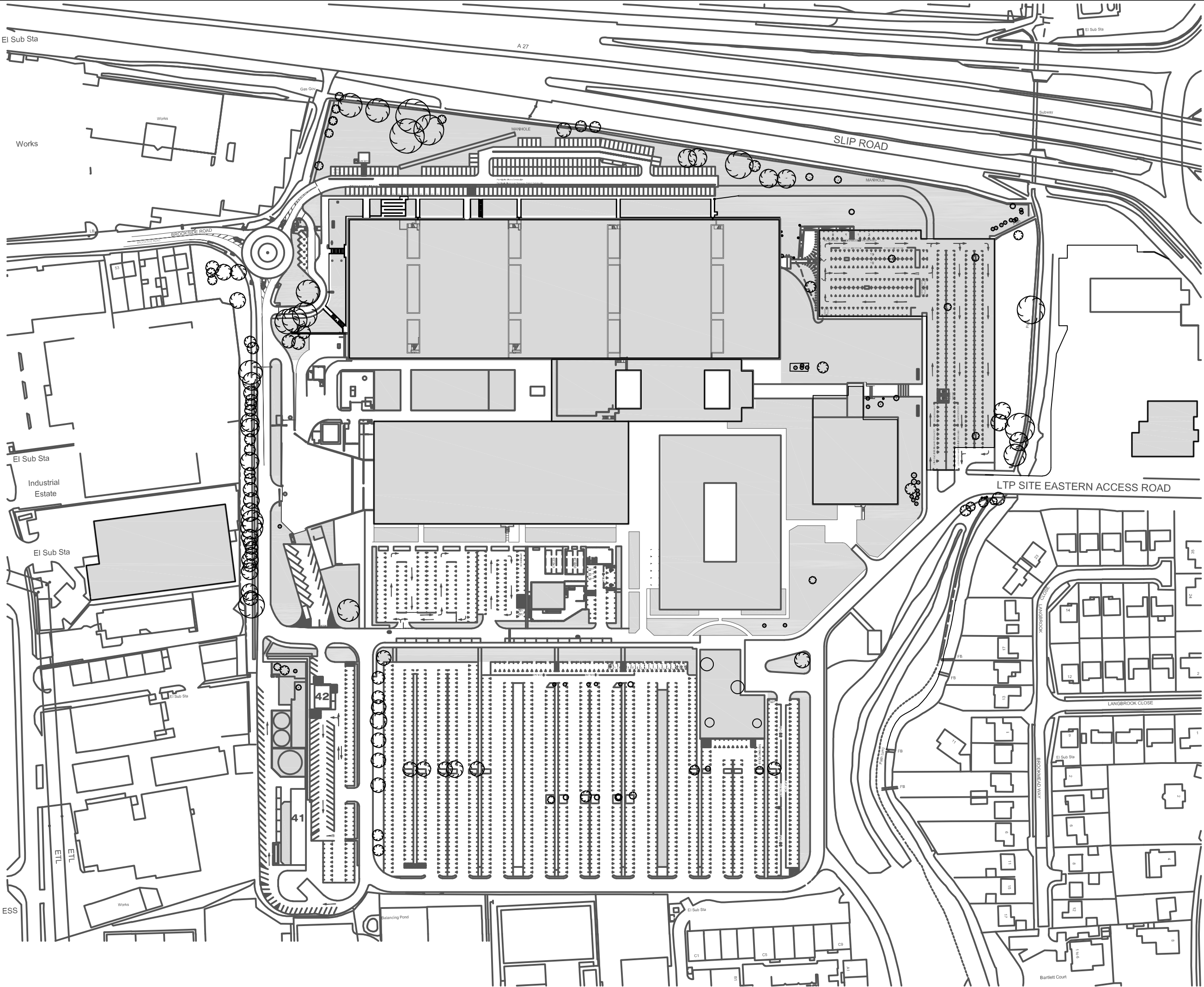
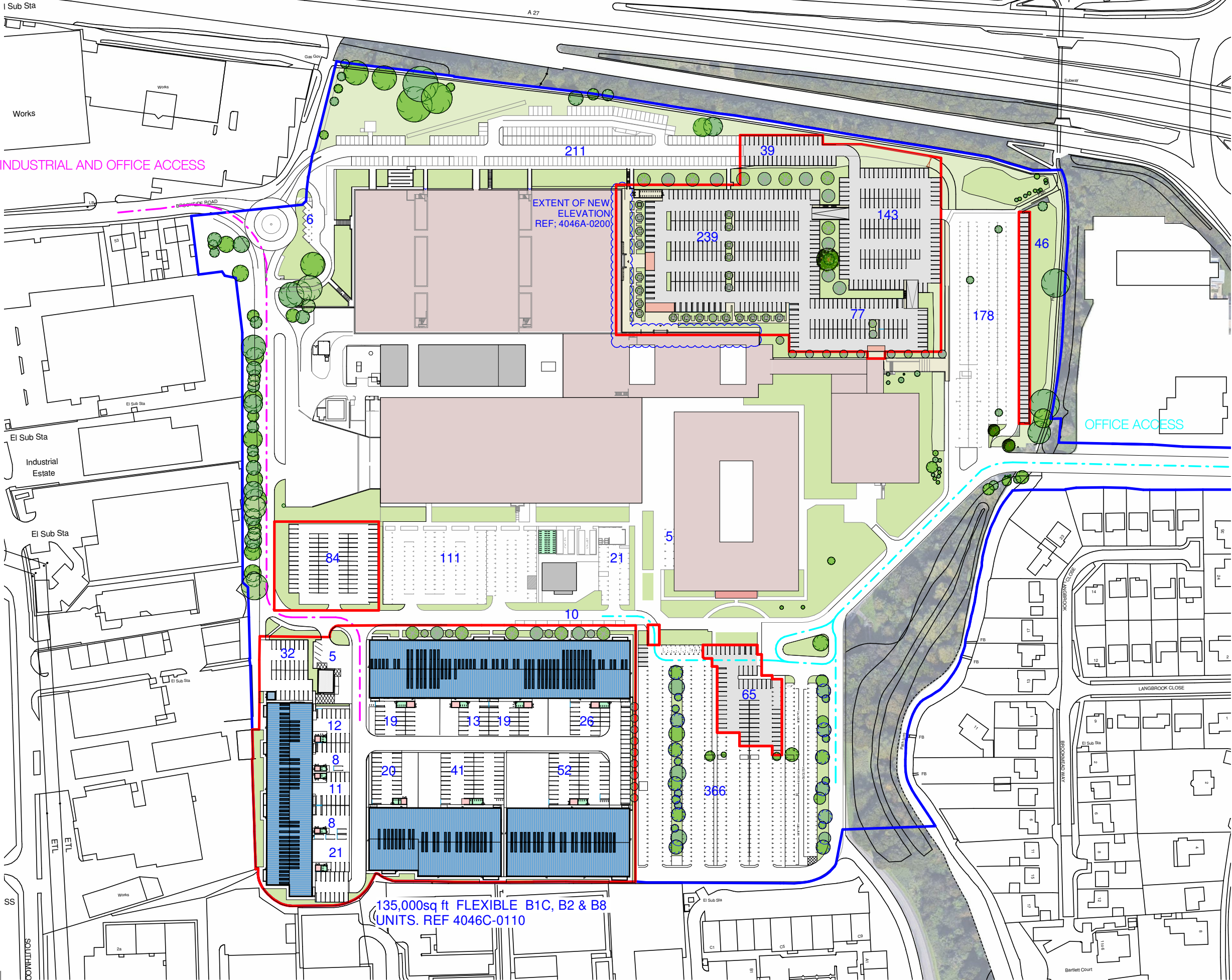




Total Site Parking: 1888 (4.5% Disabled)



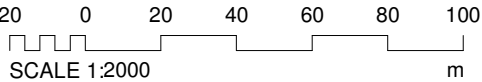
Notes

This drawing may be scaled for the purposes of Planning Applications, Land Registry and for Legal plans where the scale bar is used, and where it verifies that the drawing is an original or an accurate copy. It may not be scaled for construction purposes.

Always refer to figured dimensions. All dimensions are to be checked on site. Discrepancies and/or ambiguities between this drawing and information given elsewhere must be reported immediately to this office for clarification before proceeding. All drawings are to be read in conjunction with the specification and all works to be carried out in accordance with latest British Standards / Codes of Practice.

G 26.06.19 CJ Industrial area and landscape coordinated.

Rev	Date	Init	Notes	Chkd
-----	------	------	-------	------



Client

Drawing Originator



London - 106 Weston Street London SE1 3QB 020 7160 6000
Bristol - Rivergate House, Bristol, BS1 6LS 0117 923 2535
Plymouth - East Quay House, Plymouth, PL4 0HX 01752 261 282

RIBA Chartered Practice www.aww-uk.com

Project Title

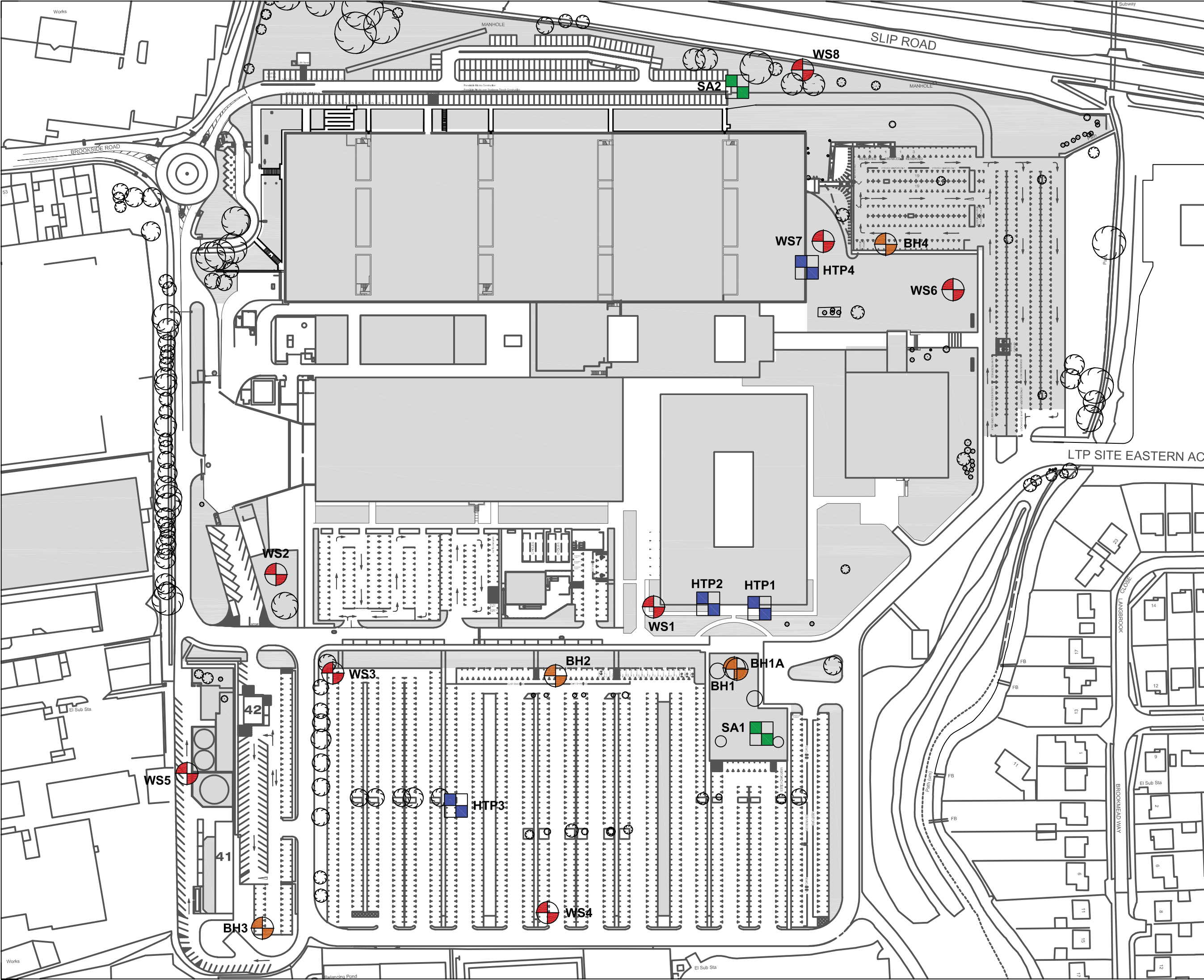
Langstone Technology Park

Drawing Title

Proposed Layout Plan Opt 02

Scale	Sheet	Drawn	Checked	Date
1 : 2000	A3	CJ	IJ	19.03.19

Status	Project No.	
PLANNING	4046	
Drawing Reference	Drawing No.	Revision
	0152	G



Key

Cable Percussive Borehole

Window Sample

Borehole Hand Excavated Trial Pit

Soakaway Test Trial Pit

REV	DATE	DESCRIPTION	BY	CHK.	APP.
Rev	Date	Description	By	Check	App.

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Client	Malcolm Hollis			
Project	Langstone Technology Park Havant			
Office	Altrincham			
Discipline	Geo-environmental			
Title	Exploratory Hole Location Plan			
Scale @ A3	NTS	Status		

www.clancy.co.uk

Originator	Job Number	Discipline	Building/Zone
SHP	10/1425	GEO	
Type	Level	Drawing No.	Revision
		002	A

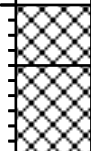
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Birmingham 0121 260 7680 - Chelmsford 01273 5336 - London 020 3977 5975 - Manchester 0161 613 0030 - Liverpool 0151 221 7231 - Weymouth 01323 5336

Appendix II

		Project Title: Langstone Technology Park, Havant				BH1	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.845214		E Coord: -0.987924	
Date: 15/07/2019		Method: Cable Percussion		Driller: WB Drilling		Logged By: SHP	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.20	ES	sb 50/85mm			0.40	MADE GROUND: Grass over brown silty sandy gravelly clay. Gravel is angular to sub-rounded fine to coarse of flint with fragments of slate and brick. Occasional roots and abundant rootlets towards the top of the unit. MADE GROUND: Greyish white clayey sandy angular to sub-rounded fine to coarse gravel of chalk and flint with fragments of brick. MADE GROUND: Concrete obstruction. End Of Borehole At 1.10 m		
0.60	ES				1.00			
1.00 - 1.10	SPT				1.10			
					2.00			
					3.00			
					4.00			
					5.00			
					6.00			
					7.00			
					8.00			

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level 		REMARKS No Groundwater Encountered Borehole terminated due concrete obstruction. Borehole backfilled with arisings. Scale: 1:50		Water Strikes																									
				<table border="1"> <thead> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>						Date	Strike	Level	Minutes	Casing	Sealed														
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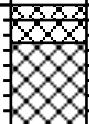
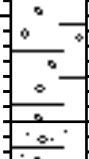
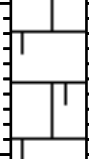
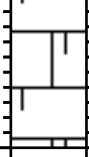
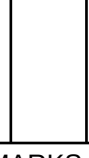
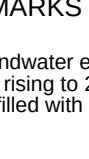
			Project Title: Langstone Technology Park, Havant				BH1A																																																	
			Project Number: 10/1425		Client: AG Langstone B.V.				Sheet 1 Of 4																																															
			GL (mAOD):		N Coord: 50.845214		E Coord: -0.987924																																																	
Date: 15/07/2019-17/07/2019			Method: Cable Percussion		Driller: WB Drilling		Logged By: SHP																																																	
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe																																																
1.20 - 1.65 1.40	SPT ES	sb 50/85mm			0.40	MADE GROUND: Grass over brown silty sandy gravelly clay. Gravel is angular to sub-rounded fine to coarse of flint with fragments of slate and brick. Occasional roots and abundant rootlets towards the top of the unit.																																																		
					1.00																																																			
					1.15		MADE GROUND: Greyish white clayey sandy angular to sub-rounded fine to coarse gravel of chalk and flint with fragments of brick.																																																	
					1.30																																																			
2.00 - 2.45	SPT	N=45			2.00	MADE GROUND: Concrete.																																																		
					2.00	MADE GROUND: Void.																																																		
3.00 - 3.45	SPT	pp 50/230mm			2.60	MADE GROUND: Brown sandy gravelly clay. Gravel is sub-rounded to rounded fine to coarse of flint and concrete with a low cobble content of concrete. Becoming increasingly gravelly with fragments of brick and a medium cobble content towards the base of the unit.																																																		
					3.00																																																			
3.50	ES					Very dense becoming medium dense light brown sandy very cleyey sub-angular to sub-rounded fine to coarse GRAVEL of flint and chalk.																																																		
4.00 - 4.45	SPT	N=10			4.00																																																			
					4.30																																																			
5.00 - 5.45	SPT	N=13			5.00	Firm light brown sandy gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded of flint and chalk.																																																		
					5.40																																																			
6.00 - 6.45	U				6.00	Structureless CHALK composed of uncompact light brownish cream sandy gravelly SILT. Gravel is sub-angular to sub-rounded white. (Grade Dm).																																																		
					7.00																																																			
7.50 - 7.95	SPT	N=13			7.50	Structureless CHALK composed of uncompact light brownish cream sandy gravelly SILT with low cobble content. Gravel and cobbles are sub-angular to sub-rounded white. Occasional black flecks and flint cobbles. (Grade Dm).																																																		
					8.00																																																			
						Borehole Continues																																																		
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Date	Casing	Water	From	To	Hours																																																			

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		Project Number: 10/1425		Client: AG Langstone B.V.																												
		GL (mAOD):		N Coord: 50.845214		E Coord: -0.987924																										
Date: 15/07/2019-17/07/2019		Method: Cable Percussion		Driller: WB Drilling		Logged By: SHP																										
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe																								
9.00 - 9.45	SPT	N=13			9.00	Structureless CHALK composed of uncompact light brownish cream sandy gravelly SILT with low cobble content. Gravel and cobbles are sub-angular to sub-rounded white. Occasional black flecks and flint cobbles. (Grade Dm).																										
10.50 - 10.95	U				10.00																											
					11.00																											
12.00 - 12.45	SPT	N=9			12.00	Structureless CHALK composed of uncompact light brownish cream gravelly sandy SILT. Gravel is sub-angular to sub-rounded light brownish cream with occasional black flecks. (Grade Dm).																										
					13.00																											
					13.50																											
13.50 - 13.95	SPT	N=16			13.50	Structureless CHALK comprised of uncompact whitish cream slightly sandy slightly gravelly SILT. Gravel is sub-angular to sub-rounded whitish cream with very rare black flecks. (Grade Dm).																										
					14.00																											
					15.00																											
14.50 - 14.95	U					Borehole Continues																										
15.00 - 15.45	SPT	N=16																														
					16.00																											
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			Scale: 1:50			Daily Log Of Depths <table border="1"> <thead> <tr> <th>Date</th> <th>Casing</th> <th>Water</th> <th>From</th> <th>To</th> <th>Hours</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			Date	Casing	Water	From	To	Hours																		
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		Project Title: Langstone Technology Park, Havant				BH1A																										
		Project Number: 10/1425		Client: AG Langstone B.V.																												
		GL (mAOD):		N Coord: 50.845214		E Coord: -0.987924																										
Date: 15/07/2019-17/07/2019		Method: Cable Percussion		Driller: WB Drilling		Logged By: SHP																										
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe																								
16.50 - 16.95	SPT	N=22			17.00	Structureless CHALK comprised of uncompact whitish cream slightly sandy slightly gravelly SILT. Gravel is sub-angular to sub-rounded whitish cream with very rare black flecks. (Grade Dm).																										
18.00 - 18.45	SPT	N=26			18.00																											
					19.00																											
19.50 - 19.95	SPT	N=28			20.00	19.50 - 21.00 Gravel of subangular black flint.																										
					21.00																											
21.00 - 21.45	SPT	pp 50/195mm			22.00	Structureless CHALK comprised of uncompact whitish cream slightly sandy gravelly SILT. Gravel is sub-angular black flint. (Grade Dm).																										
22.00 - 22.45	SPT	pp 50/220mm			23.00																											
					23.50	Structureless CHALK comprised of uncompact whitish cream slightly sandy slightly gravelly SILT. Gravel is sub-angular to sub-rounded white with common black flecks. (Grade Dm).																										
23.50 - 23.95	SPT	pp 50/210mm			24.00																											
						Borehole Continues																										
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level			REMARKS Groundwater encountered at 4.3m rising to 3.7m. Borehole installed with monitoring well. 			Water Strikes <table border="1"> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> <tr> <td>17/07/2019</td> <td>4.3</td> <td>3.7</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>			Date	Strike	Level	Minutes	Casing	Sealed	17/07/2019	4.3	3.7															
Date	Strike	Level	Minutes	Casing	Sealed																											
17/07/2019	4.3	3.7																														
			Scale: 1:50			Daily Log Of Depths <table border="1"> <tr> <th>Date</th> <th>Casing</th> <th>Water</th> <th>From</th> <th>To</th> <th>Hours</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>			Date	Casing	Water	From	To	Hours																		
Date	Casing	Water	From	To	Hours																											

		Project Title: Langstone Technology Park, Havant				BH1A																																						
		Project Number: 10/1425		Client: AG Langstone B.V.																																								
		GL (mAOD):		N Coord: 50.845214		E Coord: -0.987924																																						
Date: 15/07/2019-17/07/2019		Method: Cable Percussion		Driller: WB Drilling		Logged By: SHP																																						
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe																																				
24.50 - 24.85	SPT	pp 50/225mm			25.00	Structureless CHALK comprised of uncompact whitish cream slightly sandy slightly gravelly SILT. Gravel is sub-angular to sub-rounded white with common black flecks. (Grade Dm).																																						
						End Of Borehole At 24.95 m																																						
					26.00																																							
					27.00																																							
					28.00																																							
					29.00																																							
					30.00																																							
					31.00																																							
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KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level			REMARKS Groundwater encountered at 4.3m rising to 3.7m. Borehole installed with monitoring well. 			Water Strikes <table border="1"> <thead> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> </thead> <tbody> <tr> <td>17/07/2019</td> <td>4.3</td> <td>3.7</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			Date	Strike	Level	Minutes	Casing	Sealed	17/07/2019	4.3	3.7																											
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Date	Casing	Water	From	To	Hours																																							
Date	Casing	Water	From	To	Hours																																							

		Project Title: Langstone Technology Park, Havant				BH2	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.845665		E Coord: -0.989051	
Date: 17/07/2019-18/07/2019		Method: Cable Percussion		Driller: WB Drilling		Logged By: SHP	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
1.20 - 1.65	C	N=16			0.10 0.25	MADE GROUND: Tarmac. MADE GROUND: Greyish brown sandy angular to sub-angular fine to coarse gravel of limestone.		
2.00 - 2.45	C	N=10			1.00 1.20	MADE GROUND: Brown sandy sub-rounded to rounded fine to coarse gravel of flint. medium dense brown becoming light brown clayey very sandy sub-rounded fine to coarse to rounded GRAVEL of flint with a low cobble content of flint.		
3.00 - 3.45	C	N=2			2.00			
4.00 - 4.45	C	N=4			3.00	Very soft white gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of flint and chalk.		
5.00 - 5.45	U				4.00			
6.00 - 6.45	SPT	N=17			4.70 5.00	Brown sandy gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse of flint.		
7.50 - 7.95	U				5.50			
					6.00	Structureless CHALK composed of uncompact yellowish cream gravelly sandy SILT with a low cobble content. Gravel and cobbles are subangular to sub-rounded greyish white chalk and sub-angular black flint. (Grade Dm).		
					7.00			
					8.00			
						Borehole Continues		

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level		REMARKS Groundwater encountered at 2.5m rising to 2.3m. Borehole backfilled with arisings.	Water Strikes <table border="1"> <thead> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> </thead> <tbody> <tr> <td>29/07/2019</td> <td>2.5</td> <td>2.3</td> <td></td> <td></td> <td></td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Date	Strike	Level	Minutes	Casing	Sealed	29/07/2019	2.5	2.3															
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		Project Title: Langstone Technology Park, Havant				BH2	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.845665		E Coord: -0.989051	
Date: 17/07/2019-18/07/2019		Method: Cable Percussion		Driller: WB Drilling		Logged By: SHP	

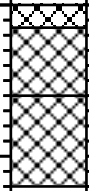
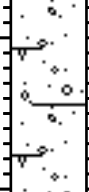
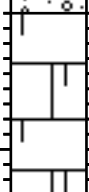
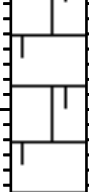
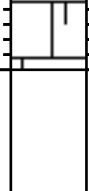
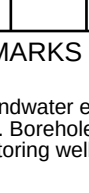
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
9.00 - 9.45	SPT	N=13			9.00	Structureless CHALK composed of uncompact yellowish cream gravelly sandy SILT with a low cobble content. Gravel and cobbles are subangular to sub-rounded greyish white chalk and sub-angular black flint. (Grade Dm).		
10.50 - 10.95	SPT	N=13			10.00			
					11.00	10.50 - 14.00 No cobble content.		
					12.00			
12.50 - 12.95	SPT	N=15			13.00			
					14.00	Structureless CHALK composed of uncompact whitish cream gravelly sandy SILT. Gravel is sub-angular to sub-rounded greyish white with occasional black flecks. (Grade Dm).		
14.00 - 14.45	SPT	N=15			15.00			
					15.50	Structureless CHALK composed of uncompact light brownish cream gravelly sandy SILT. Gravel is sub-angular to sub-rounded light brownish cream with occasional black flecks. (Grade Dm).		
15.50 - 15.95	SPT	N=17			16.00			
						Borehole Continues		

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa ▽ - Groundwater Strike ▼ - Groundwater Level	REMARKS Groundwater encountered at 2.5m rising to 2.3m. Borehole backfilled with arisings. 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="6">Water Strikes</th> </tr> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> <tr> <td>29/07/2019</td> <td>2.5</td> <td>2.3</td> <td></td> <td></td> <td></td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="3">Daily Log Of Depths</th> <th colspan="3">Chiselling</th> </tr> <tr> <th>Date</th> <th>Casing</th> <th>Water</th> <th>From</th> <th>To</th> <th>Hours</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	Water Strikes						Date	Strike	Level	Minutes	Casing	Sealed	29/07/2019	2.5	2.3																Daily Log Of Depths			Chiselling			Date	Casing	Water	From	To	Hours												
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Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe																																				
17.00 - 17.45	U				17.00	Structureless CHALK composed of uncompact light brownish cream gravelly sandy SILT. Gravel is sub-angular to sub-rounded light brownish cream with occasional black flecks. (Grade Dm).																																						
18.50 - 18.95	SPT	pp 50/215mm			18.50																																							
					19.00	Structureless CHALK composed of uncompact light greyish white gravelly slightly sandy SILT. Gravel is sub-angular to sub-rounded light greyish white with occasional black flecks. (Grade Dm).																																						
20.00 - 20.45	SPT	pp 50/190mm			20.00																																							
					21.00																																							
21.50 - 21.95	SPT	pp 50/195mm			21.50																																							
					22.00	Structureless CHALK composed of uncompact light greyish white gravelly slightly sandy SILT. Gravel is sub-angular to sub-rounded light greyish white chalk and subangular black flint. (Grade Dm).																																						
23.00 - 23.45	SPT	pp 50/180mm			23.00																																							
					24.00	Borehole Continues																																						
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24.50 - 24.70	SPT	pp 50/215mm			24.70	Structureless CHALK composed of uncompact light greyish white gravelly sightly sandy SILT. Gravel is sub-angular to sub-rounded light greyish white chalk and subangular black flint. (Grade Dm).																																						
					25.00	End Of Borehole At 24.70 m																																						
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		Project Title: Langstone Technology Park, Havant				BH3	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.844665		E Coord: -0.991222	
Date: 22/07/2019		Method: Cable Percussion		Driller: WB Drilling		Logged By: SHP	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.50	ES	N=25			0.15	MADE GROUND: Tarmac.		
1.00 1.00 - 1.45	ES SPT				0.60	MADE GROUND: Brown slightly clayey sandy angular to sub-angular fine to coarse gravel of limestone (sandy base).		
2.00 - 2.45	SPT	N=21			1.00 1.20	MADE GROUND: Greyish brown gravelly sandy silty clay. Gravel is angular to sub-rounded fine to coarse of flint and brick with fragments of slate.		
3.00 - 3.45	SPT	N=20			2.00 2.50	Medium dense brown clayey sandy sub-rounded fine to coarse GRAVEL of flint.		
4.00 - 4.45	SPT	N=28			3.00 3.00	Medium dense light brown clayey sandy sub-angular to sub-rounded fine to coarse GRAVEL of flint and chalk.		
5.00 - 5.45	SPT	N=17			4.00 5.00 5.10	Structureless CHALK composed of uncompact greyish white gravelly slightly sandy SILT. Gravel is sub-angular to sub-rounded white with rare black specks. (Grade Dm).		
6.00 - 6.45	SPT	N=13			6.00 7.00			
7.50 - 7.95	D	N=12			8.00	Borehole Continues		

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level 		REMARKS Groundwater encountered at 2.0m. Borehole installed with monitoring well. Scale: 1:50		Water Strikes																									
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		Project Title: Langstone Technology Park, Havant				BH3	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.844665		E Coord: -0.991222	
Date: 22/07/2019		Method: Cable Percussion		Driller: WB Drilling		Logged By: SHP	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
10.50 - 10.95	SPT	N=21			9.00	Structureless CHALK composed of uncompact greyish white gravelly slightly sandy SILT. Gravel is sub-angular to sub-rounded white with rare black specks. (Grade Dm).		
					10.00			
					11.00			
12.00 - 12.45	SPT	N=18			12.00	13.00 Flint cobble.		
					13.00			
					13.50			
13.50 - 13.95	SPT	N=18			13.50	Structureless CHALK composed of uncompact greyish white very gravelly slightly sandy SILT. Gravel is sub-angular to sub-rounded white. (Grade Dm).		
					14.00			
					15.00			
15.00 - 15.45	SPT	N=26			15.00	Structureless CHALK composed of uncompact greyish white gravelly sandy SILT. Gravel is sub-angular to sub-rounded white with rare black flecks. (Grade Dm).		
					16.00			
							Borehole Continues	

KEY

- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed
- W - Water Sample
- S - Standard Penetration Test
- C - Cone Penetration Test
- N - Penetration Test 'N' Value
- V - Hand Shear Vane kPa
- ▽ - Groundwater Strike
- ▼ - Groundwater Level



REMARKS

Groundwater encountered at 2.0m. Borehole installed with monitoring well.

Scale: 1:50

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed
25/07/2019	2				

Daily Log Of Depths

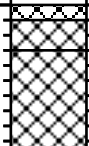
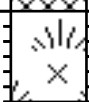
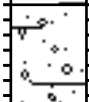
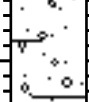
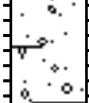
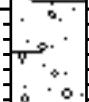
Date	Casing	Water	From	To	Hours

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		GL (mAOD):		N Coord: 50.844665		E Coord: -0.991222	
Date: 22/07/2019		Method: Cable Percussion		Driller: WB Drilling		Logged By: SHP	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe	
16.50 - 16.93	SPT	pp 50/275mm			17.00	Structureless CHALK composed of uncompact greyish white gravelly sandy SILT. Gravel is sub-angular to sub-rounded white with rare black flecks. (Grade Dm). 16.00 Flint cobble.			
18.00 - 18.28	SPT	pp 50/130mm			18.00				
19.00	D				19.00				
19.50 - 19.66	SPT	pp 50/85mm			20.00				
21.00 - 21.22	SPT	pp 50/65mm			21.00				
					22.00				
22.50 - 22.73	SPT	pp 50/75mm			22.73				
					23.00		End Of Borehole At 22.73 m		
					24.00				

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				Date	Strike	Level	Minutes	Casing	Sealed		
				25/07/2019	2						
Daily Log Of Depths				Chiselling		Date	Casing	Water	From	To	Hours

		Project Title: Langstone Technology Park, Havant				BH4	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.847282		E Coord: -0.98699	
Date: 24/07/2019-25/07/2019		Method: Cable Percussion		Driller: WB Drilling		Logged By: SHP	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.40	ES				0.10 0.30	MADE GROUND: Tarmac.		
1.10 1.20 - 1.65	ES SPT	N=2			1.00 1.60	MADE GROUND: Brown sandy sub-rounded fine to coarse gravel of flint on a geotextile membrane.		
2.00 - 2.45 2.10	SPT ES	N=50			2.00 2.30	MADE GROUND: Brown very gravelly sandy clay. Gravel is angular to sub-rounded fine to coarse of flint and brick with fragments of wood, slate and metal.		
3.00 - 3.45	SPT	N=33			3.00 4.00	Very soft plastic brown amorphous very silty PEAT.		
4.00 - 4.45	SPT	N=28			4.00 5.00	Firm becoming very stiff brown very sandy gravelly CLAY. Gravel is sub-rounded to rounded fine to coarse of flint with a low cobble content of flint.		
5.00 - 5.45	SPT	N=23			5.00 6.00	Medium dense brown clayey fine to coarse SAND and sub-rounded fine to coarse GRAVEL of flint.		
6.00 - 6.45	SPT	N=12			5.80 6.00	Light brown clayey sandy sub-angular to sub-rounded fine to coarse GRAVEL of chalk and flint.		
6.50	D				6.00 7.00	Structureless CHALK composed of uncompact brownish cream slightly sandy slightly gravelly SILT. Gravel is sub-angular to sub-rounded white. (Grade Dm).		
7.50 - 7.95	SPT	N=15			7.00 8.00	Borehole Continues		

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level		REMARKS Groundwater encountered at 6.0m rising to 2.4m. Borehole backfilled with arisings.	Water Strikes <table border="1"> <thead> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> </thead> <tbody> <tr> <td>24/07/2019</td> <td>6</td> <td>2.4</td> <td></td> <td></td> <td></td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Date	Strike	Level	Minutes	Casing	Sealed	24/07/2019	6	2.4															
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9.00 - 9.45 9.10	SPT D	N=8			9.00	Structureless CHALK composed of uncompact brownish cream slightly sandy slightly gravelly SILT. Gravel is sub-angular to sub-rounded white. (Grade Dm).																																						
					10.00	Structureless CHALK composed of uncompact greyish cream slightly sandy gravelly SILT. Gravel is sub-angular to sub-rounded white. (Grade Dm).																																						
10.50 - 10.95	SPT	N=6			10.50																																							
					11.00	Structureless CHALK composed of uncompact light greyish white slightly sandy very gravelly SILT. Gravel is sub-angular to sub-rounded white. (Grade Dm).																																						
11.50	D																																											
12.00 - 12.45	SPT	N=7			12.00																																							
					13.00																																							
13.50 - 13.95	SPT	N=15			14.00																																							
					15.00																																							
15.00 - 15.45	SPT	N=22			15.00	Structureless CHALK composed of uncompact light greyish cream sandy silty subangular to subrounded medium to coarse GRAVEL. Clasts are white. Matrix is light greyish cream. (Grade Dc).																																						
					16.00																																							
						Borehole Continues																																						
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level 			REMARKS Groundwater encountered at 6.0m rising to 2.4m. Borehole backfilled with arisings. Scale: 1:50			Water Strikes <table border="1"> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> <tr> <td>24/07/2019</td> <td>6</td> <td>2.4</td> <td></td> <td></td> <td></td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>			Date	Strike	Level	Minutes	Casing	Sealed	24/07/2019	6	2.4																											
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Date	Casing	Water	From	To	Hours																																							

		Project Title: Langstone Technology Park, Havant				BH4	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.847282		E Coord: -0.98699	
Date: 24/07/2019-25/07/2019		Method: Cable Percussion		Driller: WB Drilling		Logged By: SHP	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
16.50 - 16.95	SPT	N=22			16.50	Structureless CHALK composed of uncompact light greyish cream sandy silty subangular to subrounded medium to coarse GRAVEL. Clasts are white. Matrix is light greyish cream. (Grade Dc). Structureless CHALK composed of uncompact whitish cream gravelly sandy SILT. Gravel is whitish cream sub-rounded to sub-angular fine to coarse. (Grade Dm).		
					17.00			
					18.00			
18.90 - 19.45	D C	pp 50/265mm			19.00	Structureless CHALK composed of uncompact whitish cream slightly sandy gravelly SILT. Gravel is whitish cream sub-angular to sub-rounded fine to coarse with rare black specks. (Grade Dm).		
					20.00			
					21.00			
20.50 - 20.95	C	N=23			22.00			
					23.00			
22.00 - 22.45	C	pp 50/150mm			23.65			
					24.00			
23.50 - 23.65	C	pp 50/80mm				End Of Borehole At 23.65 m		

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level		REMARKS Groundwater encountered at 6.0m rising to 2.4m. Borehole backfilled with arisings.	Water Strikes <table border="1"> <thead> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> </thead> <tbody> <tr> <td>24/07/2019</td> <td>6</td> <td>2.4</td> <td></td> <td></td> <td></td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Date	Strike	Level	Minutes	Casing	Sealed	24/07/2019	6	2.4															
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Date	Casing	Water	From	To	Hours																						

		Project Title: Langstone Technology Park, Havant				WS1	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.845884		E Coord: -0.988569	
Date: 16/07/2019		Method: Window Sampler		Driller: WB Drilling		Logged By: SHP	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.30	ES					MADE GROUND: Grass over brown gravelly clayey fine to medium sand. Gravel is sub-angular to rounded fine to coarse of flint with fragments of pottery. Rootlets towards the top of the unit.		
1.20 - 1.65	SPT	N=15			1.00 1.30			
1.60	ES					Soft and very soft light brown becoming brownish white slightly sandy very gravelly CLAY. Gravel is sub-angular to rounded fine to coarse of flint and chalk.		
2.00 - 2.45	SPT	N=4			2.00			
2.50	ES							
3.00 - 3.45	SPT	N=3			3.00			
4.00 - 4.45	SPT	N=15			3.70 4.00	Firm white gravelly CLAY. Gravel is sub-angular to sub-rounded fine to medium of chalk (weathered bedrock).		
4.80	D							
5.00 - 5.45	SPT	N=13			5.00 5.45			
End Of Borehole At 5.45 m								
					6.00			
					7.00			
					8.00			

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa - Groundwater Strike - Groundwater Level	REMARKS Groundwater encountered at 2.0m rising to 1.8m bgl. Borehole backfilled with arisings. 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="6">Water Strikes</th> </tr> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> <tr> <td>17/07/2019</td> <td>2</td> <td>1.8</td> <td></td> <td></td> <td></td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="3">Daily Log Of Depths</th> <th colspan="3">Chiselling</th> </tr> <tr> <th>Date</th> <th>Casing</th> <th>Water</th> <th>From</th> <th>To</th> <th>Hours</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	Water Strikes						Date	Strike	Level	Minutes	Casing	Sealed	17/07/2019	2	1.8																Daily Log Of Depths			Chiselling			Date	Casing	Water	From	To	Hours												
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		Project Title: Langstone Technology Park, Havant				WS2	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.846009		E Coord: -0.990914	
Date: 17/07/2019		Method: Window Sampler		Driller: WB Drilling		Logged By: SHP	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.50 0.60 - 0.80	ES B				0.55	MADE GROUND: Grass over brown slightly clayey very sandy angular to sub-rounded fine to coarse gravel of flint and concrete with a low cobble content of concrete. Occasional rootlets towards the top of the unit.		
1.00 - 1.45 1.10	SPT ES	N=16			1.00	MADE GROUND: Brown slightly clayey very gravelly fine to medium sand. Gravel is angular to sub-rounded fine to coarse of flint.		
					1.25			
					1.60	MADE GROUND: Dark blackish grey becoming brown very sandy slightly gravelly clay with fragments of wood and grass. Gravel is sub-rounded fine to coarse of flint. Strong olfactory evidence of hydrocarbons.		
2.00 - 2.45	SPT	N=2			2.00			
2.40	ES				2.10	Firm brown very sandy slightly gravelly CLAY with fragments of wood and grass. Strong olfactory evidence of hydrocarbons.		
					3.00	Brown clayey sandy sub-angular to sub-rounded fine to coarse GRAVEL of flint.		
3.00 - 3.45	SPT	N=8			3.50	Very soft becoming soft grey becoming brown sandy silty CLAY. Slightly gravelly towards the top of the unit. Gravel is sub-rounded fine to coarse of flint.		
					4.00	Medium dense light brown clayey sandy angular to sub-rounded fine to coarse GRAVEL of flint and chalk (wet).		
4.00 - 4.45	SPT	N=12			5.00			
5.00 - 5.45	SPT	N=22		5.45	End Of Borehole At 5.45 m			
				6.00				
				7.00				
				8.00				

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa - Groundwater Strike - Groundwater Level	REMARKS No Groundwater Encountered Falling head test was undertaken in the borehole. Borehole backfilled with arisings. 	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="6">Water Strikes</th> </tr> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="3">Daily Log Of Depths</th> <th colspan="3">Chiselling</th> </tr> <tr> <th>Date</th> <th>Casing</th> <th>Water</th> <th>From</th> <th>To</th> <th>Hours</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>	Water Strikes						Date	Strike	Level	Minutes	Casing	Sealed																									Daily Log Of Depths			Chiselling			Date	Casing	Water	From	To	Hours												
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		Project Title: Langstone Technology Park, Havant				WS3	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.845676		E Coord: -0.990613	
Date: 16/07/2019		Method: Window Sampler		Driller: WB Drilling		Logged By: SHP	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.25	ES				0.15	MADE GROUND: Tarmac.		
					0.35 0.45 0.65	MADE GROUND: Orangish brown very sandy sub-rounded fine to coarse gravel of flint with a low cobble content of flint.		
1.20 - 1.65	SPT	N=12			1.00	MADE GROUND: Tarmac.		
1.50	D				1.45	MADE GROUND: Concrete.		
2.00 - 2.45	SPT	N=19			2.00	Brown slightly clayey slightly sandy angular to rounded fine to coarse GRAVEL of flint.		
3.00 - 3.45	SPT	N=13			3.00	Medium dense brown clayey very sandy sub-angular to rounded fine to coarse GRAVEL of flint with bands of sandy gravel and gravelly clay.		
4.00 - 4.45	SPT	N=28			4.00			
5.00 - 5.45	SPT	N=27			5.00			
					5.45	End Of Borehole At 5.45 m		
					6.00			
					7.00			
					8.00			

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level		REMARKS Groundwater encountered at 3.0m bgl. Borehole unstable and collapsed in to 3m bgl. Borehole installed with gas monitoring well.	Water Strikes <table border="1"> <thead> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> </thead> <tbody> <tr> <td>25/07/2019</td> <td>3</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Date	Strike	Level	Minutes	Casing	Sealed	25/07/2019	3																
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Date	Casing	Water	From	To	Hours																						

		Project Title: Langstone Technology Park, Havant				WS4	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.844701		E Coord: -0.989103	
Date: 16/07/2019		Method: Window Sampler		Driller: WB Drilling		Logged By: SHP	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.40 - 0.65 0.40	B ES				0.15	MADE GROUND: Tarmac.		
					0.65	MADE GROUND: Light orangish brown clayey sandy angular fine to coarse gravel of limestone.		
1.20 - 1.65	SPT	N=15			1.00	Firm to stiff brown sandy very gravelly CLAY.		
1.80	ES				1.70			
2.00 - 2.45	SPT	N=15			2.00	Medium dense greyish brown slightly clayey sandy angular to sub-rounded fine to coarse GRAVEL of flint with a medium cobble content of flint.		
2.90					2.50			
3.00 - 3.45	D SPT	N=5			3.00	Soft greenish grey sandy SILT.		
					3.40			
4.00 - 4.45	SPT	N=9			4.00	Firm greenish grey sandy CLAY with widely spaced coarse sand partings.		
					5.00			
5.00 - 5.45	SPT	N=16			5.45	End Of Borehole At 5.45 m		
					6.00			
					7.00			
					8.00			

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level		REMARKS Groundwater encountered at 2.1m bgl. Borehole unstable and collapsed in to 2.0m bgl. Borehole installed with gas monitoring well.	Water Strikes <table border="1"> <thead> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> </thead> <tbody> <tr> <td>25/07/2019</td> <td>2.1</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Date	Strike	Level	Minutes	Casing	Sealed	25/07/2019	2.1																
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Date	Casing	Water	From	To	Hours																						

		Project Title: Langstone Technology Park, Havant				WS5	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.845351		E Coord: -0.991569	
Date: 18/07/2019		Method: Window Sampler		Driller: WB Drilling		Logged By: SHP	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.70	ES				0.10 0.15 0.35 0.40	MADE GROUND: Tarmac.		
1.20 - 1.65	SPT	N=9			1.00	MADE GROUND: Concrete.		
2.00 - 2.45	SPT	N=5			1.60	MADE GROUND: Brown sandy gravelly clay. Gravel is sub-angular fine to coarse to sub-rounded of flint, brick, limestone and chalk.		
2.60	ES				2.00	MADE GROUND: Tarmac.		
3.00 - 3.45	SPT	N=1			2.60	MADE GROUND: Brown sandy gravelly clay with a low cobble content of brick. Gravel is sub-angular to sub-rounded fine to coarse of flint, brick, limestone and chalk.		
3.90	ES				3.00	Loose becoming very loose brown clayey sandy angular fine to coarse to sub-rounded GRAVEL of flint.		
					3.45	2.50 - 3.45 Stained dark grey.		
					4.00	2.50 - 4.00 Visual and olfactory evidence of hydrocarbons.		
						3.45 Becoming white.		
						End Of Borehole At 4.00 m		
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								

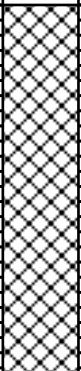
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level		REMARKS Groundwater encountered at 1.9m bgl. Borehole unstable and collapsed in to 1.9m bgl. 	Water Strikes <table border="1"> <thead> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> </thead> <tbody> <tr> <td>25/07/2019</td> <td>1.9</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Date	Strike	Level	Minutes	Casing	Sealed	25/07/2019	1.9																											
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		Project Title: Langstone Technology Park, Havant				WS6	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.847089		E Coord: -0.986694	
Date: 18/07/2019		Method: Window Sampler		Driller: WB Drilling		Logged By: SHP	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.80	ES				1.00	MADE GROUND: Grass over brown very sandy slightly gravelly clay with fragments of brick and clinker. Gravel is angular to sub-rounded fine to coarse of flint, concrete and brick. Occasional rootlets towards the top of the unit.		
1.20 - 1.65	SPT	N=14			1.50			
1.70	ES				2.00	MADE GROUND: Dark grey sandy gravelly clay. Gravel is angular to sub-rounded fine to coarse of flint, chalk, clinker, brick, mudstone and coal with fragments of wood and decaying rootlets.		
2.00 - 2.45	SPT	N=8			3.00			
3.00 - 3.45	SPT	N=10			3.10	Medium dense light orangish brown very clayey gravelly fine to coarse SAND. Gravel is sub-rounded to rounded fine to coarse of flint and chalk.		
3.90	ES			4.00				
4.00 - 4.45	SPT	N=11			5.00	4.80 - 5.45 Wet.		
5.00 - 5.45	SPT	N=21		5.45				
						End Of Borehole At 5.45 m		
					6.00			
					7.00			
					8.00			

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa - Groundwater Strike - Groundwater Level 	REMARKS No Groundwater Encountered Borehole backfilled with arisings. Scale: 1:50	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="6">Water Strikes</th> </tr> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr> <th colspan="3">Daily Log Of Depths</th> <th colspan="3">Chiselling</th> </tr> <tr> <th>Date</th> <th>Casing</th> <th>Water</th> <th>From</th> <th>To</th> <th>Hours</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>	Water Strikes						Date	Strike	Level	Minutes	Casing	Sealed																									Daily Log Of Depths			Chiselling			Date	Casing	Water	From	To	Hours												
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Daily Log Of Depths			Chiselling																																																											
Date	Casing	Water	From	To	Hours																																																									

		Project Title: Langstone Technology Park, Havant				WS7	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.847365		E Coord: -0.987382	
Date: 18/07/2019		Method: Window Sampler		Driller: WB Drilling		Logged By: SHP	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.40	ES					MADE GROUND: Grass over brown clayey gravelly fine to coarse sand with a low cobble content of flint and brick. Gravel is angular to sub-rounded fine to coarse of flint. Occasional rootlets towards the top of the unit.		
1.20 - 1.65	SPT	N=20			1.00			
1.40	ES							
2.00 - 2.45	SPT	N=40			2.00	End Of Borehole At 2.45 m		
					2.45			
					3.00			
					4.00			
					5.00			
					6.00			
					7.00			
					8.00			

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level	REMARKS No Groundwater Encountered Borehole terminated in Made Ground due to cobble construction. Borehole backfilled with arisings.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="6">Water Strikes</th> </tr> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="3">Daily Log Of Depths</th> <th colspan="3">Chiselling</th> </tr> <tr> <th>Date</th> <th>Casing</th> <th>Water</th> <th>From</th> <th>To</th> <th>Hours</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>	Water Strikes						Date	Strike	Level	Minutes	Casing	Sealed																			Daily Log Of Depths			Chiselling			Date	Casing	Water	From	To	Hours												
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Date	Strike	Level	Minutes	Casing	Sealed																																																			
Daily Log Of Depths			Chiselling																																																					
Date	Casing	Water	From	To	Hours																																																			



Scale: 1:50

		Project Title: Langstone Technology Park, Havant				WS8	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.848019		E Coord: -0.987472	
Date: 18/07/2019		Method: Window Sampler		Driller: WB Drilling		Logged By: SHP	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.60	ES					MADE GROUND: Brown sandy gravelly slightly silty clay. Gravel is angular to sub-rounded fine to coarse of brick, concrete and flint.		
1.20 - 1.21	SPT	sb 50/5mm			1.00 1.10 1.21	MADE GROUND: Concrete cobbles obstruction.		
					2.00	End Of Borehole At 1.21 m		
					3.00			
					4.00			
					5.00			
					6.00			
					7.00			
					8.00			

KEY

D - Disturbed Sample
B - Bulk Sample
U - Undisturbed
W - Water Sample
S - Standard Penetration Test
C - Cone Penetration Test
N - Penetration Test 'N' Value
V - Hand Shear Vane kPa
 - Groundwater Strike
 - Groundwater Level

REMARKS

No Groundwater Encountered
Borehole terminated in Made Ground due to concrete obstruction. Borehole backfilled with arisings.

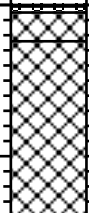
Scale: 1:50

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed

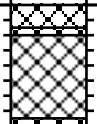
Daily Log Of Depths **Chiselling**

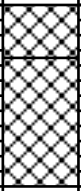
Date	Casing	Water	From	To	Hours

		Project Title: Langstone Technology Park, Havant				HTP1	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.843224		E Coord: -0.988262	
Date: 21/07/2019		Method: Hand Excavated		Logged By: SHP		Scale: 1:50	
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water
0.50	ES				0.24	MADE GROUND: Red tarmac.	
						MADE GROUND: Black tarmac.	
						MADE GROUND: Concrete with 8 mm rebar towards top of unit.	
					1.00	MADE GROUND: Orangish brown mottled dark grey in part very sandy slightly gravelly clay with a low cobble content of granite. Gravel is fine to coarse angular to sub-rounded of flint with fragments of metal, polystyrene and wood. 1.00 - 1.40 Becoming increasingly gravelly. End Of Trial Pit At 1.40 m	
					1.40		
					2.00		
					3.00		
					4.00		
					5.00		
					6.00		
					7.00		
					8.00		
					9.00		
					10.00		
KEY D - Disturbed Sample B - Bulk Sample W - Water Sample V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level 						REMARKS No Groundwater Encountered Trial pit backfilled with arisings.	

		Project Title: Langstone Technology Park, Havant				HTP2	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.844518		E Coord: -0.988413	
Date: 21/07/2019		Method: Hand Excavated		Logged By: SHP		Scale: 1:50	
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water
				 0.25  0.35  1.00  1.20  2.00  3.00  4.00  5.00  6.00  7.00  8.00  9.00  10.00	MADE GROUND: Red tarmac. MADE GROUND: Black tarmac. MADE GROUND: Concrete with 8 mm rebar towards middle of unit. MADE GROUND: Grey gravelly fine to coarse sand with a low cobble content of brick. Gravel is fine to coarse angular to sub-angular of concrete. MADE GROUND: Brown very clayey gravelly fine to coarse sand with a low cobble content of concrete and flint. Gravel is fine to coarse sub-angular to rounded of flint. End Of Trial Pit At 1.20 m		
KEY D - Disturbed Sample B - Bulk Sample W - Water Sample V - Hand Shear Vane kPa						REMARKS No Groundwater Encountered Trial pit backfilled with arisings.	



		Project Title: Langstone Technology Park, Havant				HTP3	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.845147		E Coord: -0.989939	
Date: 21/07/2019		Method: Hand Excavated		Logged By: SHP		Scale: 1:50	
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water
0.15 - 0.20	B				0.15	MADE GROUND: Tarmac. MADE GROUND: Fine to coarse sandy angular gravel of limestone. MADE GROUND: Orangish brown becoming greyish brown sandy gravelly clay with fragments of coal and wood. Gravel is fine to coarse angular to sub-rounded of chalk, flint and brick. MADE GROUND: Concrete obstruction.	
0.40	ES				0.20		
0.60 - 0.75	B				0.75 0.80 1.00		
					2.00	End Of Trial Pit At 0.80 m	
					3.00		
					4.00		
					5.00		
					6.00		
					7.00		
					8.00		
					9.00		
					10.00		
KEY D - Disturbed Sample B - Bulk Sample W - Water Sample V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level 						REMARKS No Groundwater Encountered Trial pit backfilled with arisings.	

		Project Title: Langstone Technology Park, Havant				HTP4	
		Project Number: 10/1425		Client: AG Langstone B.V.			
		GL (mAOD):		N Coord: 50.84722		E Coord: -0.98755	
Date: 21/07/2019		Method: Hand Excavated		Logged By: SHP		Scale: 1:50	
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water
0.20	ES				0.35	MADE GROUND: Grass over gravelly fine to medium sand with fragments of brick and concrete. Gravel is fine to coarse angular to sub-rounded of flint and concrete.	
					1.00	MADE GROUND: Brown sandy gravelly clay with a low cobble content of flint. Gravel is fine to coarse angular to sub-rounded of flint.	
					1.20	End Of Trial Pit At 1.20 m	
					2.00		
					3.00		
					4.00		
					5.00		
					6.00		
					7.00		
					8.00		
					9.00		
					10.00		
KEY D - Disturbed Sample B - Bulk Sample W - Water Sample V - Hand Shear Vane kPa						REMARKS No Groundwater Encountered Trial pit backfilled with arisings.	

 - Groundwater Strike
 - Groundwater Level



			Project Title: Langstone Technology Park, Havant			SA1	
			Project Number: 10/1425		Client: AG Langstone B.V.		
			GL (mAOD):		N Coord: 50.848068	E Coord: -0.987702	
Date: 19/07/2019			Method: JCB		Logged By: SHP	Scale: 1:50	
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water
0.30	ES				0.45	MADE GROUND: Grass over brown very clayey gravelly fine to medium sand. Abundant rootlets towards the top of the unit. Gravel is angular to sub-rounded fine to coarse of flint. Rare fragments of plastic. MADE GROUND: Brownish grey sandy gravelly cobbles of brick and concrete with fragments of tarmac, shells and metal. Brown clayey very sandy angular to sub-rounded fine to coarse GRAVEL of of flint. Firm dark brownish grey sandy CLAY with fragments of wood. Firm light grey sandy slightly gravelly CLAY with rare fragments of wood. Gravel is sub-rounded fine to coarse of flint. End Of Trial Pit At 2.05 m	
0.60	ES				0.65		
0.70	B				1.00		
					1.20		
					1.60		
1.30	ES				2.00		
					3.00		
					4.00		
					5.00		
					6.00		
					7.00		
					8.00		
					9.00		
					10.00		
KEY D - Disturbed Sample B - Bulk Sample W - Water Sample V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level 						REMARKS No Groundwater Encountered Trial Pit used for soakaway testing. Trial pit backfilled with arisings.	

			Project Title: Langstone Technology Park, Havant			SA2	
			Project Number: 10/1425		Client: AG Langstone B.V.		Sheet 1 Of 1
			GL (mAOD):		N Coord: 50.845255		E Coord: -0.987848
Date: 19/07/2019			Method: JCB		Logged By: SHP		Scale: 1:50
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water
0.60 0.70	B ES			  	0.10	MADE GROUND: Grass over brown clayey gravelly sand. Gravel is angular to sub-rounded fine to coarse of flint with fragments of brick and cement.	
					1.00	MADE GROUND: Brown slightly clayey gravelly fine to coarse sand with a medium cobble and boulder content of brick, concrete and pottery. Gravel is angular to sub-rounded fine to coarse of brick, flint, concrete, pottery and slate.	
1.80	B				1.50	MADE GROUND: Firm brown sandy slightly gravelly CLAY. Gravel is sub-rounded fine to coarse of flint. Masonry structure in east of the trial pit.	
					2.00	End Of Trial Pit At 2.10 m	
					2.10		
					3.00		
					4.00		
					5.00		
					6.00		
					7.00		
					8.00		
					9.00		
					10.00		
KEY D - Disturbed Sample B - Bulk Sample W - Water Sample V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level 						REMARKS No Groundwater Encountered Trial pit used for soakaway testing. Trial pit backfilled with arisings.	

Appendix III

FINAL ANALYTICAL TEST REPORT SUPPLEMENT TO TEST REPORT 19/07173 and 19/07261/1

Amendments: Request for combined report

Envirolab Job Number: 19/07173 and 19/07261
Issue Number: 2 **Date:** 12 August, 2019

Client: Clancy Consulting
Dunham Court
2 Dunham Road
Altrincham
Cheshire
UK
WA14 4NX

Project Manager: Desy Korai/Sophie Harper-Pryce
Project Name: Langstone Technology Park, Havant
Project Ref: 10/1425
Order No: 26688 / SHP / PPA /26706
Date Samples Received: 25/07/19
Date Instructions Received: 30/07/19
Date Analysis Completed: 09/08/19

Prepared by:



Richard Wong
Client Manager

Approved by:



Danielle Brierley
Client Manager

Envirolab Job Number: 19/07173 and 19/07261

Client Project Name: Langstone Technology Park, Havant

Client Project Ref: 10/1425

Lab Sample ID	19/07173/1	19/07173/2	19/07173/5	19/07173/8	19/07173/12	19/07173/15	19/07173/16	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	HTP1	HTP3	BH1	SA1	WS1	WS2	WS2			
Depth to Top	0.50	0.40	0.60	0.60	1.60	1.10	2.40			
Depth To Bottom										
Date Sampled	16-Jul-19	17-Jul-19	15-Jul-19	19-Jul-19	16-Jul-19	17-Jul-19	17-Jul-19			
Sample Type	Solid	Soil	Soil	Solid	Soil	Soil	Soil			
Sample Matrix Code	7	5AB	4A	7	5A	5AE	5AE			
% Stones >10mm _A	<0.1	27.0	28.3	<0.1	55.9	0.7	<0.1	% w/w	0.1	A-T-044
pH _D ^{M#}	7.86	8.63	8.21	9.01	9.04	8.73	8.75	pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	<0.01	-	<0.01	-	<0.01	-	-	g/l	0.01	A-T-026s
Arsenic _D ^{M#}	3	<1	-	4	<1	6	5	mg/kg	1	A-T-024s
Beryllium _D [#]	<0.5	<0.5	-	<0.5	<0.5	1.1	1.0	mg/kg	0.5	A-T-024s
Boron (water soluble) _D ^{M#}	<1.0	<1.0	-	<1.0	<1.0	2.6	2.4	mg/kg	1	A-T-027s
Cadmium _D ^{M#}	<0.5	<0.5	-	1.8	<0.5	<0.5	<0.5	mg/kg	0.5	A-T-024s
Copper _D ^{M#}	7	1	-	6	1	10	8	mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	-	<1	<1	<1	<1	mg/kg	1	A-T-040s
Lead _D ^{M#}	8	1	-	8	2	13	10	mg/kg	1	A-T-024s
Mercury _D	<0.17	<0.17	-	<0.17	<0.17	<0.17	<0.17	mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	9	2	-	23	15	54	56	mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	<1	-	<1	<1	<1	<1	mg/kg	1	A-T-024s
Vanadium _D ^{M#}	19	4	-	29	18	40	43	mg/kg	1	A-T-024s
Zinc _D ^{M#}	24	6	-	28	17	69	75	mg/kg	5	A-T-024s

Envirolab Job Number: 19/07173 and 19/07261

Client Project Name: Langstone Technology Park, Havant

Client Project Ref: 10/1425

Lab Sample ID	19/07173/1	19/07173/2	19/07173/5	19/07173/8	19/07173/12	19/07173/15	19/07173/16	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	HTP1	HTP3	BH1	SA1	WS1	WS2	WS2			
Depth to Top	0.50	0.40	0.60	0.60	1.60	1.10	2.40			
Depth To Bottom										
Date Sampled	16-Jul-19	17-Jul-19	15-Jul-19	19-Jul-19	16-Jul-19	17-Jul-19	17-Jul-19			
Sample Type	Solid	Soil	Soil	Solid	Soil	Soil	Soil			
Sample Matrix Code	7	5AB	4A	7	5A	5AE	5AE			
Asbestos in Soil (inc. matrix)										
Asbestos in soil [§]	NAD	-	NAD	NAD	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	-	N/A	N/A	-	-	-			

Envirolab Job Number: 19/07173 and 19/07261

Client Project Name: Langstone Technology Park, Havant

Client Project Ref: 10/1425

Lab Sample ID	19/07173/1	19/07173/2	19/07173/5	19/07173/8	19/07173/12	19/07173/15	19/07173/16	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	HTP1	HTP3	BH1	SA1	WS1	WS2	WS2			
Depth to Top	0.50	0.40	0.60	0.60	1.60	1.10	2.40			
Depth To Bottom										
Date Sampled	16-Jul-19	17-Jul-19	15-Jul-19	19-Jul-19	16-Jul-19	17-Jul-19	17-Jul-19			
Sample Type	Solid	Soil	Soil	Solid	Soil	Soil	Soil			
Sample Matrix Code	7	5AB	4A	7	5A	5AE	5AE			
PAH-16MS										
Acenaphthene _A ^{M#}	<0.01	<0.01	-	0.01	<0.01	1.64	<0.01	mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	<0.01	-	<0.01	<0.01	0.12	<0.01	mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	<0.02	<0.02	-	<0.02	<0.02	1.47	<0.02	mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.14	0.05	-	0.15	<0.04	2.48	<0.04	mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.32	0.05	-	0.19	<0.04	2.22	<0.04	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.36	0.06	-	0.25	<0.05	3.26	<0.05	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	0.59	<0.05	-	0.20	<0.05	1.15	<0.05	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	0.12	<0.07	-	0.08	<0.07	0.97	<0.07	mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	0.19	<0.06	-	0.19	<0.06	2.80	<0.06	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	0.13	<0.04	-	0.05	<0.04	0.47	<0.04	mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	<0.08	0.08	-	0.20	<0.08	7.14	<0.08	mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	<0.01	<0.01	-	<0.01	<0.01	1.84	<0.01	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.53	0.05	-	0.23	<0.03	1.62	<0.03	mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	-	<0.03	<0.03	0.29	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	<0.03	0.03	-	0.10	<0.03	6.57	<0.03	mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	0.09	0.08	-	0.17	<0.07	6.03	<0.07	mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	2.47	0.40	-	1.82	<0.08	40.1	<0.08	mg/kg	0.01	A-T-019s

Envirolab Job Number: 19/07173 and 19/07261

Client Project Name: Langstone Technology Park, Havant

Client Project Ref: 10/1425

Lab Sample ID	19/07173/1	19/07173/2	19/07173/5	19/07173/8	19/07173/12	19/07173/15	19/07173/16	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	HTP1	HTP3	BH1	SA1	WS1	WS2	WS2			
Depth to Top	0.50	0.40	0.60	0.60	1.60	1.10	2.40			
Depth To Bottom										
Date Sampled	16-Jul-19	17-Jul-19	15-Jul-19	19-Jul-19	16-Jul-19	17-Jul-19	17-Jul-19			
Sample Type	Solid	Soil	Soil	Solid	Soil	Soil	Soil			
Sample Matrix Code	7	5AB	4A	7	5A	5AE	5AE			
Speciated PCB-WHO12										
PCB BZ 81 _A	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 105 _A	-	-	-	-	-	0.036	-	mg/kg	0.005	A-T-004s
PCB BZ 114 _A	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 118 _A ^{M#}	-	-	-	-	-	0.084	-	mg/kg	0.007	A-T-004s
PCB BZ 123 _A	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 126 _A	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 156 _A	-	-	-	-	-	0.009	-	mg/kg	0.005	A-T-004s
PCB BZ 157 _A	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 167 _A	-	-	-	-	-	0.019	-	mg/kg	0.005	A-T-004s
PCB BZ 169 _A	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 189 _A	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 77 _A	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
Total Speciated PCB-WHO12 _A	-	-	-	-	-	0.148	-	mg/kg	0.005	A-T-004s

Envirolab Job Number: 19/07173 and 19/07261

Client Project Name: Langstone Technology Park, Havant

Client Project Ref: 10/1425

Lab Sample ID	19/07173/1	19/07173/2	19/07173/5	19/07173/8	19/07173/12	19/07173/15	19/07173/16	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	HTP1	HTP3	BH1	SA1	WS1	WS2	WS2			
Depth to Top	0.50	0.40	0.60	0.60	1.60	1.10	2.40			
Depth To Bottom										
Date Sampled	16-Jul-19	17-Jul-19	15-Jul-19	19-Jul-19	16-Jul-19	17-Jul-19	17-Jul-19			
Sample Type	Solid	Soil	Soil	Solid	Soil	Soil	Soil			
Sample Matrix Code	7	5AB	4A	7	5A	5AE	5AE			
TPH CWG										
Ali >C5-C6 _A [#]	-	-	-	-	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8 _A [#]	-	-	-	-	-	0.03	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10 _A	-	-	-	-	-	18	<1	mg/kg	1	A-T-055s
Ali >C10-C12 _A ^{M#}	-	-	-	-	-	242	<1	mg/kg	1	A-T-055s
Ali >C12-C16 _A ^{M#}	-	-	-	-	-	2210	<1	mg/kg	1	A-T-055s
Ali >C16-C21 _A ^{M#}	-	-	-	-	-	2600	<1	mg/kg	1	A-T-055s
Ali >C21-C35 _A	-	-	-	-	-	433	<1	mg/kg	1	A-T-055s
Total Aliphatics _A	-	-	-	-	-	5500	<1	mg/kg	1	A-T-055s
Aro >C5-C7 _A [#]	-	-	-	-	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8 _A [#]	-	-	-	-	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10 _A	-	-	-	-	-	22	<1	mg/kg	1	A-T-055s
Aro >C10-C12 _A ^{M#}	-	-	-	-	-	210	<1	mg/kg	1	A-T-055s
Aro >C12-C16 _A	-	-	-	-	-	1830	<1	mg/kg	1	A-T-055s
Aro >C16-C21 _A ^{M#}	-	-	-	-	-	1240	<1	mg/kg	1	A-T-055s
Aro >C21-C35 _A ^{M#}	-	-	-	-	-	396	1	mg/kg	1	A-T-055s
Total Aromatics _A	-	-	-	-	-	3700	1	mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35) _A	-	-	-	-	-	9200	1	mg/kg	1	A-T-055s
BTEX - Benzene _A [#]	-	-	-	-	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene _A [#]	-	-	-	-	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene _A [#]	-	-	-	-	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene _A [#]	-	-	-	-	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene _A [#]	-	-	-	-	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
MTBE _A [#]	-	-	-	-	-	<0.01	<0.01	mg/kg	0.01	A-T-022s

Envirolab Job Number: 19/07173 and 19/07261

Client Project Name: Langstone Technology Park, Havant

Client Project Ref: 10/1425

Lab Sample ID	19/07173/17	19/07173/19	19/07173/21	19/07173/22	19/07173/23	19/07173/27	19/07173/29	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS3	WS4	WS5	WS5	WS6	WS7	SA2			
Depth to Top	0.25	1.80	2.60	3.90	0.80	1.40	0.70			
Depth To Bottom										
Date Sampled	17-Jul-19	17-Jul-19	18-Jul-19	18-Jul-19	18-Jul-19	18-Jul-19	19-Jul-19			
Sample Type	Soil	Solid	Solid	Solid	Soil	Soil	Soil			
Sample Matrix Code	4A	7	7	7	4ABE	5AB	4ABE			
% Stones >10mm _A	40.8	<0.1	<0.1	<0.1	37.5	22.9	36.6	% w/w	0.1	A-T-044
pH _D ^{M#}	9.03	9.04	9.15	9.10	9.20	8.01	8.34	pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	<0.01	-	<0.01	<0.01	-	-	-	g/l	0.01	A-T-026s
Arsenic _D ^{M#}	<1	<1	<1	<1	<1	3	1	mg/kg	1	A-T-024s
Beryllium _D [#]	0.8	0.8	0.6	<0.5	<0.5	0.5	<0.5	mg/kg	0.5	A-T-024s
Boron (water soluble) _D ^{M#}	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	mg/kg	1	A-T-027s
Cadmium _D ^{M#}	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	0.5	A-T-024s
Copper _D ^{M#}	2	5	3	1	<1	12	7	mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-040s
Lead _D ^{M#}	7	11	5	2	2	5	1	mg/kg	1	A-T-024s
Mercury _D	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	26	40	31	24	14	20	4	mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-024s
Vanadium _D ^{M#}	24	51	41	18	12	22	6	mg/kg	1	A-T-024s
Zinc _D ^{M#}	38	55	38	26	16	29	8	mg/kg	5	A-T-024s

Envirolab Job Number: 19/07173 and 19/07261

Client Project Name: Langstone Technology Park, Havant

Client Project Ref: 10/1425

Lab Sample ID	19/07173/17	19/07173/19	19/07173/21	19/07173/22	19/07173/23	19/07173/27	19/07173/29	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS3	WS4	WS5	WS5	WS6	WS7	SA2			
Depth to Top	0.25	1.80	2.60	3.90	0.80	1.40	0.70			
Depth To Bottom										
Date Sampled	17-Jul-19	17-Jul-19	18-Jul-19	18-Jul-19	18-Jul-19	18-Jul-19	19-Jul-19			
Sample Type	Soil	Solid	Solid	Solid	Soil	Soil	Soil			
Sample Matrix Code	4A	7	7	7	4ABE	5AB	4ABE			
Asbestos in Soil (inc. matrix)										
Asbestos in soil [†]	-	-	-	-	NAD	NAD	NAD			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	-	-	-	-	N/A	N/A	N/A			

Envirolab Job Number: 19/07173 and 19/07261

Client Project Name: Langstone Technology Park, Havant

Client Project Ref: 10/1425

Lab Sample ID	19/07173/17	19/07173/19	19/07173/21	19/07173/22	19/07173/23	19/07173/27	19/07173/29	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS3	WS4	WS5	WS5	WS6	WS7	SA2			
Depth to Top	0.25	1.80	2.60	3.90	0.80	1.40	0.70			
Depth To Bottom										
Date Sampled	17-Jul-19	17-Jul-19	18-Jul-19	18-Jul-19	18-Jul-19	18-Jul-19	19-Jul-19			
Sample Type	Soil	Solid	Solid	Solid	Soil	Soil	Soil			
Sample Matrix Code	4A	7	7	7	4ABE	5AB	4ABE			
PAH-16MS										
Acenaphthene _A ^{M#}	<0.01	<0.01	0.03	<0.01	<0.01	0.02	0.11	mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	<0.01	<0.01	<0.01	0.02	0.02	0.09	mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	<0.02	<0.02	0.06	<0.02	0.05	0.06	0.49	mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.04	<0.04	0.07	<0.04	0.29	0.42	2.74	mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.06	<0.04	<0.04	<0.04	0.32	0.50	4.17	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.09	<0.05	0.06	<0.05	0.36	0.56	4.35	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	0.06	<0.05	<0.05	<0.05	0.28	0.43	3.30	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	<0.07	<0.07	<0.07	0.12	0.20	1.61	mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	<0.06	<0.06	0.08	<0.06	0.31	0.46	2.89	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	<0.04	<0.04	<0.04	0.07	0.11	0.68	mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	<0.08	<0.08	0.27	<0.08	0.52	0.74	5.78	mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	<0.01	<0.01	0.08	<0.01	0.01	0.02	0.08	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.08	<0.03	<0.03	<0.03	0.32	0.50	3.48	mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	<0.03	<0.03	0.18	<0.03	0.21	0.28	1.64	mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	<0.07	<0.07	0.25	<0.07	0.46	0.68	5.75	mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	0.33	<0.08	1.08	<0.08	3.34	5.00	37.2	mg/kg	0.01	A-T-019s

Envirolab Job Number: 19/07173 and 19/07261

Client Project Name: Langstone Technology Park, Havant

Client Project Ref: 10/1425

Lab Sample ID	19/07173/17	19/07173/19	19/07173/21	19/07173/22	19/07173/23	19/07173/27	19/07173/29	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS3	WS4	WS5	WS5	WS6	WS7	SA2			
Depth to Top	0.25	1.80	2.60	3.90	0.80	1.40	0.70			
Depth To Bottom										
Date Sampled	17-Jul-19	17-Jul-19	18-Jul-19	18-Jul-19	18-Jul-19	18-Jul-19	19-Jul-19			
Sample Type	Soil	Solid	Solid	Solid	Soil	Soil	Soil			
Sample Matrix Code	4A	7	7	7	4ABE	5AB	4ABE			
TPH CWG										
Ali >C5-C6 _A [#]	-	-	<0.05	<0.01	-	-	-	mg/kg	0.01	A-T-022s
Ali >C6-C8 _A [#]	-	-	<0.05	<0.01	-	-	-	mg/kg	0.01	A-T-022s
Ali >C8-C10 _A	-	-	23	<1	-	-	-	mg/kg	1	A-T-055s
Ali >C10-C12 _A ^{M#}	-	-	89	<1	-	-	-	mg/kg	1	A-T-055s
Ali >C12-C16 _A ^{M#}	-	-	318	2	-	-	-	mg/kg	1	A-T-055s
Ali >C16-C21 _A ^{M#}	-	-	279	2	-	-	-	mg/kg	1	A-T-055s
Ali >C21-C35 _A	-	-	45	1	-	-	-	mg/kg	1	A-T-055s
Total Aliphatics _A	-	-	756	7	-	-	-	mg/kg	1	A-T-055s
Aro >C5-C7 _A [#]	-	-	<0.05	<0.01	-	-	-	mg/kg	0.01	A-T-022s
Aro >C7-C8 _A [#]	-	-	<0.05	<0.01	-	-	-	mg/kg	0.01	A-T-022s
Aro >C8-C10 _A	-	-	19	<1	-	-	-	mg/kg	1	A-T-055s
Aro >C10-C12 _A ^{M#}	-	-	65	<1	-	-	-	mg/kg	1	A-T-055s
Aro >C12-C16 _A	-	-	218	2	-	-	-	mg/kg	1	A-T-055s
Aro >C16-C21 _A ^{M#}	-	-	161	2	-	-	-	mg/kg	1	A-T-055s
Aro >C21-C35 _A ^{M#}	-	-	31	2	-	-	-	mg/kg	1	A-T-055s
Total Aromatics _A	-	-	494	6	-	-	-	mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35) _A	-	-	1250	13	-	-	-	mg/kg	1	A-T-055s
BTEX - Benzene _A [#]	-	-	<0.05	<0.01	-	-	-	mg/kg	0.01	A-T-022s
BTEX - Toluene _A [#]	-	-	<0.05	<0.01	-	-	-	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene _A [#]	-	-	<0.05	<0.01	-	-	-	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene _A [#]	-	-	<0.05	<0.01	-	-	-	mg/kg	0.01	A-T-022s
BTEX - o Xylene _A [#]	-	-	<0.05	<0.01	-	-	-	mg/kg	0.01	A-T-022s
MTBE _A [#]	-	-	<0.05	<0.01	-	-	-	mg/kg	0.01	A-T-022s

Envirolab Job Number: 19/07173 and 19/07261

Client Project Name: Langstone Technology Park, Havant

Client Project Ref: 10/1425

Lab Sample ID	19/07173/30	19/07173/31	19/07261/1	19/07261/2	19/07261/3	19/07261/4	19/07261/5	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH3	BH4	BH2	BH2	BH2	BH3	BH3			
Depth to Top	1.00	1.10	6.00	9.00	12.50	5.00	7.50			
Depth To Bottom			6.45	9.45	12.95	5.45	7.95			
Date Sampled	19-Jul-19	24-Jul-19	18-Jul-19	18-Jul-19	18-Jul-19	23-Jul-19	23-Jul-19			
Sample Type	Soil	Soil	Solid	Solid	Solid	Solid	Solid			
Sample Matrix Code	5A	4A	7	7	7	7	7			
% Stones >10mm _A	4.1	16.4	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH _D ^{M#}	8.01	7.01	9.03	-	9.00	-	8.98	pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	g/l	0.01	A-T-026s
Total Organic Carbon _D ^{M#}	-	1.08	1.69	3.00	4.67	3.25	2.31	% w/w	0.03	A-T-032s
Arsenic _D ^{M#}	<1	<1	-	-	-	-	-	mg/kg	1	A-T-024s
Beryllium _D [#]	<0.5	<0.5	-	-	-	-	-	mg/kg	0.5	A-T-024s
Boron (water soluble) _D ^{M#}	<1.0	<1.0	-	-	-	-	-	mg/kg	1	A-T-027s
Cadmium _D ^{M#}	<0.5	<0.5	-	-	-	-	-	mg/kg	0.5	A-T-024s
Copper _D ^{M#}	4	3	-	-	-	-	-	mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	-	-	-	-	-	mg/kg	1	A-T-040s
Lead _D ^{M#}	3	8	-	-	-	-	-	mg/kg	1	A-T-024s
Mercury _D	<0.17	<0.17	-	-	-	-	-	mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	8	8	-	-	-	-	-	mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	<1	-	-	-	-	-	mg/kg	1	A-T-024s
Vanadium _D ^{M#}	12	18	-	-	-	-	-	mg/kg	1	A-T-024s
Zinc _D ^{M#}	17	18	-	-	-	-	-	mg/kg	5	A-T-024s

Envirolab Job Number: 19/07173 and 19/07261

Client Project Name: Langstone Technology Park, Havant

Client Project Ref: 10/1425

Lab Sample ID	19/07173/30	19/07173/31	19/07261/1	19/07261/2	19/07261/3	19/07261/4	19/07261/5	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH3	BH4	BH2	BH2	BH2	BH3	BH3			
Depth to Top	1.00	1.10	6.00	9.00	12.50	5.00	7.50			
Depth To Bottom			6.45	9.45	12.95	5.45	7.95			
Date Sampled	19-Jul-19	24-Jul-19	18-Jul-19	18-Jul-19	18-Jul-19	23-Jul-19	23-Jul-19			
Sample Type	Soil	Soil	Solid	Solid	Solid	Solid	Solid			
Sample Matrix Code	5A	4A	7	7	7	7	7			
Asbestos in Soil (inc. matrix)										
Asbestos in soil [§]	NAD	-	-	-	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	-	-	-	-	-	-			

Envirolab Job Number: 19/07173 and 19/07261

Client Project Name: Langstone Technology Park, Havant

Client Project Ref: 10/1425

Lab Sample ID	19/07173/30	19/07173/31	19/07261/1	19/07261/2	19/07261/3	19/07261/4	19/07261/5	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH3	BH4	BH2	BH2	BH2	BH3	BH3			
Depth to Top	1.00	1.10	6.00	9.00	12.50	5.00	7.50			
Depth To Bottom			6.45	9.45	12.95	5.45	7.95			
Date Sampled	19-Jul-19	24-Jul-19	18-Jul-19	18-Jul-19	18-Jul-19	23-Jul-19	23-Jul-19			
Sample Type	Soil	Soil	Solid	Solid	Solid	Solid	Solid			
Sample Matrix Code	5A	4A	7	7	7	7	7			
PAH-16MS										
Acenaphthene _A ^{M#}	<0.01	0.02	-	-	-	-	-	mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	0.03	-	-	-	-	-	mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	<0.02	0.06	-	-	-	-	-	mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	<0.04	0.46	-	-	-	-	-	mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	<0.04	0.57	-	-	-	-	-	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	<0.05	0.74	-	-	-	-	-	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	<0.05	0.58	-	-	-	-	-	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	0.26	-	-	-	-	-	mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	<0.06	0.58	-	-	-	-	-	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	0.14	-	-	-	-	-	mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	<0.08	0.66	-	-	-	-	-	mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	<0.01	0.02	-	-	-	-	-	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	<0.03	0.63	-	-	-	-	-	mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	-	-	-	-	-	mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	0.03	0.20	-	-	-	-	-	mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	<0.07	0.65	-	-	-	-	-	mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	<0.08	5.60	-	-	-	-	-	mg/kg	0.01	A-T-019s

Envirolab Job Number: 19/07173 and 19/07261

Client Project Name: Langstone Technology Park, Havant

Client Project Ref: 10/1425

Lab Sample ID	19/07261/6							Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH3									
Depth to Top	10.50									
Depth To Bottom	10.95									
Date Sampled	23-Jul-19									
Sample Type	Solid									
Sample Matrix Code	7									
% Stones >10mm _A	<0.1							% w/w	0.1	A-T-044
pH _D ^{M#}	9.09							pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	<0.01							g/l	0.01	A-T-026s
Total Organic Carbon _D ^{M#}	4.63							% w/w	0.03	A-T-032s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Clancy Consulting, Dunham Court, 2 Dunham Road, Altrincham, Cheshire, UK, **Project No:** 19/07173
WA14 4NX
Date Received: 30/07/2019 (am)
Project: Langstone Technology Park, Havant
Cool Box Temperatures (°C): 16.7, 17.3, 20.0
Clients Project No: 10/1425

Lab Sample ID	19/07173/1	19/07173/12	19/07173/21
Client Sample No			
Client Sample ID/Depth	HTP1 0.50m	WS1 1.60m	WS5 2.60m
Date Sampled	16/07/19	16/07/19	18/07/19
Deviation Code			
F	✓	✓	✓

Key

F Maximum holding time exceeded between sampling date and analysis for analytes listed below

HOLDING TIME EXCEEDANCES

Lab Sample ID	19/07173/1	19/07173/12	19/07173/21
Client Sample No			
Client Sample ID/Depth	HTP1 0.50m	WS1 1.60m	WS5 2.60m
Date Sampled	16/07/19	16/07/19	18/07/19
PAH-16MS	✓	✓	
VPHCWG			✓

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Appendix IV



LABORATORY REPORT



4043

Contract Number: PSL19/4664

Report Date: 14 August 2019
Client's Reference: 10/1425
Client Name: Clancy Consulting
Dunham Court
2 Dunham Road
Altrincham
Cheshire
WA144NX

For the attention of: Sophie Harper-Pryce

Contract Title: Langstone Technology Park, Havant
Date Received: 1/8/2019
Date Commenced: 1/8/2019
Date Completed: 14/8/2019

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:



(Director)

A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

S Eyre
(Senior Technician)

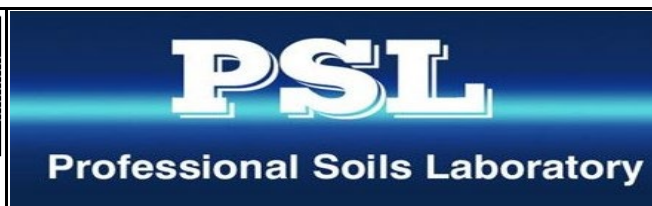
L Knight
(Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
fax: +44 (0)844 815 6642
e-mail: rgunson@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS1		D	4.80		White CHALK.
WS2		B	0.60	0.80	Brown very sandy very clayey GRAVEL of flint and chalk.
HTP3		B	0.15	0.20	MADE GROUND brown sandy slightly silty gravel.
SA1		B	0.70		Brown slightly sandy very clayey GRAVEL of flint and chalk.
SA2		B	0.60		MADE GROUND brown sandy very clayey gravel.
BH4		D	6.50		White CHALK.
BH4		D	9.10		White CHALK.
BH4		D	11.50		White CHALK.
BH4		D	18.90		White CHALK.
BH1		U	6.00	6.45	Soft white structureless CHALK.
BH1		U	10.50	10.95	White stuctureless CHALK.
BH2		U	5.00	5.45	White stuctureless CHALK.
BH2		U	7.50	7.95	White stuctureless CHALK.
BH2		U	17.00	17.45	Brown mottled grey very gravelly sandy CLAY.
BH3		U	9.00	9.45	White stuctureless CHALK.
BH2		D	5.60		White CHALK.
BH2		D	8.00		White CHALK.
BH3		D	19.00		White CHALK.
BH3		D	21.00	21.45	White CHALK.



Langstone Technology Park, Havant

Contract No:

PSL19/4664

Client Ref:

10/1425

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

4043

PSL
Professional Soils Laboratory

Langstone Technology Park, Havant

Contract No:

PSL19/4664

Client Ref:

10/1425

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

*** : Liquid Limit and Plastic Limit Wet Sieved.**



4043

PSL
Professional Soils Laboratory

Langstone Technology Park, Havant

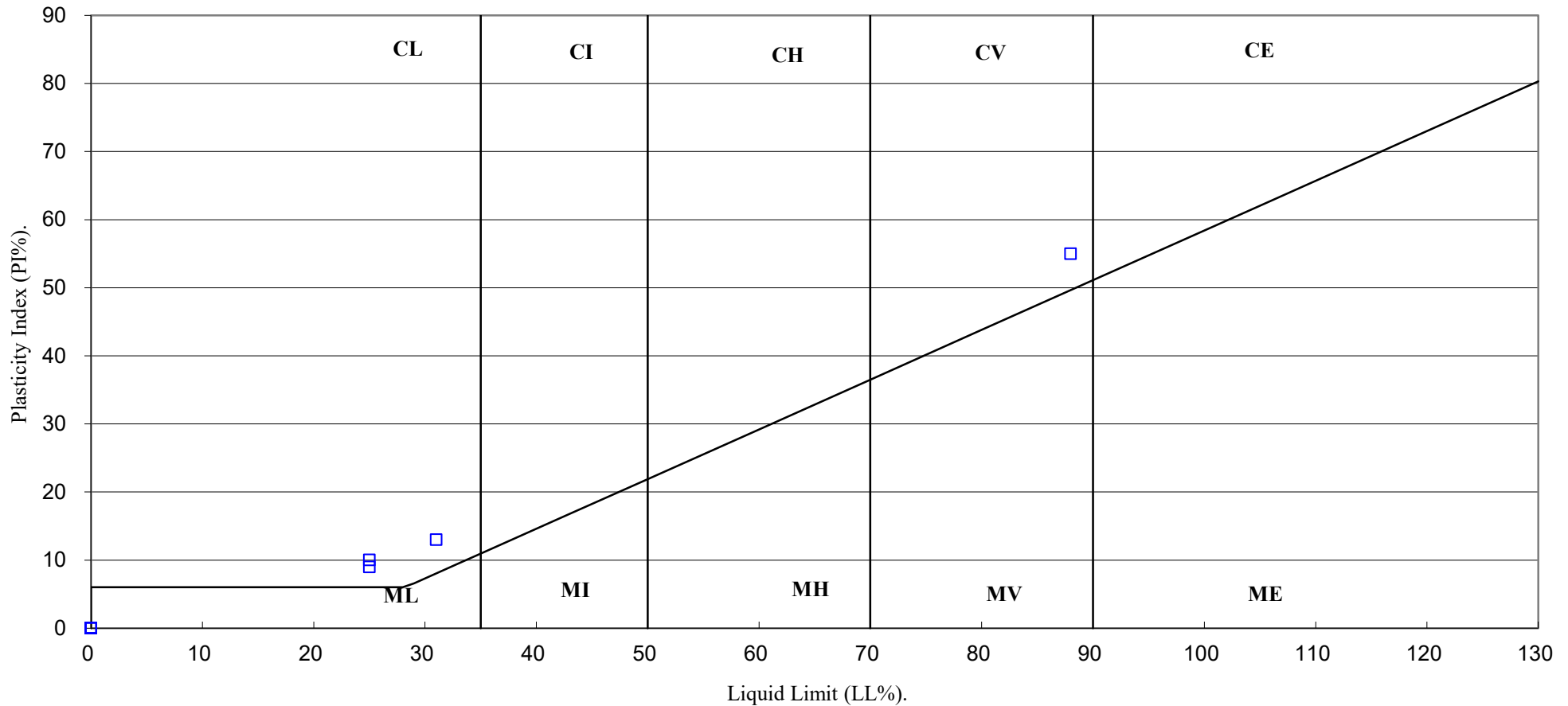
Contract No:

PSL19/4664

Client Ref:

10/1425

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



4043

PSL

Professional Soils Laboratory

Langstone Technology Park, Havant

Contract No:

PSL19/4664

Client Ref:

10/1425

SUMMARY OF CHALK TESTS

(BS1377 : PART 2 & 4 : 1990)

[illegible]

* CCV testing is not UKAS accredited



4043

PSL
Professional Soils Laboratory

Langstone Technology Park, Havant

Contract No:

PSL19/4664

Client Ref:

10/1425

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

[illegible]

4043

PSL
Professional Soils Laboratory

Langstone Technology Park, Havant

Contract No:

PSL19/4664

Client Ref:

10/1425

PARTICLE SIZE DISTRIBUTION TEST

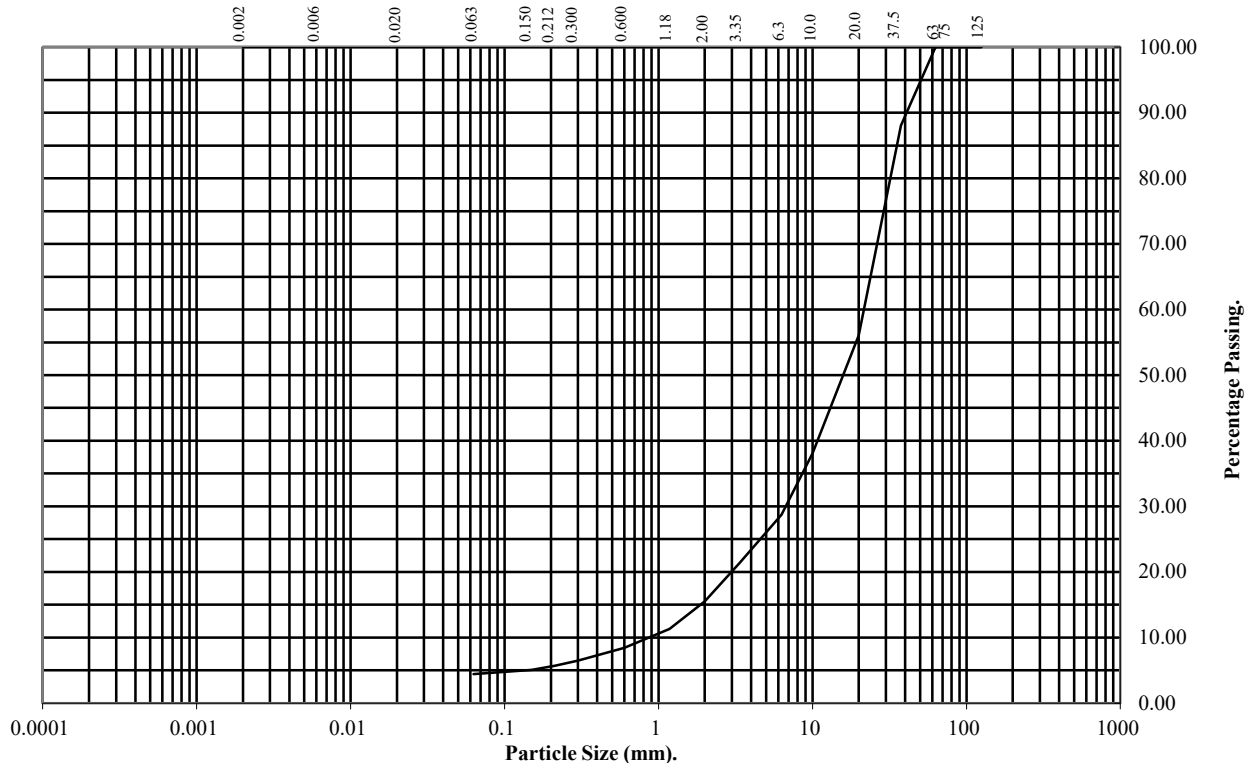
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: HTP3 Top Depth (m): 0.15

Sample Number: Base Depth(m): 0.20

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	88
20	56
10	38
6.3	29
3.35	21
2	16
1.18	11
0.6	8
0.3	6
0.212	6
0.15	5
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	84
Sand	12
Silt/Clay	4

Remarks:

See Summary of Soil Descriptions



PSL
Professional Soils Laboratory

Langstone Technology Park, Havant

Contract No:
PSL19/4664
Client Ref:
10/1425

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

WS3

Top Depth (m):

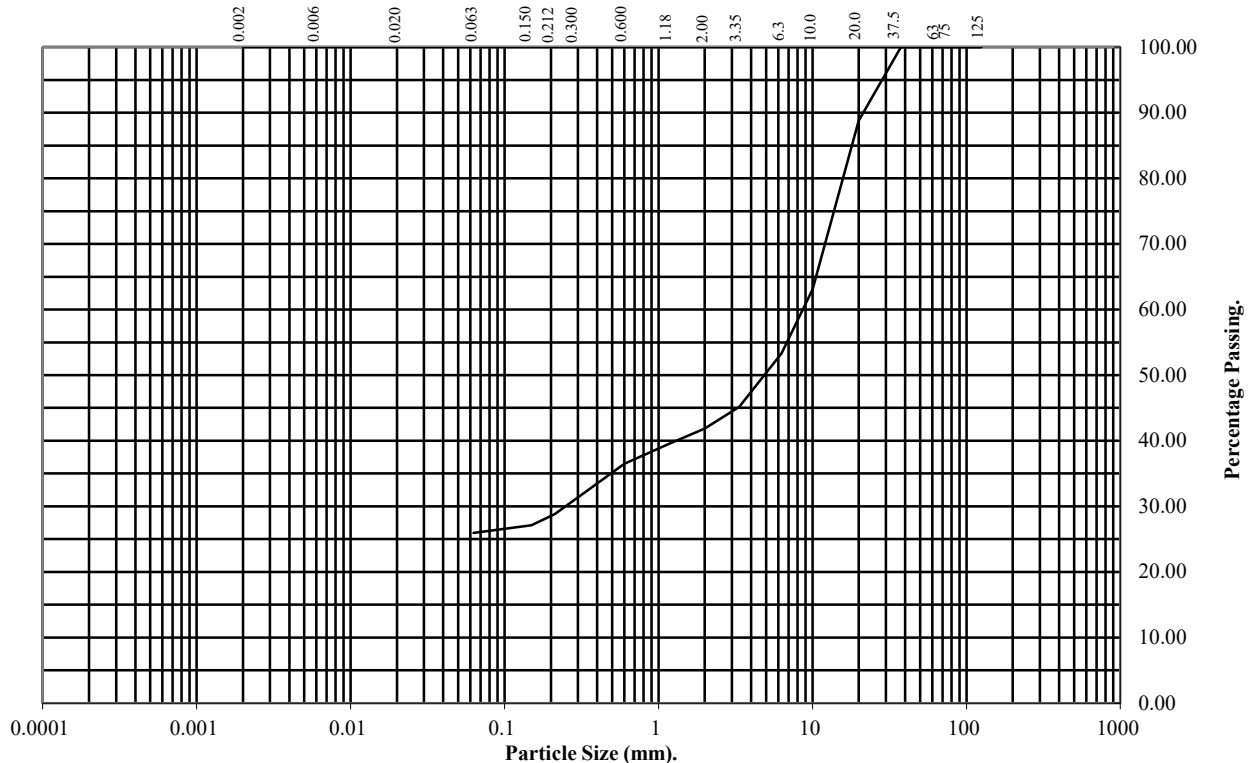
1.50

Sample Number:

Base Depth(m):

Sample Type:

D



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	89
10	63
6.3	53
3.35	45
2	42
1.18	40
0.6	36
0.3	31
0.212	29
0.15	27
0.063	26

Soil Fraction	Total Percentage
Cobbles	0
Gravel	58
Sand	16
Silt/Clay	26

Remarks:

See Summary of Soil Descriptions



PSL
Professional Soils Laboratory

Langstone Technology Park, Havant

Contract No:

PSL19/4664

Client Ref:

10/1425

CALIFORNIA BEARING RATIO TEST

Non compliance with BS 1377 : Part 4 : 1990

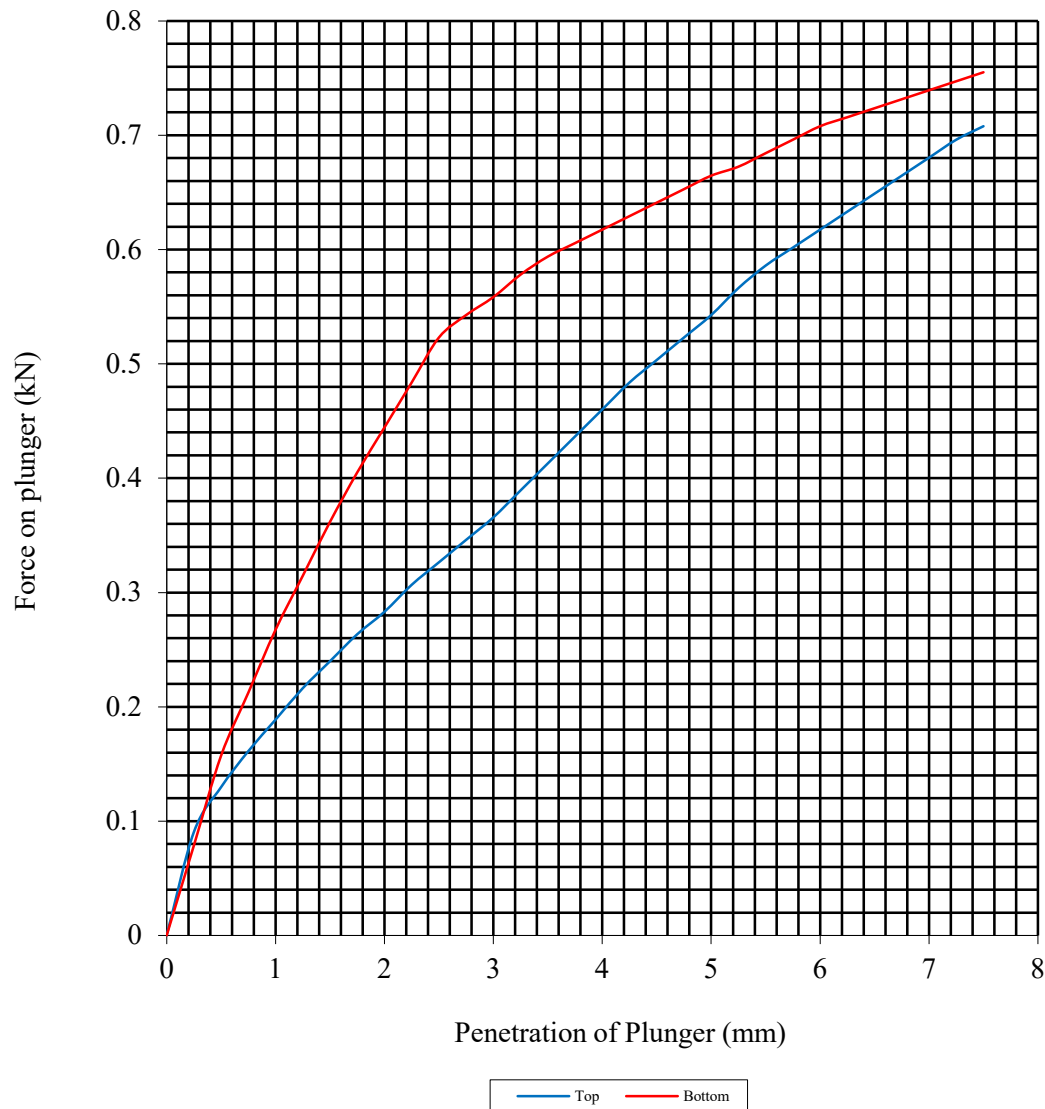
Hole Number: SA1

Top Depth (m): 0.70

Sample Number:

Base Depth (m):

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	14	Surcharge Kg:	4.20	Sample Top	15	Sample Top	2.7
Bulk Density Mg/m3:	2.13	Soaking Time hrs	96	Sample Bottom	15	Sample Bottom	4.0
Dry Density Mg/m3:	1.87	Swelling mm:	0.11	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:		47					
Compaction Conditions		4.5kg					



PSL
Professional Soils Laboratory

Langstone Technology Park, Havant

Contract No:
PSL19/4664
Client Ref:
10/1425

CALIFORNIA BEARING RATIO TEST

Non compliance with BS 1377 : Part 4 : 1990

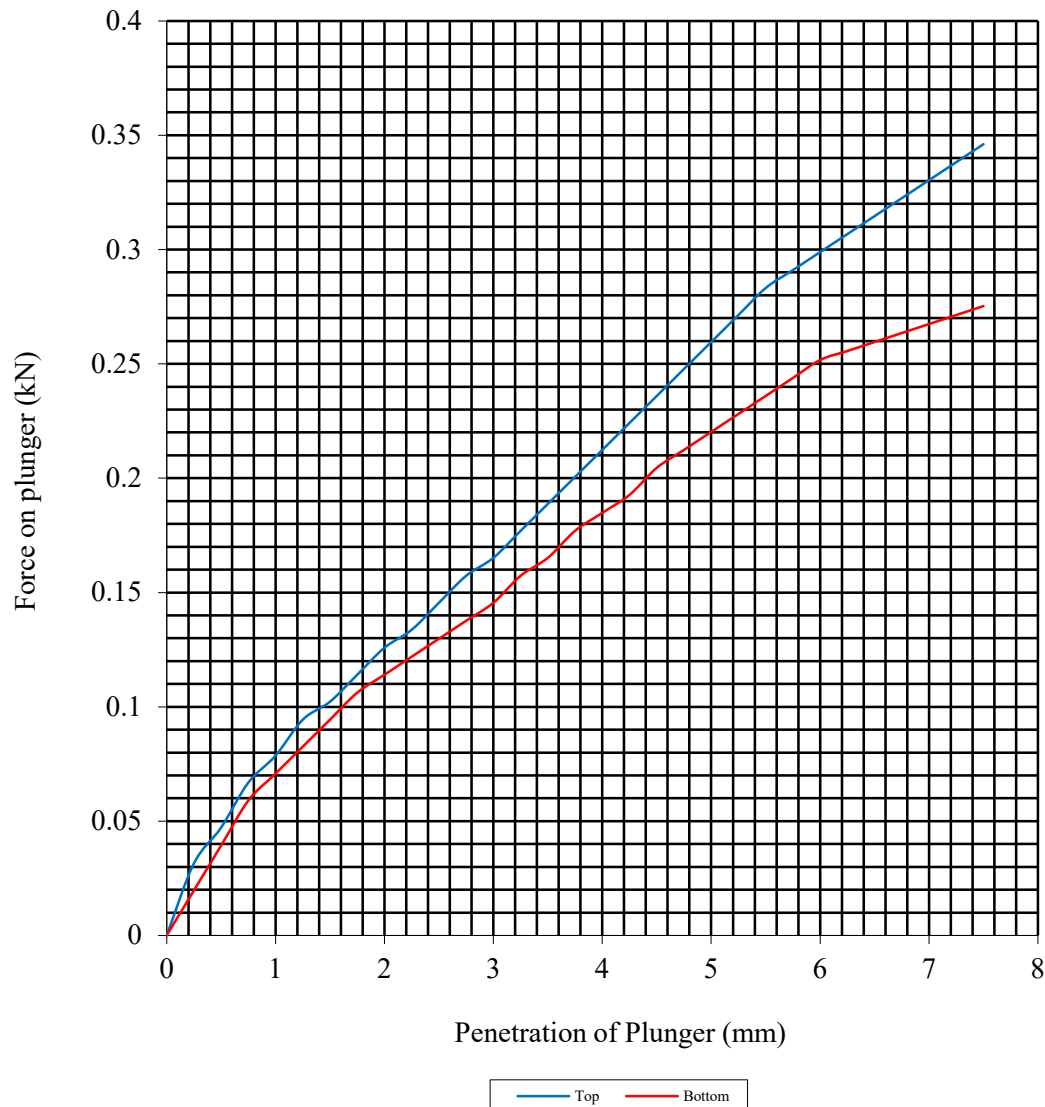
Hole Number: SA2

Top Depth (m): 0.60

Sample Number:

Base Depth (m):

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	20	Surcharge Kg:	4.20	Sample Top	22	Sample Top	1.3
Bulk Density Mg/m ³ :	1.95	Soaking Time hrs	96	Sample Bottom	21	Sample Bottom	1.1
Dry Density Mg/m ³ :	1.63	Swelling mm:	0.68	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			43				
Compaction Conditions		4.5kg					



PSL
Professional Soils Laboratory

Langstone Technology Park, Havant

Contract No:
PSL19/4664
Client Ref:
10/1425

CALIFORNIA BEARING RATIO TEST

Non compliance with BS 1377 : Part 4 : 1990

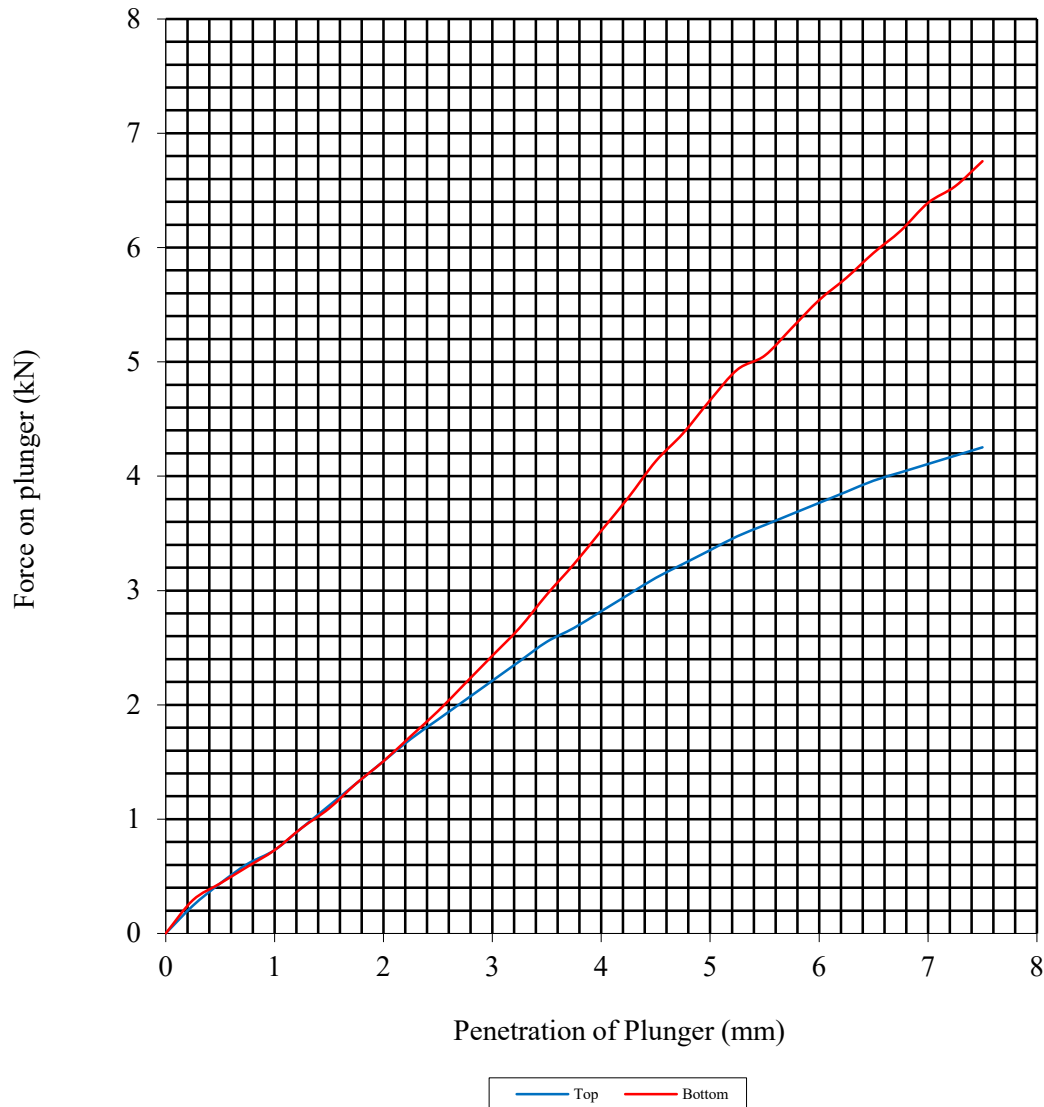
Hole Number: WS2

Top Depth (m): 0.60

Sample Number:

Base Depth (m): 0.80

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	11	Surcharge Kg:	4.20	Sample Top	14	Sample Top	16.8
Bulk Density Mg/m3:	2.10	Soaking Time hrs	96	Sample Bottom	12	Sample Bottom	23.3
Dry Density Mg/m3:	1.90	Swelling mm:	1.86	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:		30					
Compaction Conditions		4.5kg					



PSL
Professional Soils Laboratory

Langstone Technology Park, Havant

Contract No:
PSL19/4664
Client Ref:
10/1425

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

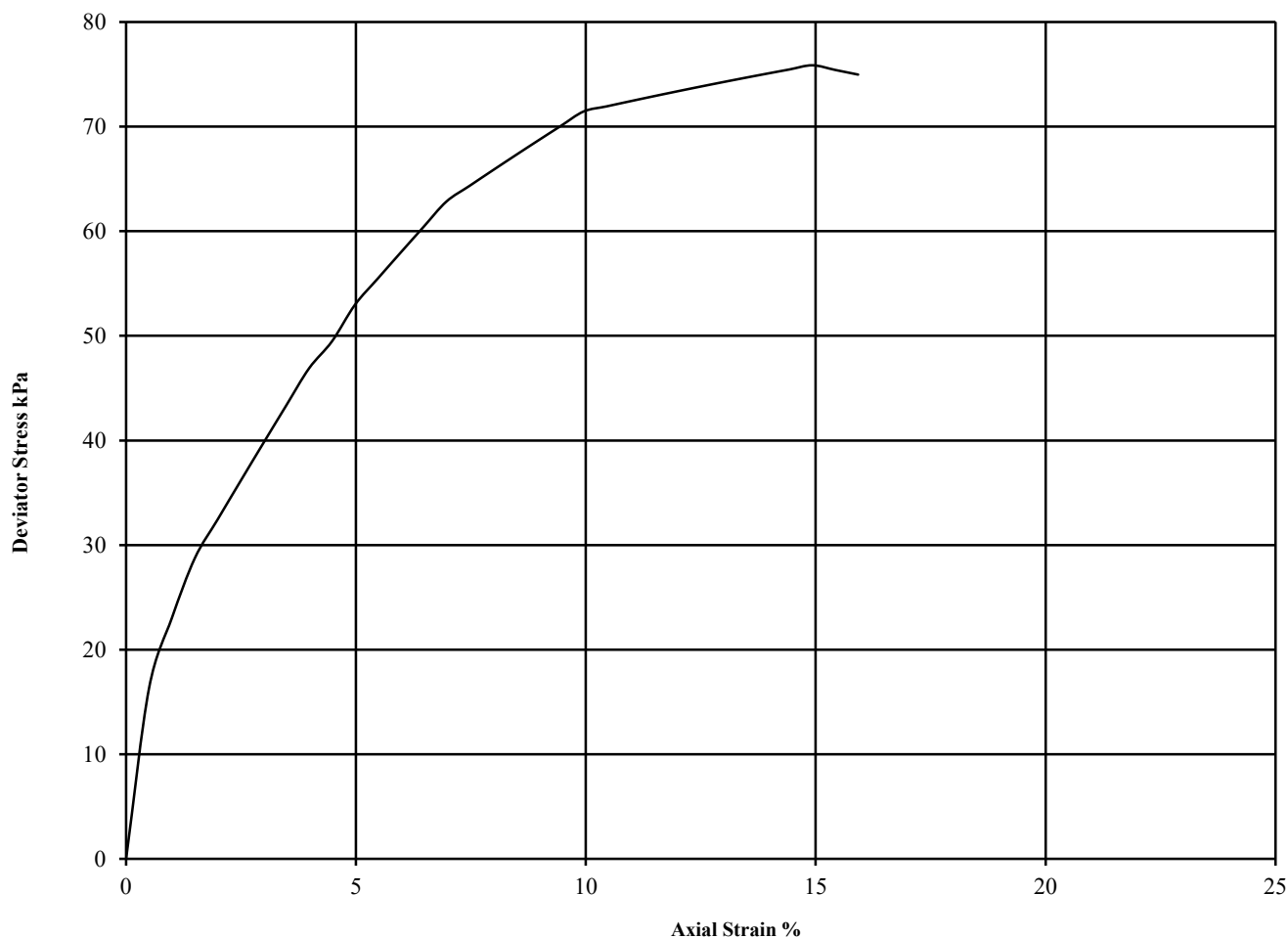
Hole Number: BH1

Top Depth (m): 6.00

Sample Number:

Base Depth (m): 6.45

Sample Type U



Diameter (mm):		103	Height (mm):		207	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.34 See summary of soil descriptions
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	24	2.03	1.64	120	76	38	14.9	Plastic	



4043

PSL

Professional Soils Laboratory

Langstone Technology Park, Havant

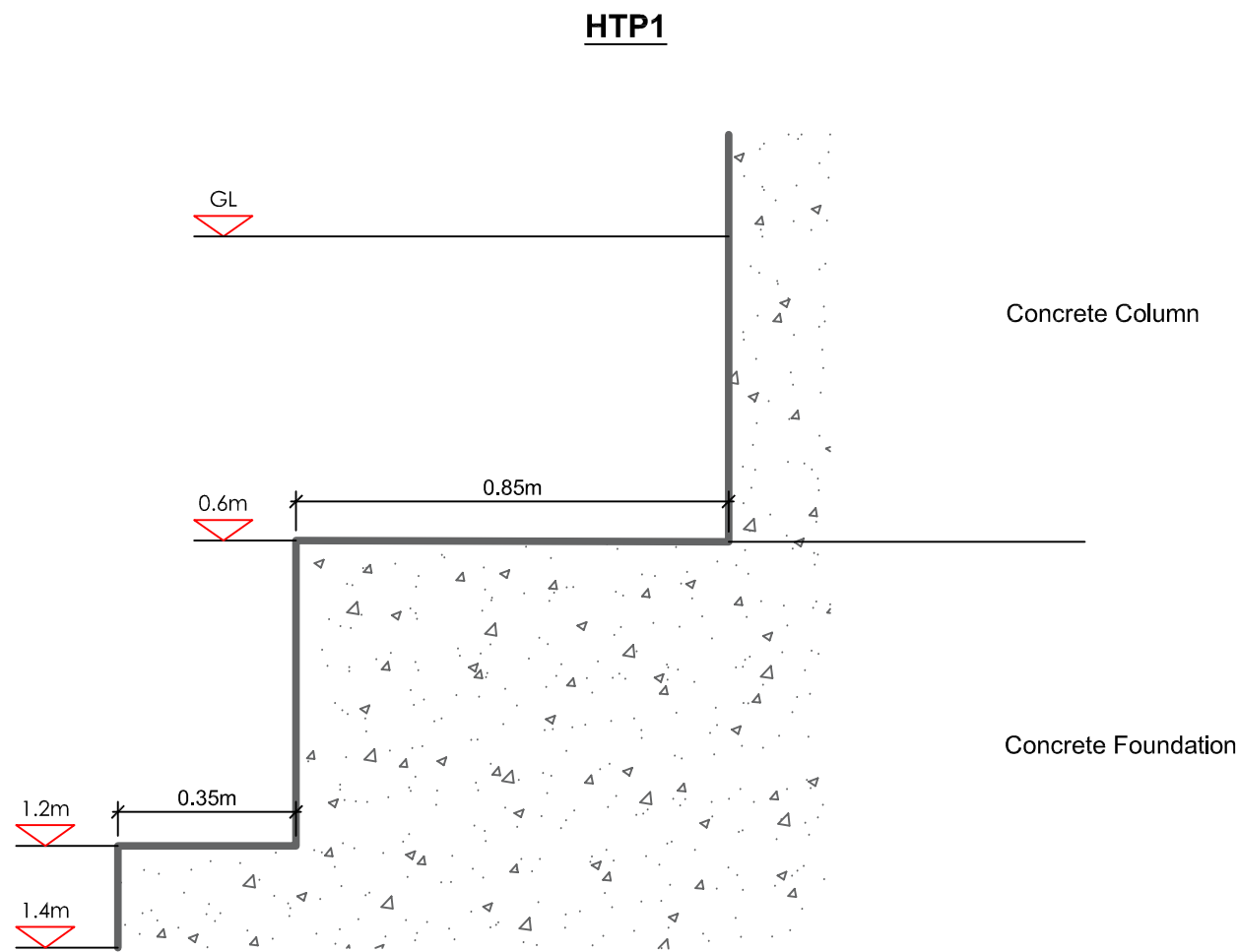
Contract No:

PSL19/4664

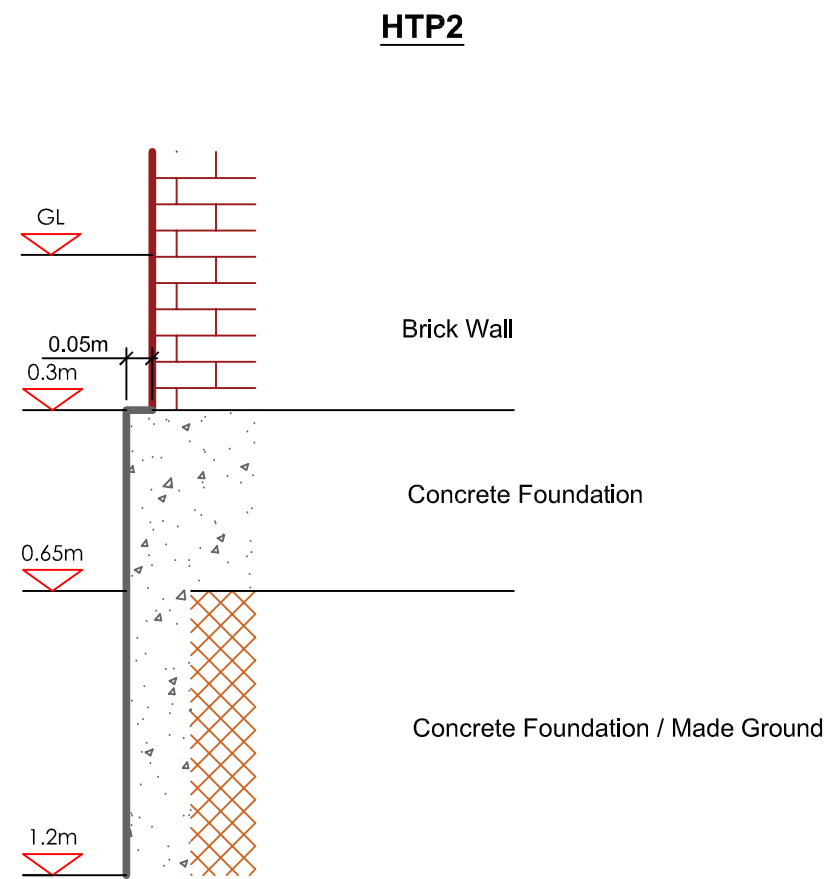
Client Ref:

10/1425

Appendix V

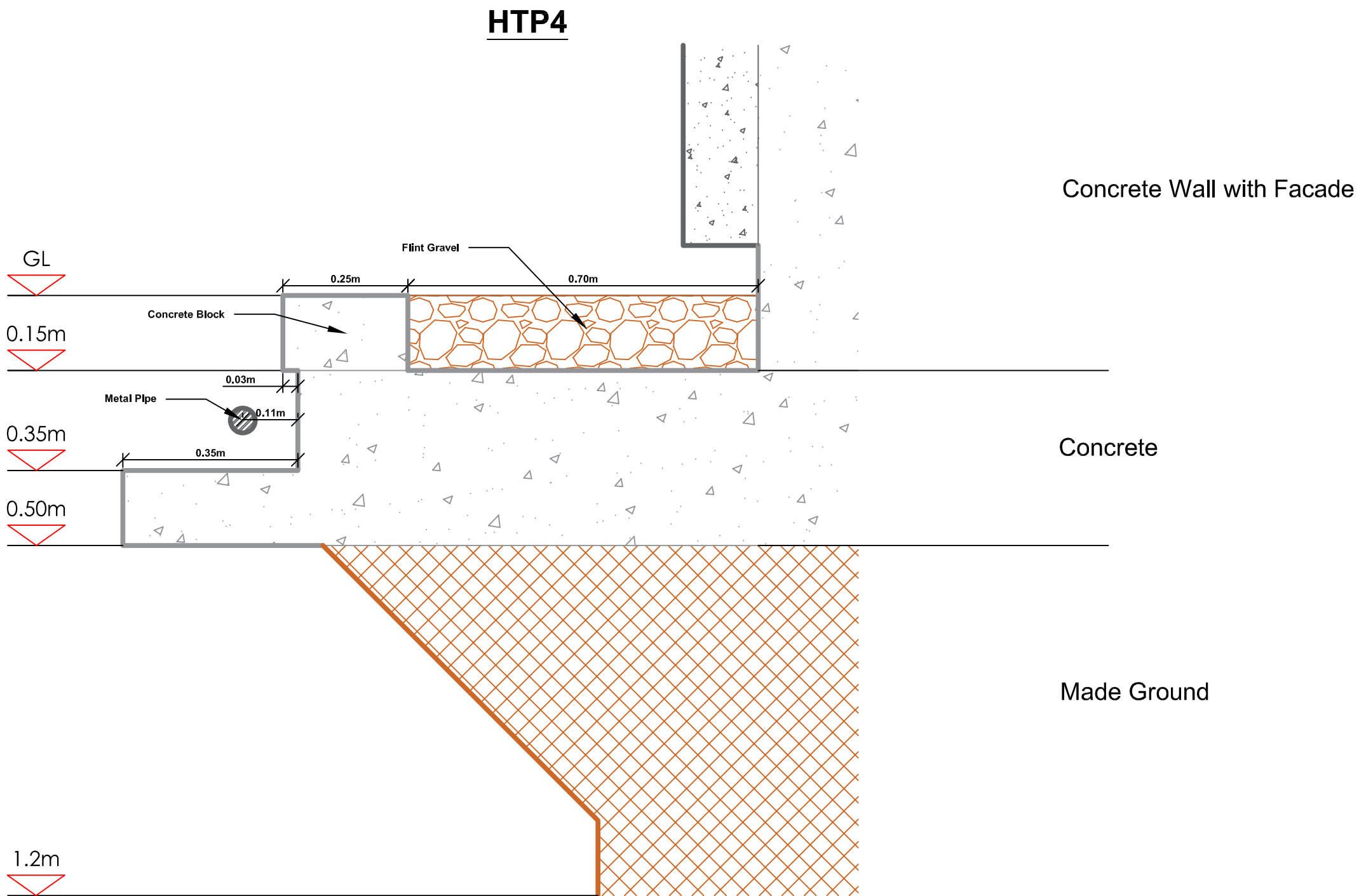


Trial pit terminated in Made Ground. Base of foundation not encountered during this investigation.



Trial pit terminated in Made Ground. Base of foundation encountered at 0.65m bgl in east of trial pit. Base of foundation not encountered in in west of trial pit.
Trial pit backfilled with arisings.

REV	DATE	DESCRIPTION	BY	CHK.	APP.
Rev	Date	Description	By	Check	App.
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Client Malcolm Hollis					
Project Langstone Technology Park Havant					
Office Altrincham					
Discipline Geo-environmental					
Title Building 6000 Hand Excavated Trial Pit Sections					
Scale @ A3 NTS			Status		
 clancy consulting www.clancy.co.uk					
Originator	Job Number	Discipline	Building/Zone		
SHP	10/1425	GEO			
Type	Level	Drawing No.	Revision		
		004	A		



Trial pit terminated in Made Ground. Base of foundation encountered at 0.50m bgl in east of trial pit. Trial pit backfilled with arisings.

A	Rev	Date	Description	By	Check	App.
		July 2019	Hand Excavated Trial Sections	DWH	SHP	NR

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Client
Malcolm Hollis

Project
Langstone Technology Park
Havant

Office
Altrincham

Discipline
Geo-Environmental

Title
Building 1000
Hand Excavated
Trial Pit Sections

Scale @ A3
NTS

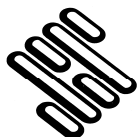
Status



www.clancy.co.uk

Originator	Job Number	Discipline	Building/Zone
DWH	10/1425	GEO	1000
Type	Level	Drawing No.	Revision
		005	A

Appendix VI



STRUCTURAL SOILS LTD

INSITU TESTING REPORT



1774

Report No. 749008R.01(00)

Date 24-July-2019 Contract Langstone Technology Park, Havant

Client Clancy Consulting Ltd
Address Dunham Court
2 Dunham Road
Altrincham
Cheshire
WA14 4NX

For the Attention of Sophie Harper-Pryce

Order received 27-June-2019
Testing Started 19-July-2019
Testing Completed 19-July-2019

Client Reference None
Client Order No. 26418/SHP/PPA
Instruction Type Written

Tests marked 'Not UKAS Accredited' in this report are not included in the UKAS Accreditation Schedule for our Laboratory.

UKAS Accredited Tests

Not UKAS Accredited Tests

2no. Soakaway tests carried out at locations specified by client.

The results represent the ground conditions at the specified locations and depths at the time of testing.

Please Note: Remaining samples will be retained for a period of one month from today and will then be disposed of.
Test were undertaken on samples 'as received' unless otherwise stated.
Opinions and interpretations expressed in this report are outside the scope of accreditation for this laboratory.

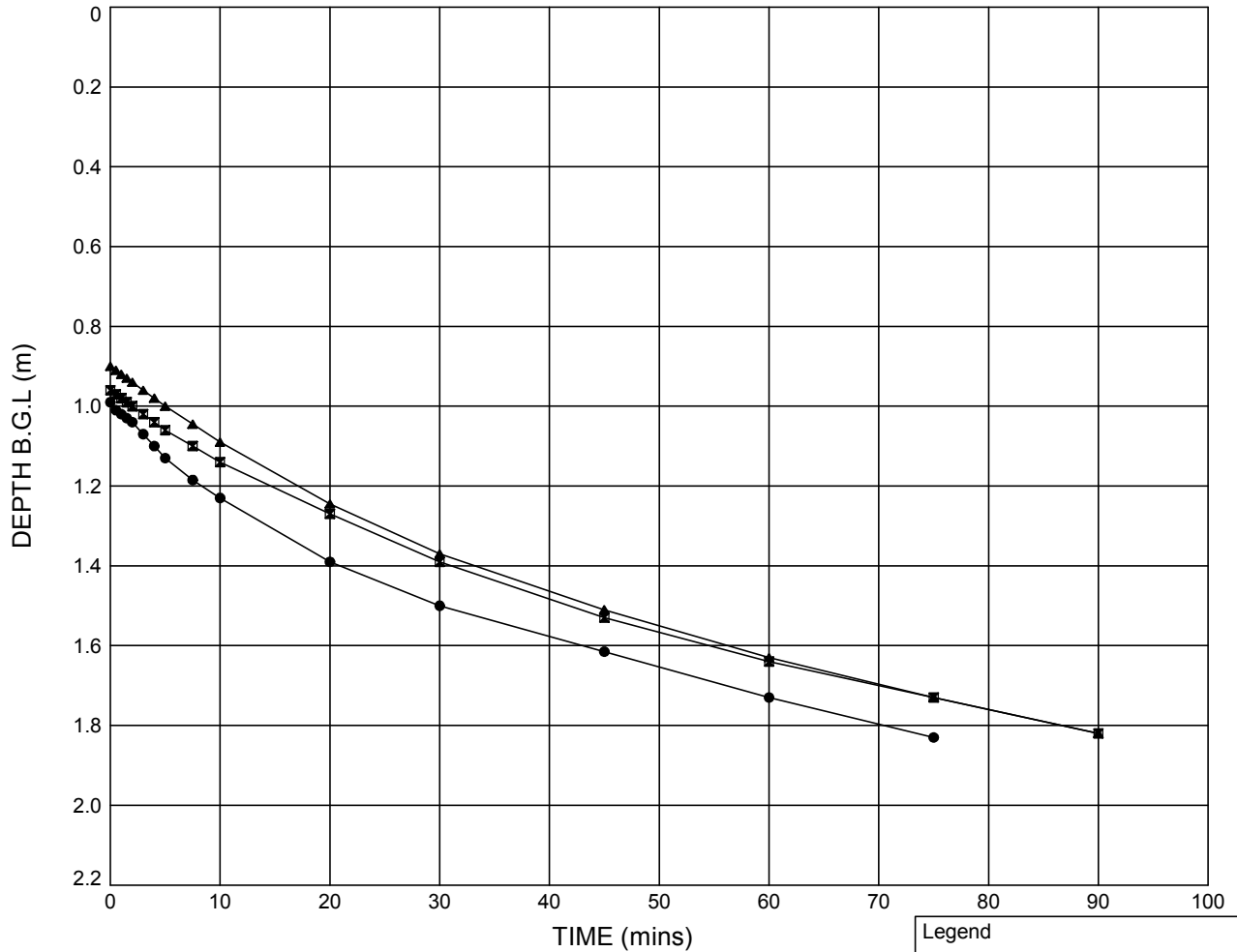
Structural Soils Ltd 1a Princess Street Bedminster Bristol BS3 4AG Tel.0117 9471000. e-mail dimitris.xirouchakis@soils.co.uk

FULL SCALE SOAKAWAY TEST

In accordance with BRE Digest 365

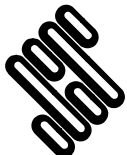
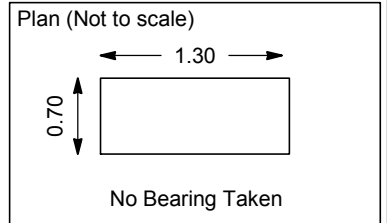
Soakaway Test - Position ID : **SA1**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



	Test 1	Test 2	Test 3	
Pit start depth:	= 2.10	2.05	2.00	m
Pit final depth:	= 2.05	2.00	2.00	m
Effective depth, D_e	= 1.11	1.14	1.20	m
Effective storage volume, V_{p75-25}	= 0.5051	0.5187	0.5460	m ³
Surface area, a_{p50}	= 3.1300	3.1900	3.3100	m ²
Time, t_{p75-25}	= 3691	4265	4174	secs
Infiltration rate, f	= 4.37×10^{-5}	3.81×10^{-5}	3.95×10^{-5}	m/s

Legend		
●	Test 1	(19.07.19)
■	Test 2	(19.07.19)
▲	Test 3	(19.07.19)



STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

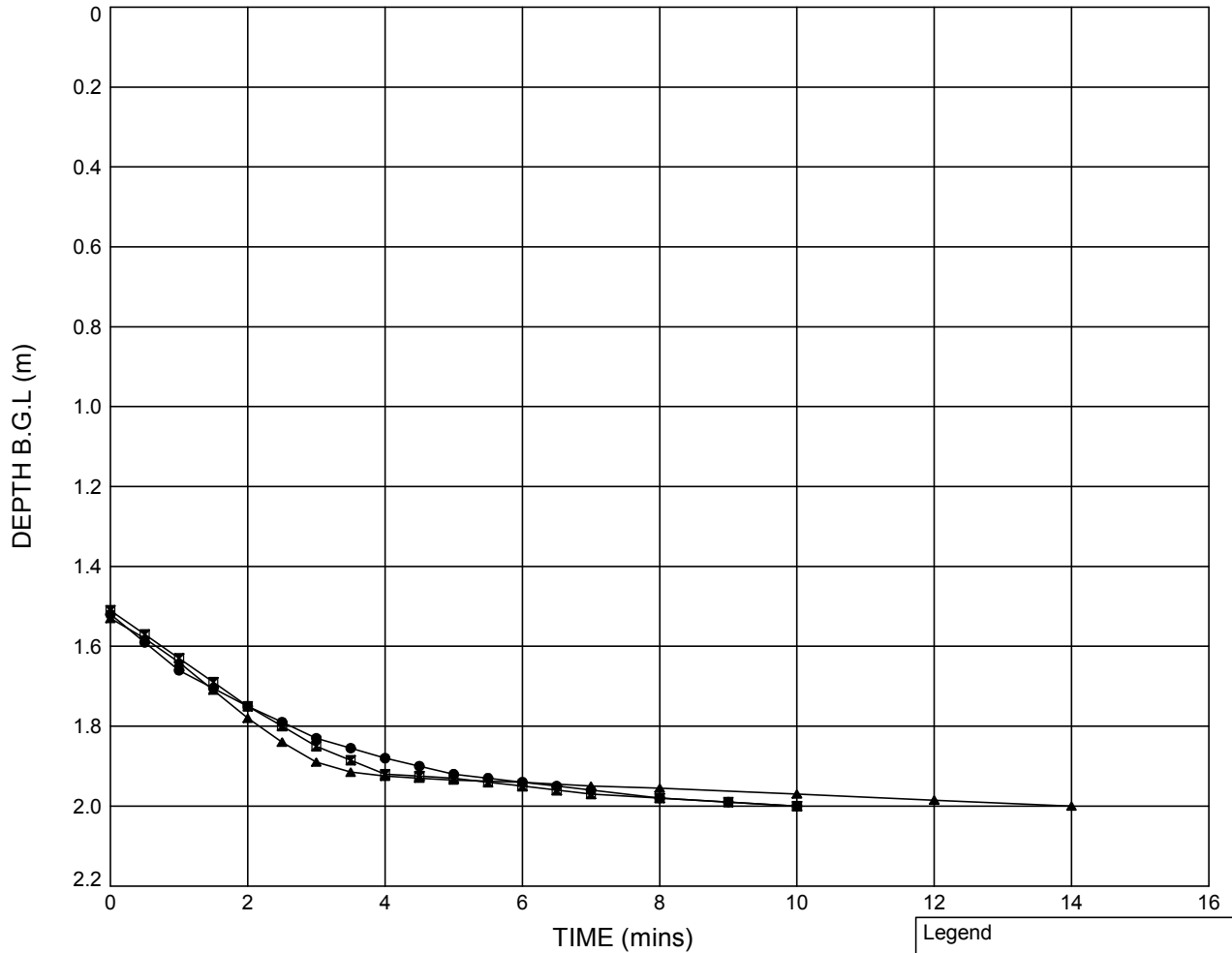
Compiled By		Date	Checked By		Date
[REDACTED]		24/07/19	[REDACTED]		4/07/19
Contract			Contract Ref:		
Langstone Technology Park, Havant			749008		

FULL SCALE SOAKAWAY TEST

In accordance with BRE Digest 365

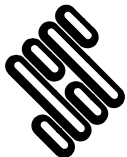
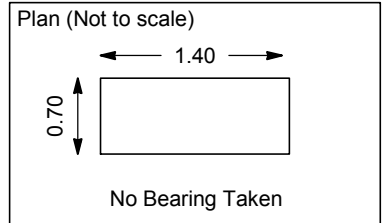
Soakaway Test - Position ID : **SA2**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



	Test 1	Test 2	Test 3	
Pit start depth:	= 2.00	2.00	2.00	m
Pit final depth:	= 2.00	2.00	2.00	m
Effective depth, D_e	= 0.48	0.49	0.47	m
Effective storage volume, V_{p75-25}	= 0.2352	0.2401	0.2303	m ³
Surface area, a_{p50}	= 1.9880	2.0090	1.9670	m ²
Time, t_{p75-25}	= 189	143	113	secs
Infiltration rate, f	= 6.26×10^{-4}	8.36×10^{-4}	1.04×10^{-3}	m/s

Legend		
●	Test 1	(19.07.19)
■	Test 2	(19.07.19)
▲	Test 3	(19.07.19)



STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By

Date

24/07/19

Checked By

Date

4/07/19

Contract

**Langstone Technology Park,
Havant**

Contract Ref:

749008

APPENDIX VII
GAS MONITORING RESULTS

MONITORING RESULTS

CLIENT: AG Langstone B.V.

JOB NO: 10/1425

SITE: Langstone Technology Park, Havant

SHEET: 1 of 4

DATE: 12/09/2019

Ambient Concentration (Volume)			CH		0.0		CO2		0.0			
			O2		20.9							
Monitoring Point			Gas Concentration								Gas Flow Rate	Remarks
			Highest			Steady			Lowest	H2S		
Ref	GWL	Depth	CH		CO2	CH		CO2	O2			
	(m)BGL	(m) BGL	LEL	v/v	()	LEL	v/v	()	()	ppm	l/hr	
BH1A - New	2.45	2.5	0.0	0.0	4.7	0.0	0.0	4.7	18.0	0.0	0.7	
BH3 - New	2.45	3	0.0	0.0	4.0	0.0	0.0	4.0	17.2	0.0	0.1	
WS3 - New	2.60	3	0.0	0.0	7.2	0.0	0.0	7.2	10.9	0.0	0.1	
WS4 - New	1.88	2	0.0	0.0	0.0	0.0	0.0	0.0	20.7	0.0	0.1	

Barometric Pressure (mb):	1027	Monitoring Equipment:	GA5000
Barometric Trend:	Rising	Date Of Last Calibration:	
Weather:	Overcast	Operator:	
Ground Condition:	Dry		

KEY	Remarks
ND None Detected NR Not Recorded POS Positive Flow NEG Negative Flow	

Checked: SHP	Approved: NR
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MONITORING RESULTS

CLIENT: AG Langstone B.V.

JOB NO: 10/1425

SITE: Langstone Technology Park, Havant

SHEET: 2 of 4

DATE: 16/09/2019

Ambient Concentration (Volume)													
			CH			0.0			CO2			0.0	
			O2			20.9							
Monitoring Point			Gas Concentration								Gas Flow Rate	Remarks	
			Highest			Steady			Lowest	H2S			
Ref	GWL	Depth	CH		CO2	CH		CO2	O2				
	(m)BGL	(m) BGL	LEL	v/v	()	LEL	v/v	()	()	ppm	l/hr		
BH1A - New	Dry	2.5	0.0	0.0	4.0	0.0	0.0	4.0	18.9	0.0	0.1		
BH3 - New	1.90	3	0.0	0.0	4.5	0.0	0.0	4.4	16.5	0.0	0.1		
WS3 - New	2.63	3	0.0	0.0	0.0	0.0	0.0	0.0	20.6	0.0	0.1		
WS4 - New	1.97	2	0.0	0.0	0.0	0.0	0.0	0.0	20.7	0.0	0.1		

Barometric Pressure (mb):	1019	Monitoring Equipment:	GA5000
Barometric Trend:	Rising	Date Of Last Calibration:	
Weather:	Overcast	Operator:	
Ground Condition:	Dry		

KEY	Remarks
ND None Detected NR Not Recorded POS Positive Flow NEG Negative Flow	

Checked: SHP	Approved: NR
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MONITORING RESULTS

CLIENT: AG Langstone B.V.

JOB NO: 10/1425

SITE: Langstone Technology Park, Havant

SHEET: 3 of 4

DATE: 19/09/2019

Ambient Concentration (Volume)													
			CH			0.0			CO2			0.0	
			O2			20.9							
Monitoring Point			Gas Concentration								Gas Flow Rate	Remarks	
			Highest			Steady			Lowest	H2S			
Ref	GWL	Depth	CH		CO2	CH		CO2	O2				
	(m)BGL	(m) BGL	LEL	v/v	()	LEL	v/v	()	()	ppm	l/hr		
BH1A - New	Dry	2.5	0.0	0.0	0.0	0.0	0.0	0.0	20.8	0.0	0.1		
BH3 - New	2.54	3	0.0	0.0	4.8	0.0	0.0	4.8	16.7	0.0	0.1		
WS3 - New	2.65	3	0.0	0.0	0.9	0.0	0.0	0.9	19.8	0.0	0.1		
WS4 - New	2.0	2	0.0	0.0	0.0	0.0	0.0	0.0	20.5	0.0	0.1		

Barometric Pressure (mb):	1025	Monitoring Equipment:	GA5000
Barometric Trend:	Falling	Date Of Last Calibration:	
Weather:	Sunny	Operator:	
Ground Condition:	Dry		

KEY	Remarks
ND None Detected NR Not Recorded POS Positive Flow NEG Negative Flow	

Checked: DK	Approved: NR
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MONITORING RESULTS



CLIENT: AG Langstone B.V.

JOB NO: 10/1425

SITE: Langstone Technology Park, Havant

SHEET: 4 of 4

DATE: 30/09/2019

Ambient Concentration (Volume)			CH		0.0		CO2		0.0			
			O2		21.0							
Monitoring Point			Gas Concentration								Gas Flow Rate	Remarks
			Highest			Steady			Lowest	H2S		
Ref	GWL	Depth	CH		CO2	CH		CO2	O2			
	(m)BGL	(m) BGL	LEL	v/v	()	LEL	v/v	()	()	ppm	l/hr	
BH1A - New	Dry	2.5	0.0	0.0	3.9	0.0	0.0	3.9	17.7	0.0	0.1	
BH3 - New	2.12	3	0.0	0.0	1.3	0.0	0.0	1.3	19.9	0.0	0.1	
WS3 - New	2.39	3	0.0	0.0	4.1	0.0	0.0	4.1	16.9	0.0	0.1	
WS4 - New	1.46	2	0.0	0.0	0.0	0.0	0.0	0.0	21.0	0.0	0.1	

Barometric Pressure (mb):	1009	Monitoring Equipment:	GA5000
Barometric Trend:	Falling	Date Of Last Calibration:	
Weather:	Overcast	Operator:	
Ground Condition:	Dry		

KEY	Remarks
ND None Detected NR Not Recorded POS Positive Flow NEG Negative Flow	

Checked: DK	Approved: NR
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Supplementary Site Investigation Report for Langstone Technology Park, Havant

Prepared for AG Langstone B.V.

September 2020

10/1425/004 Rev. 00

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Document Production Record

Revision	Date	Revision Description		Name
00	September 2020	Original	Prepared	Sophie Harper-Pryce Senior Geo-environmental Engineer sophie.harper-pryce@clancy.co.uk
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Executive Summary

Client	AG Langstone B.V.
Location	The site is located toward the southern periphery of Havant, approximately 600m south of the Town Centre and 1.5km south-east of Junction 5 of the A3(M).
Description	The wider site comprises a series of large buildings subdivided into leased units of mixed uses with associated car parking and landscaped areas. The current study area is located in the south of the wider site, predominantly comprising car parking, small gymnasium, vehicle washing area, storage area and a number of circular historic tank bases.
Development	The site is proposed for redevelopment for commercial purposes with associated infrastructure.
Previous Site Investigations	During works undertaken by Clancy Consulting in July 2019, Made Ground was recorded to depths of up to 3.10m bgl, underlain by River Terrace Deposits and/or highly weathered material derived from the underlying bedrock, to maximum depths of between 5.10m and 6.00m bgl. This was underlain by solid chalk bedrock, proven to a maximum depth of 24.85m bgl. Visual and olfactory evidence of hydrocarbon contamination was recorded in two locations in the south-west of the site (in the west of this current area of study). Although, chemical testing of soil samples collected from these locations did not identify any contaminants in excess of their relevant soil screening values for commercial / industrial end use, concentrations of organic contaminants were recorded in excess of their solubility saturation limits. As such, it was considered that these contaminants could be impacting upon groundwater (superficial Secondary A Aquifer and bedrock Principal Aquifer) beneath the site, encountered at depths ranging from 2.00m to 3.00m bgl.
Hazardous Gas	Ground gas monitoring undertaken as part of the previous works indicated the site to be classified as CIRIA Characteristic Situation 2 (CS2). Ground gas protection measures were therefore recommended for all new structures in accordance with current guidance.
Foundations	Given the variable nature of the shallow natural strata, a shallow foundation solution may be susceptible to differential settlement. As such, it was considered a piled foundation solution may prove more suitable.
Site Investigations	Site investigation works were undertaken across the site and within areas of previously identified contamination comprising the drilling of two cable percussive boreholes and twenty five window sample boreholes to provide better spatial coverage, fill in data gaps, refine the Conceptual Site Model, further the geotechnical and contamination assessments and aid in delineating contamination identified during a previous phase of works.
Ground Conditions	The ground investigation has identified up to 1.70m of Made Ground. The Made Ground was found to comprise 'topsoil' or tarmac underlain by granular fill type materials or reworked natural materials followed by natural strata comprising River Terrace Deposits or Brickearth to 4.0m bgl. This was followed by weathered layers of the chalk bedrock to 6.00m bgl. This was further underlain by chalk bedrock, proven to a maximum depth of 19.85m bgl. Visual and olfactory evidence of contamination was encountered in several locations, in the vicinity of previously identified contamination.

Groundwater was encountered within the superficial deposits at depths ranging from 2.10m to 2.80m bgl rising to between 2.00m and 2.50m bgl. Groundwater was encountered within the chalk bedrock at depths of 5.80m and 6.00m bgl rising to 3.50m bgl.

The ground conditions encountered do not differ significantly from those previously discussed.

Contamination

Contaminants of concern were recorded in groundwater sampled from beneath the site though concentrations were only marginally elevated above adopted assessment criteria.

TPH compounds were recorded in Made Ground and natural strata at concentrations in excess of their solubility limits in two hotspot locations. A number of VOC and SVOC compounds were also recorded within samples collected from the hotspot locations though no published assessment criteria for these contaminants are currently available. The excavation and off-site disposal of contaminated soils in these locations will lead to the betterment of groundwater quality beneath the site. Excavation works should take place under the supervision of a qualified geo-environmental consultant. Soil samples should be collected for chemical laboratory analysis to confirm that remaining contaminant concentrations in soils are at acceptable levels.

No significant soil based source of PAH contamination in groundwater was identified beneath the site. It is considered that this is representative of either an off-site source, or an on site source not identified during intrusive investigation works undertaken to date. A contamination watching brief by a qualified geo-environmental consultant is therefore recommended during the groundworks phase of the proposed development on site. If visual or olfactory evidence of contamination is encountered during development, outside those identified during this study, the consultant would collect additional samples for further assessment into the potential risk these soils pose to groundwater. Guidance would then be given regarding the treatment / disposal of contaminated soils off-site.

Other contaminants were not recorded at concentrations considered to represent a significant risk to human health.

Waste Characterisation

Based on available information, it is considered likely that the majority of Made Ground and natural soils beneath the site would be suitable for disposal as Non-Hazardous Waste. Natural soils impacted by localised TPH contamination in the vicinity of boreholes WS01, WS04, WS21, WS31 and WS32 would require disposal to a Hazardous Waste landfill.

Any material sent to landfill should be accompanied by the appropriate duty of care documentation and the chemical data should be forwarded to the accepting landfill for approval prior to removal of the soil from site.

Geotechnical

The SPTs carried out within the Made Ground were found to be in a loose to medium dense condition.

SPTs carried out within the shallow natural strata found these soils to be in a very variable condition.

SPTs carried out in the chalk recorded 'N' values ranging from 7 to 19. The SPT 'N' values from 18.0m to 19.5m were >50. In accordance with CIRIA C574 'Engineering in Chalk', the SPT 'N' values indicate that the base of weathering within the chalk bedrock is 18.0m bgl.

These records do not differ significantly from those encountered during previous investigations.

Further Works

The mitigation measures discussed within this report should be incorporated into a Remediation Method Statement and submitted to the Local Authority and Environment Agency for approval.

It should be noted that the reuse of soil arisings on site should be handled under a Materials Management Plan (MMP) in line with the CL:AIRE Code of Practice, or under an Environmental Permit, where required by the Environment Agency.

In summary, the following works are recommended to mitigate the potential risks posed by contamination recorded beneath the site:

- Provision of a Remediation Method Statement (RMS).
- Provision of a Material Management Plan (MMP) if site won soils are proposed for re-use on-site.
- Excavation and removal of identified contamination hotspots in the vicinity of boreholes WS2 and WS5.
- Inspection and verification of excavation works by a qualified geo-environmental consultant.
- Provision of resident engineer / geo-environmental consultant to carry out a watching brief for previously unidentified soil contamination during the groundworks phase of the proposed development.
- Collection and laboratory analysis of soil samples from finished formation level across the site to verify that residual contaminant concentrations are below assessment criteria protective of future commercial site users.
- Provision of a Verification Report to assist with discharge of planning conditions relating to contaminated land.

We would recommend that this report be submitted to the LPA at the earliest opportunity to seek their approval or further comments regarding the recommendations presented herein.

The above conclusions and recommendations are based on the sites proposed development comprising new commercial units with associated car parking and landscaped areas. Should the proposed end use change it will be necessary to amend the conclusions accordingly. The report also assumed that the final site levels will not be significantly altered.

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Appendices

Appendix I	Drawings
Appendix II	Exploratory Hole Logs
Appendix III	Chemical Laboratory Test Results
Appendix IV	Waste Assessment

1.0 Introduction

1.1 Background

Clancy Consulting Limited has been appointed by AG Langstone B.V. to conduct further investigations at the Langstone Technology Park site in Havant. The aim of the investigation is to provide better spatial coverage, fill in data gaps, further the geotechnical and contamination assessments and aid in delineating contamination identified during a previous phase of works.

A site location plan and proposed development plans are presented in Appendix I.

These works are to be undertaken in the south of the wider Langstone Technology Park site (currently occupied by car parking, landscaped areas, a gymnasium and historic tank bases) and can be split into two phases: Phase 1 in the western and central sections; and Phase 2 in the eastern section of the site.

This phase of works follow two previous phases of investigation carried out by Clancy Consulting Ltd for the wider site.

- Clancy Consulting Ltd Report No. 10/1425/001 dated August 2019
- Clancy Consulting Ltd Report No. 10/1425/002 (letter report) dated September 2019
- Clancy Consulting Ltd Report No. 10/1425/003 (letter report) dated June 2020

These previously issued documents should be read in conjunction with this report. A summary of the findings is provided in Section 2.0 below.

1.2 Objectives

The objectives of this investigation are summarised below:

- Provide a summary of data obtained during the previous investigation including ground conditions and contamination assessment.
- Undertake an intrusive site investigation comprising the drilling of window sample boreholes and cable percussion boreholes to establish the ground conditions across the proposed development area.
- Carry out geotechnical assessment of the ground conditions.
- Carry out chemical testing to determine whether any contamination risk exists to the environment and / or human health.
- Refine the preliminary risk assessment and conceptual site model with regard to potential contamination sources, pathways and receptors.
- Provide recommendations regarding the requirement for further investigations or remedial works, if required, to satisfy the Local Planning Authority and inform detailed civil and structural design.

1.3 Limitations of the Study

Clancy Consulting Limited cannot be held responsible for any omissions, misrepresentation, errors or inaccuracies with the supplied third party report information. The report is written in the context of an agreed scope of work and budget and should not be used in a different context. New information or improved practices and changes in legislation may require a reinterpretation of the report in whole or in part.

Clancy Consulting Limited reserves the right to amend either conclusions or recommendations in light of any further information that may become available. The report is provided for the sole use of AG Langstone B.V. for the objectives discussed previously only, and is confidential to them.

The report may not be relied upon by any other party without prior written consent of Clancy Consulting Limited. Those using this information in subsequent assessments or evaluations do so at their own risk.

It must be noted that whilst this investigation aims to characterise the general ground conditions beneath the proposed development site, Clancy Consulting Ltd cannot be held accountable for variations in ground and groundwater conditions, unidentified contamination or the presence of below ground structures present in areas of the site which fall outside of the exploratory locations as part of this investigation.

2.0 Summary of Previous Findings

2.1 General

The following sections have been prepared based on information acquired during the Geo-Environmental Appraisal for the site.

2.2 Site Setting and Description

The wider Langstone Technology Park comprises a roughly rectangular parcel of land occupying an area of approximately 16Ha. The site is located toward the southern periphery of Havant, approximately 600m south of the Town Centre and 1.5km south-east of Junction 5 of the A3(M).

The wider site comprises a series of large buildings subdivided into leased units of mixed uses. Occupying the centre of the site are a series of buildings including two plant buildings ('Building 2000 and 3000'), offices and amenity complex with associated courtyards ('Building 4000'), a large data and distribution centre ('Building 5000') with a waste storage area to the west, along with three-storey office buildings ('Building 6000 and 7000'). A small nursery is present to the south of Building 5000.

Located in the north of the site is 'Building 1000', a single storey structure built on top of a man-made embankment and understood to contain a number of offices, manufacturing and laboratory units with access tunnels running from the car park to the north to beneath the building.

Toward the south-western corner of the site is a small gymnasium, vehicle washing area (with associated subsurface drainage), a storage area and a number of circular historic tank bases.

Access infrastructure and soft landscaping covers the rest of the site, which include a number of engineered slopes. The remainder of the site is currently occupied by car parking areas (including the majority of the south of the site).

An existing site layout plan is presented in Appendix I.

2.3 Previous Site Investigation

During works undertaken by Clancy Consulting in July 2019, Made Ground was recorded to depths of up to 3.10m bgl, underlain by a sequence of interbedded granular and cohesive strata, interpreted to be representative of the River Terrace Deposits and/or highly weathered material derived from the underlying bedrock, to maximum depths of between 5.10m and 6.00m bgl. This was underlain by solid chalk bedrock, proven to a maximum depth of 24.85m bgl.

Visual and olfactory evidence of hydrocarbon contamination was recorded in two locations in the south-west of the site (in the west of this current area of study). Although, chemical testing of soil samples collected from these locations did not identify any contaminants in excess of their relevant soil screening values for commercial / industrial end use, concentrations of organic contaminants were recorded in excess of their solubility saturation limits. As such, it was considered that these contaminants could be impacting upon groundwater (superficial Secondary A Aquifer and bedrock Principal Aquifer) beneath the site, encountered at depths ranging from 2.00m to 3.00m bgl.

Further consideration was recommended regarding the introduction of permeable surfaces / soakaways as part of the proposed development, as the introduction of water into these soils may increase the risk of the identified contaminants mobilising and migrating into controlled groundwaters. Due to the presence of chalk beneath the site, it was recommended that the risk of causing ground dissolution features from the introduction of traditional soakaway drainage features be considered. Distributive soakaways such as permeable paving and sub-base infiltration that do not discharge surface waters in a localised manner would mitigate the risk of generating groundwater dissolution features.

Ground gas monitoring indicated the site to be classified as CIRIA Characteristic Situation 2 (CS2). Ground gas protection measures were therefore recommended for all new structures in accordance with current guidance.

Given the variable nature of the shallow natural strata, a shallow foundation solution may be susceptible to differential settlement. As such, it was considered a piled foundation solution may prove more suitable.

Further information regarding the works undertaken to date at the site by Clancy Consulting Ltd can be found within the above referenced reports. The following sections refer only to works carried out in Phase 1 and Phase 2 in the south of the wider Langstone Technology site.

3.0 Site Investigation

3.1 Investigation Design & Objectives

The revised Conceptual Site Model was used to design an appropriate site investigation. The design approach was based on guidance provided in BS 10175 Code of Practice for Investigation of Potentially Contaminated Land (2011).

The aim of the investigation is to position cable percussive and window sample boreholes across the site and within areas of previously identified contamination to provide better spatial coverage, fill in data gaps, refine the Conceptual Site Model, further the geotechnical and contamination assessments and aid in delineating contamination identified during a previous phase of works.

It must be noted that ground investigations can only target small areas of a site and that ground conditions may vary between exploratory hole locations. Whilst the investigation aims to characterise the general ground conditions beneath the proposed development site, Clancy Consulting Ltd cannot be held accountable for variations in ground and groundwater conditions, unidentified contamination or the presence of below ground structures present in areas of the site which fall outside of the exploratory locations carried out as part of this investigation.

3.2 Exploratory Fieldwork

Site investigation works were undertaken between 27th and 31st July 2020, and comprised the drilling of two cable percussion boreholes (BH5 and BH6) to a maximum depth of 19.95m bgl and the drilling of twenty five window sample boreholes (WS9 to WS32) to a maximum depth of 4.45m bgl.

BH6, WS13 to WS23 and WS25 to WS32 were positioned across Phase 1 and BH5, WS9 to WS12 and WS24 positioned across Phase 2.

An exploratory hole location plan is presented in Appendix I with exploratory hole logs presented in Appendix II.

3.3 Ground Conditions

Details of the ground conditions encountered beneath the proposed development site, along with records of the soil samples taken are presented on the exploratory hole records in Appendix II with a summary of the ground conditions provided below.

3.4 Made Ground

Made Ground was encountered in all exploratory locations and generally comprised tarmacadam to maximum depth of 0.2m bgl (occasionally followed by sub-base type materials of sandy gravel of limestone, flint and sandstone) or topsoil underlain by predominantly granular fill comprising clayey sand with gravel of brick and clinker or reworked natural materials generally comprising clayey sandy gravel of flint with fragments of brick to a maximum depth of 1.10m bgl.

In WS21 the reworked natural materials were followed by Made Ground comprising sandy clay with gravel of flint and fragments of brick to 1.40m bgl. In the location of WS14, the reworked natural materials were followed by organic clayey sand with gravel of brick and flint to 1.50m bgl and sandy clay with gravel of flint and fragments of brick to 1.70m bgl. Other than in the locations discussed above, in general, the Made Ground was found to be less than 0.50m in thickness.

A band of concrete was encountered in WS30 between 0.20m and 0.30m bgl.

Visual and olfactory evidence of contamination was recorded in WS21.

The above ground conditions do not differ significantly from those encountered during previous phases of investigation.

3.5 Natural Strata

Natural strata was formed from a mix of granular and cohesive deposits, comprising clayey sandy gravel of flint and sandy silt / clay with gravel of flint (and occasionally chalk), proven to a maximum depth of 4.00m bgl. In the west of the site, a band of occasionally gravelly or sandy silt / clay was also encountered at depths ranging from 0.30m to 1.10m bgl, ranging in thickness from 1.10m to 1.40m. A 0.20m thick band of gravelly clay was also encountered in WS9 in the east of the site. These materials have been interpreted to be River Terrace Deposits or Brickearth.

WS9 to WS13, WS15 to WS17, WS22, WS23, WS25, WS27 and WS30 (predominantly across the central and east of the site) were terminated within this material.

A band of soft gravelly sandy clay with decaying roots and rootlets was encountered in WS14 between 2.00m and 2.60m bgl and interpreted to be representative of historic topsoil.

The River Terrace Deposits / Brickearth were underlain (where encountered) by light grey and cream sandy silt / clay with gravel of flint and chalk, silty sand with gravel of flint and chalk, and silty sandy gravel of flint and chalk proven to a maximum of 6.00m bgl. These materials have been interpreted to be weathered layers of the chalk bedrock.

Chalk bedrock was encountered in BH5 and BH6 at depths ranging from 5.80m to 6.00m and proven to a maximum depth of 19.85m bgl.

Visual and olfactory evidence of contamination was encountered in was recorded in WS19, to WS21, WS29, WS31 and WS32.

The above ground conditions do not differ significantly from those encountered during previous phases of investigation.

3.6 Groundwater

Groundwater (where encountered) was encountered within the superficial deposits at depths ranging from 2.10m to 2.80m bgl rising to between 2.00m and 2.50m bgl. Within BH5 and BH6, groundwater was encountered within the chalk bedrock at depths of 5.80m and 6.00m bgl rising to 3.50m bgl.

3.7 Chemical Laboratory Testing

Selected soil and groundwater samples were recovered at regular intervals and submitted to a UKAS/MCerts accredited laboratory for a general and targeted suite of analyses which included the following:

In total twenty nine soil samples (five from the Made Ground and twenty four from the underlying natural strata) were tested for a range of determinands including *arsenic, beryllium, cadmium, chromium (VI), copper, lead, mercury, nickel, selenium, vanadium, zinc, speciated PAH, speciated TPH, SVOC and VOC*. Select samples were also tested for *TOC and PCBs*.

A sample of residues / solids encountered within the monitoring well in WS20 during collection of a groundwater sample was also recovered and tested for *Speciated PAH and Speciated TPH* analysis.

Copies of the laboratory test certificates are presented in Appendix III.

4.0 Tier 1 Contamination Analysis

4.1 Guidelines

At a Tier 1 stage the long-term human health toxicity of the soil has been assessed with reference to the LQM / CIEH S4ULs for Human Health Risk Assessment and CL:AIRE Category 4 Screening Levels (C4SLs). The proposed development will comprise the construction of new commercial units and associated hard standing, therefore the chemical test results have been compared against Site Screening Values (SSVs) for a commercial / industrial end use.

Water samples were recovered from WS3, WS9, WS14, WS20, WS29, BH5 and BH6 and tested for a range of determinands including dissolved *arsenic, beryllium, cadmium, chromium (VI), copper, lead, mercury, nickel, selenium, vanadium, zinc, speciated PAH, speciated TPH, SVOC, VOC and DOC*.

Given the presence of a superficial Secondary A Aquifer and bedrock Principal Aquifer beneath the site, the water analysis has been assessed with reference to The Water Supply (Water Quality) Regulations 2018 and WHO Guidelines For Drinking Water Quality. Where threshold values are not available, values have been considered in relation to laboratory detection limits.

4.2 Soil Inorganic Contamination

One sample of the Made Ground and fifteen samples of the natural strata were submitted for chemical testing for inorganic determinants.

None of the determinands tested exceeded their respective SSVs, protective of human health.

4.3 Soil Organic Contamination

Three samples of the Made Ground and twenty four samples of the natural strata were tested for speciated PAH and speciated TPH. Twenty three samples of the natural strata were also tested for VOC and SVOC compounds. Twelve samples of the natural strata were tested for TOC and two samples of the Made Ground tested for PCB analysis.

No elevated concentrations of the PAH compounds or TPH fractions tested were recorded in excess of their respective SSVs, protective of human health.

SVOC compounds were not recorded at concentrations in excess of their relevant SSVs or the laboratory detection limits, with the exception of perylene in a sample from WS23 at 1.00m bgl. The concentration recorded was 896µg/kg compared to the laboratory detection limit of 100µg/kg. Given the very low concentration recorded and its relatively low volatility, this is not considered to represent a significant risk to future site users.

VOC compounds were not recorded at concentrations above their relevant SSVs or laboratory detection limits, with the exceptions of isopropylbenzene, n-propylbenzene, 124-trimethylbenzene, sec-butylbenzene and n-butylbenzene in WS31 at 2.50m and WS32 at 2.40m and 2.60m, and tert-butylbenzene in WS32 at 2.40m and 2.60m bgl.

A summary of the VOC compounds above the laboratory detection limit are listed below.

Table 1 – VOC Compounds Above the Laboratory Detection Limit

Contaminant	Detection Limit (µg/kg)	Hole ID	Depth (m bgl)	Stratum	Concentration (µg/kg)
Isopropylbenzene	1	WS31	2.5	River Terrace Deposits	3
		WS32	2.4	River Terrace Deposits	3
		WS32	2.6	Completely Weathered Chalk	10
N-propylbenzene	1	WS31	2.5	River Terrace Deposits	9
		WS32	2.4	River Terrace Deposits	8
		WS32	2.6	Completely Weathered Chalk	23
Tert-butylbenzene	2	WS32	2.4	River Terrace Deposits	5
		WS32	2.6	Completely Weathered Chalk	5
124-trimethylbenzene	1	WS31	2.5	River Terrace Deposits	19
		WS32	2.4	River Terrace Deposits	13
		WS32	2.6	Completely Weathered Chalk	33
sec-butylbenzene	1	WS31	2.5	River Terrace Deposits	23
		WS32	2.4	River Terrace Deposits	32
		WS32	2.6	Completely Weathered Chalk	61
n-butylbenzene	1	WS31	2.5	River Terrace Deposits	43
		WS32	2.4	River Terrace Deposits	54
		WS32	2.6	Completely Weathered Chalk	194

PCB compounds were not recorded at concentrations above their laboratory detection limit.

Total organic carbon (TOC) concentrations ranged from 0.05% w/w to 0.63% w/w.

Aliphatic and aromatic TPH compounds in the C8 to C16 range were recorded at concentrations in excess of their saturation limits in soils samples collected from boreholes WS20 at 2.5m, WS21 at 2.70m, WS31 at 2.50m

and 2.70m, WS32 at 2.40m and 2.60m bgl and WS32 at 2.40m bgl. These are considered to pose a potential risk to groundwater beneath the site.

A summary of the TPH compounds above the solubility saturation limit are listed below.

Table 2 – TPH Compounds Above Solubility Saturation Limits

Contaminant	Saturation Limit (mg/kg)	Hole ID	Depth (m bgl)	Stratum	Concentration (mg/kg)
Aliphatic C8 – C10	78	WS32	2.4	River Terrace Deposits	96
Aliphatic C10 – C12	48	WS21	2.7	Completely Weathered Chalk	97
		WS31	2.5	River Terrace Deposits	97
		WS31	2.7	Completely Weathered Chalk	80
		WS32	2.4	River Terrace Deposits	382
		WS32	2.6	Completely Weathered Chalk	75
Aliphatic C12 – C16	24	WS20	2.5	River Terrace Deposits	316
		WS21	2.7	Completely Weathered Chalk	273
		WS31	2.5	River Terrace Deposits	465
		WS31	2.7	Completely Weathered Chalk	276
		WS32	2.4	River Terrace Deposits	1370
		WS32	2.6	Completely Weathered Chalk	294
Aromatic C12 – C16	169	WS21	2.7	Completely Weathered Chalk	243
		WS31	2.5	River Terrace Deposits	300
		WS31	2.7	Completely Weathered Chalk	205
		WS32	2.4	River Terrace Deposits	998
		WS32	2.6	Completely Weathered Chalk	175

4.4 Groundwater Inorganic Contamination

Six groundwater samples (four from the superficial aquifer and two from the underlying bedrock aquifer) were submitted for chemical testing for inorganic determinants.

No elevated concentrations of the determinands tested were recorded in excess of the relevant WSVs with the exception of lead and nickel within the superficial aquifer in WS20. The concentration recorded for lead was 106 µg/l compared to the WSV of 10 µg/l. The concentration recorded for nickel was 61 µg/l compared to the WSV of 20 µg/l.

It is noteworthy that while the concentration of nickel exceeded the WSV presented within The Water Supply (Water Quality) Regulations 2018, it fell below the WSV of 70 µg/l presented within the WHO Guidelines for Drinking Water Quality.

4.5 Groundwater Organic Contamination

Seven groundwater samples (five from the superficial aquifer and two from the underlying bedrock aquifer) were tested for the presence of organic determinands. Five were tested for speciated PAH, six were tested for speciated TPH, five were tested for SVOC and VOC.

Three samples tested for PAH recorded concentrations of total PAH marginally in excess of the WSV of 0.1 µg/l. A summary of the total TPH concentrations recorded is provided below.

Table 3 – PAH Compounds Above WSVs

Contaminant	WSV (µg/l)	Hole ID	Depth (m bgl)	Concentration (µg/l)
Total PAH	0.1	WS9	0.9	0.95
		WS20	3.0	0.23
		BH5	4.5	0.12

Aliphatic and aromatic TPH compounds in the C8 to C35 range were recorded at concentrations in excess of their laboratory detection limits in water samples collected from boreholes WS9, WS14, WS20 and BH5. A summary of the total TPH concentrations recorded are provided below.

Table 4 – TPH Compounds Above the Laboratory Detection Limit

Contaminant	Detection Limit (µg/l)	Hole ID	Depth (m bgl)	Concentration (µg/l)
Total TPH	10	WS9	0.9	78
		WS14	3.0	190
		WS20	2.5	74
		BH5	4.5	282

The concentrations of the compounds summarised above are not considered to be significantly elevated.

No concentrations of the SVOC or VOC determinands tested were recorded in excess of the relevant WSV or the laboratory detection limit.

Dissolved organic carbon (DOC) concentrations were recorded ranging from 9.8 mg/l to 24.7 mg/l.

5.0 Contamination Assessment

5.1 General

Based on the information obtained during the ground investigation and laboratory testing, the 'Conceptual Site Model' has been amended accordingly. The Conceptual Site Model is used as a basis to identify contamination sources, pathways and receptors and is subject to constant refinement as more information becomes available.

5.2 Environmental Setting & End Use

The ground investigation has identified up to 1.70m of Made Ground. The Made Ground was found to comprise 'topsoil' or tarmac underlain by granular fill type materials or reworked natural materials followed by natural strata comprising River Terrace Deposits or Brickearth to 4.0m bgl. This was followed by weathered layers of

the chalk bedrock to 6.00m bgl. This was further underlain by chalk bedrock, proven to a maximum depth of 19.85m bgl.

Groundwater was encountered within the superficial deposits at depths ranging from 2.10m to 2.80m bgl rising to between 2.00m and 2.50m bgl. Groundwater was encountered within the chalk bedrock at depths of 5.80m and 6.00m bgl rising to 3.50m bgl.

The information gathered during the intrusive investigations have not altered significantly from the Preliminary Risk Assessment carried out as part of the previous study. The superficial strata, classified as a Secondary A Aquifer and the underlying bedrock, classified as a Principal Aquifer remain the preliminary receptors of concern. As such, the environmental setting remains of 'moderate' sensitivity.

5.3 Revised Conceptual Site Model

The "suitable for use" approach is adopted for the assessment of contaminated land and remedial measures are only undertaken where unacceptable risk exists to human health or the environment. For a potential risk to be present there must be a viable pollutant linkage whereby a contamination source may impact upon a receptor.

Although contaminants of concern were recorded in groundwater sampled from beneath the site, concentrations were only marginally elevated above adopted assessment criteria. Furthermore, the site is not located within a groundwater SPZ and the nearest potable abstraction is indicated to be approximately 460m to the north.

TPH compounds were recorded in Made Ground and natural strata at concentrations in excess of their solubility limits in two hotspots in the positions of boreholes WS2 and WS19 to WS23, located in the west of the site and in the positions of boreholes WS5, WS29, WS31 and WS32, located in the southwest. The excavation and off-site disposal of TPH contaminated soils in these locations (including any impacted soils beneath tank bases in the southwest) will lead to the betterment of groundwater quality beneath the site. Excavation works should take place under the supervision of a qualified geo-environmental consultant. Soil samples should be collected from the walls and base of the resulting excavations for chemical laboratory analysis to confirm that remaining contaminant concentrations in soils are at acceptable levels.

No significant soil based source of PAH contamination in groundwater was identified beneath the site. It is considered that this is representative of either an off-site source, or an on site source not identified during intrusive investigation works undertaken to date. A contamination watching brief by a qualified geo-environmental consultant is therefore recommended during the groundworks phase of the proposed development on site. If visual or olfactory evidence of contamination is encountered during development, outside those identified during this study, the consultant would collect additional samples for further assessment into the potential risk these soils pose to groundwater. Guidance would then be given regarding the treatment / disposal of contaminated soils off-site.

A number of VOC and SVOC compounds were also recorded within samples collected from the natural strata in the hotspot locations discussed above. No published assessment criteria for these contaminants, protective of human health receptors, are currently available. However, it is considered that the removal of hydrocarbon impacted soils in these hotspots will effectively mitigate any potential risk to future site users.

Other contaminants were not recorded at concentrations considered to represent a significant risk to human health.

5.3.1 Summary of Remediation Recommendations

The mitigation measures discussed above should be incorporated into a Remediation Method Statement and submitted to the Local Authority and Environment Agency for approval.

It should be noted that the reuse of soil arisings on site should be handled under a Materials Management Plan (MMP) in line with the CL:AIRE Code of Practice, or under an Environmental Permit, where required by the Environment Agency.

In summary, the following works are recommended to mitigate the potential risks posed by contamination recorded beneath the site:

- Provision of a Remediation Method Statement (RMS).
- Provision of a Material Management Plan (MMP) if site won soils are proposed for re-use on-site.
- Excavation and removal of identified contamination hotspots in the vicinity of boreholes WS2 and WS5.
- Inspection and verification of excavation works by a qualified geo-environmental consultant.
- Provision of resident engineer / geo-environmental consultant to carry out a watching brief for previously unidentified soil contamination during the groundworks phase of the proposed development.
- Collection and laboratory analysis of soil samples from finished formation level across the site to verify that residual contaminant concentrations are below assessment criteria protective of future commercial site users.
- Provision of a Verification Report to assist with discharge of planning conditions relating to contaminated land.

6.0 Waste Characterisation

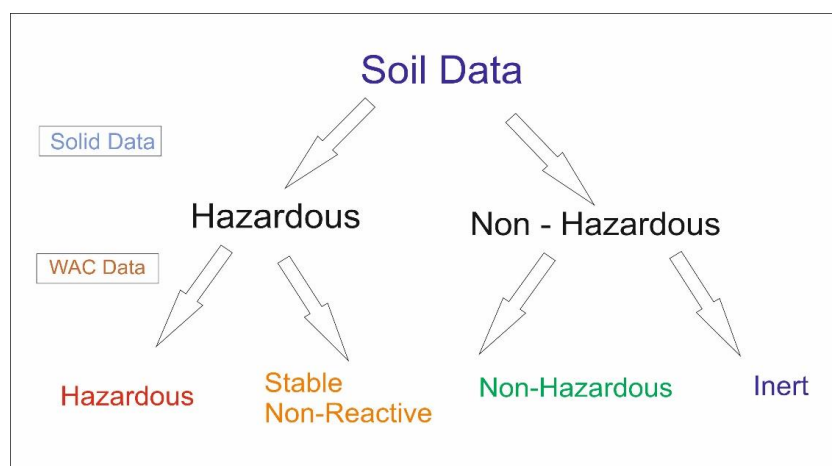
6.1 Assessment Criteria

It is likely that soil arisings generated through piling or any other excavation associated with the development will require removal from site, since there is limited potential for on-site re-use of this material. Should no suitable off site re-use options be available, disposal to landfill may need to be considered. However, if contaminated material is to be disposed of, use of soil treatment facilities should also be considered.

If disposal to landfill is required, the excavated material would be considered as waste and should be classified in line with the Hazardous Waste Directive - HWD, Council Directive 91/689/EC. This legislation divides waste into two categories, hazardous and non-hazardous. These two categories can then be subdivided into a number of classes relating to the type of landfill/cell to which the material can be sent; these are illustrated below.

In order to provide an indication of the likely waste characterisation of soils excavated from the site, should disposal be required, a waste characterisation exercise has been carried out. This is summarised in Sections 6.2 to 6.5 below. Any material sent to landfill should be accompanied by the appropriate duty of care documentation and the chemical data should be forwarded to the accepting landfill for approval prior to removal of the soil from site.

6.1.1 Waste Characterisation Categories



6.2 Soil Sampling and Testing

6.2.1 Solid Suite of Analysis

Chemical analysis was undertaken on 16 samples of Made Ground and 29 samples of natural soils. Soil samples were analysed for the following solid suite of analysis:

pH, arsenic, asbestos, boron, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc, sulphide, sulphate, cyanide and PAH.

6.2.2 WAC Testing

Two samples of the natural soils were also submitted for the solid WAC suite of analysis.

The solid WAC suite of analysis included testing for the following determinands:

Total organic carbon (TOC), loss on ignition (LOI), BTEX, sum of PCBs, mineral oil and total PAH, acid neutralisation capacity and pH.

WAC single stage leachate analysis was also carried out on the above samples. The analysis included testing for the following determinands:

Arsenic, barium, cadmium, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium, zinc, chloride, fluoride, sulphate, total dissolved solids (TDS), phenol index and dissolved organic carbon.

All soil analysis and WAC results are provided in Appendix III.

6.3 Solid Soil Data

Results of the solid suite were analysed using HazWasteOnline Software which allows users to classify waste as defined in the EWC (European Waste Catalogue 2002) based on the regulatory framework for the Classification Labelling and Packaging of Substances and mixtures Regulation, (EC) No 172/2008 and the latest Environment Agency guidance (Technical Guidance WM3).

The results of the analysis show that seven of the samples of the natural soils analysed would require disposal as hazardous waste (from boreholes WS01, WS04, WS21, WS31 and WS32), due to elevated concentrations of total petroleum hydrocarbons (TPH). The remaining 16 samples of Made Ground and 22 samples of the natural soils would be suitable for disposal as non-hazardous waste.

6.4 WAC Data

6.4.1 Solid Data

Two samples of the natural soils (WS24 at 1.30m bgl and WS29 at 0.80m bgl) were subject to the WAC solid suite of analysis.

Inert Waste thresholds were not exceeded in either sample.

6.4.2 Leachate Data

The samples of natural soil were also subject to the WAC leachate suite of analysis.

The sample from borehole WS24 exceeded the Inert Waste threshold for sulphate.

The sample from borehole WS29 exceeded the Inert Waste thresholds for lead and sulphate.

6.5 Summary of Results

The results of the waste characterisation exercise are provided in Appendix IV and summarised in the table below.

Table 5 – Summary of Waste Characterisation Exercise

Position	Depth (m bgl)	Strata	Solid Suite of Analysis	Exceedance of Corresponding Inert, SNRHW and Hazardous waste WAC Limit Value?	WAC Analysis Results
BH01	0.60	Made Ground	Non-Hazardous	N/A	N/A
BH03	1.00	Made Ground	Non-Hazardous	N/A	N/A
BH04	1.10	Made Ground	Non-Hazardous	N/A	N/A
WS01	1.60	Natural Soils	Hazardous	N/A	N/A
WS02	1.10	Made Ground	Non-Hazardous	N/A	N/A
WS02	2.40	Natural Soils	Non-Hazardous	N/A	N/A
WS03	0.25	Made Ground	Non-Hazardous	N/A	N/A
WS04	1.80	Natural Soils	Hazardous	N/A	N/A
WS05	2.60	Natural Soils	Non-Hazardous	N/A	N/A
WS05	3.90	Natural Soils	Non-Hazardous	N/A	N/A
WS06	0.80	Made Ground	Non-Hazardous	N/A	N/A
WS07	1.40	Made Ground	Non-Hazardous	N/A	N/A
WS09	0.35	Made Ground	Non-Hazardous	N/A	N/A
WS09	2.30	Natural Soils	Non-Hazardous	N/A	N/A
WS10	0.90	Natural Soils	Non-Hazardous	N/A	N/A
WS11	0.90	Natural Soils	Non-Hazardous	N/A	N/A
WS14	0.90	Made Ground	Non-Hazardous	N/A	N/A
WS14	2.40	Natural Soils	Non-Hazardous	N/A	N/A
WS16	0.95	Made Ground	Non-Hazardous	N/A	N/A
WS18	2.30	Natural Soils	Non-Hazardous	N/A	N/A
WS20	0.40	Made Ground	Non-Hazardous	N/A	N/A
WS20	0.90	Natural Soils	Non-Hazardous	N/A	N/A
WS20	1.90	Natural Soils	Non-Hazardous	N/A	N/A
WS21	1.30	Natural Soils	Hazardous	N/A	N/A
WS21	2.70	Natural Soils	Non-Hazardous	N/A	N/A
WS23	1.00	Natural Soils	Non-Hazardous	N/A	N/A
WS24	1.30	Natural Soils	Non-Hazardous	Sulphate	Non-Hazardous
WS24	2.30	Natural Soils	Non-Hazardous	N/A	N/A
WS25	0.40	Natural Soils	Non-Hazardous	N/A	N/A
WS25	1.70	Natural Soils	Non-Hazardous	N/A	N/A
WS26	1.50	Natural Soils	Non-Hazardous	N/A	N/A
WS26	2.30	Natural Soils	Non-Hazardous	N/A	N/A
WS27	0.80	Natural Soils	Non-Hazardous	N/A	N/A
WS28	2.30	Natural Soils	Non-Hazardous	N/A	N/A

WS29	0.80	Natural Soils	Non-Hazardous	Lead, sulphate	Non-Hazardous
WS29	2.40	Natural Soils	Non-Hazardous	N/A	N/A
WS30	1.00	Natural Soils	Hazardous	N/A	N/A
WS31	2.50	Natural Soils	Hazardous	N/A	N/A
WS31	2.70	Natural Soils	Hazardous	N/A	N/A
WS32	2.60	Natural Soils	Hazardous	N/A	N/A
WS32	2.40	Natural Soils	Non-Hazardous	N/A	N/A
HTP1	0.50	Made Ground	Non-Hazardous	N/A	N/A
HTP3	0.40	Made Ground	Non-Hazardous	N/A	N/A
SA01	0.60	Made Ground	Non-Hazardous	N/A	N/A
SA02	0.70	Made Ground	Non-Hazardous	N/A	N/A

N/A – Additional WAC analysis not carried out on sample

Based on available information, it is considered likely that the majority of Made Ground and natural soils beneath the site would be suitable for disposal as Non-Hazardous Waste. Natural soils impacted by localised TPH contamination in the vicinity of boreholes WS01, WS04, WS21, WS31 and WS32 would require disposal to a Hazardous Waste landfill (if they needed to be removed from site).

Any material sent to landfill should be accompanied by the appropriate duty of care documentation and the chemical data should be forwarded to the accepting landfill for approval prior to removal of the soil from site.

7.0 Geotechnical Assessment

7.1 General

It should be noted that this Section does not comprise or represent a Geotechnical Design Report (GDR) but instead provides preliminary information and recommendations based on the findings of the ground investigation.

The geotechnical section of the ground investigation was designed in general accordance with guidance presented in BS EN 1997-2:2007. The objective of the investigation was to obtain preliminary information in order to assess the geotechnical properties of the ground and confirm provided recommendations for foundation and infrastructure design.

All depths here are recorded as depth below ground level.

7.2 In-Situ Geotechnical Testing

In-situ standard penetration tests (SPTs) were carried out during window sample and cable percussion drilling at approximately 1.00m to 1.50m intervals in order to allow the assessment of ground conditions by establishing soil strength/density characteristics.

The SPTs carried out within the Made Ground recorded 'N' values of 6 and 12 indicating these to be in a loose to medium dense condition.

SPTs carried out within the shallow natural strata (River Terrace Deposits / Brickearth) ranged from 7 to in excess of 50. SPT 'N' values within the shallow natural strata (completely weathered chalk bedrock) ranged from 0 to in excess of 50 indicating both these soils to be in a very variable condition. In general, the SPT 'N' values in excess of 50 were encountered within bands with a higher flint gravel content.

SPTs carried out in the chalk bedrock between 6.00m and 16.50m bgl recorded 'N' values ranging from 7 to 19. The SPT 'N' values from 18.0m to 19.5m were >50.

In accordance with CIRIA C574 'Engineering in Chalk', the SPT 'N' values indicate that the base of weathering within the chalk bedrock is 18.0m bgl.

The above records do not differ significantly from those encountered during previous investigations.

7.3 Waste Management

Arisings generated from excavations for foundations and service trenches etc. may be classified as waste and it is the responsibility of the holder of such material to form a view as to whether or not it constitutes waste.

Guidance on how this can be achieved is set out in the Development Industry Code of Practice (CoP) (CL:AIRE, March 2011).

The handling, re-use or disposal of waste materials is regulated by the Environment Agency, who take account of the CoP in determining if materials are classified as waste. If materials are dealt with in accordance with the CoP it is considered that they are unlikely to be waste at the point when they are used during development. This might be because the materials were never discarded or because they have been processed as part of a 'recovery' operation and therefore ceased to be waste.

Should site won material be intended for re-use on site, a Materials Management Plan will be required from a suitably qualified environmental consultant.

Reference should be made to the Waste Assessment Reports undertaken for the site as summarised in section 6.0 above.

8.0 Conclusions and Recommendations

The site has been found to be underlain by Made Ground comprising 'topsoil' or tarmac underlain by granular fill type materials or reworked natural materials followed by natural strata comprising River Terrace Deposits or Brickearth to 4.00m bgl. This was followed by weathered layers of the chalk bedrock to 6.00m bgl. This was further underlain by chalk bedrock, proven to a maximum depth of 19.85m bgl.

Groundwater was encountered within the superficial deposits at depths ranging from 2.10m to 2.80m bgl rising to between 2.00m and 2.50m bgl. Groundwater was encountered within the chalk bedrock at depths of 5.80m and 6.00m bgl rising to 3.50m bgl.

Although contaminants of concern were recorded in groundwater sampled from beneath the site, concentrations were only marginally elevated above adopted assessment criteria. Furthermore, the site is not located within a groundwater SPZ and the nearest potable abstraction is indicated to be approximately 460m to the north.

TPH compounds were recorded in the soils underlying the site at concentrations in excess of their solubility limits in two hotspots in the positions of boreholes WS2 and WS19 to WS23, located in the west of the site and in the positions of boreholes WS5, WS29, WS31 and WS32, located in the southwest. The excavation and off-site disposal of TPH contaminated soils in these locations (including any impacted soils beneath tank bases in the southwest) will lead to the betterment of groundwater quality beneath the site. Excavation works should take place under the supervision of a qualified geo-environmental consultant. Soil samples should be collected from the walls and base of the resulting excavations for chemical laboratory analysis to confirm that remaining contaminant concentrations in soils are at acceptable levels.

No significant soil based source of PAH contamination in groundwater was identified beneath the site. It is considered that this is representative of either an off-site source, or an on site source not identified during intrusive investigation works undertaken to date. A contamination watching brief by a qualified geo-environmental consultant is therefore recommended during the groundworks phase of the proposed

development on site. If visual or olfactory evidence of contamination is encountered during development, outside those identified during this study, the consultant would collect additional samples for further assessment into the potential risk these soils pose to groundwater. Guidance would then be given regarding the treatment / disposal of contaminated soils off-site.

A number of VOC and SVOC compounds were also recorded within samples collected from the Made Ground in the hotspot locations discussed above. No published assessment criteria for these contaminants, protective of human health receptors, are currently available. However, it is considered that the removal of hydrocarbon impacted soils in these hotspots will effectively mitigate any potential risk to future site users.

Other contaminants were not recorded at concentrations considered to represent a significant risk to human health.

The mitigation measures discussed above should be incorporated into a Remediation Method Statement and submitted to the Local Authority and Environment Agency for approval.

It should be noted that the reuse of soil arisings on site should be handled under a Materials Management Plan (MMP) in line with the CL:AIRE Code of Practice, or under an Environmental Permit, where required by the Environment Agency.

In summary, the following works are recommended to mitigate the potential risks posed by contamination recorded beneath the site:

- Provision of a Remediation Method Statement (RMS).
- Provision of a Material Management Plan (MMP) if site won soils are proposed for re-use on-site.
- Excavation and removal of identified contamination hotspots in the vicinity of boreholes WS2 and WS5.
- Inspection and verification of excavation works by a qualified geo-environmental consultant.
- Provision of resident engineer / geo-environmental consultant to carry out a watching brief for previously unidentified soil contamination during the groundworks phase of the proposed development.
- Collection and laboratory analysis of soil samples from finished formation level across the site to verify that residual contaminant concentrations are below assessment criteria protective of future commercial site users.
- Provision of a Verification Report to assist with discharge of planning conditions relating to contaminated land.

We would recommend that this report be submitted to the LPA at the earliest opportunity to seek their approval or further comments regarding the recommendations presented herein.

The above conclusions and recommendations are based on the sites proposed development comprising new commercial units with associated car parking and landscaped areas. Should the proposed end use change it will be necessary to amend the conclusions accordingly. The report also assumed that the final site levels will not be significantly altered.

APPENDIX I
DRAWINGS