

# **Total Design Consultancy Services LLP**

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**No.2 SANDY LODGE LANE,  
NORTHWOOD**

**BASEMENT IMPACT  
ASSESSMENT**

**DATE: JULY25**

**CLIENT: GAVACAN HOMES LTD**

**JOB NO:609**

# **1. Background**

The proposed development comprises a new block flats over 4 floors, including a basement , ground floor ,first floor and second floor with associated surface car parking.

The site currently consists an existing property known as “No. 2 Sandy Lodge Way, Northwood”, the site is reletively flat and comprises various mature trees including cypress, yew and fruit trees. (Planning scheme see appendix c)

# **2. Ground Model**

A desk top study of the site revealed that the site has been occupied by the existing residential property for the entirety of its developed history.

Referring to geological records and site investigation encountered at Sandy Lodge Way, Northwood the site geological conditions can be summarised as follows:-

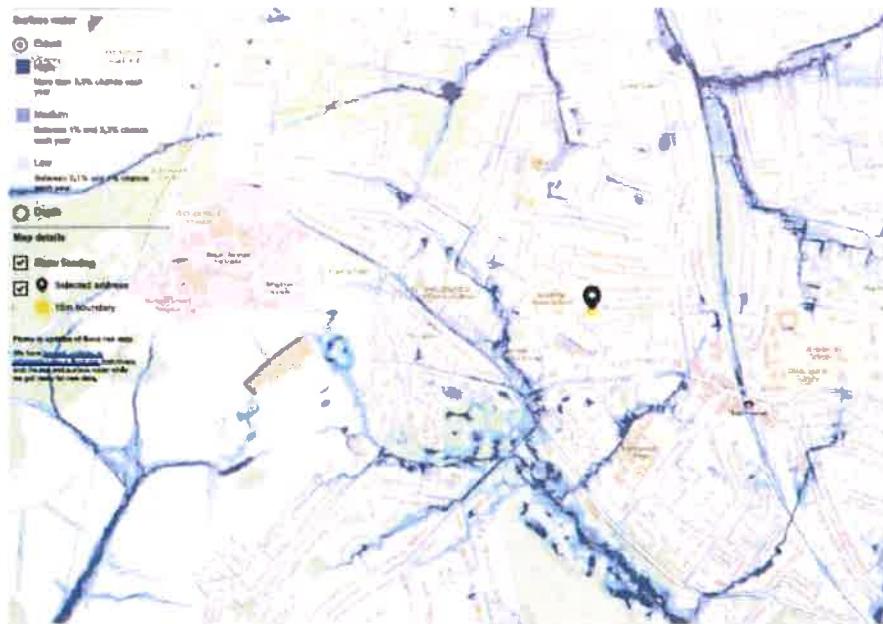
- Shallow top soil / made ground
- Overlying
- London Clay formation

During the fieldwork ground water seepage was encountered at a depth of 12-13m some 8m below any proposed excavation depth. (see Appendix A for borehole record)

### 3. Flood Risk Assessment

Referring to Environment Agency Database the site lies in floor zone 1, an area with a very low probability of flooding. (see appendix B for records)

The flood risk detailed assessment for 1:100+ year storm event, indicates the site is outside any area for flooding.



## **4. Proposed Basement Construction**

In view of the depth of the basement construction and the associated depth of basement excavations, precautions will be required in order to safe guard the existing propertie as outlined below:-

- Existing dwelling's No 4 & 16 Sandy Lodge Way, Northwood

In order to construct the proposed new basement a bored pile wall will be constructed around the proposed basement foot print to enable the basement excavation and works to progress in a safe environment, protecting the neighbouring properties from any potential settlement.

The capping beam is intended to be propped in the temporary condition , until such time that the basement slab and perimeter concrete retaining walls have been cast.

The proposed method of construction and relationship to the adjoining properties is illustrated in Appendix D of this report.

Due to the fact that ground water was encountered at a depth of 12-13m during the adjacent site investigation works, it is considered only localised pumping will be required to deal with ground water collected during times of rainfall during construction.

## **5. Ground Water Flooding and Drainage Risks.**

Due to the fact that ground water was encountered during the site investigation works at a depth of 12-13m ,8m below the level of any proposed excavations , and the desk top study highlighted the site to be contained within a flood zone 1with no flooding risk during a 1:100+ year storm event. It is considered that the risk of the proposed development causing any flooding or drainage issues are negligible.

In view of the fact no ground water was proven within 8m depth of the proposed basement excavation, it was deemed that ground water monitoring would have served no purpose as no ground water was encountered to in excess of 8m of the proposed basement excavation.

## **6. PARTY WALL MATTERS**

The proposal site is located close existing building and piled foundations / new basement necessitate a Party Wall Notice to be served under the Party Wall etc Act 1996 to the adjoining owner in relation to the proposed depth of the piled foundations and basement under Section 6 of the Act. The structural scheme to be adopted is expected to be designed with due regard to maintaining the structural stability and integrity of neighbouring buildings & structures and surrounding land. The structural form of the basement and the method of construction is expected to be developed to ensure that lateral deflections, and associated ground movements, are kept within permitted limits both during and post construction. Our initial assessment of the predicted ground surface movements using the approach set out in CIRIA C850 has indicated that the predicted category of damage to adjacent properties would be category 0/ 1- very slight.

A monitoring survey is planned to be carried out during the construction period to indicate any significant movements and alert the project contractor and designers and help to identify the probable cause and subsequent action needed to attenuate any movements observed at the earliest opportunity.

## **7. PROGRAMME OF WORKS**

The Main Contractor will be responsible for site safety and the implementation of all construction works to current British Standards and relevant health and safety legislation. This method statement is not exhaustive and assumes the Main Contractor has the competence and relevant experience to undertake building works of this nature.

No Structural works will commence without a detailed temporary works design, drawing and calculation package in place including all necessary method statements. Structural drawings are expected to give proposed acceptable details for the excavations and a proposed sequence for the works. It is intended by following this sequence, the extent of temporary supporting works can be minimised.

**Bore pile wall Retaining Wall:** Using a Rotary rig to minimise ground-borne vibrations, a series of piles are installed at set spacings to a depth to be determined by the Engineer according to soil profile characteristics.

## **8. POTENTIAL GROUND MOVEMENTS TO ADJOINING PROPERTIES**

Anticipated movements are expected to be minimal and suppressed by the stiffness of the above structure and those adjoining. The stability of the surrounding building in particular has been considered at this stage of the design and it is suggested that the impact of the proposed structure will be minimal on the stability of the surrounding structures due to the preferred method of construction.

The category of movement expected for this element of works would be a category 0-1 of the building damage classification table based on CIRIA C580 guidance (see appendix D). The Contractor will be required to monitor ground movements during the works to check the validity of the ground movement analysis and the performance of the temporary works and working methods, these targets should be placed on face of capping beam

A “traffic light” system of green, amber, red trigger values will be set with specific Contractor actions set against each trigger values.

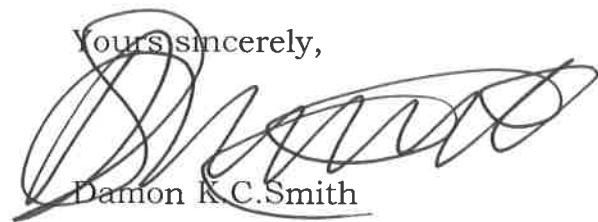
TRAFFIC LIGHT	TRIGGER VALUE (mm)	ACTION
GREEN	3mm	no action
AMBER	3-5mm	Notify CA and increase monitoring freq
RED	>5mm	Notify CA and stop all works

Monitoring of the capping beams will be carried out during the works to assess possible movements and the findings will be reported to the adjoining surveyors periodically if necessary as the Party Wall Award will define. The actual location of targets will be agreed between the two appointed surveyors

The proposed method of construction is well established and considered to be of low technology. The contractor undertaking the works is required to have suitable experience and all necessary insurances and will follow current standards and good building guides. Providing the works are carried out correctly, movement to the existing building and to all surrounding structures should be no greater than described as „very slight” under CIRIA C580 Category 1. Given the founding depth and bearing strata anticipated, any settlement would be considered immediate and no long- term movement is expected.

We trust the above is of assistance and should you require anything further please contact the writer.

Yours sincerely,



Damon K.C. Smith

**BEng(Hons) MSc CEng MIStructE**

## **APPENDIX A : SI DATA**

# GEOTECHNICAL REPORT

Site Address:	2 Sandy Lodge Way, Northwood, Middlesex. HA6 2AS
Report Date:	2 <sup>nd</sup> July 2025
Project No.:	19669
Prepared for:	Gavacan Homes Ltd



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APPENDIX 1 – Site Plan

APPENDIX 2 – Borehole Logs

APPENDIX 3 – Laboratory Testing

## SUMMARY

**ADDRESS** Sandy Lodge Way, Northwood, Middlesex. HA6 2AS

### SOILS PROFILE

Location	Made ground	Depth (m bgl)	Natural ground	Depth (m bgl)
<b>BH1</b>	Concrete	0.15m	Firm brown grey sandy CLAY	0.90m
			Firm to stiff brown slightly silty CLAY	7.70m
			Stiff grey slightly silty CLAY	14.45m
			Stiff grey brown mottled grey and brown slightly silty CLAY	25.00m+

### ROOT SYSTEM OVERVIEW

Location	Depth Recorded (m bgl)	Identification (if completed)
<b>BH1</b>	NONE	

### GROUNDWATER OVERVIEW

Location	Depth Water Struck (m bgl)	Depth of Standing Water (m bgl)	Rate of Inflow
<b>BH1</b>	13.00m	13.00m	Slight seepage

### SOIL ANALYSIS: Cohesive Soils

Strength:	Undrained triaxial testing 123-260 kN/m <sup>2</sup>
Casagrande Plasticity Classification:	High to Very High
Plasticity Index:	34-44 %
NHBC Shrinkability Classification:	High
Sulphate Content:	DS-3/AC-2s

## 1. Introduction

- 1.1 All site investigation works have been undertaken in accordance with BS5930:2015+A1:2020, (Code of Practice for Ground Investigations).
- 1.2 In accordance with your instructions, we visited the above site on the 17<sup>th</sup> June 2025.
- 1.3 The comments and opinions expressed are based purely on the soil and groundwater conditions identified within this report and the subsequent laboratory testing.
- 1.4 Some special condition may be present on site that, to date, has not been encountered within the scope of the site investigation works completed and therefore may not have been considered within the report. The findings of this report are based on the soil and groundwater sampling completed at the locations tested.
- 1.5 Unless otherwise stated, all groundwater recordings relate to short term observations and do not consider fluctuations in elevation due to seasonal, tidal, or other effects. It is possible that fluctuations in the groundwater elevation may have an impact on the proposed design and as such, it is recommended that long term monitoring is undertaken to obtain accurate information relevant to the proposed design in terms of the ground water elevation.

## 2. Description of Site

- 2.1 The site is formed by an existing residential house with associated landscaping.
- 2.2 The site is shown within the British Geological Survey Online Geology Viewer (Scale 1:50 000, Solid & Drift), which shows that the site situated with an area of London Clay Formation - Clay, Silt and Sand.

## 3. Fieldwork

- 3.1 In order to assess the site, the following site investigation works were implemented.
  - 1No Shell & Auger drilling rig borehole was sunk to a maximum depth of 25 meters.
  - Geotechnical Laboratory Testing.
- 3.2 The location of these works is indicated on the site plan-forming Appendix 1.
- 3.3 The various strata encountered were noted and are recorded on the excavation logs forming Appendix 2.
- 3.4 Full ranges of samples were recovered as noted and retained for subsequent laboratory testing.

## 4. Laboratory Testing

- 4.1 Laboratory testing has been undertaken in accordance with BS 1377-2:2022, (Methods for Tests for Soils for Civil Engineering Purposes), the results of which are enclosed.
- 4.2 Selected samples were recovered to determine their Atterberg Limits, Triaxial Testing, Soluble Sulphate value and pH.
- 4.3 The results of this laboratory testing are enclosed and form Appendix 3.

## 5. Fieldwork Results

- 5.1 Based on the borehole logs which can be found forming Appendix 2 it can be seen that the geology at the site recorded a nominal depth of made ground which in turn overlies a Clay soil which was identified in place to the close of the borehole at 25 meters.
- 5.2 Groundwater seepages were identified at a depth of between 13-15 meters which settled upon completion of the borehole at 13.00 meters. No long term monitoring was undertaken.
- 5.3 Groundwater records, unless otherwise stated, are based on short-term observations, and do not allow for or consider seasonal or other fluctuations, global warming, or periods of excessive wet or dry weather. All groundwater records are noted at the time of the drilling works and any other subsequent groundwater readings taken which, if present, are shown. Should the development be reliant on groundwater impacting on either below ground excavations, basements or short- or long-term excavations, HESI would recommend the installation of standpipes to depths relevant to any proposed excavation works and a period of either short- or long-term monitoring. This can be completed on request.

## 6. Results

- 6.1 By inspection of the borehole logs and from a visual assessment of the samples recovered, a scheme of laboratory testing has been undertaken. The results are enclosed within Appendix 3 and prove the following:
- 6.2 Undrained triaxial testing was also completed on undisturbed samples recovered from the site works, (two samples), which confirmed that the undrained shear strength of the subsoil is measured as 123-260 kN/m<sup>2</sup>.
- 6.3 The calculation of these values presented in Appendix 3, Sheet 1 can be converted into an allowable bearing capacity using the apparent cohesion values and multiplying them by factors to produce the allowable bearing capacity. The calculation can be completed using factors based on the relationship between the depth of the proposed foundation and the width of the foundation based on work by Skempton. As a rule of thumb, the apparent cohesion can be multiplied by 6 and divided by a factor of safety of 3 to achieve the allowable bearing capacity.
- 6.4 SPT N-Values have been completed within the boreholes completed at the site. It is confirmed within the borehole logs forming Appendix 2 of this report that SPT N-Values of between 9-50+ were achieved. This would indicate an approximate allowable bearing capacity of between 90 kN/m<sup>2</sup> to 500 kN/m<sup>2</sup> would be recognized. If groundwater is present within close proximity to the proposed founding depths, any allowable bearing capacity identified as a result of calculations undertaken as a result of the site investigation should be halved.
- 6.5 Where the SPT N-Value test is completed in fine grained soils, the displacement of the pore water pressure is reduced due to permeability and as such, artificially high. As such, any SPT N-Value test completed in fine grained soils should be halved.
- 6.6 Atterberg Limits tests proved the clay soils to be of high to very high plasticity, (PI= 34-44 %), which indicates a HIGH susceptibility to movement associated with moisture content change.
- 6.7 Included within the laboratory testing was sulphate analysis, which can determine the use of sulphate resisting cement within the foundation design for the development. The results are enclosed and prove the classification in accordance with ACEC to be DS- 3 /AC-2S.

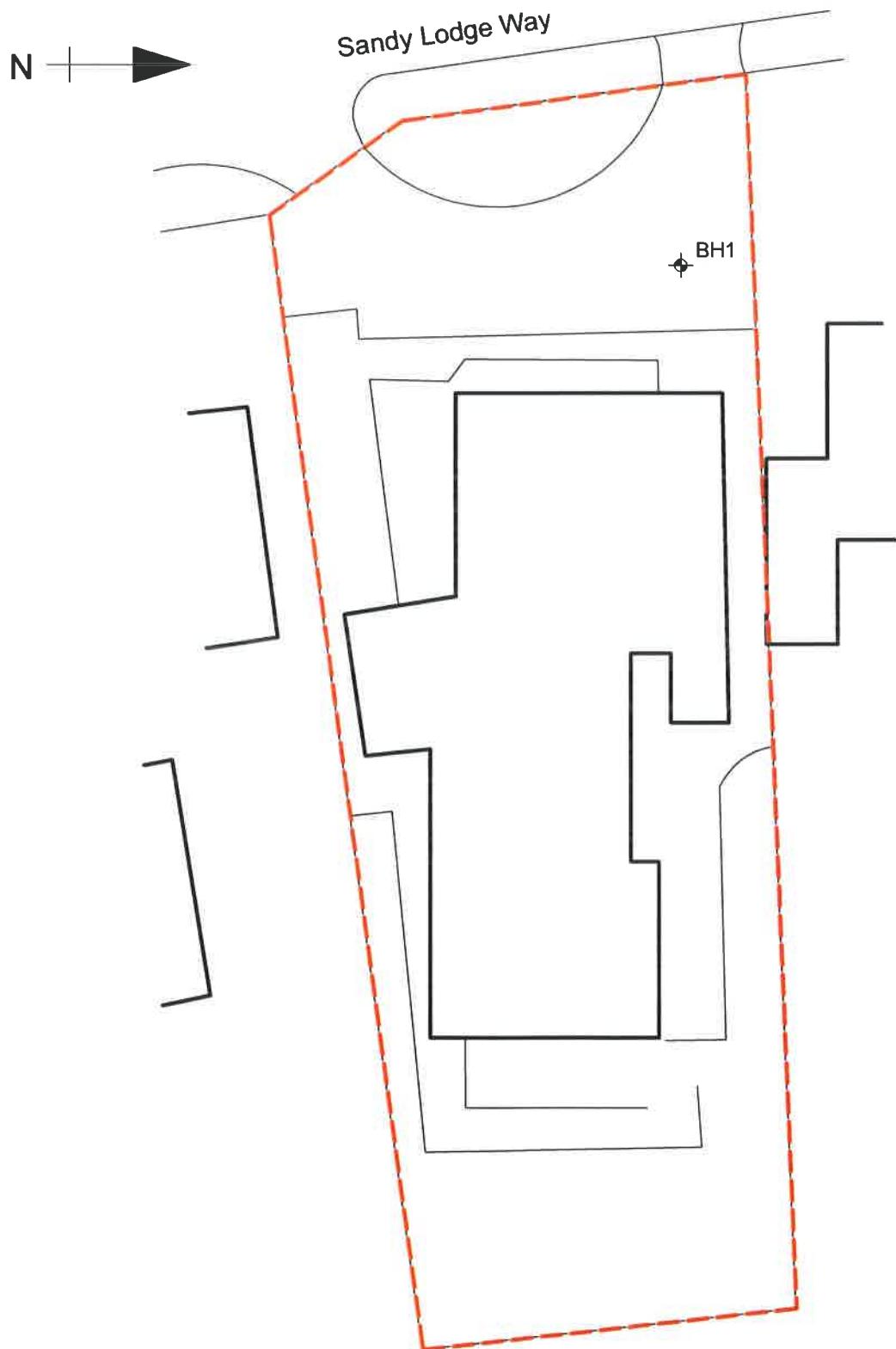
6.8 All foundations should be designed by a suitably qualified structural engineer in terms of the proposed project and all aspects of the ground, groundwater, loadings of the proposed structure etc. Should any elements of this report be unclear, consultation with ourselves should be sought to clarify any elements prior to a final design being made. The final decision in terms of foundation options should be made by a structural engineer with full working knowledge of the site and site conditions.

I hope the foregoing is sufficient for your requirements, although please do not hesitate to contact us should require any further information regarding the above.

Yours Faithfully



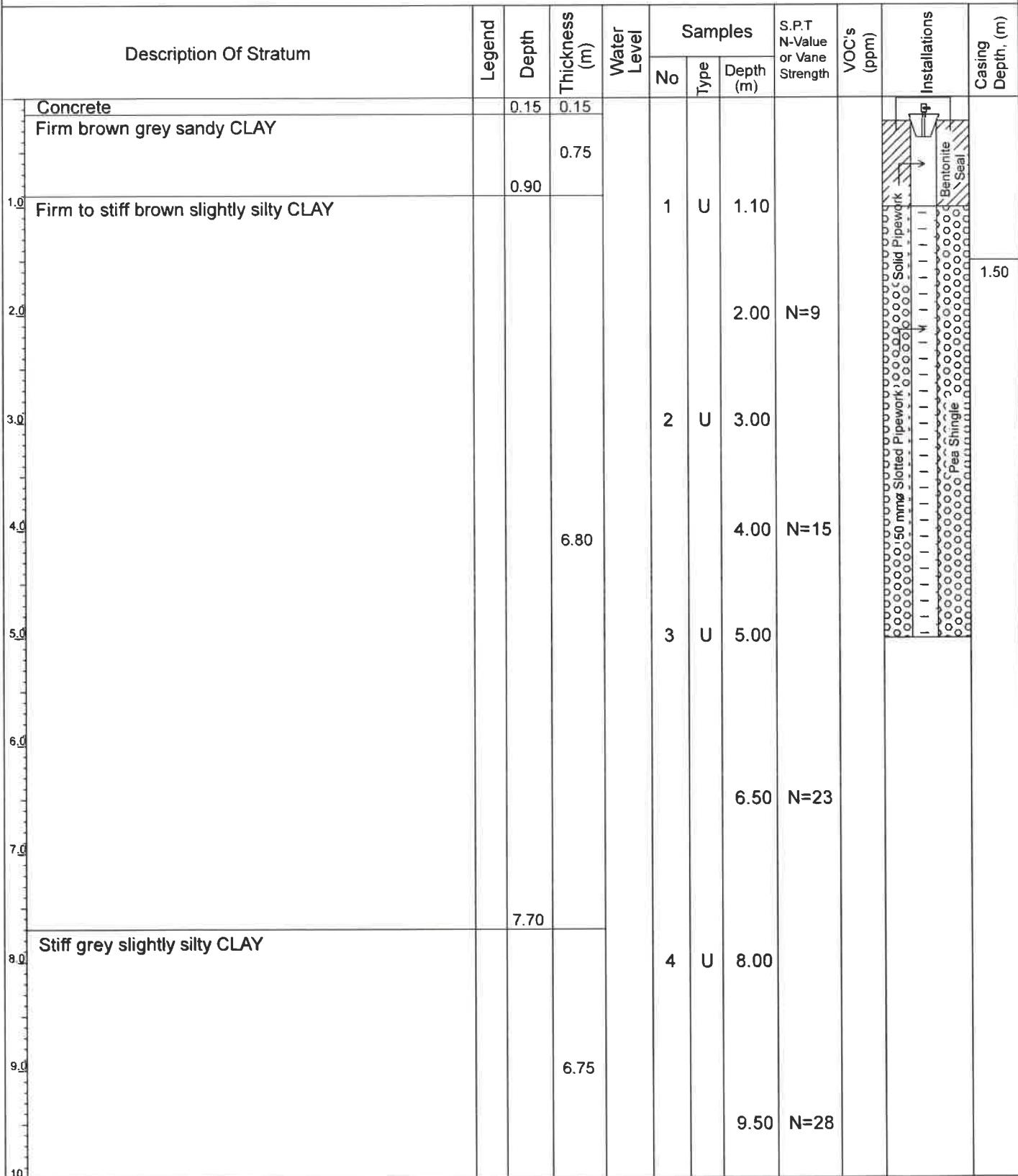
C.B. Gray PG Dip, PG Cert, M.Sc.  
Managing Director

**2 Sandy Lodge Way, Northwood, Middlesex. HA6 2AS****Site Plan**

Not to Scale  
Sketch No. : GEO / 19669 / 01 / 01

2 Sandy Lodge Way, Northwood, Middlesex. HA6 2AS

Borehole One



Remarks

Inspection Pit dug to 1.00m

Scale 1 : 50

2 Sandy Lodge Way, Northwood, Middlesex, HA6 2AS

Borehole One .... Continued

Description Of Stratum	Legend	Depth	Thickness (m)	Water Level	Samples			S.P.T N-Value or Vane Strength	VOCs (ppm)	Installations	Casing Depth, (m)
					No	Type	Depth (m)				
As above			6.75		5	U	11.00				
Becoming slightly sandy from 13.20m				13.00	6	U	12.50	N=31			
Stiff grey brown mottled grey and brown slightly silty CLAY		14.45					14.00				
			10.55				15.50	N=37			
							17.00	N=46			
							18.50	N=44			

Remarks

Scale 1 : 50

2 Sandy Lodge Way, Northwood, Middlesex. HA6 2AS

### Borehole One .... Continued

### Remarks

Scale 1 : 50

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Geotechnical Assessments | Environmental Assessments | Desktop Studies | Contamination Analysis

APPENDIX

3

SHEET

1

JOB NUMBER

19669

DATE

Jun-25

**LOCATION** Sandy Lodge Way, Northwood, Middlesex. HA6 2AS**TRIAXIAL TEST RESULTS**

Excavation Location Number	Depth m	Sample	Natural Moisture Content (%)	Bulk Density (Mg/m <sup>3</sup> )	Lateral Pressure	Deviator Stress	Apparent Cohesion	Angle of Shearing resistance (degrees)	Remarks
					(kN/m <sup>2</sup> )	(kN/m <sup>2</sup> )	(kN/m <sup>2</sup> )		
BH1	1.10	U1	30	1.98	22	245	123	-	
BH1	3.00	U2	32	1.99	60	363	181	-	
BH1	5.00	U3	29	1.99	100	422	211	-	
BH1	8.00	U4	28	2.01	160	520	260	-	
BH1	11.00	U5	27	2.03	220	490	245	-	
BH1	14.00	U6	21	2.12	280	392	196	-	

**HESI**Herts & Essex Site  
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APPENDIX

3

SHEET

2

JOB NUMBER

19669

DATE

Jun-25

Geotechnical Assessments | Environmental Assessments | Desktop Studies | Contamination Analysis

**LOCATION** Sandy Lodge Way, Northwood, Middlesex. HA6 2AS**ATTERBERG LIMITS TEST DATA**

Excavation Location Number	Depth (m)	Sample	Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Group Symbol	Amended Plasticity Index (%)	Desiccation Profile	Percentage Retained on 425 Micron Sieve (%)
BH1	1.10	U1	30	71	28	43	CV	43	Slight	0
BH1	3.00	U2	32						Slight	
BH1	5.00	U3	29	73	29	44	CV	44		0
BH1	8.00	U4	28							
BH1	11.00	U5	27	73	29	44	CV	44		0
BH1	14.00	U6	21							
BH1	18.50	D16	16							
BH1	21.50	D18	17	57	23	34	CH	34		0
BH1	24.50	D20	22							



# HESI

Herts & Essex Site  
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Geotechnical Assessments | Environmental Assessments | Desktop Studies | Contamination Analysis

APPENDIX

3

SHEET

3

JOB NUMBER

19669

DATE

Jun-25

**LOCATION** Sandy Lodge Way, Northwood, Middlesex. HA6 2AS

### SULPHATE ANALYSIS

Excavation Location Number	Depth (m)	Sample	Concentrations of Soluble Sulphate			Classification	pH
			Soil		Groundwater		
Total SO <sub>4</sub> (%)	SO <sub>4</sub> in 2:1 Water:soil (g/l)						
BH1	5.00	U3		1.37		DS-2 / AC-1s	8.12
BH1	11.00	U5		1.84		DS-3 / AC-2s	8.43

# APPENDIX B : FLOOD RISK DESK TOP STUDY

## Flood risk summary

Your selected location: 4, Sandy Lodge Way, Northwood, HA6 2AJ

This information tells you the flood risk of the land around a building, not the building itself

- [How we assess an area's flood risk](#)
- [Flood risk and climate change](#)

### Surface water [More about your surface water flood risk](#)

#### Yearly chance of flooding

Very low  Low  Medium  High

#### Yearly chance of flooding between 2040 and 2060

Very low  Low  Medium  High

#### What surface water is

Surface water flooding is sometimes known as flash flooding. It happens when rainwater cannot drain away through normal drainage systems

- [Why surface water flooding is a problem](#)

### Rivers and the sea [More about your rivers and sea flood risk](#)

#### Yearly chance of flooding

Very low  Low  Medium  High

#### Yearly chance of flooding between 2036 and 2069

Very low  Low  Medium  High

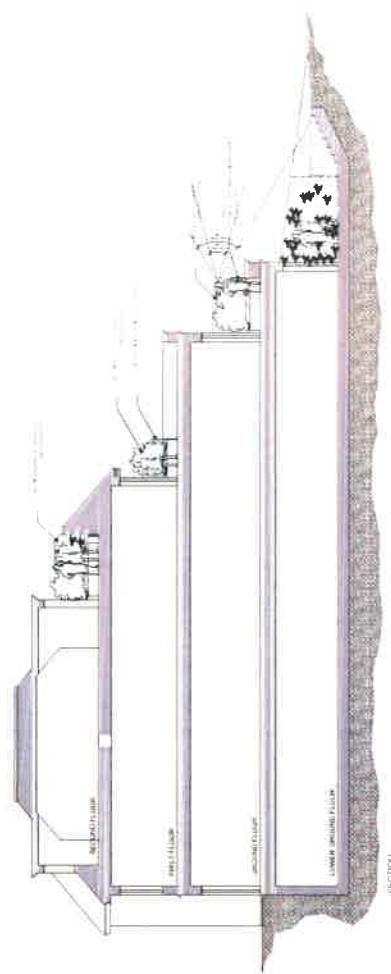
#### What makes rivers and sea flooding more likely

Low-lying areas that are close to rivers or the sea are more likely to flood when water levels rise.

This information takes into account any flood defences.

- [Why flood defences cannot completely prevent flooding](#)

## **APPENDIX C: PROPOSED PLANNING SCHEME**



Proposed Schedule of Accommodation				
Plot No	Bed	Balcony/ Terrace m <sup>2</sup>	GIA m <sup>2</sup>	GIA+P m <sup>2</sup>
Plot 1	2 BED+STUDY(4 person)	30	176.0	189.4
Plot 2	2 BED+STUDY(4 person)	11	117.0	129.9
Plot 3	3 BED+STUDY(5 person)	11	129.0	138.9
Plot 4	2 BED+STUDY(4 person)	8	89.0	95.8
Plot 5	3 BED+STUDY(6 person)	21.5	166.0	178.7
Total		81.5	677.0	728.7



PLANNING



ASCOT DESIGN  
Timeless architecture

GAVACAN HOMES

2 SANDY LODGE WAY  
NORTHWOOD HA6 2BZ

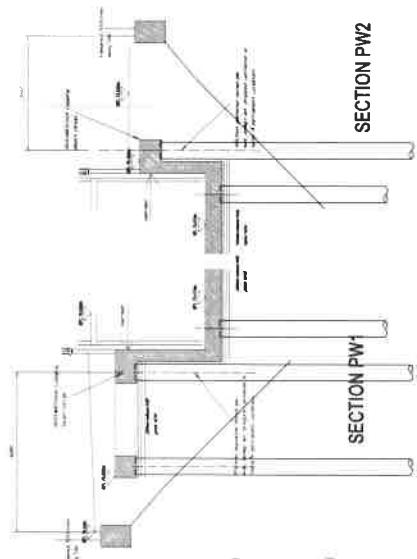
COLOURED SITE PLAN

1-3000A1 JUNE 24 NMB  
23-J4296-300.1



## **APPENDIX D : PROPOSED BASEMENT SECTIONS**

PRELIM  
ISSUE



TEMPORARY PROPS SUPPLIED  
AND DESIGNED MAYBEY  
ALL PILE CUT OFF LEVEL 73.025 UNLESS  
NOTED OTHERWISE

Ref	Top of Column	Column Top to TBC	Column Top to Top of Prop	Prop Top to Top of Pile	Prop Top to Top of Pile
1	-3.50	73.025	-	-	-
2	-4.00	73.025	-	-	-
3	-6.00	73.025	-	-	-
4	-2.00	73.025	-	-	-
5	-1.00	73.025	-	-	-
6	-2.00	73.025	-	-	-
7	-3.00	73.025	-	-	-
8	-2.50	73.025	-	-	-
9	-3.00	73.025	-	-	-
10	-2.00	73.025	-	-	-
11	-2.00	73.025	-	-	-
12	-2.00	73.025	-	-	-
13	-2.00	73.025	-	-	-
14	-2.00	73.025	-	-	-
15	-2.00	73.025	-	-	-
16	-2.00	73.025	-	-	-
17	-2.00	73.025	-	-	-
18	-2.00	73.025	-	-	-
19	-2.00	73.025	-	-	-
20	-2.00	73.025	-	-	-
21	-2.00	73.025	-	-	-
22	-2.00	73.025	-	-	-
23	-2.00	73.025	-	-	-
24	-2.00	73.025	-	-	-
25	-2.00	73.025	-	-	-
26	-2.00	73.025	-	-	-
27	-2.00	73.025	-	-	-
28	-2.00	73.025	-	-	-
29	-2.00	73.025	-	-	-
30	-2.00	73.025	-	-	-
31	-2.00	73.025	-	-	-
32	-2.00	73.025	-	-	-
33	-2.00	73.025	-	-	-
34	-2.00	73.025	-	-	-
35	-2.00	73.025	-	-	-
36	-2.00	73.025	-	-	-
37	-2.00	73.025	-	-	-
38	-2.00	73.025	-	-	-
39	-2.00	73.025	-	-	-
40	-2.00	73.025	-	-	-
41	-2.00	73.025	-	-	-
42	-2.00	73.025	-	-	-
43	-2.00	73.025	-	-	-
44	-2.00	73.025	-	-	-

ALL BASEMENT AREAS TO BE  
CAST IN CALITITE OR SIMILAR APPROVED  
CONCRETE

SHALLOWED PILE  
SUBJECT TO PILING CONTRACTOR  
DUE TO LIMIT EFFECTIVE SOIL  
TO EXISTING PROPERTIES  
BORED PILE WALL DESIGN SAFE WORKING  
VERTICAL LOAD 300kN/m

FOR BELOW DPC BRICKWORK SETTING OUT SEE  
ARCHITECTS DETAILS

