck report indicates that the site is in a lower probability radon affected area as less than 1% of properties are above the action level. Moreover, no protective measures as described in BRE report BR211 are necessary in the construction of new properties or extensions.



## 5 ENVIRONMENTAL SETTING

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### 5.1 Hydrology & Flood Risk

The River Wey is located 200m to the south-east of the site. According to the Envirocheck report the site is situated in an area deemed at being at risk of extreme flooding from Rivers or Sea without Defences (Zone 2). However, there is limited potential for flooding from the underlying groundwater.

### 5.2 Landfill Data

There is a licensed waste management facility recorded in the Envirocheck report, located 766m to the east. The facility is used for composting as part of the RHS Wisley Gardens.

There is potentially infilled land noted in Section 3.1 of this report from the 1993 mapping, located 40m to the south-east. In addition, there is potentially infilled land from 1961 located 106m to the south noted in the Envirocheck report. Given the time elapsed since 1961, however, the risk of ground gas from this feature is negligible.

### 5.3 Recent & Current Land Use

The site has historically been used for agriculture. The site is currently used as offices and, based on Section 3.2 to this report, has been since around 2002. The sewage works is situated 170m to the north-east/east.

### 5.4 Ecologically Sensitive Receptors

The following are considered to be sensitive environmental or ecological receptors and are highlighted within the Envirocheck report. The area is situated within an area of Adopted Green Belt. There is ancient woodland highlighted 313m to the west of the site. Ockham and Wisley Commons, a local nature reserve located 808m to the east, is classified as a site of special scientific interest (SSSI) and part of the Thames Basin Heaths Special Protected Areas.

## 6 SITE RECONNAISSANCE

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A visit to site was made on 8<sup>th</sup> November 2023 using the procedures outlined in CLR 2. At the time of the survey the conditions were overcast with rain.

The majority of the central part of the site is covered by either soft landscaping or tarmac/gravel car parking areas. The northern section of the site was comprised of the courtyard structures with paving and shingle in the courtyard itself.

The site is currently still in use with access from Wisley Lane. There is a footpath and a gate on the western boundary of the site, providing foot access between the site and a construction site on the western boundary. There is anecdotal evidence for a historic diesel tank on-site provided by the Client, however, the current presence and location of this tank is unknown. Evidence for the tank could not be found during the walkover.

A number of drain covers were identified across the site. A vent pipe was noted within the soft landscaped area, however, given the size of the vent pipe and the location of the drain runs, it is likely that this pipe is for foul water or an associated septic tank system.

A drawing showing the proposed site layout overlain on the topographic survey is presented in Figure 1 and during the site visit a number of photographs were taken, including close ups of areas of concern, which are presented in Figure 2 attached to this report.

## 7 PRELIMINARY RISK ASSESSMENT

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### 7.1 Conceptual Site Model

In accordance with current LCRM guidance, a Conceptual Site Model has been prepared for this site. The model prepared for the site in tabular format below lists potential sources of contamination, identified receptors on and within the immediate vicinity of the site, together with the pathways between them. A pathway must exist for an identified source to pose a risk to a receptor, thereby forming an active pollutant linkage.

The primary receptors are considered to be future residents (human health), surrounding ecology (plants and animals), controlled waters and proposed buildings.

A qualitative assessment of the risk of each potential pollutant linkage is given based upon the CIRIA guidance document 'Contaminated Land Risk Assessment: A Guide to Good Practice' (Rudland, Lancefield and Mayell, 2001). The risk is a combination of the probability or frequency of occurrence of a defined hazard and the magnitude of the consequences of the occurrence.

Table 4 - Preliminary Conceptual Site Model			
Source(s)	Potential Pathway(s)	Receptor(s)	Risk Level
Potentially infilled pond (off-site) Sewage Works (off-site) - Ground gases: carbon dioxide and methane	Migration, ingress and accumulation	Existing buildings	Very low
Unidentified tank from anecdotal evidence (on-site) - Petroleum Hydrocarbons	Ingestion, inhalation and dermal contact	Site workers and end-users	Moderate
Made Ground associated with demolished structures in south of site (on-site)	Ingestion, inhalation and dermal contact	Site workers and end-users	Low to moderate
Former agricultural use (on-site) - PAH - Petroleum Hydrocarbons - Heavy Metals - Pesticides	Leaching	Superficial Principal Aquifer	Low to moderate
Potential ACM within existing building fabric - Asbestos	Inhalation of dust	Site workers	To be assessed in specialist asbestos survey prior to commencement of refurbishment works

## 7.2 Groundwater

The anticipated regional groundwater flow within the superficial aquifer is thought to be toward the River Wey to the east. Based upon the flow direction of the River Wey, which is to the north and north-east, it is anticipated that the hydraulic gradient or groundwater flow beneath the site is likely to be east/north-east towards these surface water features. There is likely to be some hydraulic continuity between the superficial aquifer and this surface water feature.

## 7.3 Geotechnical Hazards

The site is indicated as being within an area at no risk of compressible ground stability hazards, however the Envirocheck report states that there is a moderate risk of compressible ground stability hazards located 36m to the south. The risk from any contaminants migrating from

the sewage works via groundwater is considered to be very low due to the likely direction of the hydraulic gradient, as described in Section 7.2 of this report.

#### 7.4 Conclusions & Recommendations

A number of potential sources of contamination have been identified on and in within the immediate vicinity of the site which may pose a risk to the proposed development. Hence, an intrusive ground investigation should be carried out to assess the identified risks and to prove the depth of the made ground. The proposed scope of testing should include for contaminants identified within the CSM, which includes heavy metals, PAH, TPH and pesticides. Standpipes or monitoring wells should be installed in order to determine the depth of groundwater at this site and to sample the groundwater for analysis should it be encountered.

The proposed scope of investigation should be agreed with the Guildford Borough Council Contaminated Land Officer and, if necessary, the warranty provider in order to ensure that it meets with their approval.