

# Phase I Desk Study

Land to the North of Raleigh Drive, Claygate, Surrey KT10 9PN

On behalf of Claygate House Investments Ltd and MJS Investments Ltd c/o Greatwave Property

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EXECUTIVE SUMMARY			
PROPOSED DEVELOPMENT	At the time of reporting, December 2022, the proposed development was understood to comprise the construction of up to 60No. dwellings, associated landscaping and open space with vehicle access from Raleigh Drive.		
GEOLOGY AND HYDROGEOLOGY	The eastern portion of the site was underlain by the Alluvium associated with the northerly flowing stream (Secondary A Aquifer) and the entire area of the site was underlain by bedrock deposits of the London Clay Formation (Unproductive Strata). Alluvium associated with The Rythe was also shown to the west and north-west of the site. Soils of the Kempton Park Gravel Formation were shown ~50m to the north of the site. Areas of Made Ground were shown associated with the railway line ~125m south-east of the site. An area of infilled ground was also shown at the location of the former brickworks ~180m east of the site within a 250m radius.		
	The site did not fall within a Groundwater Source Protection Zone. Groundwater was anticipated to be encountered at depth below the London Clay Formation. Some amounts of groundwater however may be present at shallower depths within Made Ground, parts of the Alluvium or silty/sandy pockets of the London Clay Formation. It was considered that groundwater was flowing in a northerly direction in line with local topography		
2POTENTIAL SOURCES OF CONTAMINATION	<ul> <li>Full details can be seen in sections 6.3 and 6.4 of this report.</li> <li>On-site - The Desk study has revealed the following potential sources of contamination on-site: <ul> <li>Potential for Made Ground (associated with historical landscaping on-site);</li> <li>Alluvium</li> </ul> </li> <li>Off-site - The Desk Study has revealed the following potential sources of contamination within the site's environs: <ul> <li>Potential ground-gas generating features</li> <li>Alluvium</li> <li>Electricity sub-stations</li> </ul> </li> </ul>		
RECOMMENDATIONS / PHASE II OBJECTIVES	The CSM shows that there is a low risk to potential receptors and it is considered that matters can be sorted with appropriately worded conditions if deemed necessary. A site investigation was recommended across the entire area of the site to confirm the presence of Made Ground. Consideration could be given to the testing of a number of soil samples, recovered from trial holes, for chemical laboratory testing. The tests will be for a broad range of contaminants in accordance with DEFRA/CLEA methodologies to confirm that they are suitable for re-use within the soft landscaped areas of the proposed redevelopment. Due to the presence of potential Alluvium on-site, the risk of ground-gas was considered to be low, therefore consideration should be given to further investigation.		



# 1. INTRODUCTION

# 1.1. General

Ground and Water Limited were instructed by Claygate House Investments Ltd and MJS Investments Ltd c/o Greatwave Property on the 30<sup>th</sup> September 2022 to conduct a Phase I Desk Study on the site: Land to the North of Raleigh Drive, Claygate, Surrey KT10 9PN. The scope of the investigation was detailed within the Table A of fee proposal GW-0787, dated the 18<sup>th</sup> May 2022.

# 1.2. Aims of the Investigation

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

This Phase I Desk Study comprises a Tier 1 Preliminary Risk Assessment, under LCRM, has been prepared to support an outline planning application proposing development of the site with up to 60 dwellings.

# 1.3. Conditions and Limitations

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

# 1.4. Technical Glossary

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



# 2. SITE SETTING

# 2.1. Site Location

The site comprised a ~2.2ha approximately square-shaped plot of land, located to the north of residential properties fronting onto the northern side of Raleigh Drive. The site was located in the western portion of Esher and to the west of Claygate, Surrey.

The national grid reference/Easting Northing for the centre of the site was approximately TQ 14900 64270. A site location plan is given within Figure 1.

#### 2.2. Site Description

A Site Walkover was undertaken on the 7<sup>th</sup> October 2022. A description of the site, as noted during the Site Walkover, is tabulated below. Photographs can be seen in Appendix C.

Site Description Sheet			
Use of site	At the time of the Site Walkover on the 7 <sup>th</sup> October 2022, the site comprised a derelict parcel of land. Evidence of it being a golf course was noted throughout the site, with old golf tees noted. A derelict tennis court was in the south-eastern corner of the site. An area of land at slightly lower elevation (~0.30m lower), was noted in the north-western corner of the site, with a drainage channel noted around it.		
Site topography	Whilst the site was relatively flat and level, there were localised undulations, possibly ground workings associated with the former golf course. As previously noted, there was a drainage channel surrounding an area of land, noted to be ~0.30m lower than the rest of the site. A watercourse was noted along the eastern site boundary.		
Area topography	The area in which the site was located was relatively flat and level.		
Structures on-site	No structures were noted on-site		
Structures off-site and use of surrounding ground	Claygate House, a commercial building, was noted immediately to the west of the site, with evidence of construction activities noted during the Site Walkover. To the south of the site were 2-storey residential properties along Raleigh Drive and Rythe Road, with the houses of Rythe Road also extending to immediately east of the site. To the north of the site were fields.		
Boundary features	A watercourse was noted along the eastern site boundary. Along the southern, eastern and northern site boundaries were trees and shrubbery. The western site boundary was fenced between the site and Claygate House.		
Site covering	The site was generally soft landscaped, with localised concrete pads where golf trees were formally located. A hardstanding tennis court was noted in the south-western corner of the site.		
Contamination sources on-site	No obvious sources of contamination were identified on site during the Site Walkover.		
Contamination sources off-site	No obvious sources of contamination were identified in the area around the site, other than the construction activities occurring immediately west of the site.		
Vegetation on-site	Scattered vegetation was noted localised in soft landscaped areas, with much denser vegetation noted along the southern, eastern and northern site boundaries. These included plants, grasses, shrubs, hedges and young trees.		
Vegetation off-site	Vegetation was localised to surrounding areas of soft landscaping, namely within residential gardens. Trees were also noted along the pedestrian pavements of roads.		
Services	Drainage channels were noted in the north-western section of the site		

# 2.3. Proposed Development

At the time of reporting, December 2022, the proposed development was understood to comprise the construction of up to 60No. dwellings, associated landscaping and open space with vehicle access from Raleigh Drive. The proposed development plan can be seen within Figure 2.



# 2.4. Geology

The British Geological Survey Solid and Drift Geology Map for the Esher area (South London Sheet No. 270) revealed that the site was underlain by bedrock deposits of the London Clay Formation. A strip of Alluvium was shown along the eastern boundary of the site associated with the northerly flowing stream. Alluvium associated with The Rythe was also shown to the west and north-west of the site. Soils of the Kempton Park Gravel Member were shown ~50m to the north of the site. Areas of Made Ground were shown associated with the railway line ~125m south-east of the site. An area of infilled ground was also shown at the location of the former brickworks ~180m east of the site within a 250m radius.

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

# Made Ground

Made Ground is shown in areas where material is known to have been deposited by man upon the natural ground surface. The main categories are spoil from mineral extraction, building and demolition rubble and waste in raised landfill sites.

#### Infilled Ground

Infilled Ground is shown in areas where material is known to have been deposited by man upon the natural ground surface. The main categories are spoil from mineral extraction, building and demolition rubble and waste in raised landfill sites.

#### Alluvium

Most small streams in the region are bordered by narrow alluvial strips. The alluvial sequences of small streams in the district are variable in detail but typically consist of up to 1.5m of clayey sands and silty clays, locally with scattered flints, resting on up to 1.5m of flint gravel.

# Kempton Park Gravel Member.

The Kempton Park Gravel Member is part of a complex series of River Terrace Deposits formed by the River Thames and its tributaries. These terraces represent ancient floodplain deposits that became isolated as the river cut downwards to lower levels. The Kempton Park Gravel Member is found at an elevation below the current river. The composition of the River Terrace Gravel varies greatly, depending on the source material available in the river's catchment. Deposits generally consist of sands and gravels of roughly bedded flint or chert commonly in a matrix of silts and clays.

#### London Clay Formation

The London Clay Formation comprises stiff grey fissured clay, weathering to brown near surface. Concretions of argillaceous limestone in nodular form (Claystones) occur throughout the formation. Crystals of Gypsum (Selenite) are often found within the weathered part of the London Clay Formation, and precautions against sulphate attack to concrete are sometimes required. The lowest part of the formation is a sandy bed with black rounded gravel and occasional layers of sandstone and is known as the Basement Bed.



A BGS borehole (TQ16SW83) located ~43m north of the site revealed a 0.45m capping of Topsoil over a brown silty clay with occasional gravel to 2.45m bgl followed by a stiff fissured brown and grey silty clay to 3.60m bgl. A stiff dark grey clayey silt was then noted for the remainder of the borehole, a depth of 4.50m bgl. Groundwater was noted at 1.95m bgl.

A second borehole (TQ16SW82) located ~183m south-west revealed a 0.18m capping of Topsoil over a loose brown silty fine to medium sand to 2.70m bgl. A 0.15m thick band of firm blue and grey peaty clay followed by a brown sandy medium gravel to 3.30m bgl. A firm to stiff brown silty clay was then noted to 4.80m bgl over a firm to stiff becoming very stiff grey silty clay was encountered for the remainder of the borehole, a depth of 9.00m bgl. Groundwater was noted at 1.20m bgl.

# 2.5. Hydrogeology and Hydrology

A study of the aquifer maps on the DEFRA website revealed the eastern portion along the boundary of the site was underlain by a Secondary A Aquifer comprising the superficial Alluvium. The remainder of the site was underlain by Unproductive Strata comprising bedrock deposits of the London Clay Formation.

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

A northly flowing unnamed stream was located on the eastern boundary of the site. Another northerly flowing stream, The Rythe, was located ~80m to the west of the site, closing to within ~30m of the north-west corner of the site. The northerly flowing River Ember was located ~1km west of the site.

From analysis of hydrogeological and topographical maps the actual groundwater table was anticipated to be encountered at depth below the London Clay Formation. Some amounts of groundwater however may be present at shallower depths within Made Ground, parts of the Alluvium or silty/sandy pockets of the London Clay Formation. It was considered that groundwater was flowing in a northerly direction in line with local topography.

Examination of the Environment Agency records showed that the eastern portion of the site was located within a Flood Zone 3 and the north-west corner of the site was located within a Flood Zone 2. Environment Agency Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Zone 3 shows the extent of a river flood with a 1 in 100 (1%0 or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year.

The Groundsure Datasheets revealed the north-west corner of the site was at a medium risk of flooding from rivers and the sea. The datasheets also revealed the eastern portion and north-west corner of the site was at risk of a high risk of groundwater flooding, while the remainder had a moderate risk. The site had a 1 in 30 year risk of surface water flooding to a depth between 0.10 - 0.30m.

The datasheets revealed two on-site and two off-site historical flood events 50m south-west and 176m south-east. All records related to an event between 14<sup>th</sup> and 19<sup>th</sup> September 1968. The two on-site records relate to an ordinary watercourse, while the off-site events related to a sewer (50m south-



west) and drainage (176m south-east). In each case the channel capacity was exceeded and there were no raised defences.

# 2.6. Radon

BRE 211 (2015) Map 5 of the London, Sussex and west Kent area indicated that the site was not located within an area where mandatory protection measures against the ingress of radon were likely to be required.

A review of the freely available Public Health England radon database, UK Radon, indicated that the site was located within a 1km grid square, where the maximum radon potential of <1% was recorded. The neighbouring 1km grid squares also had a maximum radon potential of <1%. Basic radon protection measures are required in areas where more than 3% of houses are at or above the Action Level.

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

# 2.7. Internet Search (Site Setting)

# 2.7.1. Available Unexploded Ordnance (UXO) Map Review

A review of the data available on <u>www.zeticauxo.com/</u> revealed the site was located within a negligible-risk area associated with unexploded ordnance (UXO). An area of low-risk associated unexploded ordnance was located to the immediate south, as indicated by having <15 bombs dropped per 1000 acres. No known Luftwaffe Bombing Target sites were located in a close proximity of the site.

# 2.7.2. Historical Landfill Tool Review

A review of the data available on <u>www.groundsure.io/</u> revealed no areas of Historical Landfilling in a close proximity of the site.



# 3. HISTORICAL REVIEW

# 3.1. Historical Map Review

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

Environmental Significance of Data from Historical Maps			
Maps Dated Between	Site	Environs	
1840 – 1868	The site comprised an open undeveloped land/field with trees/hedgerow along the northern, eastern and southern boundaries. A northerly flowing stream was also shown on the eastern boundary.	The site was located in a rural location with open undeveloped fields on all sides of the site. A northerly flowing stream (The Rythe) was shown ~80m to the west. A brick field and kiln was shown ~125m to the east.	
1895 – 1897	No significant change recorded.	A north to south trending railway in a cutting was shown ~120m to the east. Remainder as previous maps	
1911– 1914	No significant change recorded.	Residential development had taken place to the south. Remainder as previous maps.	
1932 – 1938	No significant change recorded.	Residential development to the immediate southern and east and to the distant west and north-west. The brick field had been extended west to the railway line. Remainder as previous maps.	
1955 – 1962	No significant change recorded.	An electricity sub-station was shown on the eastern side of the railway line ~120m to the east. The southern portion of the brick field ~125m to the east appeared to have been infilled, the northern portion was marked as a brickworks. Remainder as previous maps.	
1970 – 1973	The site was labelled as a golf course. A bowling green and half of an area of tennis courts associated with Claygate House to the immediate west were located in the north-west and south- west corners respectively. An access road and driveway from Claygate House was shown exiting via the southern boundary.	Claygate House with a swimming pool and associated landscaped gardens including ponds had been constructed to the immediate west. An electricity sub-station was shown ~90m to the west. The brickworks and area of the land to the south had been redeveloped with residential properties. A nursery was located ~175m north-east of the site. Remainder as previous maps.	
1983 <b>-</b> 2022	No significant change recorded.	No significant change recorded.	

# 3.2. Historical Aerial Photography Review

The object of this search was to report on the history of the site and its immediate environs from available Aerial Photography dating from the 1999 to the present day and downloaded from Google Earth and Groundsure. Any distances quoted for features remote from the site have been scaled from the photography and are only approximate.



At the time of the earliest aerial photography, 1999, the majority of the site comprised a golf course with several holes and bunkers visible. A bowling green was present in the north-west corner and tennis courts in the south-west corner. Residential properties were located to the east and south; Claygate House was shown to the west and open land to the north. A north to south trending railway was located ~120m to the east. There was no change noted on the 2006, 2010, 2015 aerial photographs. While there had been no change, the golf course , bowling green and tennis courts appeared to have been abandoned in the 2022 photograph.



# 4. ENVIRONMENTAL AND GEOLOGICAL INSIGHT

# 4.1. Groundsure Datasheets

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

Environmental Insight					
Source	Nearest Distance from Site/Dated/Type				
	Past Land Use				
	15x off-site records within a 250m radius:				
	3x off-site records of cuttings 111 – 117m east (1895 – 1938);				
	1x off-site record of an unspecified works 133m east (1961);				
	3x off-site records of a brick field 134 – 136m east (1868 – 1938);				
Historical industrial land uses	1x off-site record of a nursery 143m east (1972);				
	2x off-site records of an unspecified kiln 186 – 227m east (1868 – 1911);				
	1x off-site record of a smithy 194m south-east (1895 – 1897);				
	1x off-site record of a telephone exchange 241m south-east (1972);				
	2x off-site records of railway sidings 249 – 247m south-east (1911 – 1938).				
Listoriaal Tank Databasa	1x off-site record within a 250m radius:				
HISTORICAL TAILIK Database	1x off-site record of an unspecified tanks 237m north-west (1956 – 1986).				
	7x off-side records within a 250m radius:				
Historical Energy Features Database	7x off-site records of electricity substations 82m west, 99m south-east, 137m east,				
	223m south-west, 236m south-west (x2), 238m east.				
	Waste and Landfill				
	3x off-site records within a 250m radius:				
	All records are associated with 6A Hare Lane, Esher KT10 9BS 191 – 202m south-west				
	and comprised two records for treating waste exemption and one record for storing				
Waste exemptions	waste exemption.				
	The descriptions of the waste exemptions was for the treatment of waste wood and				
	waste plant matter by chipping, shredding, cutting or pulverising (x2) and the storage				
	of waste in a secure place.				
	Current Industrial Land Use				
	7x off-site records within a 250m radius.				
	1x off-site record for catering and non-specific food products 58m west;				
Recent Industrial Land Uses	1x off-site record for a sewage pumping station 159m south-west;				
	5x off-site records for electricity sub-stations 84m west, 102m south-east, 141m east,				
	238m south-west and 242m east.				
	2x off-site records within a 250m radius.				
	1x off-site record 46m west for oils and fuel (insulating and cable oils) 04/02/2004				
Pollution Incidents (EA/NRW)	(significant water impact, minor land and air impact);				
	1x off-site record 84m south-west for inert materials and wastes (other inert materials				
	or waste) 01/04/2003 (no water, land or air impact);				
Hydrogeology					
	1x on-site record and 1x off-site record within a 50m radius:				
Superficial Aquifer	1x on-site record of a Secondary A Aquifer (along eastern boundary)				
	1x off-site record of a Secondary A Aquifer 26m north-east.				
	1x on-site record and 3x off-site records within a 50m radius:				
Bedrock Aquifer	1x on-site record of a Unproductive Strata				
Doulourriquior	1x off-site record of Unproductive Strata 20m east;				
	2x off-site records of a Secondary A Aquifer 68m west and 161m east.				
	2x on-site records and 2x off-site records within a 250m radius;				
	1x on-site record of a Secondary superficial Aquifer – medium vulnerability, leaching				
Groundwater Vulnerability	class: intermediate.				
	1x on-site record of Unproductive bedrock Strata – no vulnerability, leaching class:				
	intermediate.				



	1x off-site record of Unproductive bedrock Strata 19m east – no vulnerability,		
	leaching class: low.		
	1x off-site record of a Secondary superficial Aquifer - medium vulnerability, leaching		
	class: low.		
Groundwater Vulnerability - local	1x on-site record.		
information	Highly vulnerable Principal superficial aquifer present in river terrace gravels.		
	Hydrology		
	1x on-site record and 26x off-site records within a 250m radius.		
	1x on-site record of inland river not influenced by normal tidal action		
	26x off-site records of inland river not influenced by normal tidal action: 1m east; 38m		
Mater Network (OC MAster Mar)	south; 41m west; 42m west, 44m west (x2); 50m south; 87m west; 91m west (x2); 117m		
water Network (OS MASteriviap)	south-east; 120m south-east; 142m south-west; 150m south-west; 150m south-east;		
	154m south-east; 179m south-east; 184m south-west; 192m south-west; 197m south-		
	east; 199m south-east, 207m south-east; 217m north; 222m south-east; 224m south-		
	east; and 249m south-east.		
Surface Water Features	8x records within a 250m radius.		
Surface Water realtires	No details given.		
WED Surface Water Rody Catchmonts	1x on-site record:		
WID Surface Water body catchinents	1x River Rythe Catchment on-site.		
WED Surface Water Bodies	1x off-site record within a 250m radius.		
WID Suitace Water Doules	1x River Rythe 34m west.		
WED Groupdwater Bodies	1x on-site record:		
Wib Groundwater bodies	1x Chobham Bagshot Beds on-site.		
Agricultural Designations			
	1x on-site record and 1x off-site record within a 250m radius:		
Agricultural Land Classification	1x Urban on-site,		
	1x Non-agricultural 159m north.		
Habitat Designation			
Priority Habitat Inventory	2x off-site records within a 250m radius:		
i nonty habitat inventory	2x deciduous woodland 192m south, 201m north.		

Geological Insight			
Source	Nearest Distance from Site/ Type		
Artificial and Made Ground (1:10,000 Scale)	<ul> <li>4x off-site records within a 250m radius.</li> <li>3x records of Made Ground 9undivided) 123m and 183m south-east and 227m north-east;</li> <li>1x record of Infilled Ground 177m east.</li> </ul>		
Superficial Geology (1:10,000 Scale)	<ul> <li>1x on-site record and 3x off-site records within a 250m radius:</li> <li>1x on-site record: Alluvium (silt)</li> <li>2x off-site records 26m north-east and 29m west: Alluvium (silt);</li> <li>2x off-site records 53m north and 138m north: Kempton Park Gravel Formation (sand and gravel).</li> <li>1x record on-site – Head Deposits (Clay, Silt, Sand and Gravel).</li> </ul>		
Bedrock Geology (1:10,000 Scale)	<ul> <li>1x on-site record and 3x off-site records within a 250m radius:</li> <li>1x on-site record: London Clay Formation (clay);</li> <li>1x off-site record 20m east: London Clay Formation (clay);</li> <li>2x off-site records 68m west and 161m east: Claygate Member (clay).</li> </ul>		
Artificial ground and permeability (1:50,000 scale)	4x off-site records within a 250m radius. 3x records of Made Ground 9undivided) 144m and 198m south-east and 227m north- east; 1x record of Infilled Ground 177m east.		
Superficial Geology and Permeability (1:50,000 scale)	<ol> <li>1 on-site and 1x off-site record within a 250m radius:</li> <li>1x on-site record for Alluvium. Flow Type: Intergranular, Maximum Permeability: High, Minimum Permeability: Very Low.</li> <li>1x off site record for Kempton Park Gravel Formation 53m north. Flow Type: Intergranular, Maximum Permeability: High, Minimum Permeability: Very Low</li> </ol>		
Bedrock Geology and Permeability (1:50,000 scale)	1x on-site record and 2x off-site records within a 250m radius:		



	1x on-site record: London Clay Formation. Flow Type: Mixed, Maximum Permeability:		
	Low, Minimum Permeability: Very Low;		
	2x off-site records 68m west and 161m east: Claygate Member. Flow Type: Mixed,		
	Maximum Permeability: Low, Minimum Permeability: Very Low		
	Boreholes		
	2x off-site records within a 250m radius:		
BGS recorded boreholes	43m north (4.00m depth),		
	183m south-west (9.14m depth),		
	Natural Hazard Findings		
Shrink-Swell Clay	Moderate hazard on-site.		
	Moderate hazard 20m east.		
	Negligible to Low hazard on-site		
Running Sands	Negligible hazard 20m east.		
	Low hazard 26m north-east and 29m west.		
Commence the Development to	Negligible to moderate hazard on-site.		
Compressible Deposits	Negligible hazard 20m east.		
	Woderate nazard 26m north-east and 29m west		
Collansible Deposite	Negligible to very low hazard on-site.		
	Very low lidzard 2011 edst.		
	Very Low bazard on site		
Landslides	Very low hazard 20n east		
	Negligible to Low bazard on-site		
Ground Dissolution of Soluble Rocks	Negligible to Low hazard on-site		
Minin	Ground Working and Natural Cavities		
	11v records within a 250m radius:		
Records of Surface Ground Workings	4x (uttings 111 - 117m east (1895 - 1938)		
Records of Surface Ground Workings	7x Brick Field 134 – 141m east (1868 – 1938)		
Records of Historical Mineral Planning	1x off-site record within a 250m radius.		
Areas	1x record for Sims Brickworks 143m east: surface mineral working for brick clay.		
	Radon		
In the memory in a Darley Affected Asso as			
Is the property in a Radon Affected Area as			
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# 5. ONLINE REVIEW AND HISTOIRCAL INVESTIGATIONS

# 5.1. Online Council Planning Database

A review of the Elmbridge Borough Council Planning Database revealed that no planning applications had been filed for the land north and east of Raleigh House, Raleigh Drive, Claygate, Esher Surrey.

# 5.2. Internet Search

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



# 6. PRELIMINARY RISK ASSESSMENT

# 6.1. Contaminant Source-Pathway-Receptor Model

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

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

In line with the requirements of BS 21365:2020, Soil Quality – Conceptual site models for potentially contaminated sites, the Conceptual Site Model (CSM) can be described in text, tabulated or presented as a figure. A tabulated CSM is provided in Section 6.6 of this report, where each component is discussed in the following sections. A diagrammatic CSM is provided within Figure 3.

# 6.2. Potential On-site Sources of Contaminants

This Desk Study revealed that at the time of the earliest historical mapping (1840) the site comprised an open undeveloped land/field with trees/hedgerow along the northern, eastern and southern boundaries. A northerly flowing stream was also shown on the eastern boundary. There were no significant changes until the 1970 – 1973 mapping where The site was labelled as a golf course. A bowling green and half of an area of tennis courts associated with Claygate House to the immediate west were located in the north-west and south-west corners respectively. An access road and driveway from Claygate House was shown exiting via the southern boundary. The site has remained unchanged to present day.

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

The site has undergone landscaping to form a golf course and a bowling green and tennis courts have been constructed in the north-west and south-west corners respectively. As a result various thicknesses of Made Ground resulting from these activities are likely to be encountered.

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

The British Geological Survey Solid and Drift Geology Map for the Esher area (South London Sheet No. 270) revealed that the site was underlain by bedrock deposits of the London Clay Formation. A strip of Alluvium was shown along the eastern boundary of the site associated with the northerly flowing stream.



Alluvial deposits rich in organic matter can produce ground-gases with Carbon Dioxide concentrations exceeding 5% and Methane concentration around 1%. The flow rates and gas generation rates associated with such deposits is generally low.

Given the deposits are usually at shallow depth and therefore uncapped, generally waterlogged, and with low gas generation rates a ground-gas risk is usually only present if a proposed development directly overlies organic rich/peaty deposits. The risk of migration is generally low. However, this source of contamination cannot be dismissed without further investigation/monitoring.

# 6.3. Potential Off-site Sources of Contaminants

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

The Groundsure datasheets and historical mapping recorded 11x records within a 250m radius including 7x Brick Field 134 – 141m east (1868 – 1938). By the 1950s the northern portion of the brick field was relabelled as a brickworks and southern portion appeared to have been infilled. The geology maps also marked the southern portion as an area of infilled land.

Infilled Ground is shown in areas where material is known to have been deposited by man upon the natural ground surface. The main categories are spoil from mineral extraction, building and demolition rubble and waste in raised landfill sites.

Given the age of the backfill ≤50 years, the material is unlikely to still be degrading and actively producing ground-gases in significant quantities. The risk of ground-gases migrating laterally through the impermeable strata of the London Clay Formation within the boundaries of the site was low. In addition, any fill would likely be at surface, uncapped, with preferential pathways for migration to surface. Given the above the risk of ground-gases being produced, migrating and affecting the site was negligible. Therefore, this potential source has been discounted.

The Groundsure datasheets and historical mapping recorded 11x records within a 250m radius including 4x Cuttings 111 – 117m east (1895 – 1938). The geological maps revealed these were also marked as an area of Made Ground. Contaminants associated with railway land include metals such as cadmium, chromium, nickel and lead, asbestos, Polycyclic Aromatic Hydrocarbons (PAHs), Total Petroleum Hydrocarbons (TPH) and ethylene glycol, which is a common component in anti-freeze. However, the railway cuttings are still in existence and therefore any infilling is likely to be negligible and these potential sources of contamination could be dismissed.

The Groundsure datasheets and historical mapping recorded a railway ~125m east of the site and railway sidings 249 – 247m south-east (1911 – 1938). Contaminants associated with railway land include metals such as cadmium, chromium, nickel and lead, asbestos, Polycyclic Aromatic Hydrocarbons (PAHs), Total Petroleum Hydrocarbons (TPH) and ethylene glycol, which is a common component in anti-freeze. However, given that site levels do not appear to have been raised during that time, the likelihood of fill having been imported to the site was considered to be negligible and these potential sources were dismissed.



The Groundsure datasheets and historical mapping recorded a nursery ~175m north-east of the site. Sporadic use of pesticides and herbicides may have occurred within the nursery; however, given that site levels do not appear to have been raised during that time, the likelihood of fill having been imported to the site was considered to be negligible and this potential source was dismissed.

Electricity sub-stations were located 84m west, 102m south-east, 141m east, 238m south-west and 242m east of the site. PCB oils and other cable/transformer oils, together with a series of waxes are commonly used in mainly high voltage applications. PCBs are generally toxic; however, newer forms of non-toxic oils and waxes have replaced the use of PCBs. All cable oils are extremely viscous and adhere strongly to soil particles and do not tend to migrate far from the point of leakage or spillage. Therefore, the potential risk of encountering PCBs on the site was negligible and these potential sources could be discounted.

The British Geological Survey Solid and Drift Geology Map for the Esher area (South London Sheet No. 270) revealed that alluvium associated with The Rythe was shown to the west and north-west of the site.

Alluvial deposits rich in organic matter can produce ground-gases with Carbon Dioxide concentrations exceeding 5% and Methane concentration around 1%. The flow rates and gas generation rates associated with such deposits is generally low.

Given the deposits are usually at shallow depth and therefore uncapped, generally waterlogged, and with low gas generation rates a ground-gas risk is usually only present if a proposed development directly overlies organic rich/peaty deposits. The risk of migration is generally low. Therefore this source has been dismissed with respect to the site.

# 6.4. Potential Receptors

At the time of reporting, December 2022, the proposed development was understood to comprise the construction of up to 60No. dwellings, associated landscaping and open space with vehicle access from Raleigh Drive. The proposed development plan can be seen within Figure 2.

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

# Human Health

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

Flora and Fauna

Vegetation within soft landscaped areas.

**Building Materials and Services** 



Buildings; Buried concrete; Confined spaces; and Underground services (Water Pipes).

**Controlled Waters** 

Secondary A Aquifer (Alluvium and Kempton Park Gravel Formation); and Stream on eastern boundary and The Rythe ~80m west.

6.5. Contaminant Absorption Pathways

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

# Human Health:

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

Flora and Fauna

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

**Building Materials and Services** 

Direct contact; Explosion.

**Controlled Waters** 

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

# 6.6. Tabulated Conceptual Site Model

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



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



Tabulated Conceptual Site Model – Pollutant Linkage Summary		(On-Site Sources)	
Potential Sources	Potential Absorption Pathways	Potential Receptors	<b>Risk Classification</b>
Made Ground from landscaping activities: Asbestos, PAHs.	Direct ingestion of soil and soil derived dust Dermal contact of soil and soil derived dust Inhalation of dust (indoors and outdoors) with elevated concentration of determinands Ingestion of home-grown produce, and soils attached Direct ingestion of groundwater Inhalation of volatile vapour (indoors and outdoors)	Human Health End Users (Residents/Future site visitors) Construction workers during development Site operatives during maintenance works Neighbours and public	Low
TPHs, VOCs,	Direct uptake of groundwater Direct uptake of determinands in the soil	Flora and Fauna Vegetation within soft landscaped areas	Low
Sulphates, and Metals.	Anthropogenic (man-made) pathways Vertical and lateral migration in permeable strata Surface water runoff	Controlled Waters Secondary A Aquifer (Alluvium) Stream on eastern boundary and The Rythe ~80m to the west.	Low
Aggressive ground conditions with Made Ground and natural ground, including groundwater: Sulphates, PAH/TPH.	Direct contact with aggressive ground conditions	Building Materials and Services Buried Concrete Underground services (water pipes)	Moderate
Ground gases generated by Made Ground and Alluvium: Methane, Carbon Dioxide,	Migration through anthropogenic & natural pathways Inhalation of Asphyxiating gases Explosion (methane only)	Human Health End Users (Residents/Future site visitors) Construction workers during development (especially in confined spaces) Site operatives during maintenance works in confined spaces Neighbours and public	Low
Hydrogen Sulphide, and Carbon Monoxide.	Migration through anthropogenic & natural pathways Explosion (methane only)	Building Materials and Services Buildings Confined spaces Underground services	Low



Tabulated Conceptual Site Model – Pollutant Linkage Summary		(Off-Si	te Sources)
Potential Sources	Potential Absorption Pathways	Potential Receptors	<b>Risk Classification</b>
Ground gases generated by off-site Alluvium and Infilled Ground to the east of the site: Migration through anthropogenic & natural pathways Inhalation of Asphyxiating gases Explosion (methane only)	Human Health End Users (Residents/Future site visitors) Construction workers during development (especially in confined spaces) Site operatives during maintenance works in confined spaces Neighbours and public	Negligible	
Carbon Dioxide, Hydrogen Sulphide, and Carbon Monoxide.	Migration through anthropogenic & natural pathways Explosion (methane only)	Building Materials and Services Buildings Confined spaces Underground services	Negligible



# 7. RECOMMENDATIONS AND PHASE II OBJECTIVES

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

The CSM shows that there is a low risk to potential receptors and it is considered that matters can be sorted with appropriately worded conditions if deemed necessary.

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

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

# 7.1. Soils

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

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

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

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

Sub-surface concrete may be damaged due to being in contact with aggressive ground conditions. Sampling should be undertaken where the proposed foundations will be in contact with Made Ground and/or natural ground and tested for aggressive ground conditions (sulphates/pH). Classification



should then be undertaken of the ground conditions in accordance with Building Research Establishment Special Digest 1, 2005, 'Concrete in Aggressive Ground'.

# 7.2. Services

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

# 7.3. Groundwater

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

#### 7.4. Ground-gas

The CSM has identified a low risk from ground-gases at the site as a result of Made Ground and Alluvium on-site. Analysis of soil samples should include Total Organic Carbon (TOC) testing in order to provide an indication of risk from on-site sources. In addition, ground gas monitoring should be undertaken within monitoring wells installed as part of the investigation. At this stage of investigation, in accordance with CIRIA C665 / BS8576:2013, it is anticipated that a minimum of four spot monitoring visits will be required within the ground gas risk assessment.

#### 7.5. Vapours

A limited risk for vapours was identified and it was considered at this stage that BTEX-MTBE analysis on soil samples would suffice for the risk assessment. No external SPR link was identified to warrant investigation via water sampling or PID of wells.

# 7.6. Geotechnical Review

#### 7.6.1. General

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

Natural Hazards		
Shrink Swoll Clay	Moderate hazard on-site.	
Shimk-Swell Clay	Moderate hazard 20m east.	
	Negligible to Low hazard on-site	
Running Sands	Negligible hazard 20m east.	
	Low hazard 26m north-east and 29m west.	
	Negligible to moderate hazard on-site.	
Compressible Deposits	Negligible hazard 20m east.	
	Moderate hazard 26m north-east and 29m west	
	Negligible to very low hazard on-site.	
Collapsible Deposits	Very low hazard 20m east.	
	Negligible hazard 26m north-east and 29m west	
Landelidae	Very Low hazard on-site.	
Lanusines	Very low hazard 20n east.	
Cround Discolution of Soluble Docks	Negligible to Low hazard on-site	
	Negligible hazard 20m east.	



No pits/quarrying or mining features were identified on-site, however a former brickfield was located >120m east of the site. It was therefore considered that the commodity removed from the ground was clay.

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

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

The Groundsure datasheets have indicated that the superficial Alluvium is likely to have a very low to high permeability and may not be suitable for surface water disposal. The underlying London Clay Formation was recorded to have a very low to low permeability and therefore would also be unsuitable for surface water disposal. These will be subject to on-site testing.



# FIGURES

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

Registered Office: Knetch House: 31 Horse Fair, Banbury, Oxfordshire OX16 GAE: Registered in England No. 07032001



	N         N         APPROXIMATE SITE BOUNDARY		
Project: Land to the North of Raleigh Drive, Claygate, Surrey KT10 9PN		Figure 2	
Client: Claygate House Investments Ltd and MJS Investments Ltd c/o Greatwave Property		Date: December 2022	gu
Proposed Development Plan		Ref: GWPR5034	groundswater





# APPENDIX A: Conditions and Limitations

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

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

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

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

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

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

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

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

conditions have been sampled or monitored in recorded locations and tests for some of the more common chemicals generally expected. Other concentrations of types of chemicals may exist. It was not part of the scope of this report to comment on environment/contaminated land considerations.

The conclusions and recommendations relate to land to the North of Raleigh Drive, Claygate, Surrey KT10 9PN.

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

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

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

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

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



# APPENDIX B: Site Photographs

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Photograph 1: View looking north from the site entrance.



Photograph 2: View looking south at the site entrance.



Project:

Land to the North of Raleigh Drive, Claygate, Surrey KT10 9PN Land

Client: Claygate House Investments Ltd and MJS Investments Ltd c/o Greatwave Property	Date: December 2022
Appendix B: Site Photographs	<sup>Ref:</sup> GWPR5034

Plate 1:



Photograph 4: View looking west along the southern boundary of the site Project: Land to the North of Raleigh Drive, Claygate, Surrey KT10 9PN Client: Claygate House Investr c/o G Appendix

Photograph 3: View looking east along the southern boundary of the site

nents Ltd and MJS Investments Ltd reatwave Property	Date: December 2022
B: Site Photographs	Ref: GWPR5034





Photograph 6 View of the watercourse looking south along the eastern boundary. Land to the North of Raleigh Drive, Claygate, Surrey KT10 9PN

Photograph 5: View looking north along the eastern boundary of the site

Client: Claygate House Investments Ltd and MJS Investments Ltd c/o Greatwave Property	Date: December 2022
Appendix B: Site Photographs	Ref: GWPR5034

Project:

Plate 3:



Photograph 7: View looking south-west across the site from the north-east corner.



Photograph 8: View looking south-west of the former bowling green in the north-west corner of the site.



Project:

Land to the North of Raleigh Drive, Claygate, Surrey KT10 9PN

Client: Claygate House Investments Ltd and MJS Investments Ltd c/o Greatwave Property	Date: December 2022
Appendix B: Site Photographs	Ref: GWPR5034

Plate 4:



Photograph 9: View looking south-east across the site from the north-west corner.



Photograph 10: View looking south along the western boundary of the site.



Project:

Land to the North of Raleigh Drive, Claygate, Surrey KT10 9PN

Client: Claygate House Investments Ltd and MJS Investments Ltd c/o Greatwave Property	Date: December 2022
Appendix B: Site Photographs	Ref: GWPR5034

Plate 5:



Photograph 11: View looking south of potential former cricket nets in the south-west corner of the site.



Photograph 12: View looking north along the western boundary at the tennis courts in the south-west corner of the site.



Project:

Land to the North of Raleigh Drive, Claygate, Surrey KT10 9PN

Client: Claygate House Investments Ltd and MJS Investments Ltd c/o Greatwave Property	Date: December 2022
Appendix B: Site Photographs	<sup>Ref:</sup> GWPR5034

Plate 6:





# APPENDIX C: Historical Maps

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Groundsure INSIGHTS Site Details: Land to the north of Raleigh Drive, Claygate, Surrey, KT10 9PN Client Ref: GWPR5034 Report Ref: GS-9104981 Grid Ref: 514902, 164244 Map Name: County Series Ν Map date: 1840 W 1:2.500 Scale: Printed at: 1:2,500 Surveyed 1840 Revised 1840 Edition N/A Copyright N/A Levelled N/A Surveyed 1840 Revised 1840 Edition N/A Copyright N/A Levelled N/A Produced by Powered by Groundsure Insights T: 08444 159000 E: info@groundsure.com W: www.groundsure.com

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Map legend available at: www.groundsure\_legend.pdf

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Groundsure INSIGHTS Land to the north of Raleigh Drive, Claygate, Surrey, KT10 514902, 164244 Map Name: National Grid Ν W E Surveyed N/A Revised N/A Surveyed 1956 Revised 1972 Edition N/A Copyright 1973 Levelled 1963 Edition N/A Copyright N/A Levelled N/A Surveyed N/A Revised N/A Edition N/A Copyright N/A Levelled N/A

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INSIGHTS Land to the north of Raleigh Drive, Claygate, Surrey, KT10 514902, 164244 Map Name: National Grid Ν W E Surveyed N/A Surveyed N/A Revised N/A Revised N/A Edition N/A Edition N/A Copyright 1992 Levelled N/A Copyright 1992 Levelled N/A Surveyed N/A Surveyed N/A Revised N/A Revised N/A Edition N/A Edition N/A Copyright 1992 Copyright 1992 Levelled N/A Levelled N/A

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INSIGHTS Land to the north of Raleigh Drive, Claygate, Surrey, KT10 Client Ref: GWPR5034 Report Ref: GS-9104981 514902, 164244 Map Name: County Series Ν W E 1:10.560 Printed at: 1:10,560 Surveyed 1867 Revised 1895 Edition N/A Copyright N/A Levelled N/A Produced by Groundsure Insights T: 08444 159000 E: info@groundsure.com W: www.groundsure.com

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Groundsure INSIGHTS Site Details: Land to the north of Raleigh Drive, Claygate, Surrey, KT10 9PN Client Ref: GWPR5034 Report Ref: GS-9104981 Grid Ref: 514902, 164244 Map Name: National Grid Ν Map date: 1983-1985 W Scale: 1:10.000 Printed at: 1:10,000 Surveyed 1954 Revised 1985 Edition N/A Copyright N/A Levelled N/A Surveyed 1955 Revised 1982 Edition N/A Copyright 1983 Levelled N/A Produced by Powered by Groundsure Insights T: 08444 159000 E: info@groundsure.com W: www.groundsure.com © Crown copyright and database rights 2018 Ordnance Survey 100035207

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Production date: 06 October 2022

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Map Name:	National Grid	Ν
Map date:	2001	
Scale:	1:10,000	Ψ Τ E
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Client Ref: Report Ref: Grid Ref:	GWPR5034 GS-9104981 514902, 164244	
Map Name:	National Grid	Ν
Map date:	2010	w
Scale:	1:10,000	W T E
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Client Ref: Report Ref: Grid Ref:	GWPR5034 GS-9104981 514902, 164244	
Map Name:	National Grid	Ν
Map date:	2022	
Scale:	1:10,000	Ϋ́Υ Έ
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