CROFT STRUCTURAL ENGINEERS

Appendix E

Basement Monitoring Statement

106 Savernake Road
London
NW3 2JR

1. Introduction

Basement works are intended to the above address. To undertake these works, structural works will be undertaken that require party wall awards.

2. Risk assessment

The purpose of this risk assessment is to consider the impact of the proposed works and how they impact the party wall. There are varying levels of inspection that can be undertaken and not all works, soil conditions and properties require the same level of protection.

Monitoring Level proposed	Type of Works.
Monitoring 4 Visual inspection and production of condition survey by Party wall surveyors at the beginning of the works and also at the end of the works. Visual inspection of existing party wall during the works. Inspection of the footing to ensure that the footings are stable and adequate. Vertical monitoring movement by standard optical equipment Lateral movement between walls by laser measurements	New basements greater than 2.5m and shallower than 4m Deep in gravels Basements up to 4.5m deep in clays Underpinning works to grade I listed building

3. Scheme Details

This document has been prepared by Croft Structural Engineers Ltd. It covers the proposed construction of a new basement underneath the existing structure at 106 Savernake Road.

Scope of Works

The works comprise:

- Visual Monitoring of the party wall
- Attachment of Tell tales or Demec Studs to accurately record movement of significant cracks.
- Attachment of levelling targets to monitor settlement.
- The monitoring of the above instrumentation is in accordance with Appendix A. The number and precise locations of instrumentation may change during the works; this shall be subject to agreement with the Principal Contractor (PC).

- All instruments are to be adequately protected against any damage from construction plant or private vehicles using clearly visible markings and suitable head protection e.g. manhole rings or similar. Any damaged instruments are to be immediately replaced or repaired at the contractors own cost.
- Reporting of all data in a manner easily understood by all interested parties.
- Co-ordination of these monitoring works with other site operations to ensure that all instruments can be read and can be reviewed against specified trigger values both during and post construction.
- Regular site meetings by the Principal Contractor (PC) and the Monitoring Surveyor (MS) to review the data and their implications.
- Review of data by Croft Structural Engineers

In addition, the PC will have responsibility for the following:

- Review of methods of working/operations to limit movements, and
- Implementation of any emergency remedial measures if deemed necessary by the results of the monitoring.

The Monitoring Surveyor shall allow for settlement and crack monitoring measures to be installed and monitored on various parts of the structure described in Table 1 as directed by the PC and Party Wall Surveyor (PWS) for the Client.

Item	Instrumentation Type
Party Wall Brickwork	
Settlement monitoring	Levelling equipment & targets
Crack monitoring	Visual inspection of cracking, Demec studs where necessary

Table 1: Instrumentation

General

The site excavations and substructure works up to finished ground slab stage have the potential to cause vibration and ground movements in the vicinity of the site due to the following:

a) Removal of any existing redundant foundations / obstructions;
b) Installation of reinforced concrete retaining walls under the existing footings;
c) Excavations within the site

The purpose of the Monitoring is a check to confirm building movements are not excessive.

This Specification is aimed at providing a strategy for monitoring of potential ground and building movements at the site.

This Specification is intended to define a background level of monitoring. The PC may choose to carry out additional monitoring during critical operations. Monitoring that is to be carried out is as follows:

a) Visual inspection of the party wall and any pre-existing cracking
b) Settlement of Party Wall

All instruments are to be protected from interference and damage as part of these works.

Access to all instrumentation or monitoring points for reading shall be the responsibility of the Monitoring Surveyor (MS). The MS shall be in sole charge for ensuring that all instruments or monitoring points can be read at each visit and for reporting of the data in a form to be agreed with the PWS. He shall inform the PC if access is not available to certain instruments and the PC will, wherever possible, arrange for access. He shall immediately report to the PC any damage. The Monitoring Surveyor and the Principal Contractor will be responsible for ensuring that all the instruments that fall under their respective remits as specified are fully operational at all times and any defective or damaged instruments are immediately identified and replaced.

The PC shall be fully responsible for reviewing the monitoring data with the MS, before passing onto the Croft Structural Engineers, determining its accuracy and assessing whether immediate action is to be taken by him and/or other contractors on site to prevent damage to instrumentation or to ensure safety of the site and personnel. All work shall comply with the relevant legislation, regulations and manufacturer's instructions for installation and monitoring of instrumentation.

Applicable Standards and References

The following British Standards and civil engineering industry references are applicable to the monitoring of ground movements related to activities on construction works sites:

1. BS 5228: Part 1: 1997 - Noise and Vibration Control on Construction and Open Sites -Part 1.Code of practice for basic information and procedures for noise and vibration control, Second Edition, BSI 1999.
2. BS 5228: Part 2: 1997 - Noise and Vibration Control on Construction and Open Sites -Part 2.Guide to noise and vibration control legislation for construction and demolition including road construction and maintenance, Second Edition, BSI 1997.
3. BS 7385-1: 1990 (ISO 4866:1990) - Evaluation and measurement for vibration in buildings - Part 1: Guide for measurement of vibrations and evaluation of their effects on buildings, First Edition, BSI 1990.
4. BS 7385-2: 1993 - Evaluation and measurement for vibration in buildings - Part 2: Guide to damage levels from ground-borne vibration, First Edition, BSI 1999.
5. CIRIA SP 201 - Response of buildings to excavation-induced ground movements, CIRIA 2001.

SPECIFICATION FOR INSTRUMENTATION

General

The Monitoring Contractor is required to monitor, protect and reinstall instruments as described. The readings are to be recorded and reported. The following instruments are defined:

a) Automatic level and targets: A device which allows the measurement of settlement in the vertical axis. To be installed by the MS.

b) Tell-tales and 3 stud sets: A device which allows measurement of movement to be made in two axes perpendicular to each other. To be installed by the MS.

Monitoring of existing cracks

The locations of tell-tales or Demec studs to monitor existing cracks shall be agreed with Croft Structural Engineers.

Instrument Installation Records and Reports

Where instrumentation is to be installed or reinstalled, the Monitoring Surveyor, or the Principal Contractor, as may be applicable, shall make a complete record of the work, including the position and level of each instrument. The records shall include base readings and measurements taken during each monitoring visit. Both tables and graphical outputs of these measurements shall be presented in a format to be agreed with the CM. The report shall include photographs of each type of instrumentation installed and clear scaled sections and plans of each instrument installed. This report shall also include the supplier's technical fact sheet on the type of instrument used and instructions on monitoring.

Two signed copies of the report shall be supplied to the PWS within one week of completion of site measurements for approval.

Installation

All instruments shall be installed to the satisfaction of the PC. No loosening or disturbance of the instrument with use or time shall be acceptable. All instruments are to be clearly marked to avoid damage.

All setting out shall be undertaken by the Monitoring Surveyor or the Principal Contractor as may be applicable. The precise locations will be agreed by the PC prior to installation of the instrument.

The installations are to be managed and supervised by the Instrumentation Engineer or the Measurement Surveyor as may be applicable.

Monitoring

The frequencies of monitoring for each Section of the Works are given in Appendix A.

The following accuracies/ tolerances shall be achieved:

Party Wall settlement	±1.5mm
Crack monitoring	±0.75mm

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REPORT OF RESULTS AND TRIGGER LEVELS

General

Within 24 hours of taking the readings, the Monitoring Surveyor will submit a single page summary of the recorded movements. All readings shall be immediately reviewed by Croft Structural Engineers prior to reporting to the PWS.

Within one working day of taking the readings the Monitoring Contractor shall produce a full report (see below).

The following system of control shall be employed by the PC and appropriate contractors for each section of the works. The Trigger value, at which the appropriate action shall be taken, for each section, is given in Table 2, below.

The method of construction by use of sequential underpins limits the deflections in the party wall. The maximum movement across the length of the party wall must not exceed 5 mm.

Between the trigger points, which are no greater than 2 m apart, there should be no more than 3 mm movement.

During works measurements are taken, these are compared with the limits set out below:

Movement	CATEGORY	ACTION
0mm-7mm	Green	No action required
7mm-12mm	AMBER	Crack Monitoring: Carry out a local structural review; Preparation for the implementation of remedial measures should be required.
>12mm	RED	Crack Monitoring: Implement structural support as required; Cease works with the exception of necessary works for the safety and stability of the structure and personnel; Review monitoring data and implement revised method of works

Table 2 – Movement limits between adjacent sets of Tell-tales or stud sets

Any movements which exceed the individual amber trigger levels for a monitoring measure given in Table 2 shall be immediately reported to the PWS, and a review of all of the current monitoring data for all monitoring measures must be implemented to determine the possible causes of the trigger level being exceeded. Monitoring of the affected location must be increased and the actions described above implemented. Assessment of exceeded trigger levels must not be carried out in isolation from an assessment of the entire monitoring regime as the monitoring measures are

inter-related. Where required, measures may be implemented or prepared as determined by the specific situation and combination of observed monitoring measurement data.

Appendix B is explaining how these values are within the allowable and follows the theory from Skempton and MacDonald (1956).

Standard Reporting

1 No. electronic copy of the report in PDF format shall be submitted to the PWS.

The Monitoring Surveyor shall report whether the movements are within (or otherwise) the Trigger Levels indicated in Table 2. A summary of the extent of completion of any of the elements of works and any other significant events shall be given. These works shall be shown in the form of annotated plans (and sections) for each survey visit both local to the instrumentation and over a wider area. The associated changes to readings at each survey or monitoring point shall be then regulated to the construction activity so that the cause of any change, if it occurs, can be determined.

The Monitoring Surveyor shall also give details of any events on site which in his opinion could affect the validity of the results of any of the surveys.

The report shall contain as a minimum, for each survey visit the following information:

a) The date and time of each reading:
b) The weather on the day:
c) The name of the person recording the data on site and the person analysing the readings together with their company affiliations;
d) Any damage to the instrumentation or difficulties in reading;
e) Tables comparing the latest reading with the last reading and the base reading and the changes between these recorded data;
f) Graphs showing variations in crack width with time for the crack measuring gauges; and
g) Construction activity as described. It is very important that each set of readings is associated with the extent of excavation and construction at that time. Readings shall be accompanied by information describing the extent of works at the time of readings. This shall be agreed with the PC.

Spread-sheet columns of numbers should be clearly labelled together with units. Numbers should not be reported to a greater accuracy than is appropriate. Graph axis should be linear and clearly labelled together with units. The axis scales are to be agreed with the PC before the start of monitoring and are to remain constant for the duration of the job unless agreed otherwise. The specified trigger values are also to be plotted on all graphs.

The reports are to include progress photographs of the works both general to the area of each instrument and globally to the main Works. In particular, these are to supplement annotated plans/sections described above. Wherever possible the global photographs are to be taken from approximately the same spot on each occasion. The locations of these points on site are to be on Croft Structural Engineers drawing M-10.

Erroneous Data

All data shall be checked for errors by the Monitoring Surveyor prior to submission. If a reading that appears to be erroneous (i.e. it shows a trend which is not supported by the surrounding instrumentation), he shall notify the PC immediately, resurvey the point in question and the neighbouring points and if the error is repeated, he shall attempt to identify the cause of the error. Both sets of readings shall be processed and submitted, together with the reasons for the errors and details of remedial works. If the error persists at subsequent survey visits, the Monitoring Surveyor shall agree with the PC how the data should be corrected. Correction could be achieved by correcting the readings subsequent to the error first being identified to a new base reading.

The Monitoring Surveyor shall rectify any faults found in or damage caused to the instrumentation system for the duration of the specified monitoring period, irrespective of cause, at his own cost.

Trigger Values

Trigger values for maximum movements as listed in Table 2. If the movement exceeds these values then action may be required to limit further movement. The PC should be immediately advised of the movements in order to implement the necessary works.

It is important that all neighbouring points (not necessarily a single survey point) should be used in assessing the impact of any movements which exceed the trigger values, and that rechecks are carried out to ensure the data is not erroneous. A detailed record of all activities in the area of the survey point will also be required as specified elsewhere.

Responsibility for Instrumentation

The Monitoring Surveyor shall be responsible for: managing the installation of the instruments or measuring points, reporting of the results in a format which is user friendly to all parties; and immediately reporting to all parties any damage. The Monitoring Surveyor shall be responsible for informing the PC of any movements which exceed the specified trigger values listed in Table 2 so that the PC can implement appropriate procedures. He shall immediately inform the PWS of any decisions taken.

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APPENDIX A
MONITORING FREQUENCY

INSTRUMENT	FREQUENCY OF READING
Settlement monitoring and Monitoring existing cracks	**Pre-construction** Monitored once. **During construction** Monitored after every pin is cast for first 4 no. pins to gauge effect of underpinning. If all is well, monitor after every other pin. **Post construction works** Monitored once.

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APPENDIX B

An Analysis on allowable settlements of structures (Skempton and MacDonald (1956))

The most comprehensive studies linking self-weight settlements of buildings to structural damage were carried out in the 1950's by Skempton and MacDonald (1956) and Polshin and Tokar. These studies show that damage is most often caused by differential steelments rather than absolute settlements. More recently, similar empirical studies by Boscardin and Cording (1989) and Boone (1996) have linked structural damage to ground movements induced by excavations and tunnelling activities.

In 1955 Skempton and MacDonald identified the parameter $\delta\rho/L$ as the fundamental element on which to judge maximum admissible settlements for structures. This criterion was later confirmed in the works of GRANT *et al.* [1975] and WALSH [1981]. Another important approach to the problem was that of BURLAND and WROTH [1974], based on the criterion of maximum tensile strains.

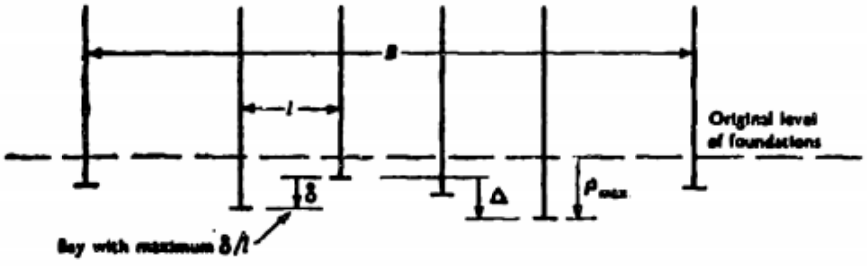


Figure 2.1 – Diagram illustrating the definitions of maximum angular distortion, δ/l, maximum settlement, ρ_{max}, and greatest differential settlement, Δ, for a building with no tilt (Skempton and MacDonald, 1956).

Figure 1: Diagram illustrating the definitions of maximum angular distrortion, δ/l, maximum settlement, pmax, and greatest differential settlement ,Δ , for a building with no tilt (Skempton and MacDonald, 1956)

The differential settlement is defined as the greatest vertical distance between two points on the foundation of a structure that has settled,w hile the angular distortion, is the difference in elevation between two points, divided by the distance between those points.

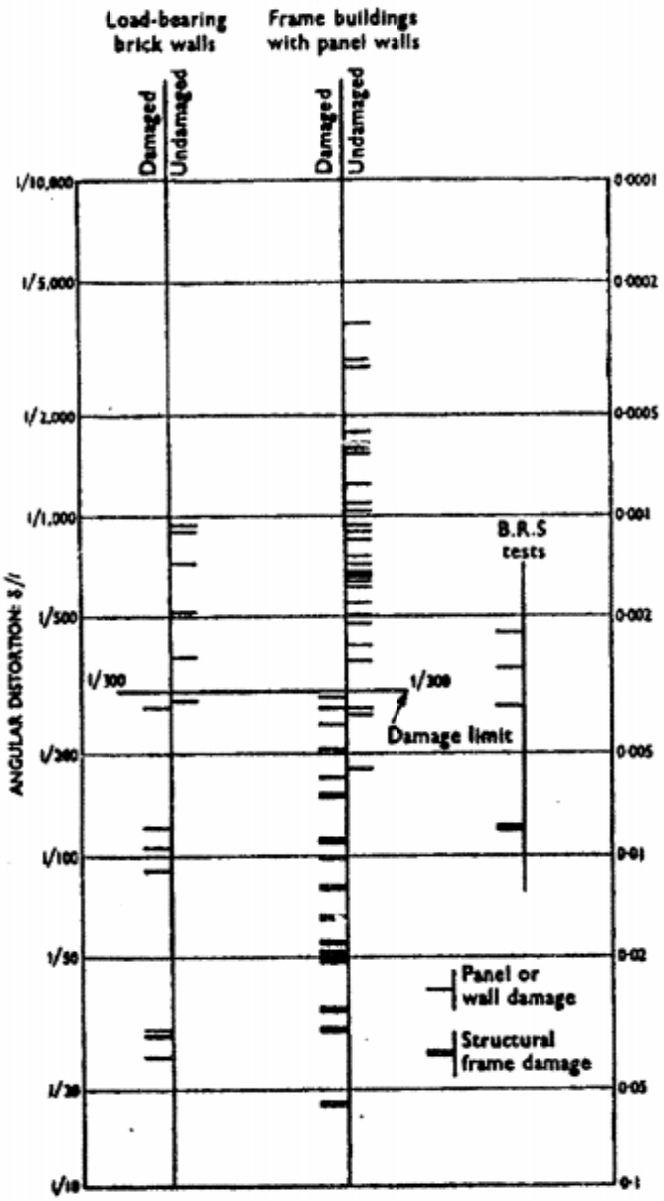
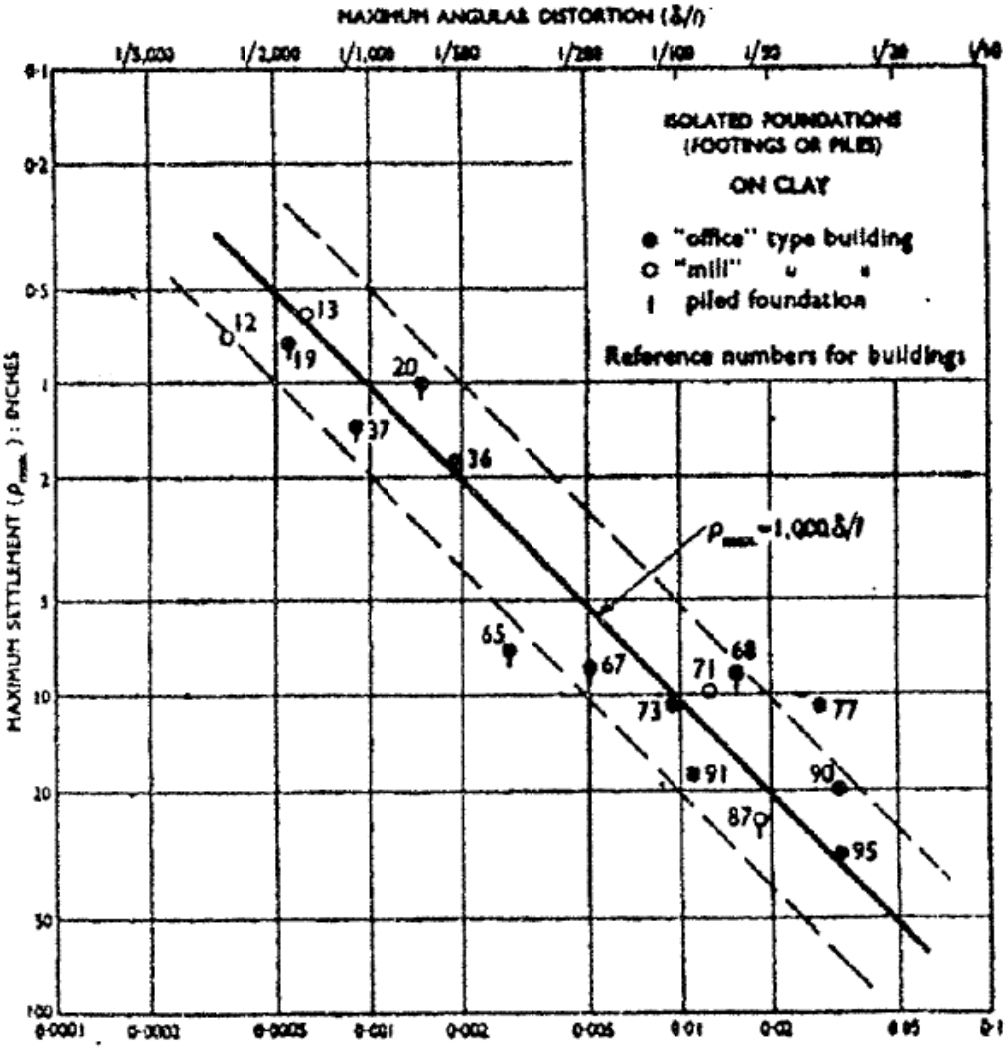


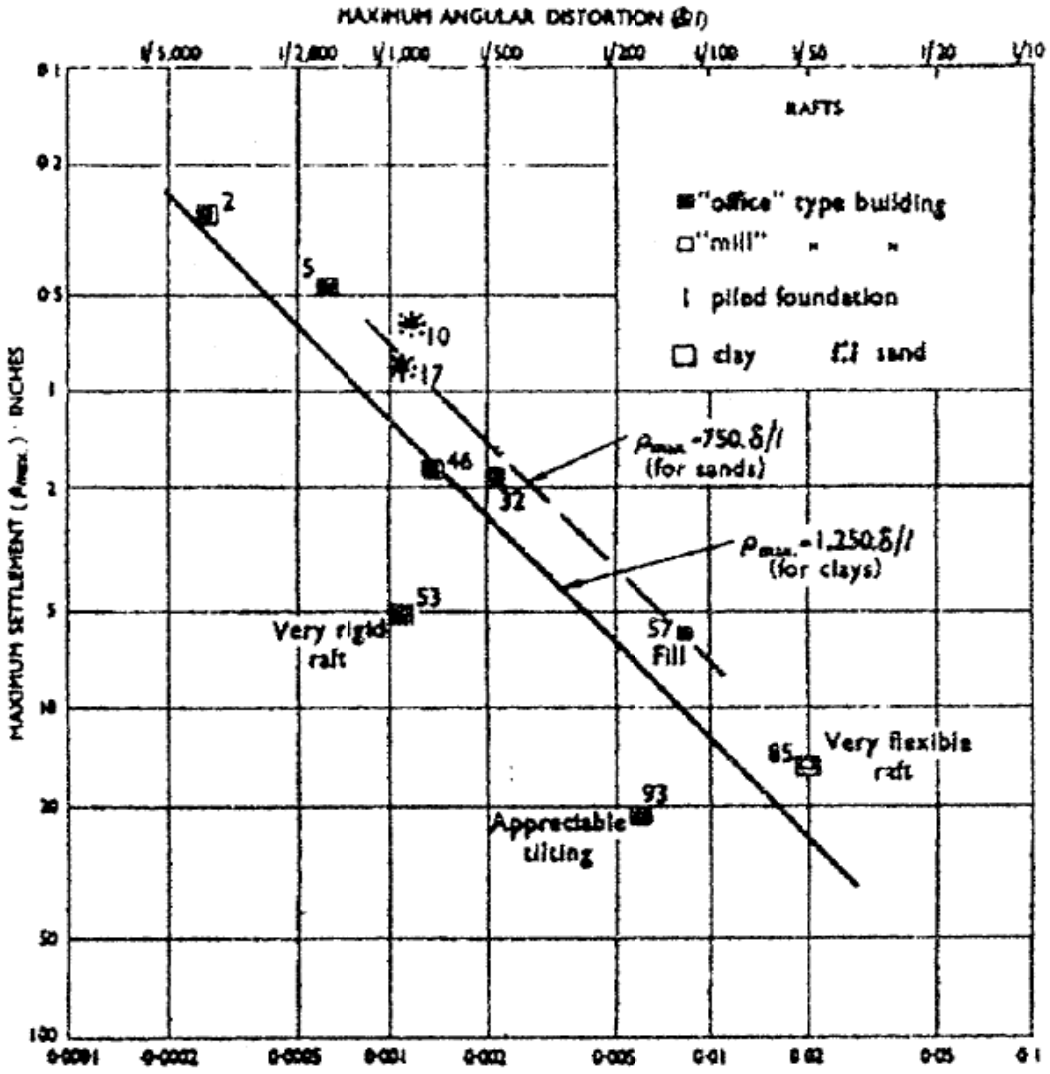
Figure 2: Skempton and MacDonald's analysis of field evidence of damage on traditional frame buildings and loadbearing brick walls

Data from Skempton abnd MacDonald's work suggest that the limiting value of angular distortion is 1/300. Angular distortion, greater than 1/300 produced visible cracking in the majority of buildings studied, regardless of whether it was a load bearing or a frame structure. As shown in the figure 2.

Other key findings by Skempton and MacDonald include limiting values of δ/l for structure, and a relationship between maximum settlement, ρmax and δ/l for structures founded on sands and clays. The charts below show these relations for raft foundations and isolated footings.



CROFT STRUCTURAL ENGINEERS



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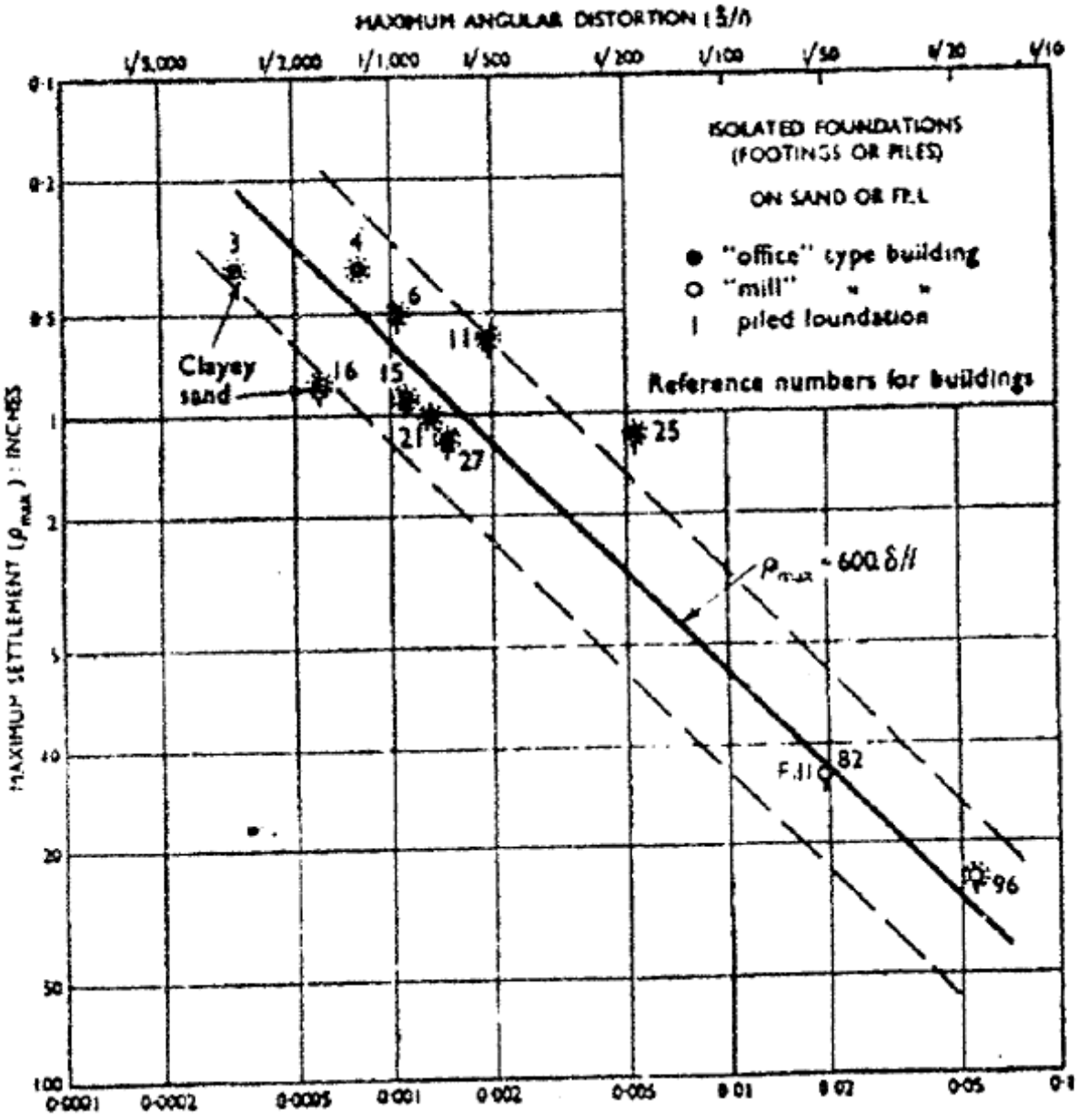


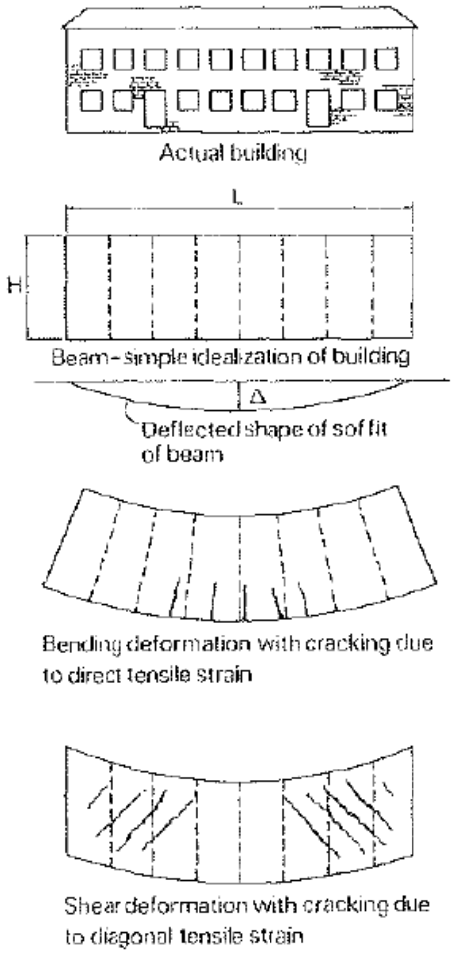
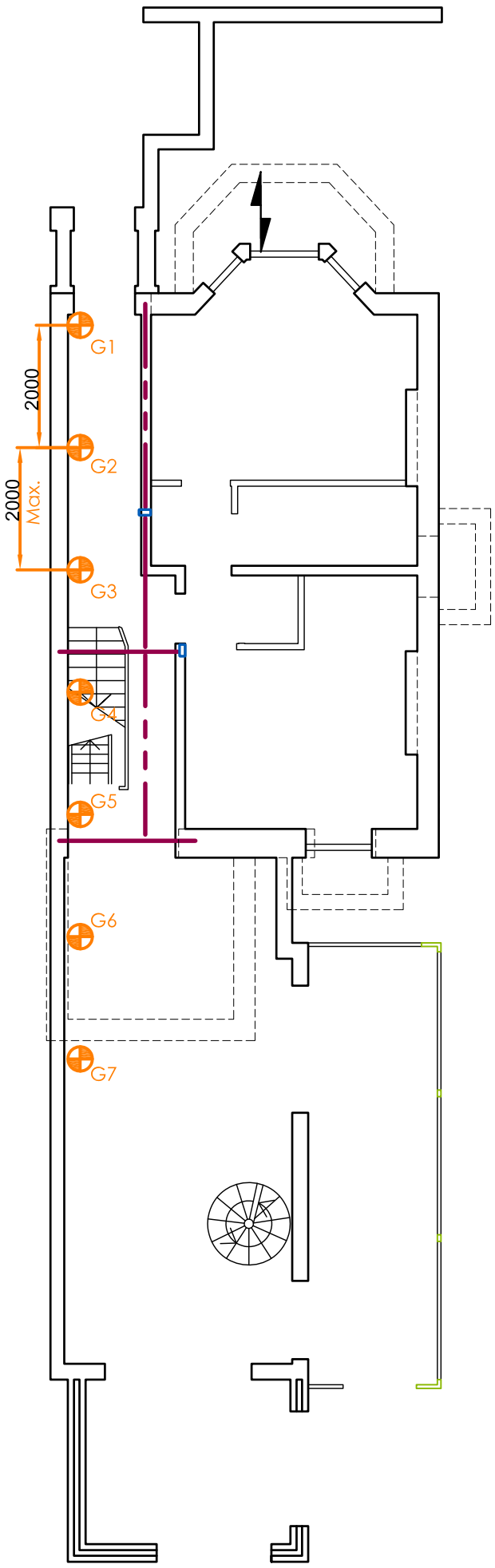


TABLE I

Angular distorsion	Characteristic situation
1/300	Cracking of the panels in frame buildings of the traditional type, or of the walls in load-bearing wall buildings;
1/150	Structural damage to the stanchions and beams;
1/500	Design limit to avoid cracking;
1/1000	Design limit to avoid any settlement damage.



Ground floor plan

Scale (1:100)

Movement	Category	Action
0mm-7mm	Green	No Action Required
7mm-12mm	Amber	Crack Monitoring: Carry out a local structural review; Preparation for the implementation of remedial measures should be required
>12mm	Red	Crack Monitoring: Implement structural support as required; Cease works with the exception of necessary works for the safety and stability of the structure and personnel; Review monitoring data and implement revised method of works

Key

Denotes position of Leveling Targets, fixed to party wall 500mm & 2000mm above Ground Floor Level.Additional monitoring may be required for any cracking noted in the Party Wall Surveyor's survey.

Rev	Date	Amendments
-	14/01/15	First issue for comment

Client: Advantage Basement & Cellar Company Ltd.

Project: 106 Savernake Road

Title : Monitoring positions

Job No.s	Drawn	Date
141208	VLD	Jan 15
Dwg Nos	Rev	Scale
M-10	-	As Shown @ A3

Croft Structural Engineers
Clockshop Mews,
Rear 60 Saxon Rd,
London, SE25 5EH
0208 684 4744
www.croftse.co.uk

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Appendix F

Uplift and Movement Calculations

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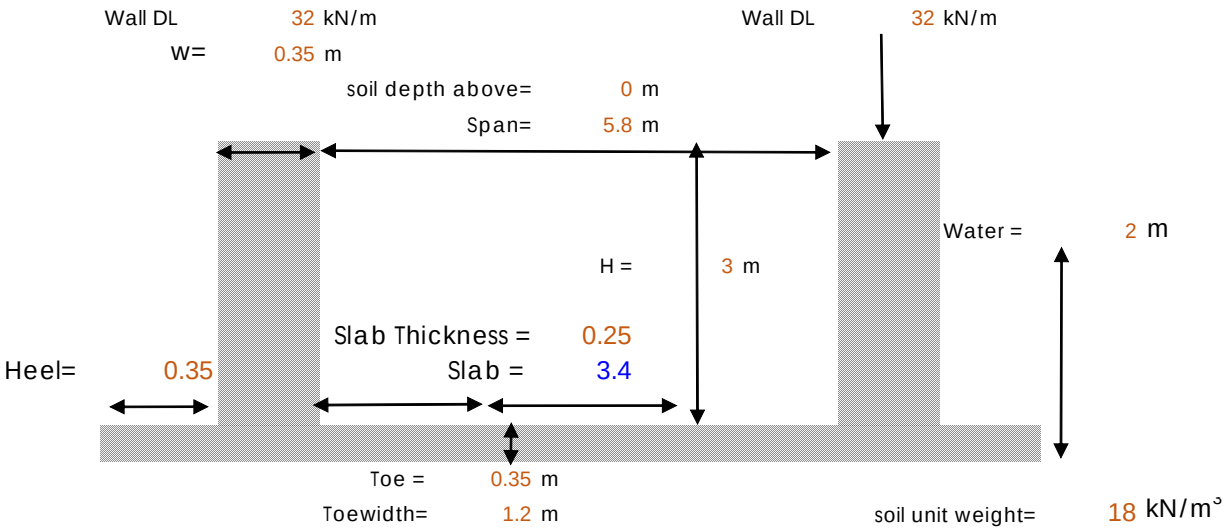
Ref

Slab Uplift



Uplift Calc

Total Dead Load =	Slab=	21.25 kN/m			
	Toe and heel =	33.25 kN/m			
	Wall =	52.5			
	Soil=(	11.9 +	) x 2 +	0 =	23.8 14
	Total Dead load =	194.8 kN/m			
Total Uplift Force=		130 kN/m	f.o.s.=	1.5	No Global Uplift

Slab Uplift

Slab =	6.25 kN/m	Uplift =	20
Service Moment =	-57.8188 kNm/m		
Factored Design moment=	-68.8569 kNm/m		
Factored Design shear =	-47.4875 kN/m		

Global Heave

Weight of building =	194.8 kN/m		
Weight of soil removed =	351		
% change	45%	place	45% of Slab area as heave protection
width of heave protection =	2.89259 m	place	2.89 m of Slab area as heave protection

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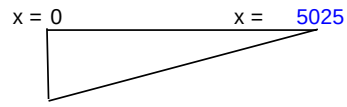
Ref

Settlement

Movement Assessment CIRIA C580: Embedded retaining walls - guidance for ecomonic design

Potential movement due to installation of wall — using parameters from Table 2.2 of CIRIA C580

Horizontal Surface Movement / Wall Depth				=	0.05%	
max δ_h =	0.05%	x	3350	=	1.675	mm
Distance behind wall wall to neglibible movement (mulitple of wall depth)				=	1.5	
L =	3350	x	1.5	=	5025	mm
Vertical Surface Movement / Wall Depth				=	0.05%	
max δ_v =	0.05%	x	3350	=	1.675	mm
Distance behind wall wall to neglibible movement (mulitple of wall depth)				=	1.5	
L =	3350	x	1.5	=	5025	mm
movment gradient (vertical and horizontal)				=	0.3	mm/m



(distances are measured from underpinned wall)

δ_v = 1.7 mm

δ_h = 1.7 mm

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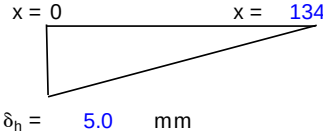
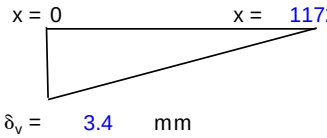
Potential movement due to excavation of wall — using parameters from Table 2.4 of CIRIA C580 (excavation will be propped during construction)

Horizontal Surface Movement / Wall Depth				=	0.15%	
max δ_h =	0.15%	x	3350	=	5.025	mm
Distance behind wall wall to neglibible movement (mulitple of wall depth)				=	4	
L =	3350	x	4	=	13400	mm
Movment gradient (horizontal)				=	0.4	mm/m



(distances are measured from underpinned wall)

Vertical Surface Movement / Wall Depth				=	0.10%	
max δ_v =	0.10%	x	3350	=	3.35	mm
Distance behind wall wall to neglibible movement (mulitple of wall depth)				=	3.5	
L =	3350	x	3.5	=	11725	mm
movment gradient (vertical)				=	0.3	mm/m



(distances are measured from underpinned wall)

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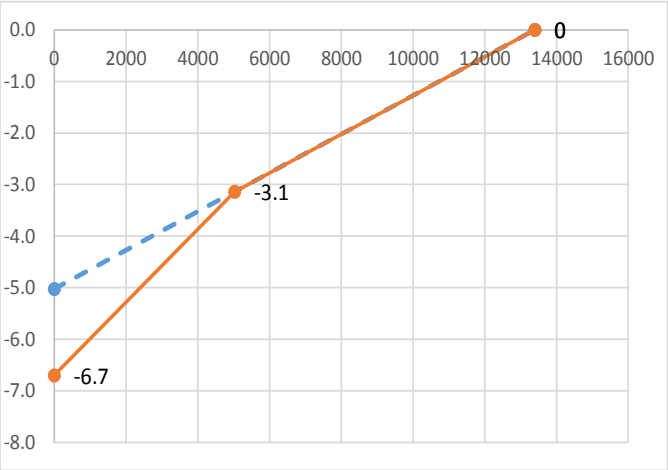
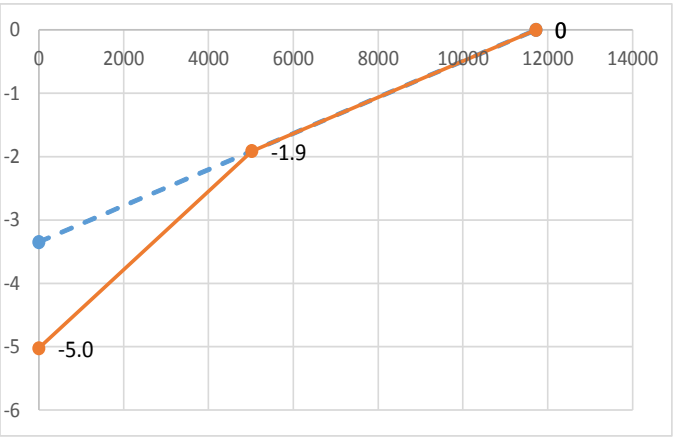
Horizontal Movement	x	δ_h
Excavation	0	-5.0
	13400	0
Installation	0	-1.7
	5025	0
Total movement	0	-6.7
	5025	-3.1
	13400	0



Determine Horizontal Movement

max δ /m = 6.7 mm / 13400 mm = 0.05%

Vertical Movement	x	δ_v
Excavation	0	-3.35
	11725	0
Installation	0	-1.7
	5025	0
Total movement	0	-5.0
	5025	-1.9
	11725	0



Determine Vertical Movement

δ_v = 5.025 mm / 11725 mm = 0.04%

Table 2.5 CIRIA C580

Category of Damage	Normal Degree	Limiting Tensile Strain %		
0	Negligible	0.00%	-	0.05%
1	Very slight	0.05%	-	0.075%
2	Slight	0.075%	-	0.15%
3	Moderate	0.15%	-	0.30%
4 to 5	Severe to Very Servere		>	0.30%
5				

Anticipated Damagae May be Categorised as **'Negligible' to 'Very Slight' ; Category 0-1**

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Appendix G

Ground Water Report

H FRASER CONSULTING
CONTAMINATED LAND AND HYDROGEOLOGY

106 Savernake Road
Basement Impact Assessment: Groundwater




Prepared for: Croft Structural Engineers
Clock Shop Mews,
Rear of 60 Saxon Rd,
SE25 5EH

Date: 23/01/2015
Status: Final
Reference: 30061R1

Prepared by: H Fraser Consulting Ltd

H FRASER CONSULTING LTD
T: 01743 352797 M:07527 006625 E:hfraser@hfraserconsulting.co.uk www.hfraserconsulting.co.uk
Registered Company No 07712855

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FIGURES

TABLES

APPENDICES

1. INTRODUCTION

Croft Structural Engineers Ltd (Croft SE) has instructed H Fraser Consulting Ltd (HFCL) to provide the hydrogeological aspects of a Basement Impact Assessment at the following property:

106 Savernake Road, NW3 2JR.

The site is in the London Borough of Camden.

1.1 Objective

The objective of this report is to provide the hydrogeological aspects of a Basement Impact Assessment to support a planning application for construction of a basement at 106 Savernake Gardens.

1.2 Scope of works

The following works have been undertaken:

- Desk study
- Screening assessment with regards to groundwater
- Scoping assessment to identify potential impacts
- Impact assessment with regard to groundwater attributes
- Reporting

The work has been undertaken in accordance with the requirements of London Borough of Camden (LBC) Planning Guidance CPG4 'Basements and Lightwells' (referred to as CPG4) and Arup's 'Geological Hydrogeological and Hydrological Study, Guidance for Subterranean Development' (Arup, 2012, referred to throughout this report as the GHHS).

This assessment is limited to an assessment of the hydrogeological aspects of the proposed development and does not purport to make any comment on surface water flooding, contamination or pollution, engineering, slope stability, design or construction issues.

The work has been undertaken by Hannah Fraser, Director of HFCL, who is a Chartered Geologist with 17 years' experience as a hydrogeologist and consultant.

2 BACKGROUND INFORMATION

Background information has been derived from a Groundsure report for the site (Appendix A); geological information has been derived from on-line BGS sources (Geology of Britain Viewer, GeoIndex, Lexicon); on-line mapping and aerial photography have been derived from Streetmap and GoogleEarth. Table 2.1 presents relevant background information for the site. The site location is shown in Figure 2.1.

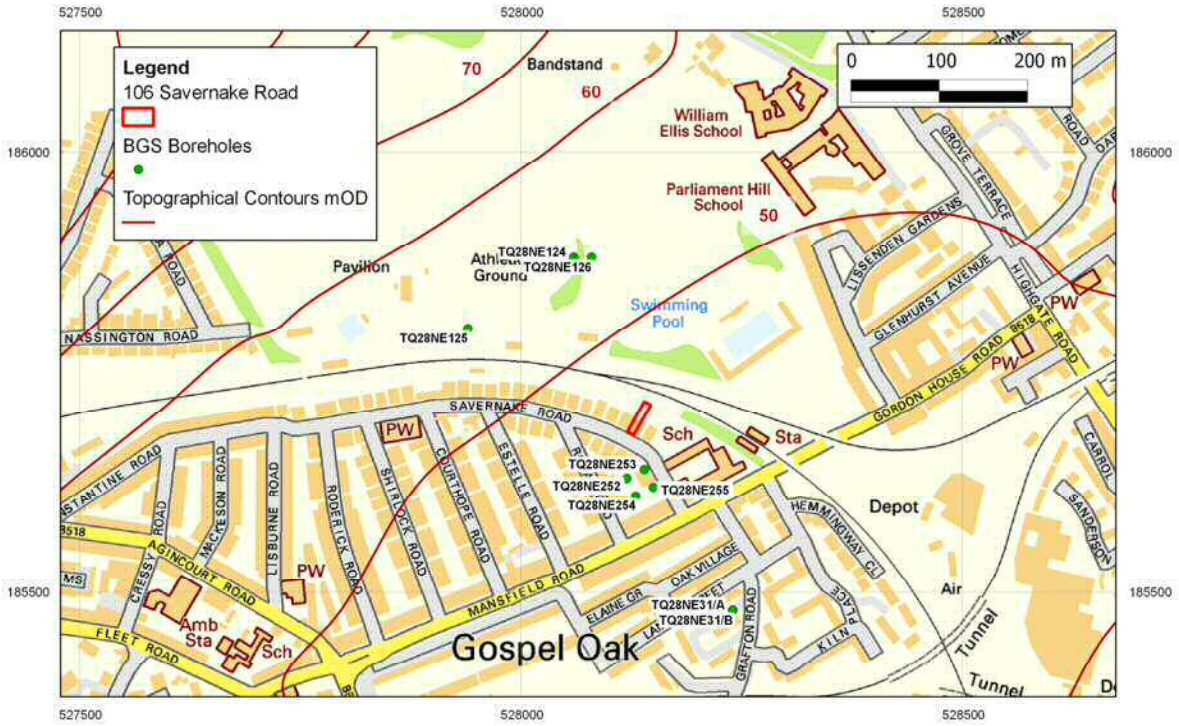


Figure 2.1 Site location

Table 2.1 Background information

Address	106 Savernake Road, NW3 2JR.
NGR	528128,185686
Description	The site comprises a semi-detached property with a small paved front garden and larger rear garden. The approximate site area is estimated as 300 m^2. The house comprises a four storey building, the fourth storey being housed in the roof with dormer windows to the front and rear. The area of the footprint of the house is approximately 105m^2. Aerial photography shows the garden to have some grass and several large trees, but the extent of hard ground cover is not known. A narrow cellar is located below the ground floor hallway, with access via stairs extending down from the hallway. The area of the existing cellar footprint is 7.4 m^2, and the depth of the cellar is c. 1.4 m bgl. Plans of the existing ground floor and basement and a section are shown in Appendix B. A search of planning records indicate that neither of the adjacent properties have applied for planning permission for development of a

	basement between 01 January 1925 and 31 December 2015. Topographical data shows the site to be just below the 50 m Ordnance Datum (OD) contour. Locally, the ground rises to the northwest, towards Parliament Hill and Hampstead Heath. Figure 2.1 shows topographical contours for the local area.
Proposed development	The proposed development is to expand the cellar so that the basement level extends below the ground floor footprint, with lightwells at the front, and sides of the property. The basement is not proposed to extend fully to the back of the house or underneath existing garden areas; the area of the proposed basement is c. 64 m^2, and the area of lightwells is estimated as c. 9 m^2. The depth of the basement will be approximately 3 to 3.5 m bgl. Proposed site plans and sections are included in Appendix B.
Geology	Geological mapping[1] shows the area to be underlain by London Clay. The London Clay is extensive across the area; the overlying Claygate member and Bagshot Formation outcrop to form the elevated area of Hampstead Heath, with the closest outcrop of the Claygate member approximately 550 m northwest. The London Clay mainly comprises bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay. It commonly contains thin courses of carbonate concretions ('cementstone nodules') and disseminated pyrite. It also includes a few thin beds of shells and fine sand partings or pockets of sand, which commonly increase towards the base and towards the top of the formation. At the base, and at some other levels, thin beds of black rounded flint gravel occur in places. Glauconite is present in some of the sands and in some clay beds, and white mica occurs at some levels[2] There are no superficial deposits mapped at the site, the closest outcrop of superficial deposits is approximately 3 km to the east-southeast.[3] Table 2.2 presents geological data from selected BGS borehole records[4], and Figure 2.1 shows the location of the boreholes. The local borehole records confirm the presence of London Clay, with Made Ground variably present or absent. A site investigation was undertaken by Ground and Water Limited on the 13th December 2014 and comprised the drilling of one window sampler borehole (WS1) to a depth of 6.00m bgl and the hand excavation of two trial pit foundation exposures (TP/FE1 and TP/FE2). The investigation confirmed that the site is underlain by Made Ground and London Clay. Site investigation data are provided in Table 2.3.
Aquifer status	The London Clay is classified by the Environment Agency as unproductive strata (rock layers with low permeability and negligible significance for water supply or river base flow). The site is not within a source protection zone of a public water supply.

[1] http://mapapps.bgs.ac.uk/geologyofbritain/home.html
[2] http://www.bgs.ac.uk/lexicon/lexicon.cfm?pub=LC
[3] http://mapapps.bgs.ac.uk/geologyofbritain/home.html
[4] http://mapapps2.bgs.ac.uk/geoindex/home.html

	BGS borehole records indicate that groundwater was commonly observed in local boreholes and trial pits, at depths ranging from 1.2 m bgl to 4.27 m bgl (see Table 2.2). During the recent site investigations (Ground and Water, 2015) a groundwater seepage was encountered during drilling at WS1, at 2.3 m bgl. The borehole was fitted with a piezometer to 5 m bgl. A second groundwater measurement of 1.65 m bgl was made on 9 January 2015. Groundwater measurements are presented in Table 2.4.
Watercourses	A Groundsure report[5] for the site states that there is a culvert 180 m northeast of the site. This may be the culverted River Fleet, which is understood to be culverted from the outflow of the Highgate Ponds. Parliament Hill Lido lies approximately 120 m northeast of the site, and a children's paddling pool lies approximately 310 m northwest of the site. These features are likely to be sealed from the local groundwater system. There are no surface water abstractions within 1 km of the site.[6]
Spring lines	There are no springs shown on OS mapping, and no known local geological features that might give rise to springs.
Wells	There are no groundwater abstraction licences within 1 km of the site. A water well is recorded at Water works, Highgate Road, 500 m northeast of the site (ref TQ 28/12). This corresponds to borehole record TQ28NE14.[7]
Groundwater flooding	British Geological Survey Groundwater flood risk mapping reports there to be no groundwater flooding susceptible areas within 50 m of the site, and the area is not considered prone to groundwater flooding, based on rock type.[8]

[5] Groundsure report
[6] Groundsure report
[7] http://mapapps2.bgs.ac.uk/geoindex/home.html
[8] Groundsure report

Table 2.2 BGS Borehole records

Reference	Name	Length (m)	Easting	Northing	Description
TQ28NE125	Parliament Hill Fields TBAA-CC E1-E2	1	527940	185800	Hard to stiff light brown clay blue in fissures with sand inclusions. Seepage noted at 2.7 m bgl (approximately 51 m OD) at TQ28NE126.
TQ28NE124	Parliament Hill Fields TBAA-CC E1-E2	3	528060	185880	
TQ28NE126	Parliament Hill Fields TBAA-CC E1-E2	3	528080	185880	
TQ28NE252	Gospel Oak Nursery School TPA	2	528120	185630	Made Ground (brown silty sandy clay with bricks, concrete fragments and gravel) to 0.2 m; firm to stiff brown fissured silty clay (London Clay) to 2 m. Water at 1.7 m bgl (42.2 m OD)
TQ28NE254	Gospel Oak Nursery School TPC	2	528130	185610	Made Ground (brown silty sandy clay with bricks, concrete fragments and gravel) to 0.7 m; Made Ground (crushed bricks) to 0.8 m; firm to stiff brown fissured silty clay (London Clay) to 2 m. Water at 1.7 mbgl (42.2 m OD)
TQ28NE253	Gospel Oak Nursery School TPB	1	528140	185640	Made Ground (brown silty sandy clay with bricks, concrete ash and gravel) to 0.3 m; firm to stiff brown fissured silty clay with occasional roots and rootlets (London Clay) to 1.3 m.
TQ28NE255	Gospel Oak Nursery School TPD	2	528150	185620	Made Ground (brown silty sandy clay with bricks, concrete fragments and gravel) to 0.4 m; Made Ground (crushed bricks) to 0.65 m; firm to stiff brown fissured silty clay (London Clay) to 1.9 m. Water at 1.7 mbgl (42.2 m OD)
TQ28NE31/B	Lamble Street St Pancras	6.4	528240	185480	Fill to 1.22 m, soft silty clay to 1.45 m, brown mottled clay to 2.13 m, firm brown clay to 6.4 m. Water struck at 1.2 m
TQ28NE31/A	Lamble Street St Pancras	10.97	528240	185480	Made ground to 4.11 m; soft brown clay to 4.34 m; brown mottled clay to 5.03 m; firm brown clay to 10.97 m. Water struck at 4.27 m bgl, standing water at 3.05 m bgl

The borehole records in Table 2.2 were selected from the BGS on-line Geoindex[9] as those records within 250 m of the site.

[9] http://mapapps2.bgs.ac.uk/geoindex/home.html

Geological data from site investigations in December 2014 are presented in Table 2.3.

Table 2.3 Site investigation data

Strata	Depth Encountered (m bgl)	Thickness (m)
PATIO SLAB AND SUB-BASE	Ground level	0.20
MADE GROUND (Light to dark brown, locally black, slightly clayey sandy gravel to slightly sandy gravelly clay. Sand is fine to coarse grained. Gravel is occasional to abundant, fine to coarse, sub-rounded to angular brick, flint and concrete)	0.20	0.20 – 0.40
MADE GROUND (Light brown, brown to orange brown slightly gravelly silty clay. Gravel is rare to occasional, fine to coarse, sub-rounded to sub-angular brick, concrete and flint).	0.40 – 0.60	>0.40 – 0.90
LONDON CLAY FORMATION BH1 ONLY (Brown, with blue grey mottling, silty CLAY)	1.50	>4.50

Groundwater dip data were recorded by Ground and Water Ltd; the groundwater elevation data are presented in Table 2.4.

Table 2.4 Groundwater level data

Date	Dip (m bgl)	Reduced groundwater elevation (m OD)*
13.12.14	2.3	46.7
9.1.15	1.65	47.35

*Assumes a ground elevation of 49 m OD based on OS topographical data. Accuracy is likely to be +/- 1 m

3 SCREENING

A screening assessment has been undertaken in accordance with the methodology set out in Section 6.2 and Appendix E2 of the GHHS (Arup, 2012). The results are presented in Table 3.1.

Table 3.1 Screening assessment

Ref	Question	Answer (yes/no/unknown)	Action
Q1a	Is the site located directly above an aquifer?	No	No further action
Q1b	Will the proposed basement extend beneath the water table surface?	Possible	Take forward to scoping stage
Q2	Is the site within 100m of a watercourse, well (used/ disused) or potential spring line?	No	No further action
Q3	Is the site within the catchment of the pond chains on Hampstead Heath?	No	No further action
Q4	Will the proposed basement development result in a change in the proportion of hard surface/paved areas?	Yes	Take forward to scoping stage
Q5	As part of the drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDs)	Unknown	Take forward to scoping stage
Q6	Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to or lower than the mean water level in any local pond or spring line?	No	No further action

4 SCOPING

This section of the report summarises the pertinent information as a Conceptual Model, and then describes the matters of concern that need to be considered in the Impact Assessment.

4.1 Conceptual model

The proposal is to extend an existing cellar to a depth of approximately 3 to 3.5 m bgl and an area of approximately 64 m^2. The new basement will be entirely below the footprint of the existing building, which has an area of approximately 105 m^2, with the exception of three lightwells to the front and sides of the property. The total area of the lightwells is approximately 9 m^2. The depth and area of the existing cellar are 1.4 m and 7.4m^2 respectively.

The underlying geology comprises the London Clay. Site investigation data confirm the presence of London Clay, below clayey Made Ground, proven to 1.5 m bgl. The London Clay is classified as 'unproductive strata', and has low permeability. Groundwater flow within the London Clay is generally negligible, although some groundwater movement may occur on discrete sand partings or other discontinuities. A groundwater seepage was encountered during drilling at the site at a depth of 2.3 m bgl. A second measurement found the groundwater level in the piezometer at 1.65 m bgl. BGS borehole records indicate that groundwater is commonly observed in the London Clay in local boreholes at similar depths. It is considered probable that the proposed excavation will encounter groundwater, and that the basement structure will extend downwards into saturated London Clay.

Given the age of the property and the similarity of surrounding properties, it is considered probable that neighbouring properties have a cellar similar to the existing cellar at the site. If neighbouring cellars underlie the existing hallways, as with the subject site, the distance between the new construction and an existing cellar to the west is likely to be in excess of 10m. If a cellar is present on the eastern side, this would be adjacent to the proposed basement, however it is likely to be on the 'downstream' side of new basement and may therefore not be subject to groundwater level rises. There is therefore the potential for changes in groundwater elevation to impact on existing cellars, although the likely lateral distances and position relative to groundwater flow may mitigate this potential effect.

There are no surface waters within 100 m of the site.

4.2 Matters of concern

Five attributes are considered as potential matters of concern, as discussed below.

1. Groundwater level – the development has the potential to affect groundwater levels, and this is carried forward for further assessment.
2. Range of seasonal fluctuation in groundwater levels – the development has the potential to affect seasonal variations in groundwater levels and this is carried forward for further assessment.
3. Spring/stream hydrographs – there is no evidence that local streams or springs are likely to be affected and these are not considered further.
4. Soil moisture – there is the potential for soil moisture content to be affected, and this is carried forward for further assessment.
5. Water quality – there is no evidence that the development will affect water quality, provided good practice is followed with regard to pollution management. This is not considered further.

5 IMPACT ASSESSMENT

The impact assessment has been undertaken by considering groundwater attributes, how these are likely to change under the proposed development and the consequence of any predicted changes. The assessment is qualitative at this stage. The results are presented in Table 5.1.

Table 5.1 Impact assessment

Groundwater Attribute	Predicted Change	Consequence of change and mitigation
Groundwater levels – groundwater has been measured at 1.65 m bgl at the site	The proposed basement will extend below the measured elevation of groundwater at the site, and has the potential to impede groundwater flow, causing groundwater elevations to rise on the upstream side of the structure and be depressed on the downstream side of the structure. During excavation, there is the potential for groundwater inflow to the excavation, which may have implications for ground stability. Dewatering of the excavation may also have implications for ground stability. The construction of three lightwells may reduce groundwater recharge due by reducing the permeable area of the site. The affected area is not large, the existing ground cover may be impermeable in any case, and recharge to the underlying strata under current conditions is likely to be low, due to the low permeability of the London Clay. The lightwells are therefore not considered likely to have a significant impact on groundwater levels, however disposal of drainage water associated with the lightwells should take into account the requirements of sustainable urban drainage. The drainage arrangements for the proposal are not known, but there is the potential for recharge to groundwater to be reduced if all drainage is directed immediately to surface water drainage systems.	If neighbouring cellars are present, there is the potential that rising groundwater levels might cause groundwater related damage or nuisance to any such cellars. It is recommended that any neighbouring cellars are surveyed to establish pre-construction conditions. Ongoing monitoring during and after construction should also be undertaken. Due to this, and the shallow nature of the observed groundwater, consideration should be given to providing groundwater drainage around the basement structure. Due to the sparsity of data it is recommended that ongoing groundwater monitoring is undertaken as a condition of planning permission being granted. Provision should be made to keep the excavation dry, and to dewater the excavation during construction. The advice of a reputable dewatering contractor, familiar with the type of ground and groundwater conditions encountered on this site, should be sought. The advice of a geotechnical engineer should be sought regarding ground stability issues relating to groundwater ingress and dewatering. The proposed basement structure should be adequately protected against ingress of groundwater. Design of drainage systems should consider the requirements of sustainable urban drainage.
Range of seasonal fluctuation in groundwater levels – the magnitude of seasonal variation has not been	The range of water level variation has not been established.	Due to the shallow levels observed, consideration should be given to providing groundwater drainage pathways around the basement structure.

Groundwater Attribute	Predicted Change	Consequence of change and mitigation
evaluated		
Soil moisture –	Backing up of groundwater may cause the capillary zone in the clay to rise above normal elevations, increasing soil moisture further up the soil profile.	The proposed basement structure should be adequately protected against permeation of soil moisture. Neighbouring cellars (if present) may be impacted by increased soil moisture, and a pre-construction survey with ongoing monitoring should be undertaken.

6 CONCLUSIONS

The proposal is to extend an existing cellar to a depth of approximately 3 to 3.5 m bgl and an area of approximately 64 m^2. The new basement will be entirely below the footprint of the existing building, which has an area of approximately 105 m^2, with the exception of three lightwells to the front and sides of the property. The total area of the lightwells is approximately 9 m^2. The depth and area of the existing cellar are 1.4 m and 7.4 m^2 respectively.

The underlying geology comprises the London Clay. The London Clay is classified as 'unproductive strata', and has low permeability. Groundwater flow within the London Clay is generally low, although some groundwater movement may occur on discrete (and rare) sand partings or other discontinuities. A groundwater seepage was encountered during drilling at the site at a depth of 2.3 m bgl. A second measurement found the groundwater level in the piezometer at 1.65 m bgl. BGS borehole records indicate that groundwater is commonly observed in the London Clay in local boreholes at similar depths.

It is considered likely that the proposed excavation will encounter groundwater, and that the basement structure will extend downwards into saturated London Clay. The proposed basement structure has the potential to impede groundwater flow, causing groundwater elevations and moisture content to rise on the upstream side of the structure and be depressed on the downstream side of the structure. This has the potential to cause nuisance to neighbouring cellars, if they are present. It is recommended that neighbouring cellars, if present, are surveyed to establish pre-construction conditions. Ongoing monitoring during and after construction should also be undertaken. Due to the potential for nuisance, and due to the shallow water table, consideration should be given to providing groundwater drainage around the basement structure.

Due to the sparsity of data it is recommended that ongoing groundwater monitoring is undertaken as a condition of planning permission being granted, to continue until the winter after construction is completed.

The proposed basement structure should be adequately protected against ingress of groundwater. The advice of a reputable contractor should be sought regarding appropriate waterproofing systems.

During excavation, there is the potential for inflow to the excavation, which may have implications for ground stability. Provision should be made to keep the excavation dry, and to dewater the excavation during construction. Dewatering of the excavation may also have implications for ground stability. The advice of a reputable dewatering contractor, familiar with the type of ground and groundwater conditions encountered on this site, should be sought. The advice of a geotechnical engineer should be sought regarding ground stability issues relating to groundwater ingress and dewatering.

The drainage arrangements for the proposal are not known, however disposal of drainage water, including drainage water associated with lightwells, should take into account the requirements of sustainable urban drainage.

7 REFERENCES

Arup, 2012. Geological Hydrogeological and Hydrological Study, Guidance for subterranean development

Ground and Water, 2015. Ground Investigation Report For The Site at 106 Savenake Road, London NW3 2JR. Ref GWPR1123/GIR/JANUARY 2015.

London Borough of Camden CPG4 'Basements and Lightwells'

APPENDIX A

Groundsure report

GroundSure EnviroInsight

Address:	**106, SAVERNAKE ROAD, LONDON, NW3 2JR**
Date:	**14 Jan 2015**
Reference:	**GS-1846253**
Client:	**H Fraser Consulting Ltd**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	20-Apr-2013
Grid Reference:	528128,185686
Site Size:	0.03ha

Contents Page

Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
1.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
1.1.1 Records of historic IPC Authorisations	0	0	0	0
1.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
1.1.3 Records of Water Industry Referrals (potentially harmful discharges to the public sewer)	0	0	0	0
1.1.4 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters)	0	0	0	0
1.1.5 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
1.1.6 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
1.1.7 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	5
1.1.8 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
1.1.9 Records of Licensed Discharge Consents	0	0	0	0
1.1.10 Records of Planning Hazardous Substance Consents and Enforcements	0	0	0	0
1.2 Records of COMAH and NIHHS sites	0	0	0	0
1.3 Environment Agency Recorded Pollution Incidents				
1.3.1 National Incidents Recording System, List 2	0	0	0	1
1.3.2 National Incidents Recording System, List 1	0	0	0	0
1.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 2: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-5000
2.1 Landfill Sites						
2.1.1 Environment Agency Registered Landfill Sites	0	0	0	0	0	Not searched
2.1.2 Environment Agency Historic Landfill Sites	0	0	0	0	0	0
2.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
2.1.4 GroundSure Local Authority Landfill Sites Data	0	0	0	0	0	0
2.2 Landfill and Other Waste Sites Findings						
2.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	5	Not searched	Not searched
2.2.2 Environment Agency Licensed Waste Sites	0	0	0	0	3	0

Section 3: Current Land Use

	On-site	0-50m	51-250	251-500
3.1 Current Industrial Sites Data	0	0	3	Not searched
3.2 Records of Petrol and Fuel Sites	0	0	0	1
3.3 Underground High Pressure Oil and Gas Pipelines	0	0	0	0

Section 4: Geology

4.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	No
4.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	None
4.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 5: Hydrogeology and Hydrology

	0-500m
5.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	No
5.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
5.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	9
5.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	2
5.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	2
5.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
5.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
5.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	0	0	0	0	Not searched	Not searched

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
5.9 Is there any Environment Agency information on river quality within 1500m of the study site?	No	No	No	No	No	No
5.10 Detailed River Network entries within 500m of the site	0	0	1	0	Not searched	Not searched
5.11 Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched

Section 6: Flooding

6.1 Are there any Environment Agency Zone 2 floodplains within 250m of the study site?	No
6.2 Are there any Environment Agency Zone 3 floodplains within 250m of the study site?	No
6.3 Are there any Flood Defences within 250m of the study site?	No
6.4 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
6.5 Are there any areas used for Flood Storage within 250m of the study site?	No
6.6 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Not Prone
6.7 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Not Applicable

Section 7: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
7.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	1
7.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
7.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
7.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
7.5 Records of Ramsar sites	0	0	0	0	0	0
7.6 Records of Ancient Woodlands	0	0	0	0	0	1
7.7 Records of Local Nature Reserves (LNR)	0	0	0	0	1	0
7.8 Records of World Heritage Sites	0	0	0	0	0	0
7.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0
7.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
7.11 Records of National Parks	0	0	0	0	0	0
7.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
7.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
7.14 Records of Green Belt Data	0	0	0	0	0	0

Section 8: Natural Hazards

8.1 What is the maximum risk of natural ground subsidence?	Moderate
8.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Moderate
8.1.2 What is the maximum Landslides hazard rating identified on the study site?	Low
8.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
8.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Negligible
8.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
8.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Negligible

Section 9: Mining

9.1 Are there any coal mining areas within 75m of the study site?	No
9.2 What is the risk of subsidence relating to shallow mining within 150m of the study site?	Negligible
9.3 Are there any brine affected areas within 75m of the study site?	No

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between GroundSure and the Client. The document contains the following sections:

1. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

2. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

3. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure underground oil and gas pipelines.

4. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

5. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

6. Flooding

Provides information on surface water flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

7. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

8. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence.

9. Mining

Provides information on areas of coal and shallow mining.

10. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, GroundSure provide a free Technical Helpline (08444 159000) for further information and guidance.

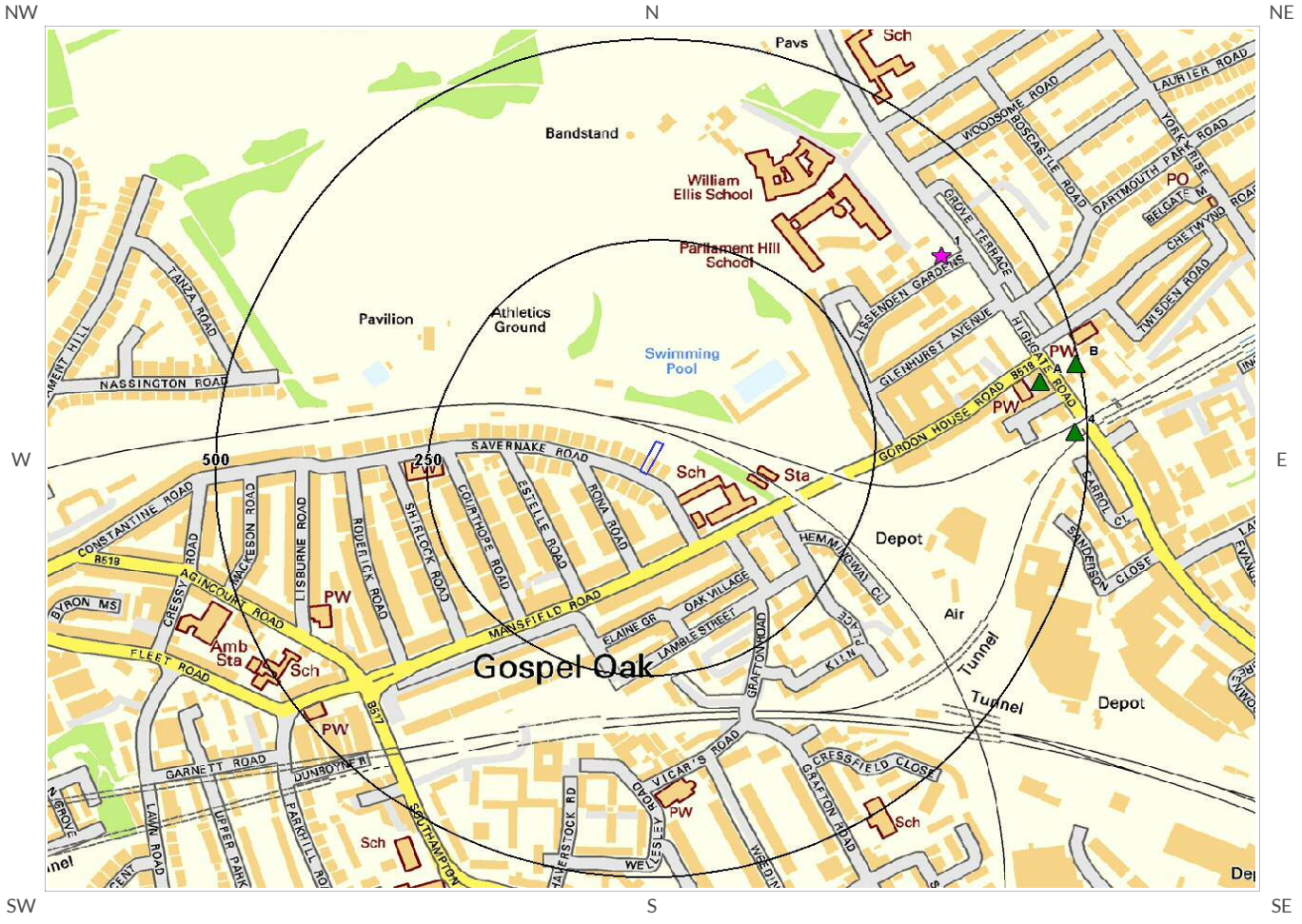
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier “A” on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as “Not Shown”.

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Environmental Permits, Incidents and Registers Map



Environmental Permits, Incidents and Registers Legend

Mapping sourced from Ordnance Survey

- Site Outline
- Search Buffers (m) — 250 — 500
- Recorded Pollution Incident
- Dangerous Substances (List 1)
- Dangerous Substances (List 2)
- Water Industry Referrals
- Licenced Discharge Consents
- Red List Discharge Consents
- RAS 3 & 4 Authorisations
- Part A(1) Authorised Processes and Historic IPC Authorisations
- Part A(2) and Part B Authorised Processes
- COMAH / NIHHS Sites
- Sites Determined as Contaminated Land
- Hazardous Substance Consents and Enforcements

1. Environmental Permits, Incidents and Registers

1.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency and Local Authorities reveal the following information:

1.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

1.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

1.1.3 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

1.1.4 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

1.1.5 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

1.1.6 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

1.1.7 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

5

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance	Direction	NGR	Details	
2A	449.0	E	528590 185788	Address: Perfect Dry Cleaners, 151 Highgate Road, NW5 1JL Process: Dry Cleaner Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
3A	449.0	E	528590 185788	Address: Perfect Dry Cleaners, 151 Highgate Road, NW5 1JL Process: Dry Cleaner Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
4	484.0	E	528631 185726	Address: M & A Coachworks, 135 Highgate Road, Kentish Town, London, NW5 1LE Process: Vehicle respraying Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
5B	496.0	E	528633 185810	Address: ASF Garage Ltd, 138-140 Highgate Road, London, NW5 1PB Process: Petrol Station Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
6B	496.0	E	528633 185810	Address: ASF Garage Ltd, 138 Highgate Road, London, NW5 1PB Process: Petrol Station Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified

---

1.1.8 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

1.1.9 Records of Licensed Discharge Consents within 500m of the study site:

0

Database searched and no data found.

1.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site: 0

Database searched and no data found.

1.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

1.3 Environment Agency Recorded Pollution Incidents

1.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site: 1

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance	Direction	NGR	Details	
1	402.0	NE	528474 185947	Incident Date: 22/08/2001 Incident Identification: 25942 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

1.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site: 0

Database searched and no data found.

1.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site? 0

Database searched and no data found.

2. Landfill and Other Waste Sites Map

NW N NE

W E

SW S SE

Landfill and Other Waste Sites Legend

Mapping sourced from Ordnance Survey

- Site Outline
- Search Buffers (m) 250 / 500
- E.A. Active Landfill
- E.A. Historic Landfill
- Local Authority Landfill
- Historic and Planned Waste Sites
- E.A. Licensed Waste Site
- BGS / DoE Survey Landfill

2. Landfill and Other Waste Sites

2.1 Landfill Sites

2.1.1 Records from Environment Agency landfill data within 1000m of the study site:

0

Database searched and no data found.

2.1.2 Records of Environment Agency historic landfill sites within 1500m of the study site:

0

Database searched and no data found.

2.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

2.1.4 Records of Local Authority landfill sites within 1500m of the study site:

0

Database searched and no data found.

2.2 Other Waste Sites

2.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

5

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details		
1A	482.0	SW	527779 185321	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1953	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

ID	Distance (m)	Direction	NGR	Details		
2A	482.0	SW	527779 185321	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1965	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
3A	483.0	SW	527778 185321	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1965	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
4A	483.0	SW	527778 185321	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1952	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
5A	483.0	SW	527778 185321	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1952	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

2.2.2 Records of Environment Agency licensed waste sites within 1500m of the study site:

3

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
Not shown	815.0	SE	528740 185138	Site Address: Camden London Borough Council, Recycling Centre, Regis Road, Kentish Town, London, NW5 3EP Type: Household Waste Amenity Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LWL001 EPR reference: EA/EPR/GB3230DW/T001 Operator: LondonWaste Ltd Waste Management licence No: 80349 Annual Tonnage: 7793.0	Issue Date: 10/12/1996 Effective Date: 11/05/2012 Modified: 25/01/2002 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Regis Road Recycling Centre Correspondence Address: -, -
Not shown	815.0	SE	528740 185138	Site Address: Camden London Borough Council, Recycling Centre, Regis Road, Kentish Town, London, NW5 3EP Type: Household Waste Amenity Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LWL001 EPR reference: EA/EPR/GB3230DW/T001 Operator: Londonwaste Limited Waste Management licence No: 80349 Annual Tonnage: 7793.0	Issue Date: 10/12/1996 Effective Date: 11/05/2012 Modified: 25/01/2002 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Regis Road Recycling Centre Correspondence Address: -, -
Not shown	815.0	SE	528740 185138	Site Address: Camden London Borough Council, Recycling Centre, Regis Road, Kentish Town, London, NW5 3EP Type: Household Waste Amenity Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CAM001 EPR reference: EA/EPR/DP3091NK/V003 Operator: Camden London Borough Council Waste Management licence No: 80349 Annual Tonnage: 7793.0	Issue Date: 10/12/1996 Effective Date: - Modified: 25/01/2002 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Regis Road Recycling Centre Correspondence Address: -, -

3. Current Land Use Map

NW N NE

W E

SW S SE

Current Land Use Legend

Mapping sourced from Ordnance Survey

Site Outline

Search Buffers (m)

Current Industrial Sites

Petrol & Fuel Sites

Underground High Pressure Oil & Fuel Pipelines

3. Current Land Uses

3.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 3

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	125.0	E	Gospel Oak Rail Station	528266 185674	NW5	Railway Stations, Junctions and Halts	Public Transport, Stations and Infrastructure
2	177.0	W	Electricity Sub Station	527943 185681	NW3	Electrical Features	Infrastructure and Facilities
3	216.0	SW	Electricity Sub Station	527965 185529	NW3	Electrical Features	Infrastructure and Facilities

3.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 1

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
4	491.0	E	528632 185792	Pace	Parliament Hill Service Station, 138-140, Highgate Road, Highgate Road, Kentish Town, London, Greater London, NW5 1PB	No	Open

3.3 Underground High Pressure Oil and Gas Pipelines

Records of high pressure underground pipelines within 500m of the study site: 0

Database searched and no data found.

4. Geology

4.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

4.2 Superficial Ground and Drift Geology

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

4.3 Bedrock and Solid Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
LC-CLSS	LONDON CLAY FORMATION	CLAY, SILT AND SAND

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

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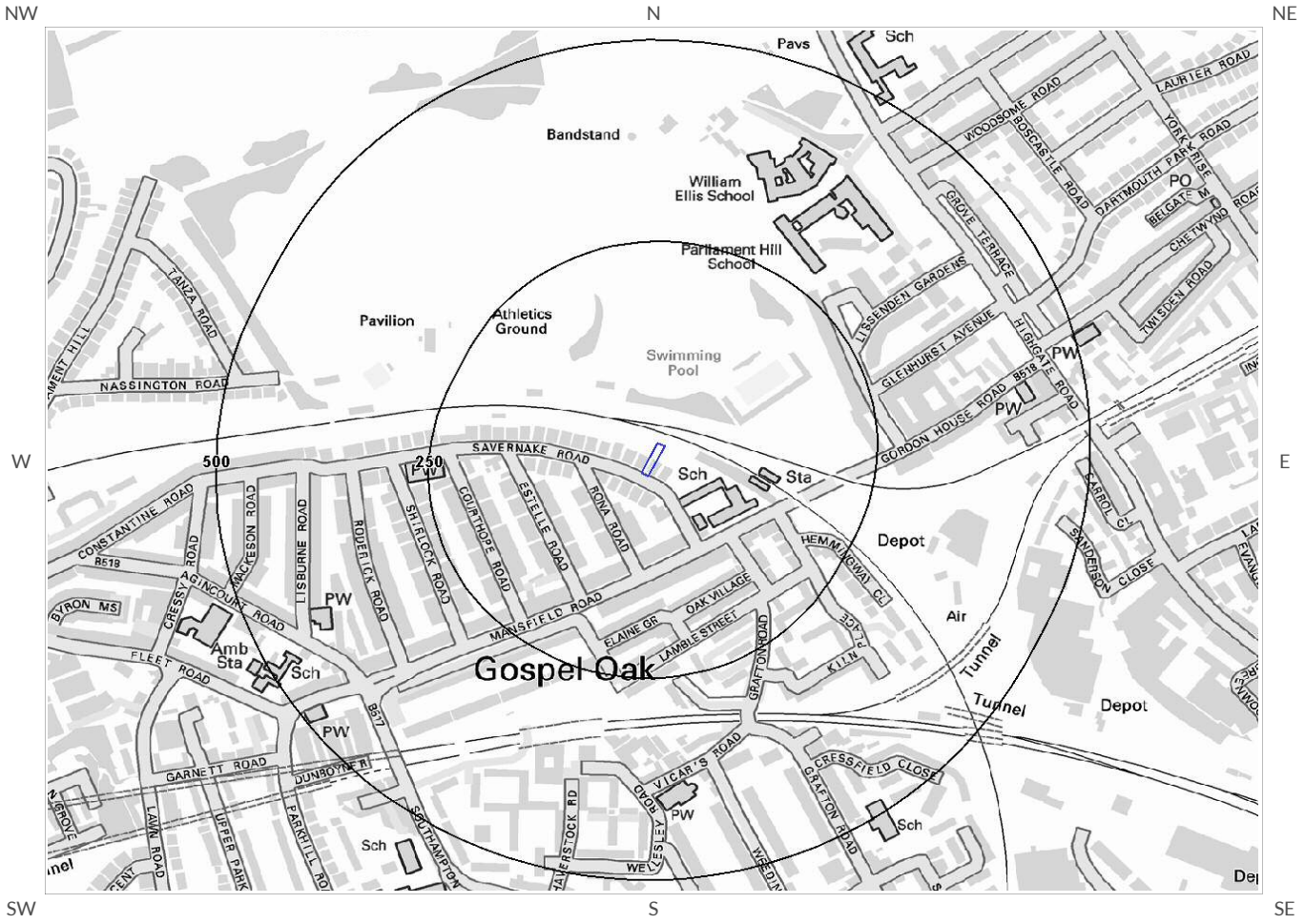
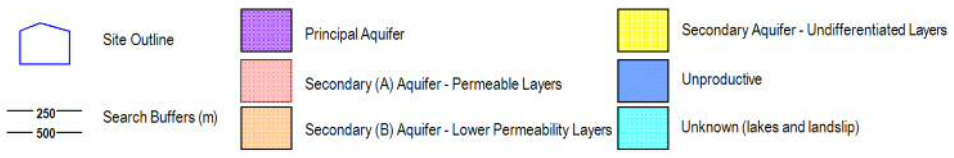
5. Hydrogeology and Hydrology

5a. Aquifer Within Superficial Geology

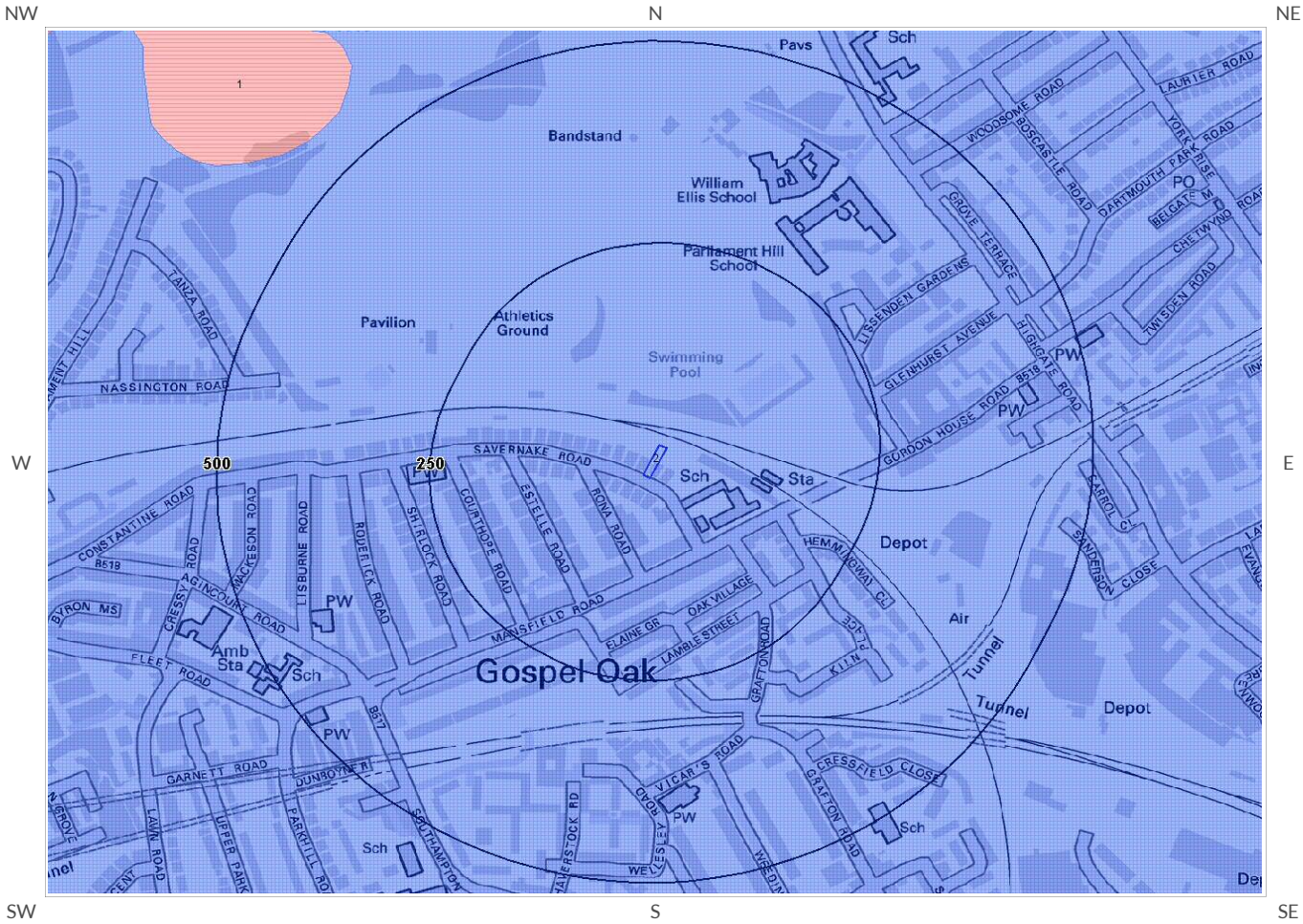


Aquifer Within Superficial Geology

Mapping sourced from Ordnance Survey



5b. Aquifer Within Bedrock Geology and Abstraction Licenses



Aquifer Within Bedrock Geology and Abstraction Licenses

Mapping sourced from Ordnance Survey

Site Outline

Search Buffers (m) 250 500

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Secondary Aquifer - Undifferentiated Layers

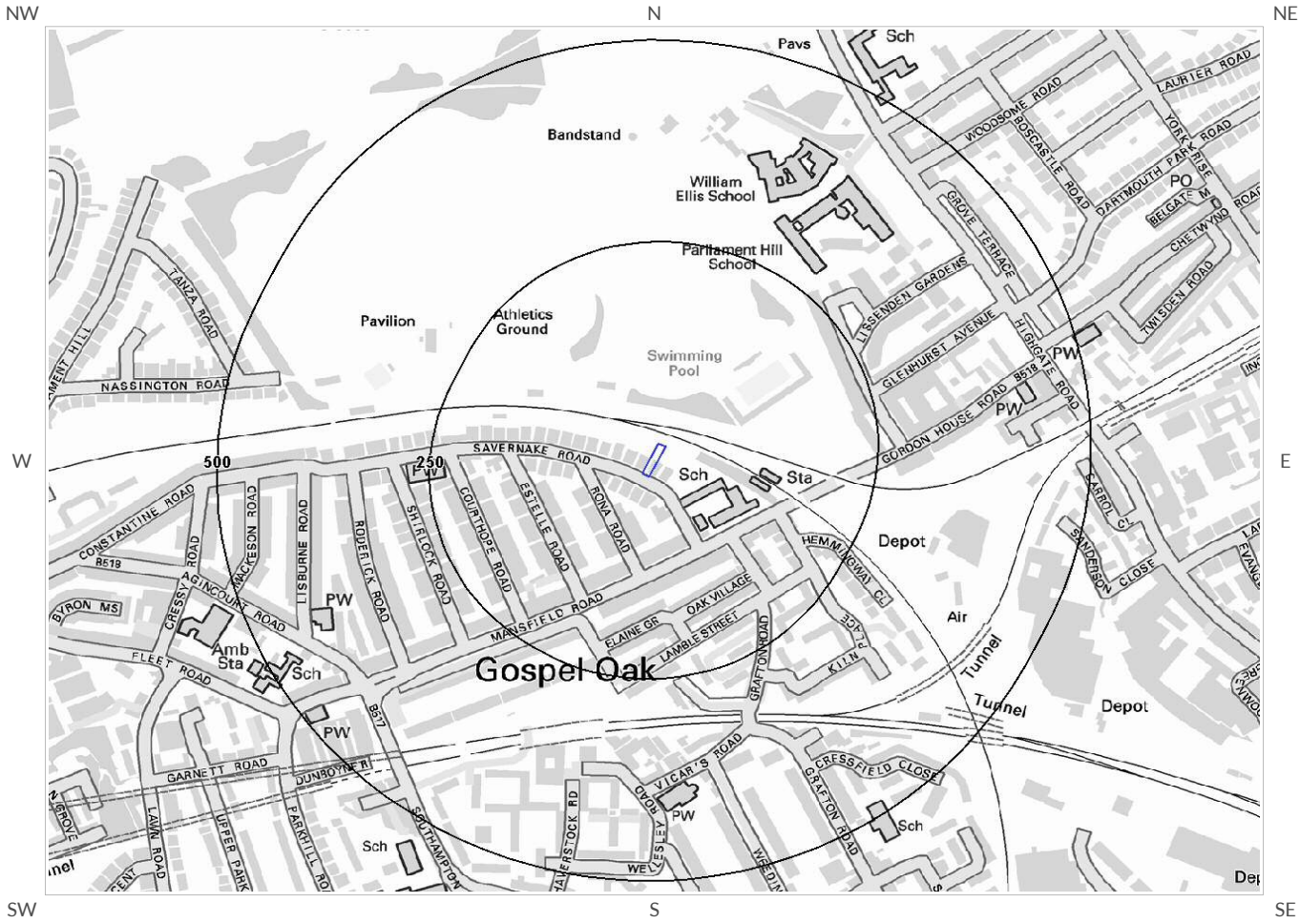
Unproductive

Unknown (lakes and landslip)

Groundwater Abstraction Licence

Surface Water Abstraction Licence

5c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



Map LegendSource Protection Zonesand PotableWater Abstraction Licenses

Mapping sourced from Ordnance Survey®

Site Outline

250 500 Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2 - Outer Catchment

Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

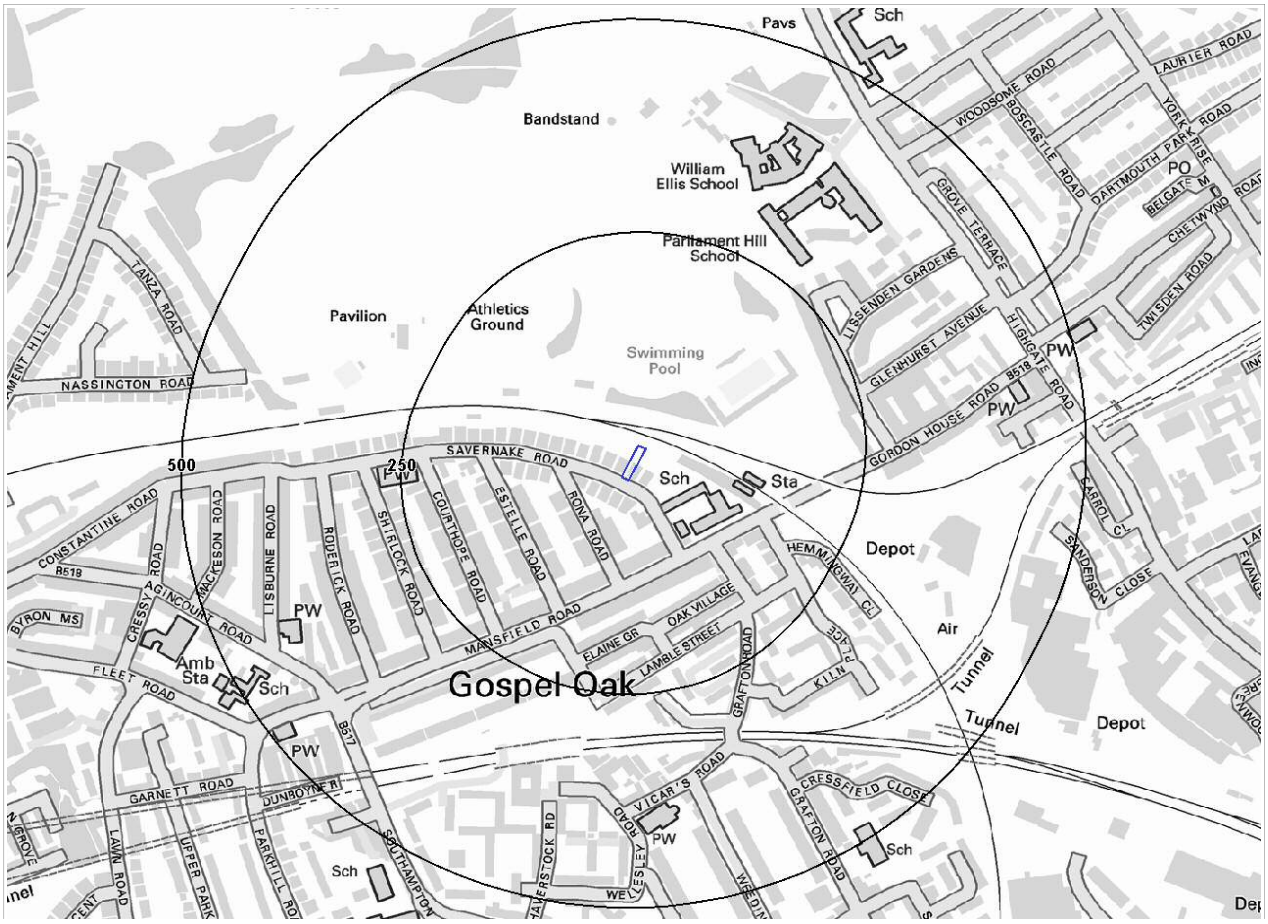
Potable Water Abstraction Licence

5d. Hydrology Source Protection Zones within confined aquifer

NW N NE

W E

SW S SE



Hydrology Source Protection Zones

Mapping sourced from Ordnance Survey

Site Outline

250
500
Search Buffers (m)

Source Protection Zone 1C - Inner Catchment within Confined Aquifer

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

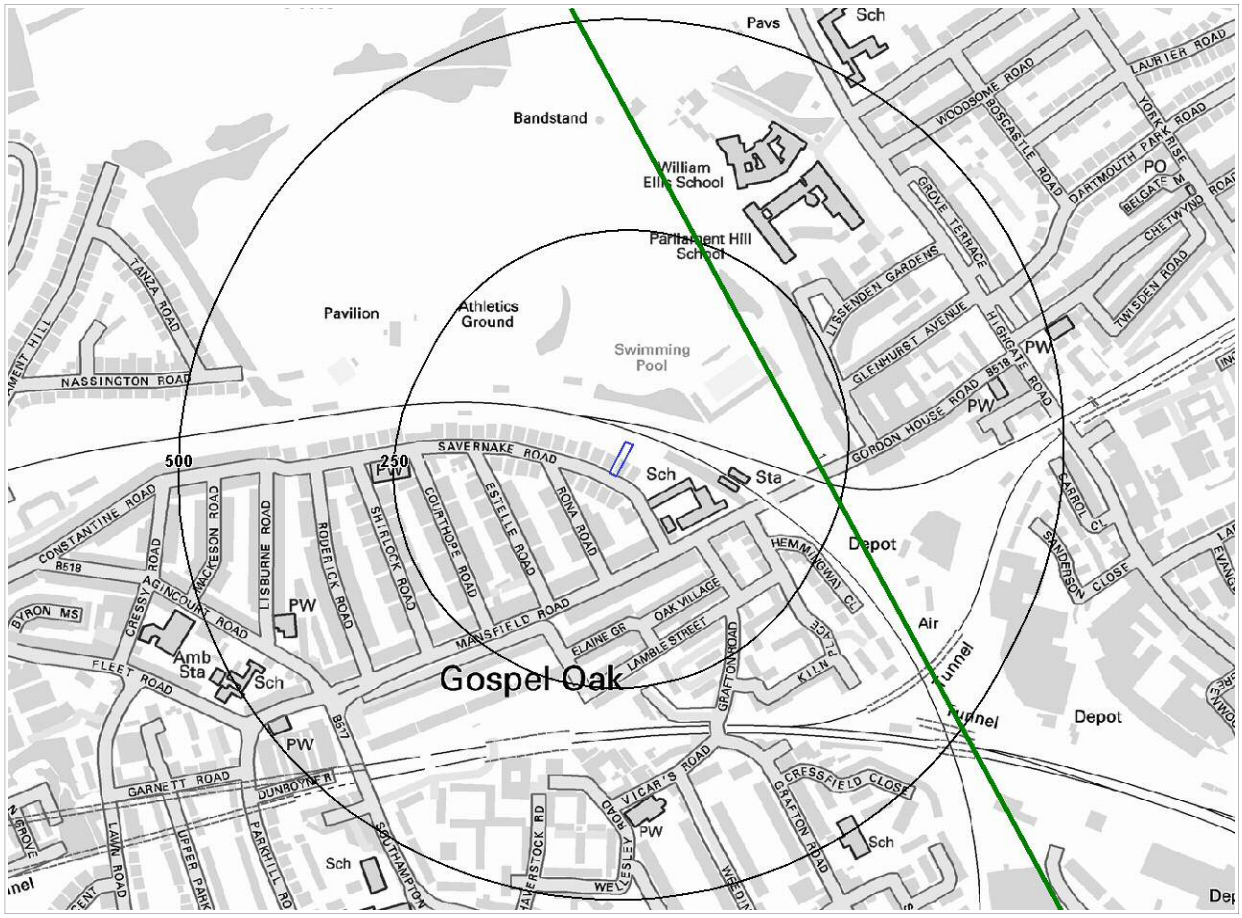
Source Protection Zone 3C - Total Catchment within Confined Aquifer

Potable Water Abstraction Licence

5 e. Hydrology – Detailed River Network and River Quality

NW N NE

W E



SW S SE

Hydrology – Detailed River Network and River Quality

Mapping sourced from Ordnance Survey

Site Outline

250 500 Search Buffers (m)

Primary River
Secondary River
Tertiary River
Lake/Reservoir
Underground River (inferred)
General Quality Assessment: Biology
General Quality Assessment: Chemistry
Canal
Canal Tunnel
Culvert
Multiple Channel Culvert
Underground River (Potential Sewer)
Underground River (local knowledge)

5. Hydrogeology and Hydrology

5.1 Aquifer within Superficial Deposits

Are there records of strata classification within the superficial geology at or in proximity to the property? No

Database searched and no data found.

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the GroundSure Enviroinsight User Guide.

5.2 Aquifer within Bedrock Deposits

Are there records of strata classification within the bedrock geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the GroundSure Enviroinsight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (5b):

ID	Distance (m)	Direction	Designation	Description
2	0.0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

5.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site? Yes

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (5b):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1185.0	SE	528800 184700	Licence No: 28/39/39/0091 Details: Laundry Use Direct Source: Thames Groundwater Point: Two Bores At Kentish Town Sports Centre, Prince Of Wales St Data Type: Point	Annual Volume (m^3): 94506 Max Daily Volume (m^3): 1813.8 Original Application No: NPS/WR/010565 Original Start Date: 13/6/1966 Expiry Date: - Issue No: 101 Version Start Date: 5/4/2012 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1185.0	SE	528800 184700	Licence No: 28/39/39/0091 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Two Bores At Kentish Town Sports Centre, Prince Of Wales St Data Type: Point	Annual Volume (m^3): 94506 Max Daily Volume (m^3): 1813.8 Original Application No: NPS/WR/010565 Original Start Date: 13/6/1966 Expiry Date: - Issue No: 101 Version Start Date: 5/4/2012 Version End Date:
Not shown	1185.0	SE	528800 184700	Licence No: 28/39/39/0091 Details: Process Water Direct Source: Thames Groundwater Point: Two Bores At Kentish Town Sports Centre, Prince Of Wales St Data Type: Point	Annual Volume (m^3): 94506 Max Daily Volume (m^3): 1813.8 Original Application No: NPS/WR/010565 Original Start Date: 13/6/1966 Expiry Date: - Issue No: 101 Version Start Date: 5/4/2012 Version End Date:
Not shown	1185.0	SE	528800 184700	Licence No: 28/39/39/0091 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Kentish Town Sports Centre, Prince Of Wales St Data Type: Point	Annual Volume (m^3): 17997 Max Daily Volume (m^3): 604.6 Original Application No: NPS/WR/010565 Original Start Date: 13/6/1966 Expiry Date: - Issue No: 101 Version Start Date: 25/5/2012 Version End Date:
Not shown	1185.0	SE	528800 184700	Licence No: 28/39/39/0091 Details: Process Water Direct Source: Thames Groundwater Point: Kentish Town Sports Centre, Prince Of Wales St Data Type: Point	Annual Volume (m^3): 17997 Max Daily Volume (m^3): 604.6 Original Application No: NPS/WR/010565 Original Start Date: 13/6/1966 Expiry Date: - Issue No: 101 Version Start Date: 25/5/2012 Version End Date:
Not shown	1923.0	SW	526800 184280	Licence No: 28/39/39/0219 Details: Spray Irrigation - Direct Direct Source: Thames Groundwater Point: Swiss Cottage Open Space- Borehole Data Type: Point	Annual Volume (m^3): 10512 Max Daily Volume (m^3): 28.8 Original Application No: WRA/N/1407 Original Start Date: 12/8/2005 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: 1/4/2008 Version End Date:
Not shown	1972.0	SW	526750 184261	Licence No: TH/039/0039/087 Details: Spray Irrigation - Direct Direct Source: Thames Groundwater Point: Swiss Cottage Open Space- Borehole Data Type: Point	Annual Volume (m^3): 10512 Max Daily Volume (m^3): 28.8 Original Application No: NPS/WR/014567 Original Start Date: 5/12/2013 Expiry Date: 31/3/2025 Issue No: 1 Version Start Date: 5/12/2013 Version End Date:
Not shown	1972.0	SW	526750 184261	Licence No: TH/039/0039/087 Details: General Washing/Process Washing Direct Source: Thames Groundwater Point: Swiss Cottage Open Space- Borehole Data Type: Point	Annual Volume (m^3): 10512 Max Daily Volume (m^3): 28.8 Original Application No: NPS/WR/014567 Original Start Date: 5/12/2013 Expiry Date: 31/3/2025 Issue No: 1 Version Start Date: 5/12/2013 Version End Date:
Not shown	1972.0	SW	526750 184261	Licence No: TH/039/0039/087 Details: Lake & Pond Throughflow Direct Source: Thames Groundwater Point: Swiss Cottage Open Space- Borehole Data Type: Point	Annual Volume (m^3): 10512 Max Daily Volume (m^3): 28.8 Original Application No: NPS/WR/014567 Original Start Date: 5/12/2013 Expiry Date: 31/3/2025 Issue No: 1 Version Start Date: 5/12/2013 Version End Date:

5.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site? Yes

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (5b):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1694.0	S	528490 184020	Licence No: 28/39/39/0173 Details: Non-Evaporative Cooling Direct Source: Thames Surface Water - Non Tidal Point: Oval Road, Camden - Grand Union Regents Canal Data Type: Point	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: 8/12/1994 Expiry Date: - Issue No: 100 Version Start Date: 8/12/1994 Version End Date:
Not shown	1697.0	S	528500 184020	Licence No: 28/39/39/0164 Details: Non-Evaporative Cooling Direct Source: Thames Surface Water - Non Tidal Point: Southampton Bridge, London, Nw8 - Regents Canal Data Type: Point	Annual Volume (m^3): 7010000 Max Daily Volume (m^3): 19520 Application No: - Original Start Date: 18/7/1980 Expiry Date: - Issue No: 101 Version Start Date: 17/12/2007 Version End Date:

5.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? Yes

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (5c):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1185.0	SE	528800 184700	Licence No: 28/39/39/0091 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Kentish Town Sports Centre, Prince Of Wales St Data Type: Point	Annual Volume (m^3): 17997 Max Daily Volume (m^3): 604.6 Original Application No: NPS/WR/010565 Original Start Date: 13/6/1966 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:
Not shown	1185.0	SE	528800 184700	Licence No: 28/39/39/0091 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Two Bores At Kentish Town Sports Centre, Prince Of Wales St Data Type: Point	Annual Volume (m^3): 94506 Max Daily Volume (m^3): 1813.8 Original Application No: NPS/WR/010565 Original Start Date: 13/6/1966 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:

5.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site? No

Database searched and no data found.

5.7 Source Protection Zones within Confined Aquifer

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site?

No

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

5.8 Groundwater Vulnerability and Soil Leaching Potential

Is there any Environment Agency information on groundwater vulnerability and soil leaching potential within 500m of the study site? No

Database searched and no data found.

5.9 River Quality

Is there any Environment Agency information on river quality within 1500m of the study site? No

---

5.9.1 Biological Quality:

Database searched and no data found.

5.9.2 Chemical Quality:

Database searched and no data found.

5.10 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site? Yes

The following Detailed River Network records are represented on the Hydrology Map (5e):

ID	Distance (m)	Direction	Details	
1	180.0	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined

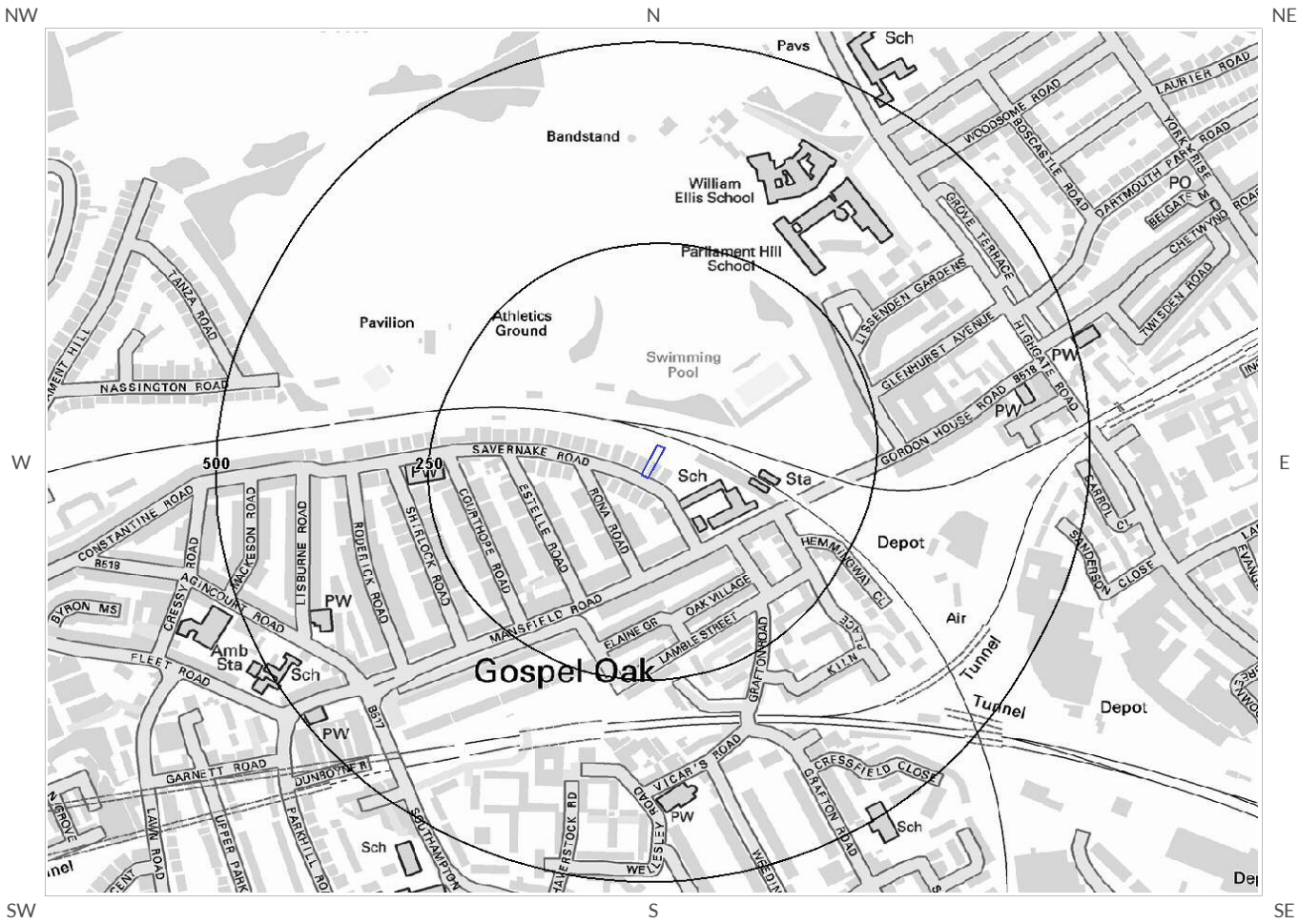
5.11 Surface Water Features

Are there any surface water features within 250m of the study site? Yes

The following surface water records are not represented on mapping:

Distance (m)	Direction
108.0	NE

6. Environment Agency Flood Map for planning (from rivers and the sea)



Environment Agency Flood Map for planning (from rivers and the sea)

Mapping sourced from Ordnance Survey

Site Outline

250
500
Search Buffers (m)

Zone 2 Floodplain

Zone 3 Floodplain

Flood Storage Area

Area Benefiting from Flood Defences

Flood Defences

6. Flooding

6.1 Zone 2 Flooding

Environment Agency Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 1 – Environment Agency Flood Map for Planning:

Is the site within 250m of an Environment Agency Zone 2 floodplain? No

Database searched and no data found.

6.2 Zone 3 Flooding

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) 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. Any relevant data is represented on Map 1 – Environment Agency Flood Map for Planning.

Is the site within 250m of an Environment Agency Zone 3 floodplain? No

Database searched and no data found.

6.3 Flood Defences

Are there any Flood Defences within 250m of the study site? No

Database searched and no data found.

6.4 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? No

6.5 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? No

6.6 Groundwater Flooding Susceptibility Areas

6.6.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site?

No

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

6.6.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Not Prone

The area is not considered to be prone to groundwater flooding based on rock type.

6.7 Groundwater Flooding Confidence Areas

What is the British Geological Survey confidence rating in this result? Not Applicable

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

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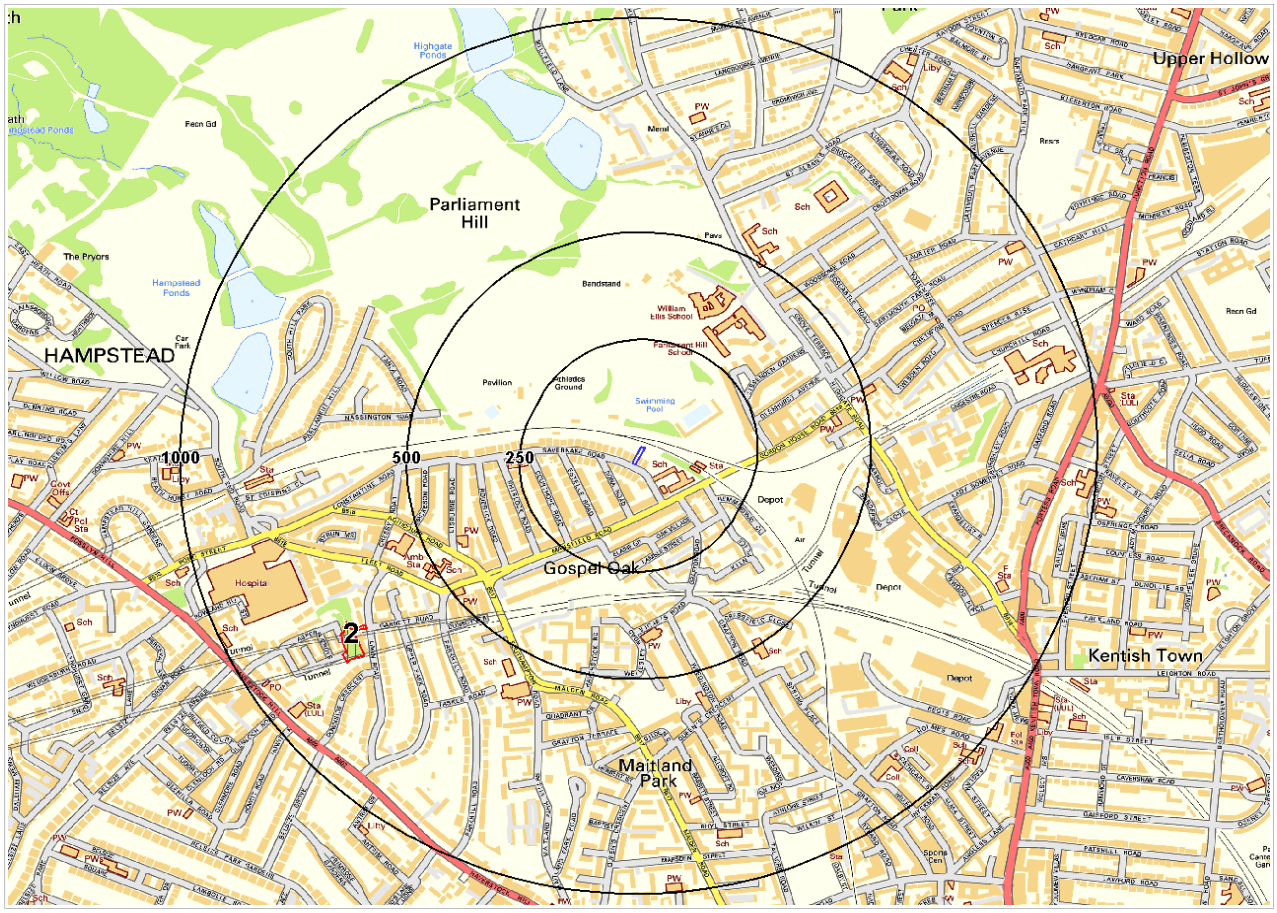
7. Designated Environmentally Sensitive Sites Map

NW N NE



W E

SW S SE

Designated Environmentally Sensitive Sites Map

Mapping sourced from Ordnance Survey

Site Centre
Site Outline
100 / 250 Search Buffers (m)

AONB
National Park
SSSI
Special Protection Areas
Nitrate Vulnerable Zones
Green Belt
Environmentally Sensitive Areas
Special Areas of Conservation
World Heritage Sites
Nitrate Sensitive Areas
Ancient Woodland
National Nature Reserve
Local Nature Reserves
RAMSAR Sites

7. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site? Yes

7.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

1

The following Site of Special Scientific Interest (SSSI) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SSSI Name	Data Source
Not shown	1483.0	NW	Hampstead Heath Woods	Natural England

7.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

7.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

7.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

7.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

7.6 Records of Ancient Woodland within 2000m of the study site:

1

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
Not shown	1490.0	NW	UNKNOWN	Ancient and Semi-Natural Woodland

7.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

1

The following Local Nature Reserve (LNR) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	LNR Name	Data Source
2	700.0	SW	Belsize Wood	Natural England

7.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

7.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

7.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

7.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

7.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

7.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

0

Database searched and no data found.

7.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

8. Natural Hazards Findings

8.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a GroundSure GeoInsight, available from our website. The following information has been found:

8.1.1 Shrink Swell

What is the maximum Shrink-Swell* hazard rating identified on the study site? Moderate

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly high plasticity. Do not plant or remove trees or shrubs near to buildings without expert advice about their effect and management. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a probable increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a probable increase in insurance risk during droughts or where vegetation with high moisture demands is present.

8.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property no significant increase in insurance risk due to natural slope instability problems.

* This indicates an automatically generated 50m buffer and site.

8.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

8.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

8.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

8.1.6 Running Sand

What is the maximum Running Sand* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

* This indicates an automatically generated 50m buffer and site.

9. Mining

9.1 Coal Mining

Are there any coal mining areas within 75m of the study site? No

Database searched and no data found.

9.2 Shallow Mining

What is the subsidence hazard relating to shallow mining on-site*? Negligible

*Please note this data is searched with a 150m buffer.

9.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? No

Guidance: No Guidance Required.

Contact Details

GroundSure Helpline
Telephone: 08444 159 000
info@groundsure.com

British Geological Survey Enquiries

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email: enquiries@bgs.ac.uk
Web:www.bgs.ac.uk
BGS Geological Hazards Reports and general geological enquiries

Environment Agency

National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 08708 506 506
Web:**www.environment-agency.gov.uk**
Email:**enquiries@environment-agency.gov.uk**

Public Health England

Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
https://www.gov.uk/government/organisations/public-health-england
Email:**enquiries@phe.gov.uk**
Main switchboard**: 020 7654 8000**

The Coal Authority

200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Ordnance Survey

Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: Camden London Borough Council
Phone: 020 7278 4444
Web: www.camden.gov.uk
Address: Camden Town Hall, Judd Street, Camden, London, WC1H 9JE

Gemapping PLC

Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444

Standard Terms and Conditions

1 Definitions

In these terms and conditions unless the context otherwise requires:

"Beneficiary" means the person or entity for whose benefit the Client has obtained the Services.

"Client" means the party or parties entering into a Contract with GroundSure.

"Commercial" means any building or property which is not Residential.

"Confidential Information" means the contents of this Contract and all information received from the Client as a result of, or in connection with, this Contract other than

(i) information which the Client can prove was rightfully in its possession prior to disclosure by GroundSure and

(ii) any information which is in the public domain (other than by virtue of a breach of this Contract).

"Support Services" means Support Services provided by GroundSure including, without limitation, interpreting third party and in-house environmental data, providing environmental support advice, undertaking environmental audits and assessments, Site investigation, Site monitoring and related items.

"Contract" means the contract between GroundSure and the Client for the provision of the Services, and which shall incorporate these terms and conditions, the Order, and the relevant User Guide.

"Third Party Data Provider" means any third party providing Third Party Content to GroundSure.

"Data Reports" means reports comprising factual data with no accompanying interpretation.

"Fees" has the meaning set out in clause 5.1.

"GroundSure" means GroundSure Limited, a company registered in England and Wales under number 03421028.

"GroundSure Materials" means all materials prepared by GroundSure and provided as part of the Services, including but not limited to Third Party Content, Data Reports, Mapping, and Risk Screening Reports.

"Intellectual Property" means any patent, copyright, design rights, trade or service mark, moral rights, data protection rights, know-how or trade mark in each case whether registered or not and including applications for the same or any other rights of a similar nature anywhere in the world.

"Mapping" means a map, map data or a combination of historical maps of various ages, time periods and scales.

"Order" means an electronic, written or other order form submitted by the Client requesting Services from GroundSure in respect of a specified Site.

"Ordnance Survey" means the Secretary of State for Business, Innovation and Skills, acting through Ordnance Survey, Adanac Drive, Southampton, SO16 0AS, UK.

"Order Website" means the online platform through which Orders may be placed by the Client and accepted by GroundSure.

"Report" means a Risk Screening Report or Data Report for Commercial or Residential property.

"Residential" means any building or property used as or intended to be used as a single dwelling.

"Risk Screening Report" means a risk screening report comprising factual data with an accompanying interpretation by GroundSure.

"Services" means any Report, Mapping and/or Support Services which GroundSure has agreed to provide by accepting an Order pursuant to clause 2.6.

"Site" means the area of land in respect of which the Client has requested GroundSure to provide the Services.

"Third Party Content" means data, database information or other information which is provided to GroundSure by a Third Party Data Provider.

"User Guide" means the user guide, as amended from time to time, available upon request from GroundSure and on the website (www.GroundSure.com) and forming part of this Contract.

2 Scope of Services, terms and conditions, requests for insurance and quotations

2.1 GroundSure agrees to provide the Services in accordance with the Contract.

2.2 GroundSure shall exercise reasonable skill and care in the provision of the Services.

2.3 Subject to clause 7.3 the Client acknowledges that it has not relied on any statement or representation made by or on behalf of GroundSure which is not set out and expressly agreed in writing in the Contract and all such statements and representations are hereby excluded to the fullest extent permitted by law.

2.4 The Client acknowledges that terms and conditions appearing on a Client's order form, printed stationery or other communication, or any terms or conditions implied by custom, practice or course of dealing shall be of no effect, and that this Contract shall prevail over all others in relation to the Order.

2.5 If the Client or Beneficiary requests insurance in conjunction with or as a result of the Services, GroundSure shall use reasonable endeavours to recommend such insurance, but makes no warranty that such insurance shall be available from insurers or that it will be offered on reasonable terms. Any insurance purchased by the Client or Beneficiary shall be subject solely to the terms of the policy issued by insurers and GroundSure will have no liability therefor. In addition you acknowledge and agree that GroundSure does not act as an agent or broker for any insurance providers. The Client should take (and ensure that the Beneficiary takes) independent advice to ensure that the insurance policy requested or offered is suitable for its requirements.

2.6 GroundSure's quotations or proposals are valid for a period of 30 days only unless an alternative period of time is explicitly stipulated by GroundSure. GroundSure reserves the right to withdraw any quotation or proposal at any time before an Order is accepted by GroundSure. GroundSure's acceptance of an Order shall be binding only when made in writing and signed by GroundSure's authorised representative or when accepted through the Order Website.

3 The Client's obligations

3.1The Client shall comply with the terms of this Contract and

(i) procure that the Beneficiary or any third party relying on the Services complies with and acts as if it is bound by the Contract and

(ii) be liable to GroundSure for the acts and omissions of the Beneficiary or any third party relying on the Services as if such acts and omissions were those of the Client.

3.2 The Client shall be solely responsible for ensuring that the Services are appropriate and suitable for its and/or the Beneficiary's needs.

3.3 The Client shall supply to GroundSure as soon as practicable and without charge all requisite information (and the Client warrants that such information is accurate, complete and appropriate), including without limitation any environmental information relating to the Site and shall give such assistance as GroundSure shall reasonably require in the provision of the Services including, without limitation, access to the Site, facilities and equipment.

3.4 Where the Client's approval or decision is required to enable GroundSure to carry out work in order to provide the Services, such approval or decision shall be given or procured in reasonable time and so as not to delay or disrupt the performance of the Services.

3.5 Save as expressly permitted by this Contract the Client shall not, and shall procure that the Beneficiary shall not, re-sell, alter, add to, or amend the GroundSure Materials, or use the GroundSure Materials in a manner for which they were not intended. The Client may make the GroundSure Materials available to a third party who is considering acquiring some or all of, or providing funding in relation to, the Site, but such third party cannot rely on the same unless expressly permitted under clause 4.

3.6 The Client is responsible for maintaining the confidentiality of its user name and password if using the Order Website and the Client acknowledges that GroundSure accepts no liability of any kind for any loss or damage suffered by the Client as a consequence of using the Order Website.

4 Reliance

4.1The Client acknowledges that the Services provided by GroundSure consist of the presentation and analysis of Third Party Content and other content and that information obtained from a Third Party Data Provider cannot be guaranteed or warranted by GroundSure to be reliable.

4.2 In respect of Data Reports, Mapping and Risk Screening Reports, the following classes of person and no other are entitled to rely on their contents;

(i) the Beneficiary,

(ii) the Beneficiary's professional advisers, (iii) any person providing funding to the Beneficiary in relation to the Site (whether directly or as part of a lending syndicate),

(iv) the first purchaser or first tenant of the Site, and

(v) the professional advisers and lenders of the first purchaser or tenant of the Site.

4.3 In respect of Support Services, only the Client, Beneficiary and parties expressly named in a Report and no other parties are entitled to rely on its contents.

4.4 Save as set out in clauses 4.2 and 4.3 and unless otherwise expressly agreed in writing, no other person or entity of any kind is entitled to rely on any Services or Report issued or provided by GroundSure. Any party considering such Reports and Services does so at their own risk.

5 Fees and Disbursements

5.1GroundSure shall charge and the Client shall pay fees at the rate and frequency specified in the written proposal, Order Website or Order acknowledgement form, plus (in the case of Support Services) all proper disbursements incurred by GroundSure. The Client shall in addition pay all value added tax or other tax payable on such fees and disbursements in relation to the provision of the Services (together "Fees").

5.2 The Client shall pay all outstanding Fees to GroundSure in full without deduction, counterclaim or set off within 30 days of the date of GroundSure's invoice or such other period as may be agreed in writing between GroundSure and the Client ("Payment Date"). Interest on late payments will accrue on a daily basis from the Payment Date until the date of payment (whether before or after judgment) at the rate of 8% per annum.

5.3 The Client shall be deemed to have agreed the amount of any invoice unless an objection is made in writing within 28 days of the date of the invoice. As soon as reasonably practicable after being notified of an objection, without prejudice to clause 5.2 a member of GroundSure's management team will contact the Client and the parties shall then use all reasonable endeavours to resolve the dispute within 15 days.

6 Intellectual Property and Confidentiality

6.1 Subject to

(i) full payment of all relevant Fees and

(ii) compliance with this Contract, the Client is granted (and is permitted to sub-licence to the Beneficiary) a royalty-free, worldwide, non-assignable and (save to the extent set out in this Contract) non-transferable licence to make use of the GroundSure Materials.

6.2 All Intellectual Property in the GroundSure Materials are and shall remain owned by GroundSure or GroundSure's licensors (including without limitation the Third Party Data Providers) the Client acknowledges, and shall procure acknowledgement by the Beneficiary of, such ownership. Nothing in this Contract purports to transfer or assign any rights to the Client or the Beneficiary in respect of such Intellectual Property.

6.3 Third Party Data Providers may enforce any breach of clauses 6.1 and 6.2 against the Client or Beneficiary.

6.4 The Client shall, and shall procure that any recipients of the GroundSure Materials shall:

(i) not remove, suppress or modify any trade mark, copyright or other proprietary marking belonging to GroundSure or any third party from the Services;

(ii) use the information obtained as part of the Services in respect of the subject Site only, and shall not store or reuse any information obtained as part of the Services provided in respect of adjacent or nearby sites;

(iii) not create any product or report which is derived directly or indirectly from the Services (save that those acting in a professional capacity to the Beneficiary may provide advice based upon the Services);

(iv) not combine the Services with or incorporate such Services into any other information data or service;

(v) not reformat or otherwise change (whether by modification, addition or enhancement), the Services (save that those acting for the Beneficiary in a professional capacity shall not be in breach of this clause 6.4(v) where such reformatting is in the normal course of providing advice based upon the Services);

(vi) where a Report and/or Mapping contains material belonging to Ordnance Survey, acknowledge and agree that such content is protected by Crown Copyright and shall not use such content for any purpose outside of receiving the Services; and

(vii) not copy in whole or in part by any means any map prints or run-on copies containing content belonging to Ordnance Survey (other than that contained within Ordnance Survey's OS Street Map) without first being in possession of a valid Paper Map Copying Licence from Ordnance Survey,

6.5 Notwithstanding clause 6.4, the Client may make reasonable use of the GroundSure Materials in order to advise the Beneficiary in a professional capacity. However, GroundSure shall have no liability in respect of any advice, opinion or report given or provided to Beneficiaries by the Client.

6.6 The Client shall procure that any person to whom the Services are made available shall notify GroundSure of any request or requirement to disclose, publish or disseminate any information contained in the Services in accordance with the Freedom of Information Act 2000, the Environmental Information Regulations 2004 or any associated legislation or regulations in force from time to time.

7.Liability: Particular Attention Should Be Paid To This Clause

7.1 This Clause 7 sets out the entire liability of GroundSure, including any liability for the acts or omissions of its employees, agents, consultants, subcontractors and Third Party Content, in respect of:

(i) any breach of contract, including any deliberate breach of the Contract by GroundSure or its employees, agents or subcontractors;

(ii) any use made of the Reports, Services, Materials or any part of them; and

(iii) any representation, statement or tortious act or omission (including negligence) arising under or in connection with the Contract.

7.2 All warranties, conditions and other terms implied by statute or common law are, to the fullest extent permitted by law, excluded from the Contract.

7.3 Nothing in the Contract limits or excludes the liability of the Supplier for death or personal injury resulting from negligence, or for any damage or liability incurred by the Client or Beneficiary as a result of fraud or fraudulent misrepresentation.

7.4 GroundSure shall not be liable for

(i) loss of profits;

(ii) loss of business;

(iii) depletion of goodwill and/or similar losses;

(iv) loss of anticipated savings;

(v) loss of goods;

(vi) loss of contract;

(vii) loss of use;

(viii) loss or corruption of data or information;

(ix) business interruption;

(x) any kind of special, indirect, consequential or pure economic loss, costs, damages, charges or expenses;

(xi) loss or damage that arise as a result of the use of all or part of the GroundSure Materials in breach of the Contract;

(xii) loss or damage arising as a result of any error, omission or inaccuracy in any part of the GroundSure Materials where such error, omission or inaccuracy is caused by any Third Party Content or any reasonable interpretation of Third Party Content;

(xiii) loss or damage to a computer, software, modem, telephone or other property; and

(xiv) loss or damage caused by a delay or loss of use of GroundSure's internet ordering service.

7.5 GroundSure's total liability in relation to or under the Contract shall be limited to £10 million for any claim or claims.

7.6 GroundSure shall procure that the Beneficiary shall be bound by limitations and exclusions of liability in favour of GroundSure which accord with those detailed in clauses 7.4 and 7.5 (subject to clause 7.3) in respect of all claims which the Beneficiary may bring against GroundSure in relation to the Services or other matters arising pursuant to the Contract.

8 GroundSure's right to suspend or terminate

8.1 If GroundSure reasonably believes that the Client or Beneficiary has not provided the information or assistance required to enable the proper provision of the Services, GroundSure shall be entitled to suspend all further performance of the Services until such time as any such deficiency has been made good.

8.2 GroundSure shall be entitled to terminate the Contract immediately on written notice in the event that:

(i) the Client fails to pay any sum due to GroundSure within 30 days of the Payment Date; or

(ii) the Client (being an individual) has a bankruptcy order made against him or (being a company) shall enter into liquidation whether compulsory or voluntary or have an administration order made against it or if a receiver shall be appointed over the whole or any part of its property assets or undertaking or if the Client is struck off the Register of Companies or dissolved; or

(iii) the Client being a company is unable to pay its debts within the meaning of Section 123 of the Insolvency Act 1986 or being an individual appears unable to pay his debts within the meaning of Section 268 of the Insolvency Act 1986 or if the Client shall enter into a composition or arrangement with the Client's creditors or shall suffer distress or execution to be levied on his goods; or

(iv) the Client or the Beneficiary breaches any term of the Contract (including, but not limited to, the obligations in clause 4) which is incapable of remedy or if remediable, is not remedied within five days of notice of the breach.

9. Client's Right to Terminate and Suspend

9.1 Subject to clause 10.1, the Client may at any time upon written notice terminate or suspend the provision of all or any of the Services.

9.2 In any event, where the Client is a consumer (and not a business) he/she hereby expressly acknowledges and agrees that:

(i) the supply of Services under this Contract (and therefore the performance of this Contract) commences immediately upon GroundSure's acceptance of the Order; and

(ii) the Reports and/or Mapping provided under this Contract are

(a) supplied to the Client's specification(s) and in any event

(b) by their nature cannot be returned.

10 Consequences of Withdrawal, Termination or Suspension

10.1 Upon termination of the Contract:

(i) GroundSure shall take steps to bring to an end the Services in an orderly manner, vacate any Site with all reasonable speed and shall deliver to the Client and/or Beneficiary any property of the Client and/or Beneficiary in

GroundSure's possession or control; and

(ii) the Client shall pay to GroundSure all and any Fees payable in respect of the performance of the Services up to the date of termination or suspension. In respect of any Support Services provided, the Client shall also pay GroundSure any additional costs incurred in relation to the termination or suspension of the Contract.

11 Anti-Bribery

11.1 The Client warrants that it shall:

(i) comply with all applicable laws, statutes and regulations relating to anti-bribery and anti-corruption including but not limited to the Bribery Act 2010;

(ii) comply with such of GroundSure's anti-bribery and anti-corruption policies as are notified to the Client from time to time; and

(iii) promptly report to GroundSure any request or demand for any undue financial or other advantage of any kind received by or on behalf of the Client in connection with the performance of this Contract.

11.2 Breach of this Clause 11 shall be deemed a material breach of this Contract.

12 General

12.1 The Mapping contained in the Services is protected by Crown copyright and must not be used for any purpose other than as part of the Services or as specifically provided in the Contract.

12.2 The Client shall be permitted to make one copy only of each Report or Mapping Order. Thereafter the Client shall be entitled to make unlimited copies of the Report or Mapping Order only in accordance with an Ordnance Survey paper map copy license available through GroundSure.

12.3 GroundSure reserves the right to amend or vary this Contract. No amendment or variation to this Contract shall be valid unless signed by an authorised representative of GroundSure.

12.4 No failure on the part of GroundSure to exercise, and no delay in exercising, any right, power or provision under this Contract shall operate as a waiver thereof.

12.5 Save as expressly provided in this Contract, no person other than the persons set out therein shall have any right under the Contract (Rights of Third Parties) Act 1999 to enforce any terms of the Contract.

12.6 The Secretary of State for Business, Innovation and Skills ("BIS") or BIS' successor body, as the case may be, acting through Ordnance Survey may enforce a breach of clause 6.4(vi) and clause 6.4(vii) of these terms and conditions against the Client in accordance with the provisions of the Contracts (Rights of Third Parties) Act 1999.

12.7 GroundSure shall not be liable to the Client if the provision of the Services is delayed or prevented by one or more of the following circumstances:

(i) the Client or Beneficiary's failure to provide facilities, access or information;

(ii) fire, storm, flood, tempest or epidemic;

(iii) Acts of God or the public enemy;

(iv) riot, civil commotion or war;

(v) strikes, labour disputes or industrial action;

(vi) acts or regulations of any governmental or other agency;

(vii) suspension or delay of services at public registries by Third Party Data Providers;

(viii) changes in law; or

(ix) any other reason beyond GroundSure's reasonable control.

In the event that GroundSure is prevented from performing the Services (or any part thereof) in accordance with this clause 12.6 for a period of not less than 30 days then GroundSure shall be entitled to terminate this Contract immediately on written notice to the Client.

12.8 Any notice provided shall be in writing and shall be deemed to be properly given if delivered by hand or sent by first class post, facsimile or by email to the address, facsimile number or email address of the relevant party as may have been notified by each party to the other for such purpose or in the absence of such notification the last known address.

12.9 Such notice shall be deemed to have been received on the day of delivery if delivered by hand, facsimile or email (save to the extent such day is not a working day where it shall be deemed to have been delivered on the next working day) and on the second working day after the day of posting if sent by first class post.

12.10 The Contract constitutes the entire agreement between the parties and shall supersede all previous arrangements between the parties relating to the subject matter hereof.

12.11 Each of the provisions of the Contract is severable and distinct from the others and if one or more provisions is or should become invalid, illegal or unenforceable, the validity and enforceability of the remaining provisions shall not in any way be tainted or impaired.

12.12 This Contract shall be governed by and construed in accordance with English law and any proceedings arising out of or connected with this Contract shall be subject to the exclusive jurisdiction of the English courts.

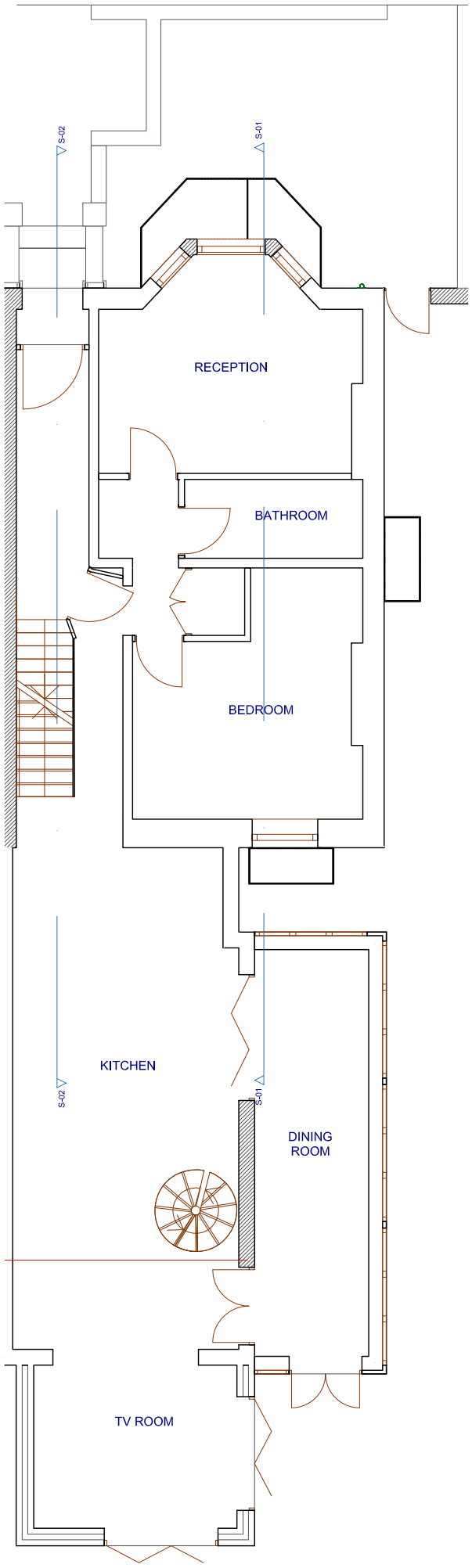
12.13 GroundSure is an executive member of the Council of Property Search Organisation (CoPSO) and has signed up to the Search Code administered by the Property Codes Compliance Board (PCCB). All Risk Screening Reports shall be supplied in accordance with the provisions of the Search Code.

12.14 If the Client or Beneficiary has a complaint about the Services, written notice should be given to the Compliance Officer at GroundSure who will respond in a timely manner.

12.15 The Client agrees that it shall, and shall procure that each Beneficiary shall, treat in confidence all Confidential Information and shall not, and shall procure that each Beneficiary shall not (i) disclose any Confidential Information to any third party other than in accordance with the terms of this Contract; and (ii) use Confidential Information for a purpose other than the exercise of its rights and obligations under this Contract. Subject to clause 6.6, nothing shall prevent the Client or any Beneficiary from disclosing Confidential Information to the extent required by law.

APPENDIX B

Site plans and elevations
(provided by Croft Structural Engineers Ltd)



01 Ground Floor

scale (1:100)

Rev	Date	Amendments
-		

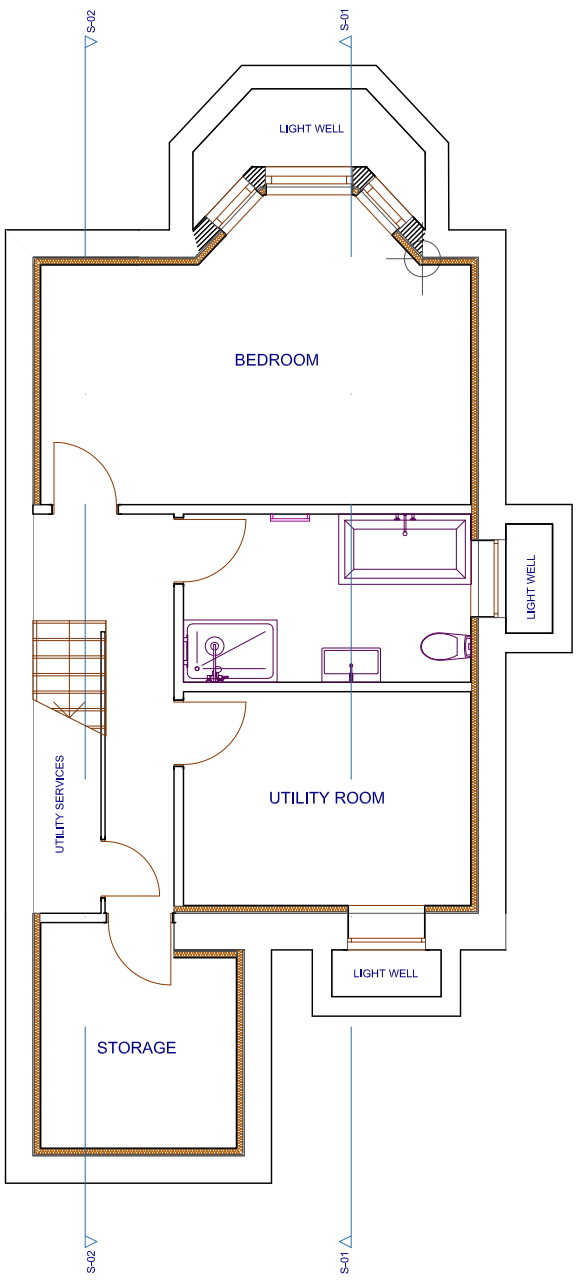
Client:

Project:

Title : 01 Ground Floor

Job No.s	Drawn	Date
	VLD	Jan 15
Dwg Nos	Rev	Scale
	-	As Shown @ A3

Croft Structural Engineers
Clockshop Mews,
Rear 60 Saxon Rd,
London, SE25 5EH
0208 684 4744
www.croftse.co.uk



Basement

scale (1:100)

Rev	Date	Amendments
-		

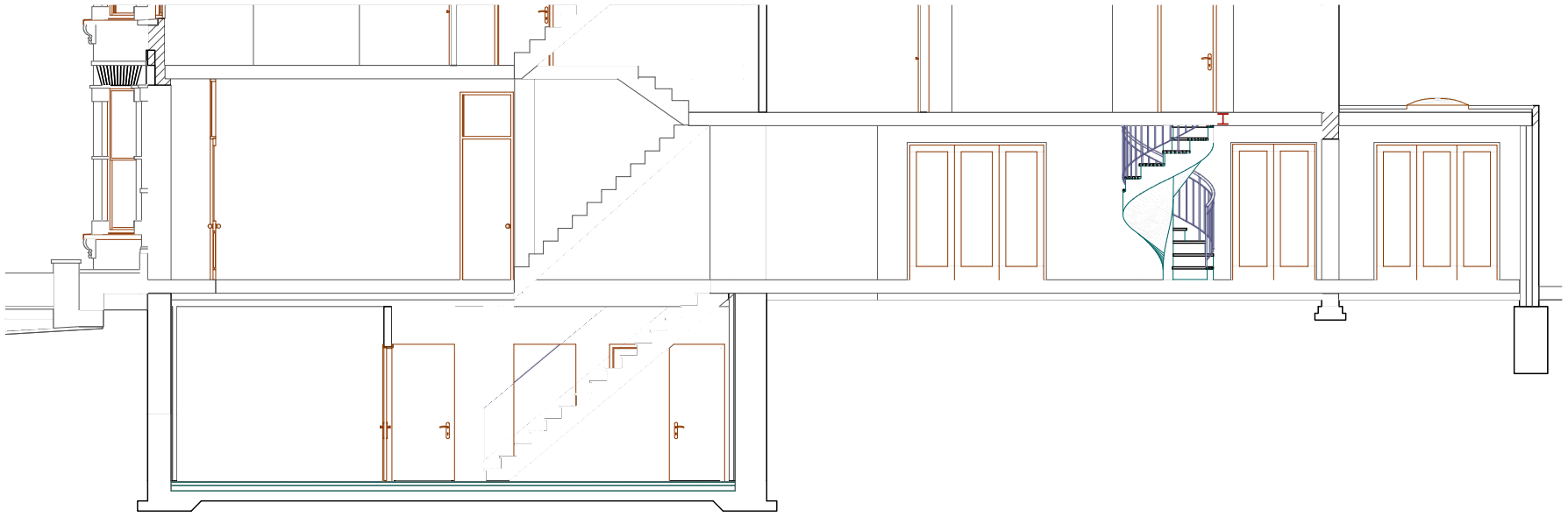
Client:

Project:

Title : Basement

Job No.s	Drawn	Date
	VLD	Jan 15
Dwg Nos	Rev	Scale
	-	As Shown @ A3

Croft Structural Engineers
Clockshop Mews,
Rear 60 Saxon Rd,
London, SE25 5EH
0208 684 4744
www.croftse.co.uk



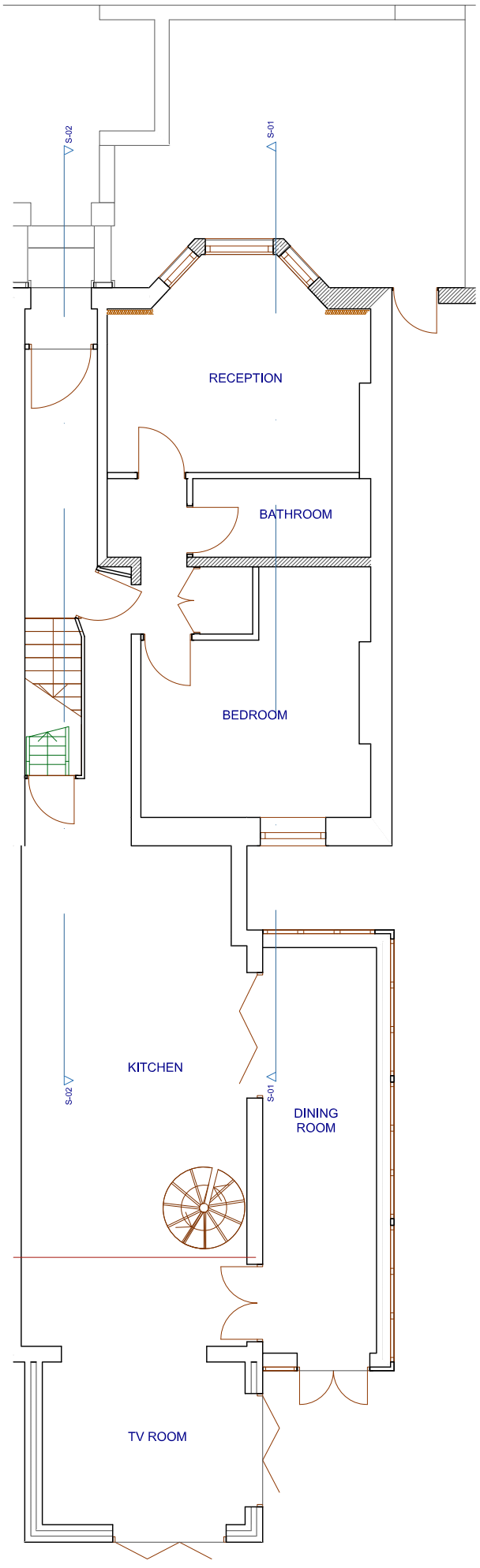
03 Section 02

scale (1:100)

Rev	Date	Amendments

Job No.s		Client:
Dwg Nos		Project: 106 Savernake Road
	Date Jan 15	Title : 03 Section 02
Drawn VLD	Chk'd CT	
Scale As shown @ A3	Rev -	

Croft Structural Engineers
Clockshop Mews,
r/o 60 Saxon Rd,
London, SE25 5EH.
020 8684 4744
www.croftse.co.uk



E01 Ground Floor

scale (1:100)

Rev	Date	Amendments
-		

Client:

Project:

Title : E01 Ground Floor

Job No.s	Drawn	Date
	VLD	Jan 15
Dwg Nos	Rev	Scale
	-	As Shown @ A3

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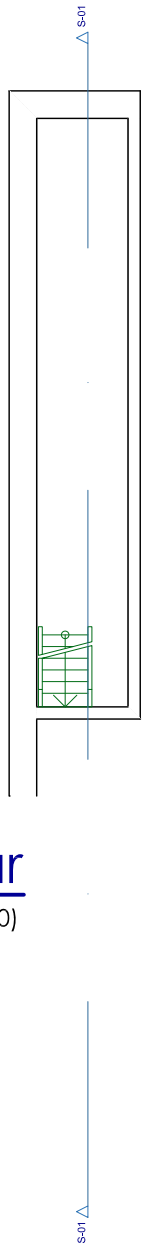

Cellar

scale (1:100)

Rev	Date	Amendments
-		

Client:

Project:

Title : E00 Cellar

Job No.s	Drawn	Date
	VLD	Jan 15
Dwg Nos	Rev	Scale
	-	As Shown @ A3

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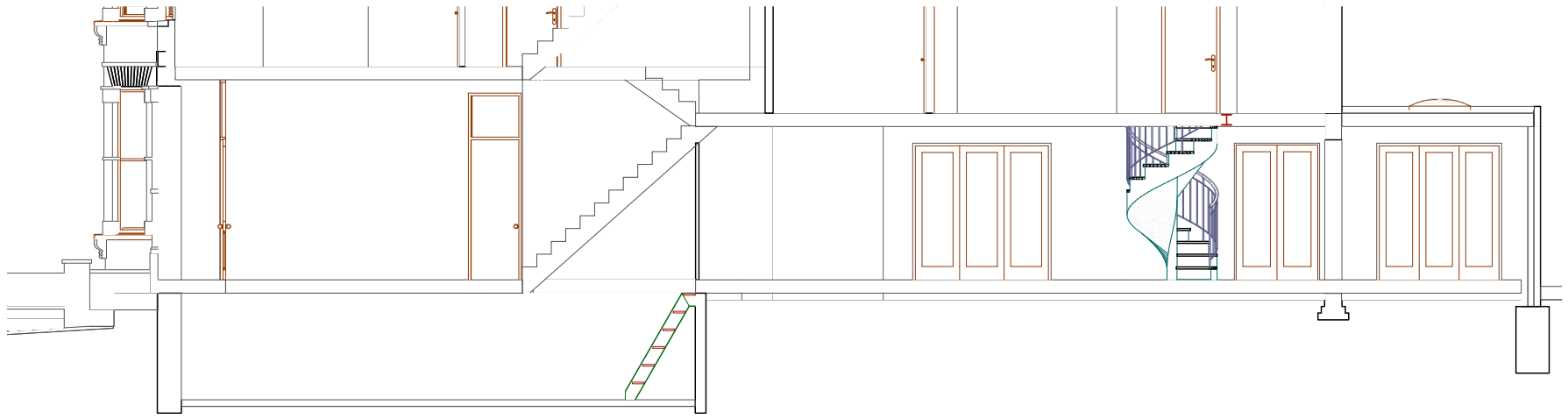

E03 Section 02

scale (1:100)

Rev	Date	Amendments

Job No.s	Client:
Dwg Nos	Project: 106 Savernake Road
Date Jan 15	Title : E03 Section 02
Drawn VLD / Chk'd CT	
Scale As shown @ A3 / Rev -	

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