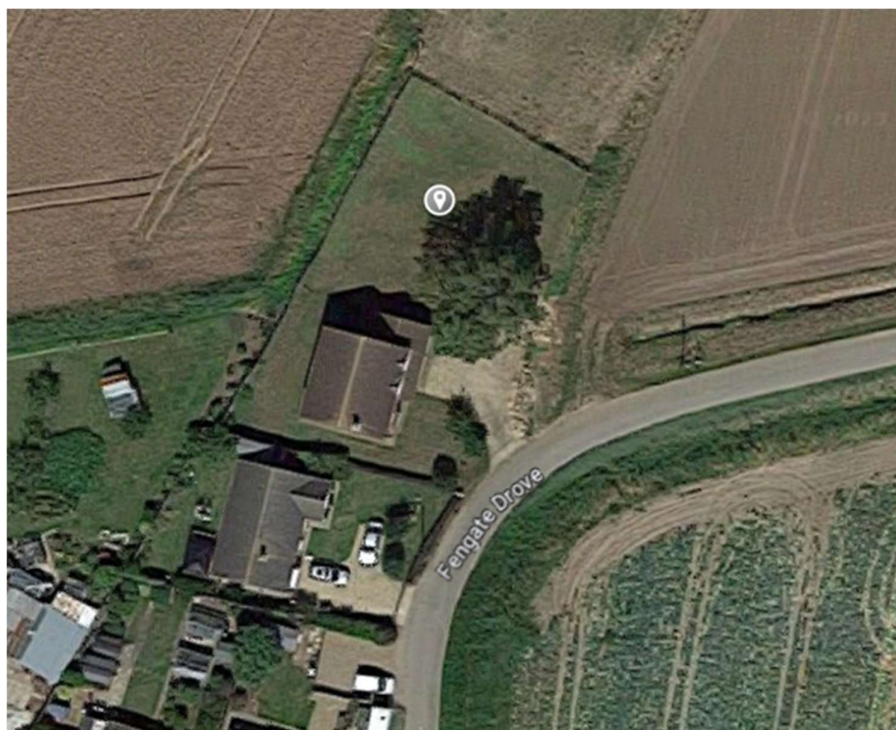


GROUND INVESTIGATION REPORT**UPON****LAND OFF 2 FENGATE DROVE,****WESTON HILLS,****LINCOLNSHIRE, PE12 6DJ****PROJECT No: SW 23-267****DOCUMENT REF: SW 23-267-GI-01**

Mr Adrian Brotherton
Highgrove Homes (Spalding) Ltd.,
Ashgrove Lodge,
Austendyke Road,
Weston Hills,
PE12 6BX



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1. INTRODUCTION

Acting upon the instruction of Mr Adrian Brotherton of Highgrove Homes, we attended site on 2nd August 2023, the purpose being to observe the underlying ground conditions and determine the basic characteristics of the soil strata.

Mechanically excavated trial pits took place, and our comments are based upon a visual inspection of the disturbed samples obtained and the in-situ strata within the trial pits.

We would suggest the groundwater conditions may vary seasonally and that the water levels as recorded at the time of explorations should not necessarily be taken as being constant as they may be subject to fluctuations.

The opinions and comments expressed within this report are based upon ground conditions encountered in the trial pits excavated at the time of our visit.

This report has been prepared for the named client above and should not be relied upon by any other parties, with the exception of the client's professional advisors, for any use without the express written permission of Shields Wilson Limited.

2. LOCATION & DESCRIPTION OF SITE

2.1. Site Location

The site is situated to the North-West of Fengate Drove, Weston Hills, Appropriate national grid reference TF 276 200.

A Location plan is contained with Appendix A.

2.2. Site History Description

Desktop study of publicly available historical maps has been undertaken and found the site stood as arable farmland in the 1950s prior to the adjacent site being developed.

An extract is contained within Appendix B.

2.3. Site Description

The site currently stands as a grassed garden.

The North of the site is bound by a post and rail fence which separates the existing garden from the neighbouring farmland.

The Eastern Boundary is boarded by ditch.

The West of the site is bound by a close board fence, separating the proposed site from existing neighbouring farmland.

The Southern boundary is currently open as this will form the boundary between proposed and existing development.

At the time of our visit the weather was dry and clear, however there had been some precipitation in the days leading up to the visit.

2.4. Geological Description

Desktop study of the area has been undertaken using the British Geological Society Maps.

The maps indicate the site to be underlain by superficial tidal flat deposits of Sand and Silt over the Oxford Clay (Mudstone) formation.

This information is based upon publicly available records. An extract is contained with Appendix C.

3. SITE WORK

Two Number trial pits were excavated with the use of mechanical excavator. The siting of these explorations is shown on the Location plan shown within Appendix A.

Soakaway testing was undertaken in accordance with the guidelines contained within BRE digest 365. Infiltration calculations are contained in Appendix F.

A visual inspection of the disturbed samples was undertaken. A description of the strata and test results are shown on sheets SW23-267/TP01 thru TP02. The Trial pit logs are contained within Appendix D.

The soil demonstrated no identifying odours or markers for known man-made contamination and with the historical investigation indicating no previous development being present, no samples were submitted for laboratory chemical analysis testing.

A photographic record of site explorations is contained within Appendix E.

4. GROUND CONDITIONS

The sequence of the strata encountered during the investigation generally conforms to the geology identified by the desk top studies.

The strata encountered in both explorations were very similar and demonstrated a consistent geological profile across the site.

Once the 0.4m of grassy topsoil material was penetrated the strata generally became a light brown, slightly clayey silt. This strata continued down to a depth of 1.6m below ground level. From depth of 1.6m to 2.3m the material recovered was a softer dark grey clay, this became softer with depth, at around 2.3m the clay became very soft and grey and continued down to the extent of excavation at 3.0m.

Similar to TP01, the second trial pit had a 0.4m layer of topsoil, below this was a light brown, slightly clayey silt down to a depth of 1.5m. The material recovered turned to a soft bluey grey clay down to a depth of 2.8m.

5. CONCLUSIONS & RECOMMENDATIONS

The proposed development is understood to comprise of a single bungalow constructed using traditional load bearing masonry walls.

Dwellings with structures of this nature are likely to develop foundation loads in the region of 30 – 40 kN/m.

As such our recommendations are as follows:

The ground floor should take the form of a traditional ground bearing concrete floor slab.

A traditional strip foundation solution with a formation level of 0.9m below existing ground level would be suitable for this project. In order to ensure additional stresses are not imposed onto the softer clays at depth, allowable bearing stresses should be limited to 45kN/m².

Should the formation depth be increased, or strips widened past 0.9m below existing ground level, consideration should be given to limiting stresses on softer strata below and bearing capacities reduced accordingly.

Furthermore, the results from the infiltration test show that the ground conditions are suitable for an infiltration drainage techniques, however, the detailed design should bear in mind the likely variable groundwater level and the less permeable strata at depth, as such infiltration drainage should be kept shallow. A value of 1.16×10^{-5} would be suitable for design purposes.

For and on behalf of **SHIELDS WILSON LIMITED**

J. Lawrence

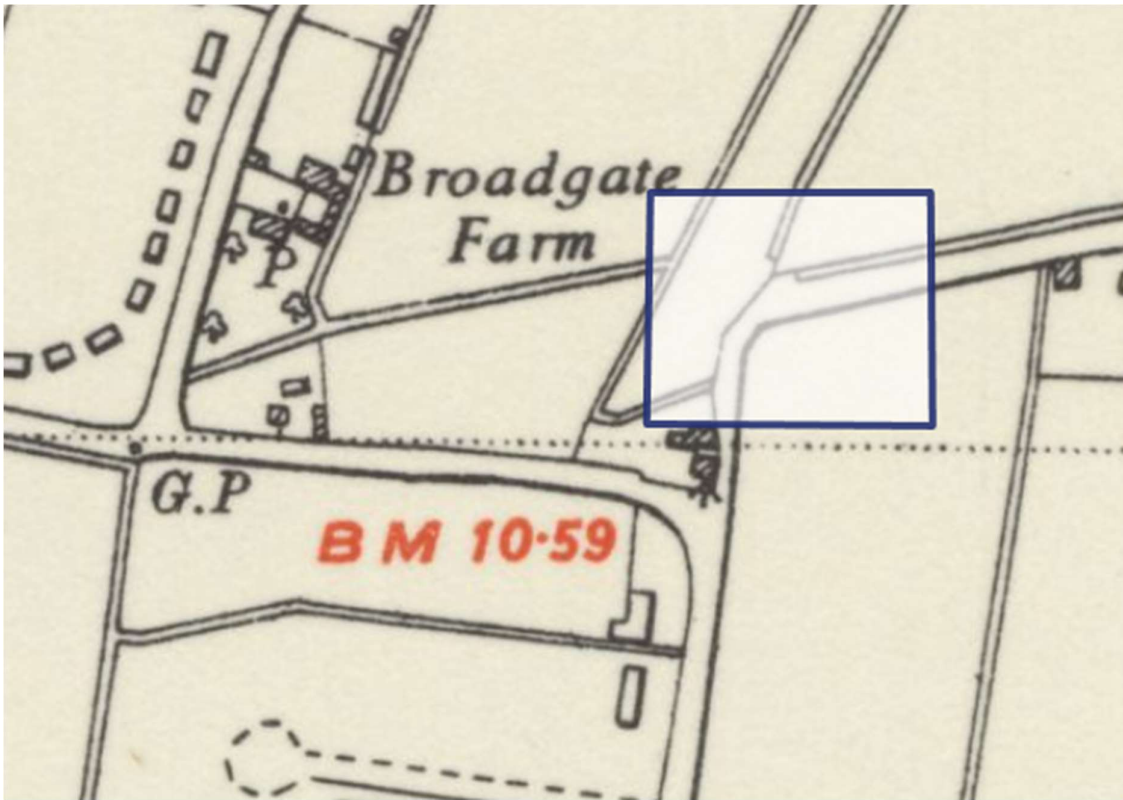
A.P. Wilson CEng MStructE

28th September 2023.

APPENDIX A

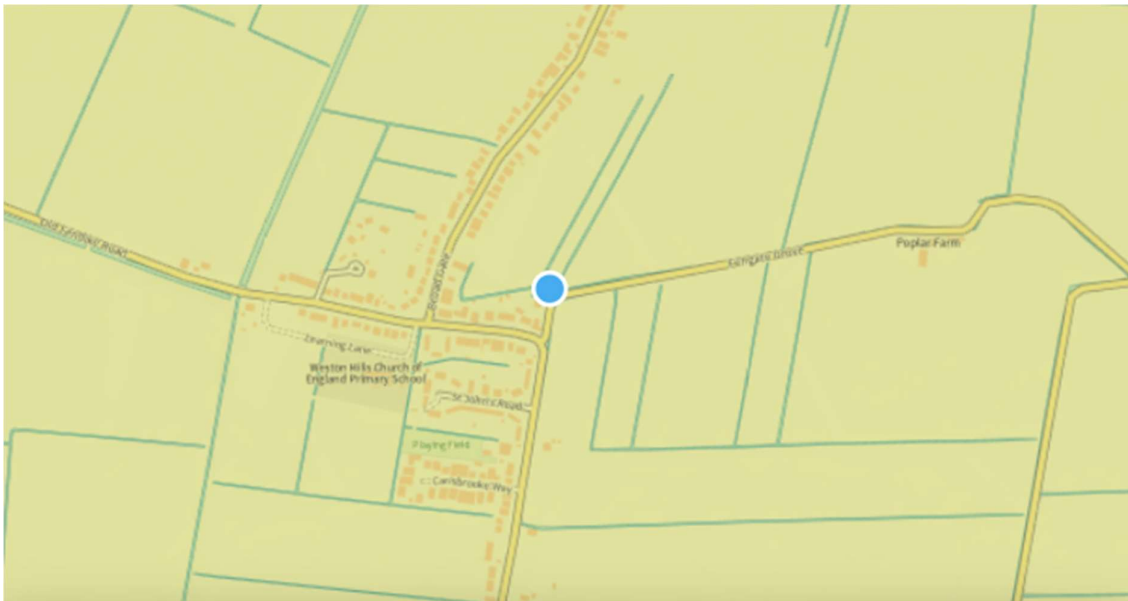


APPENDIX B



Extract of 1950 Map

APPENDIX C



Geology



Bedrock geology



Oxford Clay Formation - Mudstone. Sedimentary bedrock formed between 166.1 and 157.3 million years ago during the Jurassic period.

[More Information](#)

Superficial deposits



Tidal Flat Deposits - Clay and silt. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.

[More Information](#)

Extract British Geological Society Maps – Bedrock Geology
Extract British Geological Society Maps – Superficial Deposits

APPENDIX D

SHIELDS WILSON e: info@shieldswilson.co.uk t: 01775 729252 STRUCTURAL AND CIVIL ENGINEERING				LOGGED BY JL	JOB NO. SW23-267	BH01	
				DRAWN BY MRB	DATE OF TESTING 02/08/23		
PROJECT SINGLE DWELLING DEVELOPMENT FENGATE DROVE, WESTON HILLS SPALDING, PE12 6DJ				SITE COORDINATES TF277200			
				GROUND LEVEL 0.000 APPROX			
CLIENT HIGHGROVE HOMES LTD.				EXCAVATION METHOD MECHANICAL EXCAVATOR			
DESCRIPTION	REDUCED LEVEL	LEGEND	(THICK) DEPTH	SAMPLE REF.	TEST REQUIRED	MACKINTOSH PROBE	HAND SHEAR VANE
TOP SOIL			0.4m				
DRY SLIGHTLY CLAYEY LIGHT BROWN SILT			(1.2m)				
					0.95m	MP FOR 300mm 36 BLOWS	
					1.25m	MP FOR 300mm 54 BLOWS	
BLACK PEATY CLAY			1.6m (0.7m)				
VERY SOFT BLUEY GREY CLAY			2.3m (0.7m)				
			3.0m				
REMARKS: TRIAL PIT TERMINATED @ 3.0m							

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SHIELDS WILSON e: info@shieldswilson.co.uk t: 01775 729252 STRUCTURAL AND CIVIL ENGINEERING				LOGGED BY	JL	JOB NO.	SW23-267	BH02
				DRAWN BY	MRB	DATE OF TESTING	02/08/23	
PROJECT SINGLE DWELLING DEVELOPMENT FENGATE DROVE, WESTON HILLS SPALDING, PE12 6DJ				SITE COORDINATES TF277200				
				GROUND LEVEL 0.000 APPROX				
CLIENT HIGHGROVE HOMES LTD.				EXCAVATION METHOD MECHANICAL EXCAVATOR				
DESCRIPTION	REDUCED LEVEL	LEGEND	(THICK) DEPTH	SAMPLE REF.	TEST REQUIRED	MACKINTOSH PROBE	HAND SHEAR VANE	
TOP SOIL			0.4m					
DRY SLIGHTLY CLAYEY LIGHT BROWN SILT			(1.1m)					
			1.5m					
VERY SOFT BLUEY GREY CLAY			(1.3m)					
			2.8m					
REMARKS: TRIAL PIT TERMINATED @ 2.8m								

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APPENDIX E





APPENDIX F

PROPOSED SINGLE DWELLING DEVELOPMENT - FENGATE DROVE, WESTON HILLS - HIGHGROVE HOMES LTD.

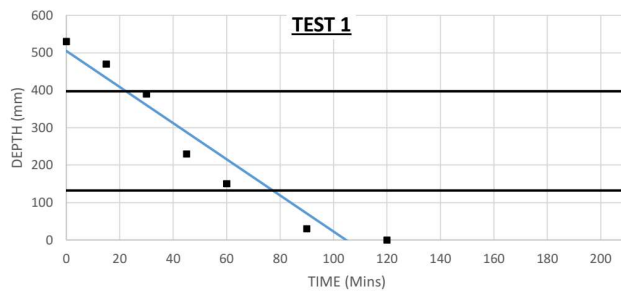
SA01	TEST 1	TEST 2	TEST 3
TIME (Mins)	DEPTH mm (d)	DEPTH mm (d)	DEPTH mm (d)
0	530	525	530
15	470	480	445
30	390	430	370
45	230	380	330
60	150	345	290
90	30	305	260
120	0	280	245
150		255	225
180		230	220
210		210	200

INFILTRATION TEST - HOLE SA01

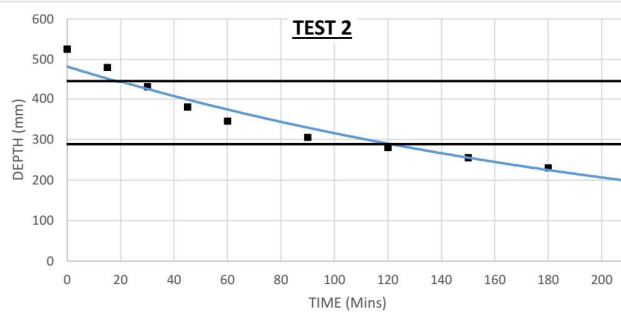
PROJECT NO. SW23-267

SITE VISIT: 02/08/2023

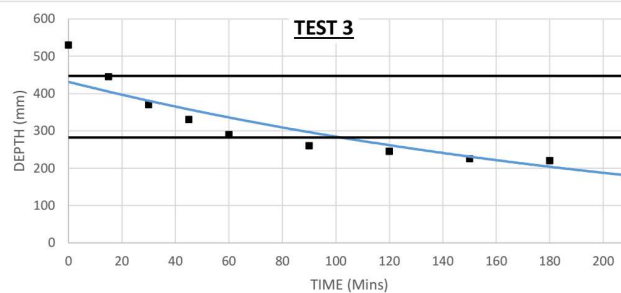
TRIAL PIT DIMENSIONS (m)	
A [L]	1.50
B [W]	0.60
C [D]	1.00



SOIL INFILTRATION RATE, f	
TEST 1	
	3.29111E-05 m/s
	0.118479881 m/h



SOIL INFILTRATION RATE, f	
TEST 2	
	1.51297E-05 m/s
	0.054466859 m/h



SOIL INFILTRATION RATE, f	
TEST 3	
	1.55367E-05 m/s
	0.055932203 m/h

PROPOSED SINGLE DWELLING DEVELOPMENT - FENGATE DROVE, WESTON HILLS - HIGHGROVE HOMES LTD.

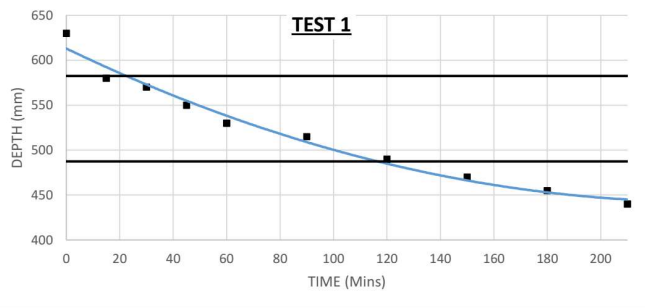
SA02	TEST 1	TEST 2	TEST 3
TIME (Mins)	DEPTH mm (d)	DEPTH mm (d)	DEPTH mm (d)
0	630	660	655
15	580	625	635
30	570	605	615
45	550	590	600
60	530	575	585
90	515	550	560
120	490	525	540
150	470	505	505
180	455	490	495
210	440	470	485

INFILTRATION TEST - HOLE SA02

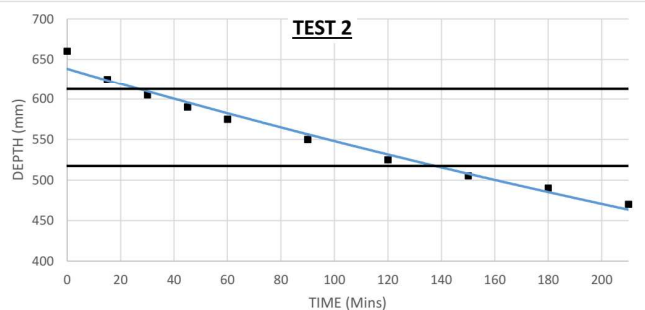
PROJECT NO. SW23-267

SITE VISIT: 02/08/2023

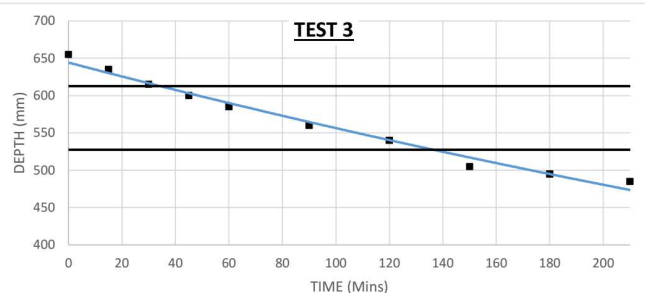
TRIAL PIT DIMENSIONS (m)	
A [L]	1.65
B [W]	0.60
C [D]	1.10



SOIL INFILTRATION RATE, f	
TEST 1	
1.16402E-05 m/s	
0.041904762 m/h	



SOIL INFILTRATION RATE, f	
TEST 2	
1.16402E-05 m/s	
0.041904762 m/h	



SOIL INFILTRATION RATE, f	
TEST 3	
1.07564E-05 m/s	
0.038723037 m/h	