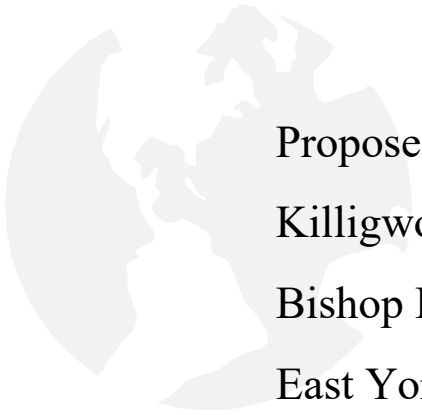


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# T. L. P. Ground Investigations.

## **Site Investigation Report**



Proposed Commercial Development,  
Killigwoldgraves Lane,  
Bishop Burton,  
East Yorkshire.

1<sup>st</sup> February 2017

# T. L. P. Ground Investigations Ltd.

## Site Investigation Report

Site: Proposed Commercial Development, Killigwoldgraves Lane, Bishop Burton, East Yorkshire.

Client: Conceptus UK Ltd.

Engineers: P & N Design Ltd.

Date: 01.02.2017.

### Brief

A new commercial development is being considered on an area of land situated on Killingwoldgraves Lane, Bishop Burton, East Yorkshire. In order to evaluate the suitability of the ground for the proposed works, TLP Ground Investigations Ltd. were requested to undertake a preliminary ground investigation at the site which was to include the following: -

- The sinking of 4 No. sampling boreholes using dynamic sampling equipment taking undisturbed soil samples and performing *in situ* tests.
- Identification of the prevailing soil and groundwater conditions.
- Examination and soils laboratory testing of selected samples.
- The provision of a report with borehole records and laboratory test results.

### Site and Geology

The irregular shaped site is situated to the west of Killingwoldgraves Lane approximately 1km to the southeast of the village of Bishop Burton in the East Riding of Yorkshire. The site was formerly occupied by a large roughly 'L' shaped agricultural / industrial building that was operated by Geroge Buckton Ltd.; a company specialising in the distribution of selected seeds and feed for pigeons and other birds. This building has subsequently been demolished and the demolition rubble removed from the site. In addition to the superstructure, it appears that the majority of the foundations and floor slab associated with the former building have also been broken up, excavated and removed from the site.

The site is currently accessed through a pair of galvanised metal gates located within the eastern boundary of the site along Killingwoldgraves Lane. The gates lead onto an area of concrete hard standing which extends northwards and westwards along the edges of the area where the former building once stood. Following demolition, the central and western areas of the site now lie at a slightly lower level than the adjacent hard standing estimated to be approximately 300mm to 500mm below the surface of the concrete. In this area, the site surface is uneven with numerous small mounds of soil and fragments of assorted demolition rubble strewn over the surface. This

area has now become partially overgrown with weeds and grasses. Just behind the facade of where the former structure once stood, there is an excavation which partially exposes a cylindrical metal tank measuring approximately 6m in length and 1.80m in diameter. The exposed tank (the top of which was estimated to be approximately 600mm below surrounding ground level) appeared to be partially filled with waste soil and rubble which may have occurred during the demolition works. Anecdotal information indicates that the tank was formerly used for the storage of water however, this has not been confirmed.

The remaining parts of the site, which lie outside the areas of demolition and outside the surrounding concrete apron. i.e. the southern part of the site and narrow area adjacent to the western site boundary are slightly less uneven at the surface and are generally set at similar level to that of the adjacent concrete apron.

A row of semi-mature trees and shrubs are present along parts of the eastern site boundary adjacent to Killingwoldgraves Lane; presumably planted to provide screening for the site. A small collection of trees is also present in the south western corner of the site. To the north of the site, is a small collection of residential properties some of which have medium sized agricultural out buildings. To the south of the site is a poultry farm incorporating three medium sized sheds. The remaining areas surrounding the site comprise agricultural farm land.

At the time of the investigation the site appeared to be well drained with no areas of standing water on the site surface.

From data obtained during other surveys taken in the area, together with information shown on the British Geological Survey 1: 50 000 Series it was anticipated that the site would be initially underlain by Glacial Till represented by deposits of clay, silt, sand and gravel. The underlying solid geology is represented by the Flamborough Chalk Formation which is of Santonian / Campanian age (Cretaceous).

### **Fieldwork**

The fieldwork was undertaken in accordance with BS 5930:1999+A2 2010 Code of Practice for Site Investigations and BS EN 1997-2:2007 'Eurocode 7 – Geotechnical Design – Part 2 – Ground Investigation and Testing' British Standards Institution and was completed on the 19<sup>th</sup> January 2017. It involved the excavation of 4 No. boreholes using dynamic sampling equipment to depths of between 4.00m and 4.10m beneath the surface. Undisturbed core samples were obtained as the borings were advanced and these were returned to the laboratory for subsequent examination and testing.

The borings were located in order to provide an overview of the ground conditions prevailing beneath the area of proposed new development whilst avoiding any existing underground services or any un-trafficable ground. A borehole was also located in the western part of the site in an area of possible future development. The approximate locations of the borings have been indicated on the enclosed site layout plan and aerial photograph.

### **Ground Conditions**

#### **Made Up / Disturbed Ground**

Boreholes BH1 and BH2 were located on the concrete hard standing (concrete apron) in the central eastern part of the site. Here, the surface comprised a layer of concrete measuring between 110mm and 115mm in thickness resting on a layer of tar macadam extending to depths of between 250mm and 370mm beneath the surface. At the location of BH2, this was further underlain by a sub-base of medium chalk gravel in a matrix of brown, silty, sandy fines. At both locations, the sub-base materials were underlain by deposits of 'made ground' extending to depths of between 0.70m and 0.88m beneath the surface concrete. This comprised generally 'firm to stiff' or 'stiff' deposits of greyish brown, silty, slightly sandy clay containing occasional fine to medium fragments of chalk, brick, coal, flint and other assorted stones.

BH3 was located within the area of former demolition where the ground level was approximately 400mm lower than the adjacent concrete hard standing. Here, deposits of 'made ground' extended to a depth of 1.05m below the local borehole ground level. This initially comprised 'loose' deposits of medium to coarse brick, chalk, and other assorted building rubble in a matrix of brown, gritty, sandy fines. At around 0.70m depth, this rested on a layer comprising medium fragments of chalk, brick, coal and other assorted stones in a matrix of brown, silty, sandy clay.

In BH4, which was estimated to be approximately level with the concrete apron, was located in the western side of the site, approximately 10m from the western site boundary, the surface was covered with a 100mm thick layer of mid brown, silty, sandy and clayey topsoil containing occasional fine stones. This rested directly on the underlying natural deposits of glacial till.

### **Natural Stratum**

The underlying natural deposits of 'glacial till' were represented by Boulder Clay comprising 'firm to stiff' or 'stiff', brown, mottled rust brown and light grey, silty, sandy clay containing occasional fine fragments of coal, sandstone and other assorted gravel. In boreholes BH1 and BH2, at depths of between 1.45m and 1.75m beneath the surface, the deposits became increasingly silty and sandy developing into brown, very silty and sandy clay containing occasional fine gravel fragments. At depths of between 2.00m and 2.35m beneath the surface, the same boreholes penetrated more competent deposits of brown or dark brown, silty, slightly sandy boulder clay containing occasional fine fragments of chalk, sandstone and other assorted stones. Similar deposits of less weathered boulder clay were encountered within the depths penetrated by boreholes BH3 and BH4. for the majority of the depth penetrated. At depths of around 3.80m to 3.90m beneath the surface, three of the borings penetrated deposits comprising predominantly assorted fine to medium, sub angular fragments of chalk and occasional flint in a matrix of brown silty and sandy clay. These deposits probably represent the development of the underlying Flamborough Chalk Formation. Historical borings performed on the southern part of the site by TLP Ground Investigations Ltd. in November 1998 encountered similar chalk deposits at depths of between 4.45m and 4.60m beneath the surface which quickly graded into compact, white chalk rubble and gravel.

No significant groundwater seepages were encountered within the depth penetrated and on completion of the borings the excavation remained dry.

### **Laboratory and In Situ Testing**

Atterberg Limit tests were performed on representative samples of the Glacial Boulder Clay recorded Plastic Index values (PI's) ranging between 26.2% and 27.0% indicating that the material has a 'Medium' volume change potential.

Hand vane tests were performed on sections of the undisturbed core samples recovered from the Glacial Boulder Clay and the results of the tests have been recorded on the enclosed borehole record sheets. Hand vane values varied between 42kN/m<sup>2</sup> and 156kN/m<sup>2</sup> indicating a range in consistency between 'soft to firm' and 'very stiff' for the deposit. It should be noted that the lower values were generally recorded on samples obtained from the more silty and sandy boulder clay encountered in borehole BH1 and BH2. The majority of the results were recorded in the 'firm to stiff' and 'stiff' ranges.

A Chemical test performed on representative sample of the made ground encountered in BH3 recorded water-soluble sulphate concentration of 0.12g/l (2:1 water / soil extract) with pH of 8.3.

### **Engineering Comments**

- The borings have revealed that in the eastern part of the site the surface construction comprises a layer of concrete measuring between 110mm and 115mm in thickness resting on an older layer of tar macadam extending to depths of between 250mm and 370mm beneath

the surface. This rests on deposits of made ground extending to depths of between 0.70m and 0.88m and represented by medium to coarse fragments of rubblely chalk over mixed brown, silty, sandy clay containing occasional fine fragments of chalk, brick and other assorted stones.

BH3 was located in the central western part of the site within the 'footprint' of a demolished building where the existing ground level was approximately 400mm lower than the surrounding area. Here deposits of 'made ground' were encountered to a depth of 1.05m beneath the (local ground level) surface initially comprising 'loose', medium and occasional coarse fragments of brick, chalk and other assorted building rubble in a matrix of brown, gritty, sandy fines. At 0.75m beneath the surface this rested on medium fragments of chalk, brick, coal and other assorted stones in a matrix of mixed brown, silty, sandy clay.

At the far western end of the site, approximately 10m from the western boundary, no significant deposits of 'made ground' were encountered. Here only a thin layer of topsoil rested on the underlying 'firm to stiff' boulder clay at 0.10m beneath the surface.

- In terms of bearing capacity and settlement considerations, the natural deposits of 'firm to stiff' or 'stiff' glacial boulder clay should provide a satisfactory bearing stratum for shallow spread foundations. As a preliminary guide to design, it has been computed that for strip or foundations constructed on 'firm to stiff' glacial boulder clay, the safe foundation bearing pressure would be approximately 150kN/m<sup>2</sup>. At this loading long term settlements should be limited to within 25mm. Care should be exercised to ensure that the foundations are constructed on **natural deposits of 'stiff' or 'firm to stiff' glacial boulder clay which in parts of the site may require excavations in excess of 1.55m below the level of the concrete surface.** In the western part of the site where possible future development could take place, natural boulder clay was encountered at only 100mm depth. However, more detailed investigation would be prudent to establish if this is the case within the 'footprint' of any future building that may be considered in this part of the site.
- In the eastern central part of the site, in the area where the former structure once stood, there is an excavation which partially exposes a buried cylindrical metal tank. The tank measured approximately 6m long by 1.80m in diameter and appeared to be partially filled with waste soil and rubble which may have occurred during the demolition works. Anecdotal information indicates that the tank was formerly used for water storage however, this has not been confirmed. Any new foundations which pass through this area are likely to require the tank to be removed prior to construction. Bearing in mind the size of the tank and its position, this may require foundations greater than 2.50m in depth in order to establish the natural boulder clay and this may necessitate an engineered design.
- If a ground bearing floor slabs are to be considered for the proposed new development then any 'made ground' remaining beneath the area of the slab will need to be adequately compacted, possibly relayed or even replaced with compacted granular fill of suitable grading. This is particularly true in the areas of thicker made ground or in the area of the tank, should it need to be excavated and the area backfilled. If left *in situ*, the tank should be filled with appropriate material and the area capped to minimise any potential long term settlement. If even minimal settlement of the ground slab cannot be tolerated then a 'fully suspended ground floor construction' may wish to be considered which would mitigate the risk of damage that might result from subsequent consolidation of any remaining 'made ground'.
- It is understood that some mobile heavy lifting equipment will be incorporated into the proposed new structure. Bearing in mind the variable depth and consistency of the 'made ground' beneath parts of the site, it would be prudent to support any mobile crane stanchions on foundations which are constructed within the underlying natural boulder clay.
- No significant groundwater infiltrations were encountered within the depths penetrated by the borings and on completion all of the borings remained dry. It is therefore unlikely that foundation excavations will encounter any significant groundwater ingress. However, owing to the generally 'loose' and stony composition of the 'made ground' particularly within the area of former demolished building, foundation excavations may experience some sidewall

instability which may require the provision of temporary trench supports to ensure that construction can proceed under optimum conditions.

- Atterberg limit determinations have established that the boulder clay is a material with a 'medium volume change potential' and as a result would be susceptible to volume changes associated with seasonal fluctuations in soil moisture content, which could be exasperated by root activity. In this connection reference should be made to the NHBC Standard Chapter 4.2 'Building near trees' 2003, which provides useful guidance on meeting the technical requirements and recommendation for building near trees. Although no significant vegetation has been identified within influencing distance of the proposed new structure, the impact of existing trees /hedges on any future extensions should be taken into consideration. Any new plantings (trees /hedges) should be positioned beyond the influence of the new foundations taking into consideration the water demands and heights of the chosen specimens at full maturity.
- Chemical tests performed on a representative sample of the 'made ground' encountered in BH3, recorded a water-soluble sulphate concentrations of 0.12g/l (2:1 water / soil extract) with pH of 8.3. This value fall within design sulphate class DS-1 of the BRE Digest Special Digest 1 classification 'Concrete in Aggressive Ground'. In accordance with the guidelines contained in Part 1 of the Digest and taking into account the geology and specific soil and groundwater conditions, the site can be assigned an ACEC (Aggressive Chemical Environment for Concrete) Class AC-1.

*The opinions expressed in this report assume that the ground conditions do not vary beyond the range revealed by the scope of the investigation. There may, however, be conditions at the site, which have not been identified by the investigation and therefore will not have been considered in this report. Accordingly a careful watch should be maintained during any future ground works and this report and its conclusions reviewed and /or modified accordingly.*

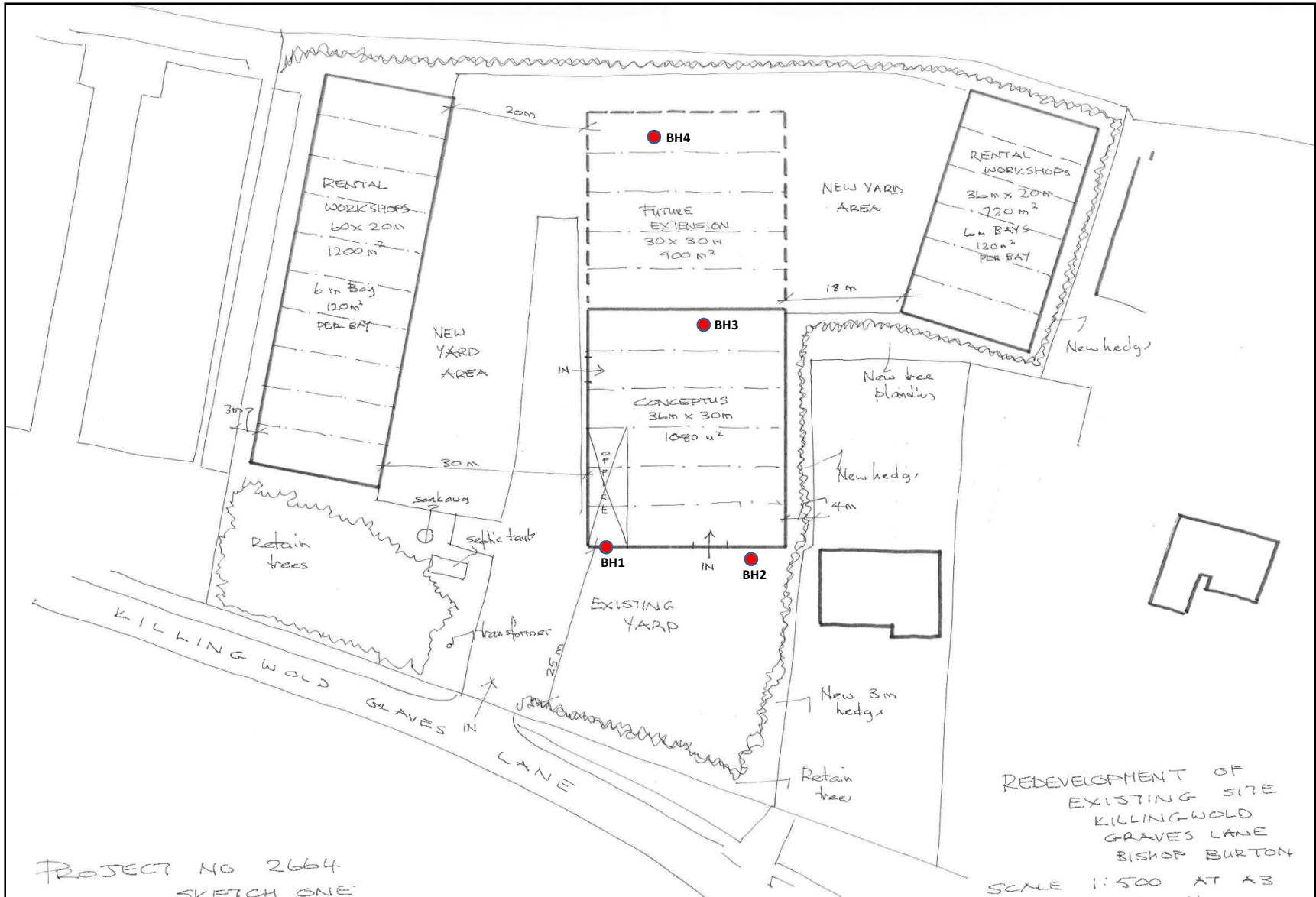
**TLP Ground Investigations Ltd**



R. L. Trattles B.Sc. M.Sc.

Ref. RT/CUL/P&N/ 01/2017

# Borehole Location Plan

Proposed Commercial Development, Killingwoldgraves Lane, Bishop Burton.



T.L.P. Ground Investigations Ltd.		Borehole Record Dynamic Probe / Sampler.		Location : Commercial Development, Killingwoldgraves Lane, Bishop Burton.			Borehole No. BH1.		
Carried out For Conceptus UK Ltd.		Ground Level		Co-ordinates			Date : 19.1.2017		
Description	Reduced Level	Legend	Depth & Thickness	Samples/Tests			Field Records		
				Depth	samples Type No.	Test			
Concrete slab. Tar macadam over tar coated chippings. <b>Made Ground</b> Very stiff, mixed, brownish grey, silty, sandy clay containing assorted fine to medium fragments of chalk, brick, coal, flint and other assorted stones.			(0.115) 0.115 (0.255) 0.37 (0.33) 0.70	0.18 - 1.10	U 1				
Generally stiff, brown, mottled light grey, silty, slightly sandy <b>Clay</b> containing occasional fine fragments of coal, sandstone and other assorted gravel.  <b>Glacial Till / Boulder Clay</b>  Brown, very silty and sandy <b>Clay</b> / clayey <b>Sand</b> containing fine to medium gravel.  Stiff, brown, becoming dark brown, mottled grey, silty, slightly sandy <b>Clay</b> containing occasional fine fragments of chalk, sandstone and other assorted gravel.  Stiff, mid brown, silty, slightly sandy <b>Clay</b> containing occasional fine fragments of chalk, other assorted gravel.  Fine to medium fragments of sub angular <b>Chalk</b> and occasional flint in a matrix of brown, silty, slightly sandy <b>Clay</b> .  <b>Observations</b> No groundwater seepages were encountered within the depth penetrated by the borehole and on completion the excavation remained dry.			0.80  (1.05)  1.40  1.75  (0.60)  2.35  2.60  (1.10)  2.90 3.00 - 4.00  3.20  3.45  (0.45)  3.80  3.90 4.00		U 2  U 3  U 4	Vane  Vane  Vane  Vane  Vane  Vane  Vane	156kN/m <sup>2</sup>  112kN/m <sup>2</sup>  124kN/m <sup>2</sup>  124kN/m <sup>2</sup>  50kN/m <sup>2</sup>  108kN/m <sup>2</sup>  96kN/m <sup>2</sup>  138kN/m <sup>2</sup>  112kN/m <sup>2</sup>  116kN/m <sup>2</sup>  118kN/m <sup>2</sup>		
			<b>End of Borehole</b>						
	S.P.T. : Where full penetration has not been achieved the number of blows for the quoted penetration is given (Not 'N' value)	Samples/Test Key. D Disturbed Sample B Bulk Sample W Water Sample U Undisturbed Core sample S Standard Penetration Test V Vane Test		Remarks				Logged by S. P. T. / J. T.	
	Depths: All depths and reduce levels in metres. Thickness given in brackets in depth column.							Scale 1 : 25	
									Fig.



T.L.P. Ground Investigations Ltd.		Borehole Record Dynamic Probe / Sampler.		Location : Commercial Development, Killingwoldgraves Lane, Bishop Burton.		Borehole No. BH2.			
Carried out For Conceptus UK Ltd.		Ground Level		Co-ordinates		Date : 19.1.2017			
Description	Reduced Level	Legend	Depth & Thickness	Samples/Tests			Field Records		
				Depth	samples Type No.	Test			
Concrete slab. Tar macadam over tar coated chippings. <b>Made Ground</b> Compact, medium fragments of chalk in a matrix of brown, gritty, sandy fines. Firm, greyish brown, silty and sandy clay containing occasional fine to medium fragments of chalk, brick and other assorted stones.			(0.11)	0.15 - 1.10	U	1			
			0.11 (0.14) 0.25						
Stiff becoming firm to stiff, brown, mottled rust brown, silty, slightly sandy <b>Clay</b> containing occasional fine fragments of coal, sandstone and other assorted gravel.  Firm to stiff, brown, mottled light grey, very silty, slightly sandy <b>Clay</b> containing fine to medium gravel.  <b>Glacial Till / Boulder Clay</b>  Soft to firm, becoming firm to stiff, mid brown, silty, slightly sandy <b>Clay</b> containing occasional fine fragments of chalk, sandstone and other assorted gravel.			(0.27)	0.80			Vane	58kN/m <sup>2</sup>	
			0.52						
			(0.36)	1.10 - 2.00	U	2		Vane	104kN/m <sup>2</sup>
			0.88						
			(0.57)	1.40				Vane	96kN/m <sup>2</sup>
			1.45						
			(0.55)	1.70				Vane	80kN/m <sup>2</sup>
			2.00						
			2.00 - 3.00	U	3			Vane	76kN/m <sup>2</sup>
			2.30						
	2.60	U	4			Vane	86kN/m <sup>2</sup>		
	2.90								
	3.00 - 4.00					Vane	86kN/m <sup>2</sup>		
	3.20								
	3.50					Vane	76kN/m <sup>2</sup>		
	3.80								
	4.00	<b>End of Borehole</b>							
<b>Observations</b> No groundwater seepages were encountered within the depth penetrated by the borehole and on completion the excavation remained dry.							Logged by S. P. T. / J. T.		
S.P.T. : Where full penetration has not been achieved the number of blows for the quoted penetration is given (Not 'N' value)  Depths: All depths and reduce levels in metres. Thickness given in brackets in depth column.		Samples/Test Key. D Disturbed Sample B Bulk Sample W Water Sample U Undisturbed Core sample S Standard Penetration Test V Vane Test		Remarks			Scale 1 : 25  Fig.		

T.L.P. Ground Investigations Ltd.		Borehole Record Dynamic Probe / Sampler.		Location : Commercial Development, Killingwoldgraves Lane, Bishop Burton.			Borehole No. BH3.	
Carried out For Conceptus UK Ltd.		Ground Level		Co-ordinates			Date : 19.1.2017	
Description	Reduced Level	Legend	Depth & Thickness	Samples/Tests			Field Records	
				Depth	samples Type No.	Test		
<p>Loose, medium and occasional coarse fragments of brick, chalk and assorted building rubble in a matrix of brown, gritty, sandy fines.</p> <p><b>Made Ground</b></p> <p>Medium fragments of chalk, brick, coal and other assorted stones in a matrix of mixed, brown, silty, sandy clay.</p>			0.00 - 1.00	U	1			
			(0.75)	0.75				
<p>Firm to stiff becoming stiff, brown, mottled light grey, silty, slightly sandy <b>Clay</b> containing occasional fine fragments of chalk, coal, sandstone and other assorted stones.</p> <p><b>Glacial Till / Boulder Clay</b></p> <p>Thin lens of dry, light brown, medium sand</p> <p>Fine to medium fragments of sub angular <b>Chalk</b> and occasional flint in a matrix of brown, silty, sandy <b>Clay</b>.</p> <p><b>Observations</b> No groundwater seepages were encountered within the depth penetrated by the borehole and on completion the excavation remained dry.</p>			1.00 - 2.05	U	2	S N12	86kN/m <sup>2</sup>	
			(0.30)	1.10				
				1.40			Vane	132kN/m <sup>2</sup>
				1.70			Vane	120kN/m <sup>2</sup>
				2.00			Vane	120kN/m <sup>2</sup>
				2.05 - 3.10	U	3		
				(2.85)	2.30		Vane	110kN/m <sup>2</sup>
				2.60			Vane	104kN/m <sup>2</sup>
				2.90			Vane	124kN/m <sup>2</sup>
				3.10 - 4.10	U	4		
			3.20		Vane	104kN/m <sup>2</sup>		
			3.50		Vane	96kN/m <sup>2</sup>		
			3.51					
			3.80		Vane	88kN/m <sup>2</sup>		
			3.90					
			4.10					
			<b>End of Borehole</b>					
S.P.T. : Where full penetration has not been achieved the number of blows for the quoted penetration is given (Not 'N' value)		Samples/Test Key.		Remarks			Logged by	
Depths: All depths and reduce levels in metres. Thickness given in brackets in depth column.		D Disturbed Sample B Bulk Sample W Water Sample U Undisturbed Core sample S Standard Penetration Test V Vane Test					S. P. T. / J. T.	
							Scale	
							. . .	
							Fig.	

T.L.P. Ground Investigations Ltd.		Borehole Record Dynamic Probe / Sampler.		Location : Commercial Development, Killingwoldgraves Lane, Bishop Burton.		Borehole No. BH4.	
Carried out For Conceptus UK Ltd.		Ground Level		Co-ordinates		Date : 19.1.2017	
Description	Reduced Level	Legend	Depth & Thickness	Samples/Tests			Field Records
				Depth	samples Type No.	Test	
Mixed, brown, silty, sandy clay containing occasional fine to medium fragments of chalk and other stones. <b>Topsoil</b>			(0.10) 0.10	0.00 - 1.10	U 1		
Stiff, brown, mottled rust brown, silty and sandy <b>Clay</b> containing fine to medium fragments of coal, sandstone and other assorted gravel.			(0.40) 0.50	0.50		Vane	130kN/m <sup>2</sup>
Firm to stiff, mid to dark brown, silty, slightly sandy <b>Clay</b> containing occasional fine fragments of chalk, coal, sandstone and other assorted gravel.			(0.85) 0.80	0.80		Vane	86kN/m <sup>2</sup>
<b>Glacial Till / Boulder Clay</b>			1.10 - 2.10	1.10 - 2.10	U 2	Vane	85kN/m <sup>2</sup>
			1.35	1.40		Vane	118kN/m <sup>2</sup>
			1.70	1.70		Vane	132kN/m <sup>2</sup>
			2.00	2.00		Vane	108kN/m <sup>2</sup>
			2.10 - 3.10	2.10 - 3.10	U 3	Vane	128kN/m <sup>2</sup>
Stiff, brown, mottled grey, silty, slightly sandy <b>Clay</b> containing occasional fine fragments of chalk, coal, sandstone and other assorted gravel.			(2.45) 2.30	2.30		Vane	128kN/m <sup>2</sup>
			(2.45) 2.60	2.60		Vane	142kN/m <sup>2</sup>
			2.90	2.90		Vane	150kN/m <sup>2</sup>
			3.10 - 4.10	3.10 - 4.10	U 4	Vane	150kN/m <sup>2</sup>
			3.20	3.20		Vane	150kN/m <sup>2</sup>
			3.50	3.50		Vane	132kN/m <sup>2</sup>
Fine to medium fragments of sub angular <b>Chalk</b> and occasional flint in a matrix of brown, silty, sandy <b>Clay</b> .			3.80	3.80		Vane	116kN/m <sup>2</sup>
			4.10	4.10			
<b>End of Borehole</b>							
<b>Observations</b> No groundwater seepages were encountered within the depth penetrated and on completion the borehole remained dry.							
S.P.T. : Where full penetration has not been achieved the number of blows for the quoted penetration is given (Not 'N' value)	Samples/Test Key.		Remarks				Logged by S D T / I T
Depths: All depths and reduce levels in	<ul style="list-style-type: none"> <li>D Disturbed Sample</li> <li>B Bulk Sample</li> <li>W Water Sample</li> <li>U Undisturbed Core sample</li> <li>S Standard Penetration Test</li> <li>V Vane Test</li> </ul>						Scale 1 : 25
						Fig.	

# Summary of Lab Test Data

## Moisture Content and Plasticity

Client	Conceptus UK Ltd
Location	Killingwoldgraves Lane, Bishop Burton
Job No.	Your Ref. - above
Date	19-01-17

Sample Details			Classification						
No. Type	Depth (m)	Description	w%	%<425μ	w <sub>c</sub> %	LL%	PL%	PI%	I <sub>p</sub> %
BH1	1.10	Boulder Clay (Cl)	27.8	100	27.8	39.7	12.8	26.9	26.9
BH2	1.10	Boulder Clay (Cl)	26.2	100	26.2	38.7	12.5	26.2	26.2
BH3	1.40	Boulder Clay (Cl)	28.4	100	28.4	40.1	13.4	26.7	26.7
BH4	0.80	Boulder Clay (Cl)	27.1	100	27.1	39.9	12.9	27.0	27.0

**Key**

BS1377	%<425μ	Percent Passing 425 Micron Sieve
BS1377	w%	Natural Moisture Content
BS1377	w <sub>c</sub> %	Corrected w% for <425 Micron
BS1377	LL%	Liquid Limit of Sample >425 Micron removed
BS1377	PL%	Plastic Limit of Sample >425 Micron removed
BS1377	PI%	Plastic Index LL% - PL%
NHBC 4.2	I <sub>p</sub> %	Modified Plasticity Index for <425 micron - NHBC 4.2

**Notes - Classification**

NP	Non Plastic
CL	Clay of Low Plasticity
CI	Clay of Intermediate Plasticity
CH	Clay of High Plasticity
CV	Clay of Very High Plasticity
CE	Clay of Extremely High Plasticity
ML	Silt of Low Plasticity
MI	Silt of Intermediate Plasticity
MH	Silt of High Plasticity
MV	Silt of Very High Plasticity
ME	Silt of Extremely High Plasticity

Based on Plasticity Chart Fig 31. (B.S. 5930 - 1981)

Liquid limit determinations performed on soil samples in natural state <425 micron particle size, using one point method in accordance with BS 1377 Part 2

Plastic limit determinations performed on soil samples in natural state <425 micron particle size in accordance with BS 1377 Part 2

