






L U S T R E
CONSULTING

64 DERBY ROAD

**GROUNDWATER SCREENING
ASSESSMENT**





PROJECT RECORD				
PROJECT NAME	64 DERBY ROAD			
CLIENT	KEN GEORGE			
REPORT DETAILS				
TYPE	GROUNDWATER SCREENING ASSESSMENT			
REFERENCE	4041.R01			
ISSUE DATE	AUGUST 2021			
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CONTENTS

1.0	INTRODUCTION	4
2.0	SITE SETTING	8
3.0	SITE ENVIRONMENT	11
4.0	PROPOSED DEVELOPMENT & METHOD OF CONSTRUCTION.....	16
5.0	SCREENING ASSESSMENT.....	19
6.0	SCOPING STAGE.....	21
7.0	CONCLUSIONS AND RECCOMENDATIONS	22

APPENDICES

APPENDIX A: SITE ASSESSMENT AND VERIFICATION FORM

APPENDIX B: NOTES ON LIMITATIONS





1.0 INTRODUCTION

- 1.1 Lustre Consulting Limited (Lustre) has been commissioned by Ken George to undertake a Groundwater Screening Assessment for 64 Derby Road, London, SW14 7DP. The assessment has been undertaken in accordance with our fee proposal and scope of works dated 29/07/2021, which was formally approved on behalf of Ken George on 05/08/2021.
- 1.2 The site, rectangular in plan, is centered at National Grid Reference 519787, 175071, and occupies an approximate area of 0.04ha, as shown in Figure 1. The site currently comprises a detached residential property and is located within a residential area. It is understood that the Client requires this groundwater screening assessment to support the proposed two storey side extension, first floor rear extension and alterations to the existing rear dormer. A basement is proposed underneath the proposed side extension.

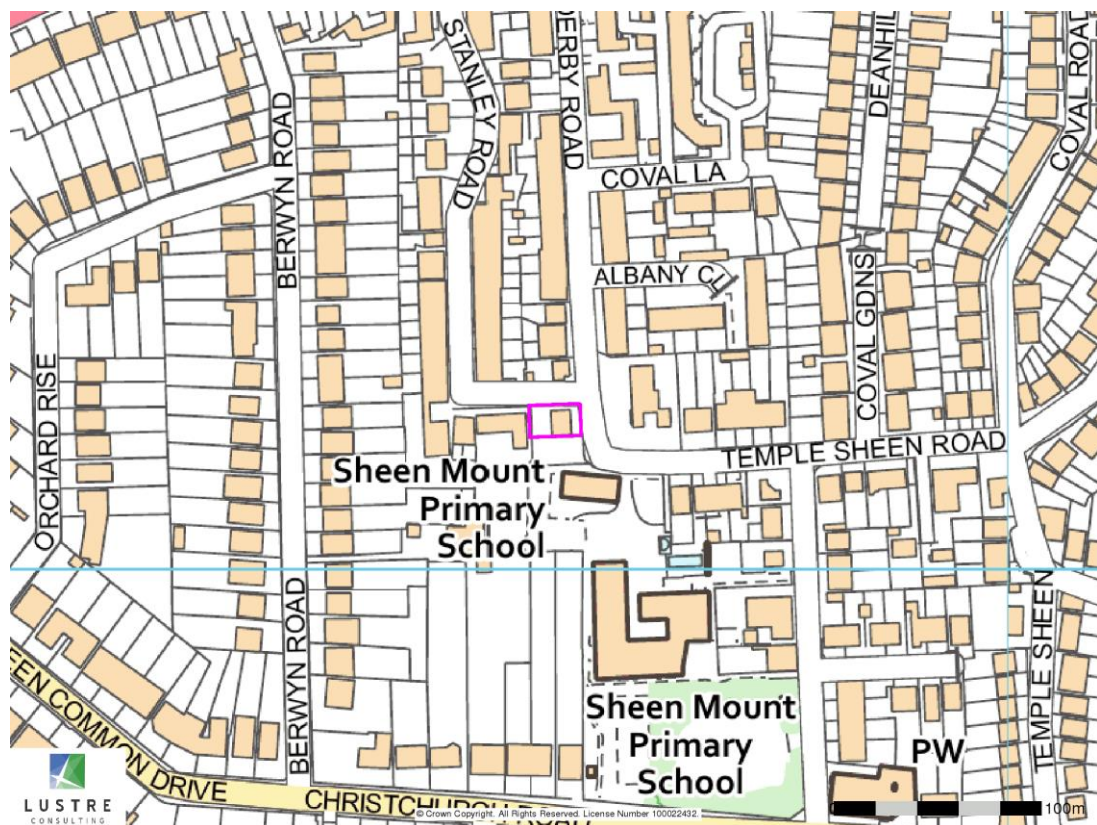


Figure 1: Site Location Plan



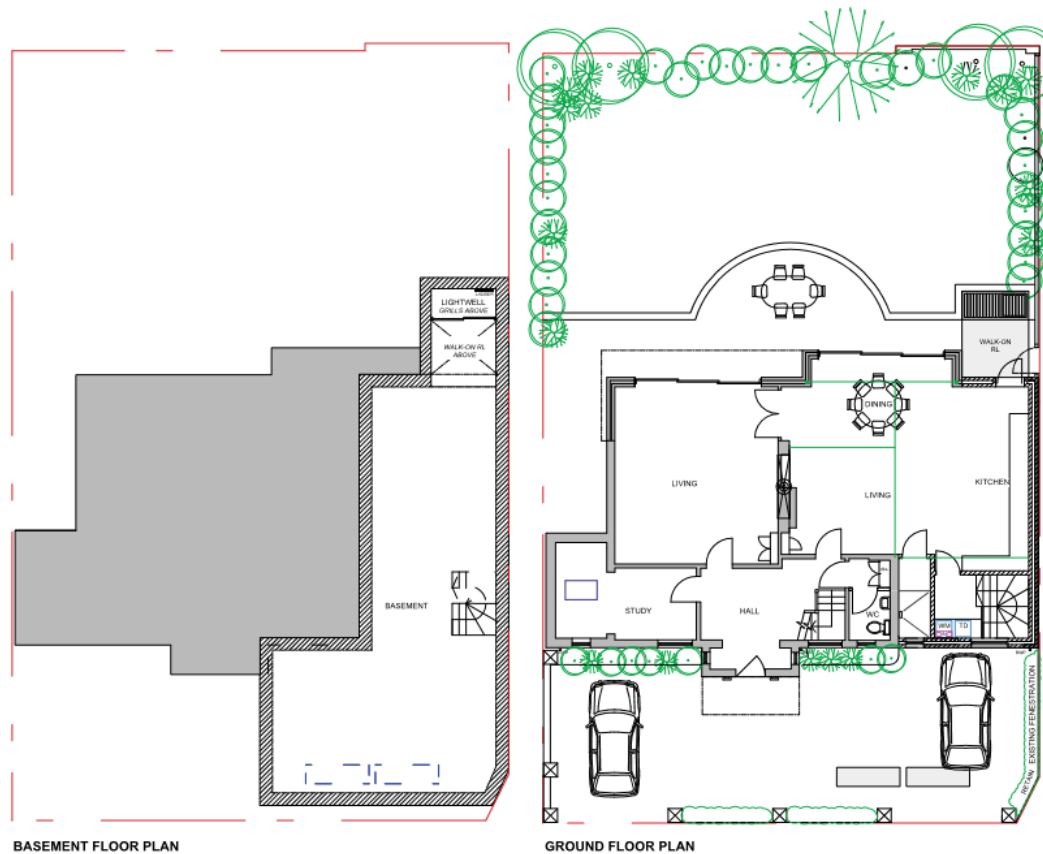


Figure 2: Proposed Site Layout - Plan View – Ground Floor & Basement

Background Information

- 1.3 The assessment has been prepared in line with the London Borough of Richmond Upon Thames (LBRUT) supplementary planning guidance released in 2020, including guidance on Strategic Flood Risk Assessment (Level 1)¹ and Further Groundwater Investigations².
- 1.4 The supplementary guidance requires all new basement applications in areas that are either more susceptible to groundwater flooding ($\geq 25\%$), and/or within Throughflow Catchment Areas to have a screening assessment that would then be used to inform the scope of a Basement Impact Assessment, which should consider the LBRUT good practice guidance on

¹ Strategic Flood Risk Assessment – Level 1. Prepared for the London Borough of Richmond Upon Thames. September 2020.

² Further Groundwater Investigations. Prepared for the London Borough of Richmond Upon Thames. October 2020.





basements³. The location of a site and whether it falls within one of the two catchment areas can be viewed on LBRUT interactive mapping tool⁴.

1.5 An initial review of the site location presented on the LBRUT interactive mapping tool confirm the following:

- The site **is** located within an 'Area Susceptible to Groundwater Flood' of $\geq 75\%$ or more; and
- The site **is not** located within a Throughflow Catchment Area (Throughflow and Groundwater Policy Zone).
- The site is located within a 'Potential Throughflow Catchment Area', East Sheen Common.

1.6 Once the need for a Screening Assessment has been established, the process needs to consider the requirements of LBRUT's user guide⁵ to identify specific matters by answering screening questions under three main categories, including:

- Subterranean characteristics;
- Land stability (including slope);
- Flood risk and drainage (including throughflow, groundwater and surface water).

1.7 The information gathered to inform the answers to the screening questions is provided in Chapters 2, 3 and 4. Answers to these questions will be either Yes, No or Unknown and reinforced with reasons justifying the responses to these questions. The screening assessment and responses to the questions are provided in Chapter 5.

1.8 The need and scope for any further Basement Impact Assessment for the subterranean development will be guided by the responses to the screening questions. The Scoping Stage

³ LBRUT Planning Advice Note. Good Practice Guide on Basement Developments. May 2015.

⁴ Groundwater Sewer Artificial Flood Risk Map:

https://mapping.richmond.gov.uk/map/Aurora.svc/run?script=%5CAurora%5Cpublic_SFRA_Groundwater_Etc_LBRUT.AuroraScrip%24&resize=always

⁵ LBRUT Basement Assessment User Guide. March 2021.





in Chapter 5 will provide a summary of the potential impacts and what aspects the Basement Impact Assessment needs to focus on, including the scope and nature of any further site investigation.

Objectives

- 1.9 The purpose of this Screening Assessment is to consider the impact the proposed basement could have on the local hydrogeology and groundwater, and the wider neighbouring environment, especially with respect to flood risk.

Reliance and Limitations

- 1.10 This report has been prepared using published information and information provided by the Client, as available at the time of writing only. No liability is extended to any information which has become available since this time.
- 1.11 No third-party liability or duty of care is extended without express permission in writing by Lustre. Third parties using information contained in this report do so at their own risk. For further details please refer to our terms and conditions.

Report Structure

- 1.12 Chapter 2 of the report provides information relating to the site history and built environment through a study of current and historical land uses, whilst information on the geological, hydrogeological, hydrological and topographical setting of the site is detailed in Chapter 3. Chapter 4 provides details of the proposed development and the screening assessment is carried out in Chapter 5. Chapter 6 details the conclusions and recommendations.





2.0 SITE SETTING

Introduction

2.1 This chapter provides details on the current site layout, building arrangement and configuration / elevations based on information supplied by the Client or obtained from existing reports or publicly recorded information. In addition, information on the surrounding built environment and the site's history is provided, which has been obtained from environmental database records, aerial photography, available planning records and OS historical mapping.

Site Description and History

2.2 The site is a detached residential property, on the corner of Derby Road and Stanley Road with vehicular and pedestrian entrance at the front of the property facing Derby Road. There is a garage in the rear garden which is accessed from Derby Road. Outside the front of the property there is off road parking with no soft landscaping, whilst to the rear of the property there is a soft landscaped rear garden.

2.3 There are a number of trees on the northern and western boundaries of the site, some of these are present within adjoining properties rear gardens and on Stanley Road.

2.4 The property is shown on historical maps from 1952; prior to this the site is shown as part of the rear garden of a property on Stanley Road. From 1973 the garden on the southern side of the property is shown as being divided and No.66 Derby Road has been constructed.

2.5 There are four successful planning applications associated with the address shown on planning portal dating from 1981. There may have been earlier changes to the property prior to planning records being retained electronically.

2.6 The successful planning applications are as follows:

- 1985 – 85/1692: Enlarging extension at side and rear of property to create kitchen and dining area.
- 2003 – 03/1823: Proposed loft extension with front and rear dormers.
- 2007 – 07/4010: Alterations to external elevations, including new windows and dormers, erection of single storey extensions to both flanks and rear.





- 2012 – 12/3826: A single storey rear extension, a storey and a half side extension including the basement, alterations to front formers and rear roof alterations to link existing dormers into a single dormer.
- 2.7 A further four planning applications were submitted for the address between 2012 and 2016 – these were modifications to the 2012 approved application; these were withdrawn by the applicant.
- 2.8 A further three planning applications were submitted in 2020 and 2021, these were modifications to the 2012 application with differing iterations of side and rear extensions. These were all refused.

Surrounding Area

- 2.9 The site is situated within a residential area, the majority of which was developed in the early 20th Century. All of the larger lodges present in the area since the late 19th Century were redeveloped in the 1950s – 1970s into smaller residential units
- 2.10 Relevant approved planning records from the last 5 years at properties within the East Sheen Ward have been reviewed and are summarised below:
- 66 Derby Road – 17/2644/FUL: Demolition of the existing four bedroom house and erection of two semi-detached four bedroom townhouses incorporating basements.
 - 32 Fife Road – 18/2779/FUL: Replacement two-storey detached dwelling house with roofspace accommodation and two storey basement (inc. car lift).
 - 21 Sunbury Avenue – 19/1219/FUL: Replacement two storey four bedroom dwelling house with a basement level and accommodation in the roof.
 - 19 Enmore Gardens – 19/2150/HOT: Proposed ground floor and basement (garden level) rear extension to existing end of terrace house.
 - 14 St Leonards Road – 19/2199/FUL: Erection of a two storey building with a basement level providing a commercial unit on part ground floor and basement levels.
- 2.11 Due to the age of these planning applications, none of them required a groundwater screening assessment or a basement impact assessment as part of the planning process.





- 2.12 There are further planning applications for basements within the ward; however these have been refused and are therefore not considered relevant.

Topography

- 2.13 In order to understand ground levels within the vicinity of the site Environment Agency produced LiDAR data has been reviewed. Due to the filtering process to create a Digital Terrain Model (DTM), the level accuracy near structures and vegetation could be unrepresentative locally. This LiDAR data review therefore seeks to understand the general topographical changes within the vicinity of the site. An extract is shown within Figure 3.
- 2.14 The ground levels within the vicinity of the site are generally flat, with a slight fall noted towards the north and west.
- 2.15 The site is bounded by Stanley Road to the north. Approximately 30 m to the north west of the site Stanley Road turns 90°, orientated in a northerly direction. The ground level on the road at this point is approximately 17.7 m AOD. Immediately outside of the north west corner of the site an elevation of 17.8 m AOD is recorded. At the junction with Derby Road the road elevation is shown as 17.9 m AOD. Derby Road immediately outside of the south east corner is recorded as 18.25 m AOD.
- 2.16 Onsite ground levels are generally between 18.0 and 18.15 m AOD.



Figure 3: Ground elevations - extracted from 1m resolution LiDAR data



3.0 SITE ENVIRONMENT

Introduction

- 3.1 This chapter reviews the hydrological setting, geology underlying the site and hydrogeological conditions of the site and the surrounding area that could influence the development proposal.

Hydrology

- 3.2 The closest watercourse within the vicinity of the site is that of the River Thames, situated approximately 1.2 Km to the north east of the site. The Beverley Brook, is located approximately 1.3 Km to the east of the site and flows towards the north east.
- 3.3 The site is classified as being located within Flood Zone 1, meaning a very low risk of flooding from fluvial or tidal sources (< 0.1% in any given year).

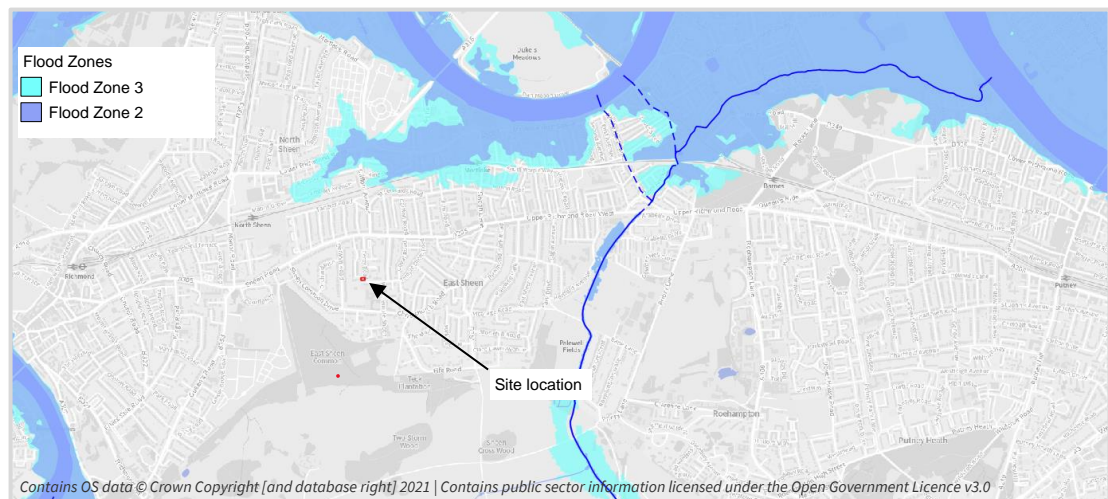


Figure 4: Flood Zones - from Environment Agency's Flood Maps for Planning (Rivers and Sea) data

- 3.4 A risk of surface water flooding is considered to be very low (<0.1%). Low risk (0.1%) from this source of flooding is shown by the Environment Agency's surface water flood risk mapping to affect Derby Road and Albany Close some 70 m to the north of the site. The vicinity of the junction of Temple Sheen Road and West Temple Sheen Roads is also shown to be at risk from low and medium risk probability surface water flooding scenarios. This is approximately 110 m to the south east of the site.



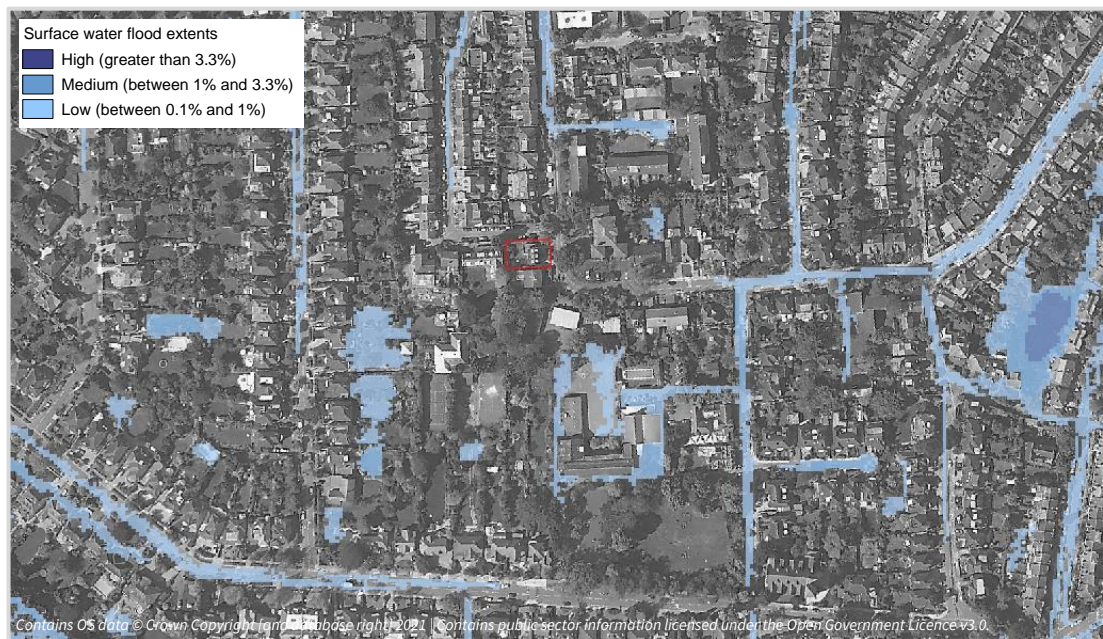


Figure 5: Surface water flood risk - from Environment Agency's 'Risk of Flooding from Surface Water Extents'

Geology

- 3.5 The 1:50,000 British Geological Survey (BGS) map (Sheet 270)⁶ and the BGS website (National Geoscience Information Service)⁷ show the site to be directly underlain by the superficial deposits of Taplow Park Gravel Member comprising sand and gravel. The superficial deposits are underlain by bedrock geology of the London Clay Formation comprising poorly laminated, blue-grey or grey-brown, silty to very silty clay.
- 3.6 A band of superficial deposits oriented east-west is associated with Head consisting of clay is located approximately 120 m to the north of the site.
- 3.7 The closest historic borehole⁸ is situated approximately 500 m to the north east of the site within superficial deposits of the Kempton Park Gravel Member. Depth to clay is shown at approximately 4 m below ground level. Groundwater is shown to be perched with the gravel layer at approximately 1.2 m below ground level.

⁶ BGS Solid and Drift Map Sheet 270

⁷ Information from BGS website: www.bgs.ac.uk consulted in month of report issue

⁸ BGS borehole record reference TQ17NE61





3.8 Two historical boreholes⁹ located 700m and 730m south east of the site have been identified; whilst there are closer boreholes to the north of the site, as stated in 3.7, there is a boundary in the superficial deposits to the north where Head Deposits are present overlying the London Clay Formation. The two historical boreholes were undertaken in 2007 in the vicinity of Fife Road and both proved a similar succession:

- Made Ground from GL to 0.60m – 0.90m,
- River Terrace Gravels:
 - Sandy gravelly Clay 0.90m – 2.00m,
 - Brown Sand and Gravel 0.60 – 5.00m & 2.00 – 6.20m,
 - Large Gravel with some Sand 5.00 – 7.00m,
- London Clay - Firm to stiff grey Clay 7.00m – 10.00m & 6.20m – 15.00m

3.9 Based on the available data it is considered that the soils underlying the site are likely to be Taplow Park Gravel Member overlain by Made Ground, with the top of the London Clay Formation present at a depth of approximately 5m.

Hydrogeology

3.10 LBRUT interactive mapping tool shows that the Environment Agency has classified the 1km grid square that contains the site as having 75% or more of its area susceptible to groundwater flooding.

3.11 The mapping tool also shows a 'susceptibility to groundwater flooding' map developed by the BGS. This indicates the site is situated within an area susceptible to groundwater flooding of property situated below ground level. Areas susceptible to groundwater flooding occurring at surface are shown to be in close proximity to the site. The distance ranges between 20 m to the south and 130 m to the north and west of the site. The map was developed as part of

⁹ BGS borehole records reference TQ27SW244 and TQ27SW237





'strategic scale' exercise and should not be interpreted as identifying precise areas where groundwater flooding is actually likely to occur.

- 3.12 Groundwater within the permeable sand and gravel deposits is likely to be in hydraulic continuity with the rivers.
- 3.13 The groundwater level in the superficial deposits may fluctuate in response to rainfall events and to seasonal rainfall recharge.
- 3.14 Groundwater in the two boreholes identified in paragraph 3.8 was recorded at depths of 1.11m and 1.60m respectively; only one of these boreholes had ordnance datum information with ground level recorded at 17.00m AOD and water level at 15.89m AOD.
- 3.15 The ground level at the second borehole is a similar height to the first based on LiDAR data, and both are at a comparable elevation to the site.
- 3.16 Groundwater is likely to be present within the Taplow Park Gravel Member beneath the site between 1 and 2m bgl based on historical records for boreholes in the area. The typical depth to groundwater may be greater than this but cannot be confirmed without measurement.
- 3.17 A review of the Surface water Management Plan¹⁰ shows four groundwater flood incidents from Environment Agency records between 300 m and 700m of the site. These were recorded between 2000 and 2010. Incident 19, recorded within the Taplow Gravel Formation is recorded as a flooded cellar.
- 3.18 The Groundwater Vulnerability Map of England on the MAGiC website¹¹ has been reviewed to determine the aquifer designations. The Taplow Park Gravel Member is designated as 'Secondary A' aquifer, which is defined as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. The groundwater vulnerability is classified as 'low'.

¹⁰ Royal Borough of Richmond Upon Thames, Surface Water Management Plan, 2011, Figure 1-3

¹¹ <https://magic.defra.gov.uk/MagicMap.aspx>





- 3.19 The London Clay Formation is designated as an unproductive stratum which is defined by the Environment Agency as "rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow."
- 3.20 The Environment Agency has defined Source Protection Zones (SPZs) for groundwater sources used for public drinking water supply. No groundwater Source Protection Zones have been identified within 1km of the subject site⁹.





4.0 PROPOSED DEVELOPMENT & METHOD OF CONSTRUCTION

Proposed Development

- 4.1 The development will involve the demolition of the existing garage in the garden and the construction of a side and rear extension on the northern elevation of the property with a basement underneath that extends out to the front and rear. A lightwell with a grill is proposed at the rear of the property within the garden and two skylights are proposed at the front of the property.
- 4.2 The proposed formation level for the basement extension is likely to be approximately 3.50m below ground level, which would be around 14.5 m AOD, no sections or levels have been provided of the proposed basement.
- 4.3 A Construction Method Statement has been undertaken by SAB Projects and the pertinent points for the construction staging are included below:

Construction Method Statement (from SAB Projects)

Phase 1: Site set-up

- 4.4 Prior to any work, the site will be provided with all the welfare facilities that are needed, all the existing main services will be capped where required or adapted for construction use.
- 4.5 A hoarding will be built to the front and side perimeter to protect and enclose the site with a height of 2.4m.
- 4.6 The main gate for the site will be positioned on Derby Road, no equipment or material will be deposited on the highway outside the hoarding.
- 4.7 During the manoeuvres of the trucks, banksmen will be deployed to avoid traffic build up and to keep vehicles and pedestrians safe at all times.
- 4.8 In this phase there will be:
- Dropside Truck 7.5-ton L 9.45m W 2.49 m H 3.5m





Phase 2: Demolition

- 4.9 The demolition will be carried out collecting the spoils directly inside a skip positioned inside the hoarding that protects the site in Derby Road.
- 4.10 This phase is believed to last 2 weeks and all the operations will be done inside the hoarding, this to protect the public pavement and to ensure the safety of the pedestrians.
- 4.11 During the manoeuvres of the trucks, and during the collection of spoil by the grab lorry banksmen will be deployed to avoid traffic build up and to keep vehicles and pedestrians safe at all times.
- 4.12 In this phase there will be:
- Grab Lorry L 9.1 m x W 2.55 m x H 3.4 m

Phase 3: Excavation of basement, underpinning and casting of concrete

- 4.13 The excavation works will take 24 weeks and will consist of 1-2 loads per day of spoil disposal. It is proposed to remove the spoil associated with the site by a Grab Lorry, that will collect the spoil associated with the works parked in front of the house, measuring L 9.1 m x W 2.55 m x H 3.4m.
- 4.14 While the grab lorry empties the static skip on the front driveway of the property, banksmen will be deployed to protect pedestrians and vehicles.
- 4.15 In this phase there will be:
- Grab Truck L 9.1 m x W 2.6 m x H 3.4 m
 - Ready mix concrete Lorry: L 8.7m x W 2.5 m x H 4m
 - Van L 6.95m x W 1.99m x H 2.71m

Phase 4: Scaffolding

- 4.16 The Delivery of the material for the installation of the scaffolding will be done with rigid truck with tail lift. In this phase there will be:





- Dropside/HIAB Truck 7.5 ton L 9.45m W 2.49m H 3.5m

Phase 5: Superstructure

4.17 The Delivery of steel beams and timber structure will be done with rigid truck with tail lift. In this phase there will be:

- Dropside/HIAB Truck 7.5 ton L 9.45m W 2.49m H 3.5m
- Van for deliveries per day with dimensions L.6.95m x H 1.99m x W 2.71m

Phase 6-7: Non-structural works/ Internal fit out/Clear site

4.18 On a later stage, smaller vehicles will visit the site, these vehicles, such as plasterer's or electrician's vans, need to park outside the site and unload any materials or heavy tools that will be collected inside the site.

4.19 During the manoeuvres of the vans, banksmen will be deployed to avoid traffic build up and to keep vehicles and pedestrians safe at all times. During the last phase of clearing of the site there will be a dropside truck that will collect the materials from the site.

4.20 In this phase are there will be:

- Van measuring (L 6.95 m W 1.99m H 2.71 m)
- Dropside/HIAB Truck (L9.54m x W2.49m x H3.5m)

4.21 The Project Manager in charge of the project will liaise as far as possible with residents in the vicinity in order to minimize impact of construction traffic movement. A newsletter will be issued monthly to update residents and copies provided directly to any residents who request a copy.





5.0 SCREENING ASSESSMENT

Introduction

- 5.1 The Richmond Basement Assessment User Guide requires the Screening Assessment to identify specific matters by answering selected questions covering three main categories. Any responses that result in a Yes or Unknown will be taken forward to Chapter 6, Scoping Stage to understand what could be addressed as part of a Basement Impact Assessment.

Subterranean Characteristics

Question	Response	Details
Does the recorded water table extend above the base of the proposed subsurface structure?	Unknown but likely	Based upon local borehole records, groundwater is anticipated between 1 and 2 m below ground level.
Is the proposed subsurface development structure within 100m of a watercourse or spring line?	No	No identified above ground water features identified within 100 m of the site.
Are infiltration methods proposed as part of the site's drainage strategy?	No	No infiltration methods are proposed as there is no notable increase in impermeable area. Depth to groundwater is also likely to preclude infiltration of surface water.
Does the proposed excavation during the construction phase extend below the local water table level or spring line (if applicable)?	Unknown but likely	Based upon local borehole records, groundwater is anticipated between 1 and 2 m below ground level.
Is the most shallow geological strata at the site London Clay?	No	The Taplow Park Gravel Formation is the shallowest strata and London Clay Formation is not anticipated until 5m – 6m bgl.
Is the site underlain by an aquifer and/or permeable geology?	Yes	The Taplow Park Gravel Formation is classified as a Secondary A aquifer which could support local water features. The groundwater is classified as having low vulnerability.

Land Stability

Question	Response	Details
Does the site, or neighbouring area, topography include slopes that are greater than 7°?	No	The site is almost flat.
Will changes to the site's topography result in slopes that are greater than 7°?	No	There are no changes to the site topography.





Will the proposed subsurface structure extend significantly deeper underground compared to the foundations of the neighbouring properties?	No	There is a basement underlying the properties at No.66 Derby Road of a similar depth (2.80m bgl – 3.00m bgl) to the proposed development.
Will the implementation of the proposed subsurface structure require any trees to be felled or uprooted?	No	There is a tree on Stanley Road, but it is understood that this will remain.
Has the ground at the site been previously worked?	No	The historic maps indicate that the only construction on the site is that of the residential property and extensions.
Is the site within the vicinity of any tunnels or railway lines?	No	According to the TFL Asset Map there are no tunnels or underground railways in the vicinity of the site.

Flood Risk and Drainage

Question	Response	Details
Will the proposed subsurface development result in a change in impermeable area coverage on the site?	No	The impermeable area is going to remain unchanged as the proposed development occupies a similar footprint to the existing property including the garage.
Will the proposed subsurface development impact the flow profile of throughflow, surface water or groundwater to downstream areas?	Unknown / limited	Local evidence suggests the proposed basement will be situated partially below groundwater levels. Due to the size of the basement changes to the groundwater and throughflow profiles are likely to be minimal.
Will the proposed subsurface development increase throughflow or groundwater flood risk to neighbouring properties?	Unknown / limited	Local evidence suggests the proposed basement will be situated partially below groundwater levels. Due to the size of the basement changes to the groundwater and throughflow profiles are likely to be minimal.





6.0 SCOPING STAGE

6.1 The Screening Assessment has identified the following characteristics that have been carried forward for further consideration.

- The site is underlain by the Taplow Park Gravel Member which is a Secondary A Aquifer and is classified as being within a Potential Throughflow Catchment Area.
- The groundwater level beneath the site is not known. Based on information from the nearest historical borehole data the water table could be between 1 and 2 metres below ground level.
- It is recommended that the depth and presence of the groundwater is validated. The council will require detailed borehole information on or from nearby to the development site providing results for at least two different points in time.





7.0 CONCLUSIONS AND RECOMMENDATIONS

- 7.1 Based on the findings of this Groundwater Screening Assessment, there is now a clear understanding of the site setting, proposed development and potential risks posed to the Subterranean Characteristics, Land Stability and Flood Risk and Drainage.
- 7.2 There do not appear to be any considerable risks in relation to the proposed basement that would make the development and construction proposals unviable.
- 7.3 Overall, it is our opinion that the construction works will not have a negative influence on the identified receptors, it is recommended that a copy of this Groundwater Screening Assessment is submitted to the London Borough of Richmond upon Thames for review, to satisfy their preliminary requirements and ultimately work towards validating the planning application before moving on to further phases of the assessment.



**APPENDIX A:
SITE AND
ASSESSMENT
VERIFICATION
FORM**

6. Site and Assessment Verification Form

This Site and Assessment Verification form should be completed and submitted as part of the planning application. The 'Chartered Professional Verification' table should be completed by the specialist that undertook the required assessment(s) (Screening Assessment and / or Basement Impact Assessment). If chartered professionals from different expertise areas carried out parts of the assessment(s), please ensure that separate Site and Assessment Verification forms are completed and submitted.

Site Details

Site Details	Applicant Information
Site Name	64 Derby Road, East Sheen
Planning application reference	21/0730/HOT
Address & Postcode	64 Derby Road, East Sheen,
Brief description of the proposed works	Proposed two storey side extension, first floor rear extension and alterations to the existing rear dormer. A basement is proposed underneath the proposed side extension.
Geology type	Kempton Park Gravel Member over London Clay Formation
Presence of aquifer?	Secondary A
Total site area (Ha)	0.04ha
Is the site currently known to be at risk of flooding from any sources?	No (Flood Zone 1)

Chartered Professional Verification

Professional Details	Applicant Information
Name	Jonathan Larkin Morwenna Corry
Profession / area of expertise	Hydrogeologist Geotechnical Engineer
Chartered institution and membership level	Chartered Geologist, Fellow of the Geological Society (Member No. 17429) Chartered Geologist, Fellow of the Geological Society (Member No. 1019042)
Brief description of assessment involvement	Co-authored the Groundwater Screening Assessment, with full and final review undertaken by Jonathan Larkin.
Brief summary of the assessment results	It is our opinion, given the overall low risk the project poses, that the construction works will not have a negative influence on the identified receptors.
Declaration of assessment results	We have applied all reasonable skill, care and diligence in performing this assessment and to the best of our knowledge the results are a true reflection of the site conditions based on the information made available to us at the time of writing.

Signature(s)



Morwenna Corry



Jonathan Larkin

**APPENDIX B:
NOTES ON
LIMITATIONS**

LUSTRE CONSULTING, ENVIRONMENTAL AND GEOTECHNICAL CONSULTANCY SERVICES NOTES ON LIMITATIONS

General

Lustre Consulting have completed the attached report for the use of the Client detailed on the front cover and those parties to whom Lustre Consulting has agreed to provide and has provided an executed warranty agreement, or to whom an assignment of the benefit of this report has been agreed.

Third parties are not entitled to use or rely upon the contents of the report unless written approval has been given by Lustre Consulting; (due to legal requirements, a charge may be levied as a condition of such approval, in which case approval shall not be effective unless and until such a charge has been paid in full).

Lustre Consulting accepts no responsibility or liability for:

- a) any use of this report for any purpose or project other than that for which it was commissioned, and
- b) any use of this report by any third party to whom approval for use has not been given and any conditions applicable to such use have been met.

Phase I Environmental Risk Assessments, Desk Studies and Site Audits

The work completed and utilised to provide this report comprises a study of available documentation. The opinions and results presented in this report have been arrived at by utilising the finite amount of data available at the time of writing and are relevant only to the purpose for which the report was commissioned. The data which has been reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative information pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, Lustre Consulting reserves the right to review this information and, if warranted, to modify the opinions presented in the report accordingly.

It should be noted that the risks which are identified in this report are perceived risks based on the available information at the time of writing and that the actual risks associated can only be assessed following a physical investigation of the site.

Phase II Site Investigations

The intrusive investigation has been completed to provide information concerning the type and degree of contamination present along with ground and groundwater conditions which facilitates a reasonable risk assessment to be completed. The stated objectives of the ground investigation have been limited to assessing the proven risks which are associated with potential human targets, building materials, the environment (including adjacent land), and to surface water and groundwater.

The amount of exploratory work, chemical testing and monitoring completed as part of this project has potentially been restricted by the short timescale available, and the locations of exploratory holes undertaken have potentially been restricted to areas unoccupied by buildings(s) and buried services. A more comprehensive post demolition / decommission investigation may be required if the site is to be redeveloped. For these reasons any costs included in relation to site remediation must be considered as tentative only at this time.

The exploratory holes investigate only a small volume of the ground in relation to the size of the site and therefore, can only provide a "snap shot" or general indication of ground conditions located on the site. The fact that the site has been investigated does not preclude the existence of localised "hotspots" of contamination where concentrations may be significantly higher than those actually encountered.

The risk assessment and opinions provided in this report take into account currently available guidance values relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.



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