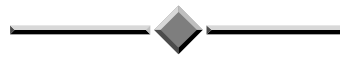


Site Investigation for land at
Trough Laithe Farm, Barrowford Road, Lancashire

Appendix 7

Guide to Trial Pit and Window Sample Logs



Trial Pit Logs (Cooper)

Coopers

Trial Pit No.s: TP101 to TP169

Excavated: 28 April to 1 May 2014

Guide to Trial Pit and Window Sample Logs

Odour Assessments

The “intensity” of an odour is also relevant. Intensity refers to the perceived strength of an odour when described by a recipient. Low concentrations of some compounds in a sample are capable of being perceived as having a high intensity even when close to threshold concentrations. These compounds are common in naturally unpleasant odours such as hydrogen sulphide (rotten eggs) and skatole (faeces). Where possible the odour of the sample will be assessed as it is being removed from the ground without any contact with the soil per se. If it is considered appropriate to, a piece of natural soil may be taken and inspected closer for odour, assuming odour is not apparent during excavation. Contaminants which may generate odours are likely to have a carcinogenic risk when inhaled, and hence placing samples close to the nose is not recommended. Should strong odours or greater be encountered, suitable PPE will be adopted by site engineers.

All soils are anticipated to have an odour, however these typically earthy odours have not been taken into consideration within this assessment as secondary odours indicate the inclusion of compounds which are not normally present in natural soils and may indicate contamination. It should be noted that made ground may potentially contain asbestos and hence it is not prudent to inhale samples of this material as loose microscopic fibres may be in taken.

It should also be noted that odour is affected by weather conditions, wind direction and the moisture content of the soil mass.

Odour Intensity	Description of Intensity
No odour	No odour is apparent over general background odours.
Very faint odour	The sample has to be closely held close to the nose to notice an odour and is just detectable above background levels. There is no odour noted as the soil is being excavated and stockpiled. The source of the odour may not be discernable.
Faint odour	The sample is noted to have a slight odour without needing to break open the sample or agitate it. The odour is just detectable and discernable.
Distinct odour	An obvious identifiable odour can be determined during excavation and possible whilst the material is stockpiled.
Strong odour	The soils are noted to be odorous during excavation and stockpiling within the close vicinity to the excavation and there is no need to break open or agitate samples.
Very strong odour	Odour is noted as the soils are being excavated and deposited in stockpile. This may be detectable both during excavation and once the material has been stockpiled. The odour is noted to be overpowering at a close distance to the excavation, but noted away from the excavation.
Extremely strong odour	Odour is noted a significant distance away from excavation works and is overpowering within close proximity. The odour is noted during excavation as well as a time following excavation.

Vapour Assessment

Equipment utilised – PID (MiniRae Photo Ionisation Device). This item is calibrated every 12 months

Sample Containers (disclosed under type in the logs)

- J - 250ml amber jar provided by laboratories.
- V - vial provided by laboratories
- B - Standard bulk sample taken in a sterile plastic sampling bag.
- B - one litre amber bottle provided by laboratories.

All jars, vials and bottles to be stored in a chilled cool boxed upon sampling and to be transferred to the Coopers sample reception refrigerators at the end of the day for temporary storage until samples have been scheduled.

Shear Strength of Cohesive Stratum

Equipment utilised – hand shear vane calibrated every 6 months by Lambda Calibration.

Madeground (similar to topsoil)

This description represents strata which appears as topsoil, however contains a significant amount of anthropogenic material (i.e. broken crockery, clinker, fragmented brick) and cannot be considered as natural stratum. This material may also be situated directly over madeground materials and hence cannot be natural.

Granular strata

Relative Density Description


All observations (unless stated otherwise) of the relative density of granular strata (madeground and natural) are based upon the observations of the side walls of trial pits and trial trenches. This cannot be determined on window samples, and SPT readings should be used to characterise the strata. It should be noted that the below descriptions may be affected by pore water pressure (very dry will be looser than strata with much pore water), and saturation. The ability to assess how well a trial pit or trench to stand must not be utilised in an assessment to determine whether personnel can enter excavations which are not supported or have an appropriate battered.



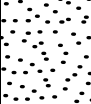













Relative Density	Description	SPT equivalent (SPT $N_{1(60)}$ BS EN 1997-2)
Very loose	During excavation the side walls of the trial pit continually collapse resulting in significantly oversized, typically circular, excavation. Excavation is very easy within this strata. Very easy to excavate with a spade.	0 – 4 (0 – 3)
Loose	The excavation may exhibit good initial stability, but rapidly fails and collapses. Excavation is easy within this strata. Fairly easy to excavate with a spade or crowbar.	4 – 10 (3 – 8)
Loose to Medium Dense	The side wall stability is good in the short term with possible small areas of spalling faces. Excavation is easy to moderate through this stratum.	6-15
Medium Dense	The excavation leaves a clean face and has short and possibly medium term stability. Negligible spalling occurs on the surface of the excavation. Excavation may be moderate to laboured in this strata. Bucket teeth marks should be visible within the excavation. Difficult to excavate with a spade or penetrate with a crowbar.	10 – 30 (8 – 25)
Dense	The stratum is difficult to excavate and has a very good stability of sides. Very difficult to penetrate with a crowbar and requires a pick for excavation.	30 – 50 (25 – 42)
Very Dense	The stratum is very difficult to excavate and behave more as a rock, with the potential for scraping of the strata and sparks. Difficult to excavate with a pick.	>50 (42 – 58)

Cohesive Strata

Relative Density	Description	Shear Vane (kN/m^2)
Very Soft	Finger easily pushes in up to 25mm. exudes between fingers.	0 – 20
Soft	Finger pushed in up to 10mm. Moulded by light finger pressure.	20 – 40
Soft to Firm		40 – 60
Firm	Thumb makes impression easily. Cannot be moulded by fingers. Rolls to thread.	60 – 75
Firm to Stiff		75 – 100
Stiff	Can be indented slightly by thumb. Crumbles in rolling thread. Remoulds.	100 – 150
Very Stiff	Can be indented by thumb nail. Cannot be moulded. Crumbles.	150 – 250
Hard	Can be scratched by thumb nail.	>250

All logging is in accordance with BS5930 and is compliant with Eurocode 7.

Park House, Sandpiper Court, Chester Business Park, Chester, CH4 9QU (T) 01244 684910 (F) 01244 684911 (E) admin@coopers.co.uk (W) www.coopers.co.uk				TRIAL HOLE LOG		 coopers chartered consulting engineers			
Project : TROUGH LAITHE FARM, BARROWFORD					Project No: 5883		Trial Pit Ref.: TP101		
Method: 140 LCV Tracked Excavator				Weather: Sunny		Date: 28/04/2014		Sheet 1 of 69	

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.2	B		0.1	Dark brown, fine to coarse SAND (similar to topsoil)		
0.4	B			Yellowish brown, silty, slightly gravelly, fine to coarse SAND. Assumed as loose to medium dense ¹ .		
0.6	SV	(80)	0.5	Firm to stiff, yellowish brown, silty CLAY with some natural stone gravel.		
0.7	B		0.9			
1.0	SV	(68)	1m	Firm, very dark grey/orange, silty CLAY.		
1.1	B					
			1.5			
1.6	SV	(20)		Very soft, dark grey/blue SILT.		
1.7	B					
			2m			
2.2	SV	(20)				
2.4	B					
						
2.9	SV	(22)				2.9 (TWL)
3.0	B		3m			3.0
			3.0	Trial pit terminated		(s/s)
			4m			

Remarks:
¹Based upon trenchside stability characteristics.
 Strata description based upon Coopers logging of retrieved samples.
 Trial Pit left open for 1 hour

Stability: Sides stable during excavation and after 1 hour		Groundwater: Groundwater seeping in at base after excavation. Groundwater at 2.9m after 1 hour	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS




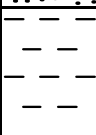
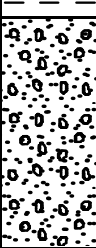




Stability: Sides stable during excavation and after 30 minutes		Groundwater: Groundwater seeping in at base after excavation Groundwater at 2.9m when backfilled		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS	

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TRIAL HOLE LOG

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Project :	TROUGH LAITHE FARM, BARROWFORD	Project No:	5883	Trial Pit Ref.:	TP103
Method:	140 LCV Tracked Excavator	Weather:	Sunny	Date:	28/04/2014
					Sheet 3 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.2	B	(72)		Dark brown, silty, clayey, fine to coarse SAND (similar to topsoil). Assumed as loose ¹ .		
0.45	SV		0.4			
0.45	B		0.5	Firm, brown, silty CLAY.		
				Grey/brown, silty, fine to coarse SAND and fine to coarse, natural stone GRAVEL. Assumed as loose to medium dense ¹ .		
			1m			
1.1	B	(90)				
1.6	SV		1.5			
1.6	B			Firm to stiff, dark grey/blue, silty CLAY.		
1.9	SV	(60)	2m	2.0		
				Dark grey/brown, very silty, slightly clayey, fine to coarse SAND and fine to coarse GRAVEL. Assumed as loose to medium dense ¹ .		
2.3	B					
						
			2.8	Soft, dark grey/blue SILT.		
2.9	SV	(40)				
3.0	B		3m	3.0		
				Trial pit terminated		
						
			4m			

Remarks:
¹Based upon trenchside stability characteristics.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 25 minutes.



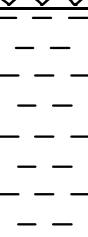
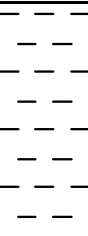
Stability:		Groundwater:		
Sides stable during excavation and after 25 minutes		None observed during excavation or when backfilled		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS	

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Project :	TROUGH LAITHE FARM, BARROWFORD	Project No:	5883	Trial Pit Ref.:	TP104
Method:	140 LCV Tracked Excavator	Weather:	Sunny	Date:	28/04/2014
					Sheet 4 of 69



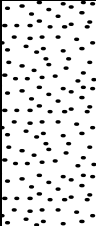
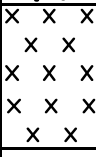
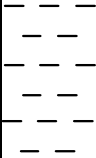
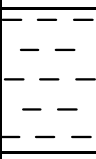

Samples and Tests				Depth	Description of Strata	Legend	Water	
Depth (m)	Type	Hand Vane kN/m2						
			0					
0.3	B	(30)		0.3	Dark brown, slightly clayey, fine to coarse SAND (similar to topsoil). Assumed as loose ¹ .			
0.8	B					Firm, yellowish brown, fine to coarse sandy, slightly gravelly CLAY. Gravel is fine to coarse natural stone.		
			1m					
				1.1				
1.4	B	(36)			Soft, dark grey/blue, silty CLAY with some fine to coarse, angular angular to sub-angular mudstone gravel.			
1.5	SV							
			2m					
2.1	B	(36)						
2.1	SV							

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Project :	TROUGH LAITHE FARM, BARROWFORD	Project No:	5883	Trial Pit Ref.:	TP105
Method:	140 LCV Tracked Excavator	Weather:	Sunny	Date:	28/04/2014
					Sheet 5 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.2	B		0.3	Dark brown, fine to coarse SAND (similar to topsoil) Assumed as loose ¹ .		
0.8	B			Yellowish brown/grey, silty, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to sub-rounded, natural stone. Assumed as loose to medium dense ¹ .		
1.2	SV	(44)	1.1			
1.2	B			Soft to firm, dark grey/blue, gravelly SILT. Gravel is fine to coarse, angular to rounded, natural stone and cobbles.		
1.8	SV	(40)	1.6			
1.8	B			Soft dark brown/grey gravelly CLAY. Gravel is fine to coarse mudstone.		
2.4	SV	(36)	2.2			
2.4	B			Soft, dark brown/grey/orange, silty, sandy slightly gravelly CLAY. Gravel consists of fine to coarse mudstone.		
3.0	SV	(44)	2.7			
3.0	B		3.0	Soft to firm, dark grey/blue very silty gravelly CLAY. Gravel is fine to coarse mudstone.		
				Trial pit terminated		

Remarks:
¹Based upon trenchside stability characteristics.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 20 minutes.


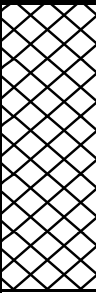
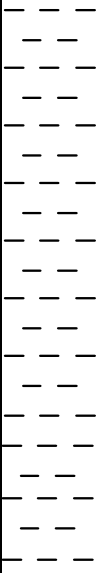
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Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO Processed By: AJ Approved by: PRS

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Project :	TROUGH LAITHE FARM, BARROWFORD	Project No:	5883	Trial Pit Ref.:	TP106
Method:	140 LCV Tracked Excavator	Weather:	Sunny	Date:	28/04/2014
					Sheet 6 of 69

Samples and Tests			Depth (m)	Description of Strata		Legend	Water
Depth (m)	Type	Hand Vane kN/m2					
			0				
0.5	B			Brown, gravelly, fine to coarse SAND (similar to topsoil) Assumed as loose ¹ .			
1.1	B		1m	1.0			
1.1	SV	(90)		Firm to stiff, dark grey, silty, gravelly CLAY. Gravel is fine to coarse, angular to subangular, natural stone, cobbles and rootlets.			
1.6	B						
1.7	SV	(80)					
			2m				
2.3	B						
2.3	SV	(76)					
				Below 2.5m: Fine to coarse sandy			
2.9	B						
3.0	SV	(78)	3m	3.0			
				Trial pit terminated			
			4m				

Remarks:
¹Based upon trenchside stability characteristics.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 20 minutes.


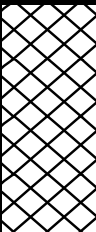
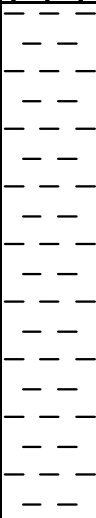
Stability: Sides stable during excavation and after 20 minutes		Groundwater: None observed during excavation or after 20 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS	

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Project :	TROUGH LAITHE FARM, BARROWFORD	Project No:	5883	Trial Pit Ref.:	TP107
Method:	140 LCV Tracked Excavator	Weather:	Sunny	Date:	28/04/2014
					Sheet 7 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.4	B			Brown, slightly silty, gravelly, fine to coarse SAND (similar to topsoil) Assumed as loose ¹ .		
0.9	B		0.8			
0.9	SV	(50)	1m	Soft to firm, dark grey/orange, silty, fine to coarse sandy, gravelly CLAY. Gravel is fine to coarse, angular to rounded, natural stone and cobbles.		
1.7	B		2m			
				Below 2.0m: very gravelly		
2.6	B		2.6			
			3m	Trial pit terminated.		
			4m			

Remarks:
¹Based upon trenchside stability characteristics.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 25 minutes.

Stability: Partial collapse of upslope face above 0.8m during excavation. No further collapse after 25 minutes.		Groundwater: None observed during excavation or after 25 minutes	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS



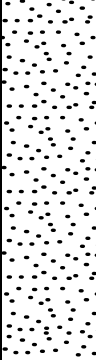

Stability:		Groundwater:		
Sides stable during excavation and after 25 minutes		None observed during excavation or after 25 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS	

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Project :	TROUGH LAITHE FARM, BARROWFORD	Project No:	5883	Trial Pit Ref.:	TP109
Method:	140 LCV Tracked Excavator	Weather:	Sunny	Date:	28/04/2014
					Sheet 9 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m ²				
			0			
			0.3	Dark brown, fine to coarse SAND (similar to topsoil) with some gravel. Assumed as loose ¹ .		
0.5	B			Brown, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to rounded, mudstone. Assumed as loose ¹ .		
1.3	B					
1.6				Very weak, dark grey/blue/brown highly weathered, thinly laminated MUDSTONE. Assumed as very dense ² . Mudstone excavated as gravels, cobbles and boulders.		
1.8	B		1.9	Trial pit terminated		
			2m			
			3m			
			4m			

Remarks:
¹Based upon trenchside stability characteristics.
²Base scratched with toothed bucket for 10 minutes, excavating 0.3 metres.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 20 minutes.

Stability:	Groundwater:
Sides stable during excavation and after 20 minutes	None observed during excavation or after 20 minutes
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO
	Processed By: AJ
	Approved by: PRS

Approved by:	PRS
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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP111
Method: 140 LCV Tracked Excavator	Weather: Sunny	Date: 28/04/2014	Sheet 11 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, slightly silty, fine to coarse SAND (similar to topsoil) Assumed as loose ¹ .		
0.8	B			Brown, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to rounded natural stone. Assumed as loose to medium dense ¹ .		
1.7	B		1.9			
2	B		2.2	Very weak dark grey/brown, thinly laminated, highly fractured completely weathered MUDSTONE recovered as mudstone gravel. Assumed as very dense ² .		
				Trial pit terminated		

Remarks:
¹Based upon trenchside stability characteristics.
²Base scratched with toothed bucket for 5 minute, extracting 0.3metres.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 30 minutes.



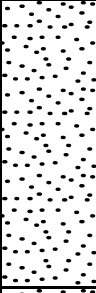
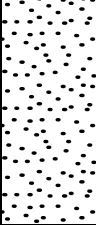
Stability: Sides stable during excavation and after 30 minutes.		Groundwater: None observed during excavation or after 30 minutes.		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: <div style="text-align: center;">MO</div>	Processed By: <div style="text-align: center;">AJ</div>	Approved by: <div style="text-align: center;">PRS</div>	

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Project :	TROUGH LAITHE FARM, BARROWFORD	Project No:	5883	Trial Pit Ref.:	TP112
Method:	140 LCV Tracked Excavator	Weather:	Sunny	Date:	28/04/2014
					Sheet 12 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil) Assumed as loose ¹ .		
				Orange/brown, fine to coarse SAND. Assumed as very loose ¹ .		
0.7	B		1m			
			1.2			
1.5	B		2m	Grey/orange, very silty, fine to coarse SAND. Assumed as very loose ¹ .		
			2.0			
				Trial pit terminated		
			3m			
			4m			

Remarks:
¹Based upon trenchside stability characteristics.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit backfilled immediately due to collapse.

Stability: Upslope and downslope faces collapsed during excavation.		Groundwater: None observed during excavation		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS	

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP113
Method: 140 LCV Tracked Excavator	Weather: Sunny	Date: 28/04/2014	Sheet 13 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil) Assumed as loose ¹ .		
				Brown, silty, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to rounded, natural stone. Assumed as loose to medium dense ¹ .		
0.8	B					
			1m			
1.6	B					
			1.9			
2.1	B		2m	Dark grey/brown, silty, clay bound mudstone GRAVEL. Assumed as very dense ² . (completely weathered mudstone)		
			2.2	Trial pit terminated		
			3m			
			4m			

Remarks:
¹Based upon trenchside stability characteristics.
²Base scratched with toothed bucket for 5 minutes, excavating 0.3metres.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 30 minutes.

Stability: Sides stable during excavation		Groundwater: None observed during excavation		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS	

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP114
Method: 140 LCV Tracked Excavator	Weather: Sunny	Date: 28/04/2014	Sheet 14 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil) Assumed as loose ¹ .		
0.7	B			Orange/brown, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to subrounded, natural stone. Assumed as loose to medium dense ¹ .		
1.5	B		1.0	Brown, fine to coarse SAND and fine to coarse, angular to subangular, mudstone GRAVEL. Assumed as loose to medium dense ¹ .		
2.2	B		2.4	Very weak, dark blue/grey, thinly laminated, highly fractured completely weathered MUDSTONE recovered as a gravel. Assumed as very dense ² .		
2.5	B		2.6	Trial pit terminated.		

Remarks:
¹Based upon trenchside stability characteristics.
²Base scratched with a toothed bucket for 5 minutes, excavating 0.2 metres.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 30 minutes



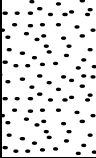
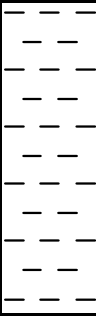

Stability: Sides stable during excavation and after 30 minutes		Groundwater: None observed during excavation or after 30 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS	

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Project :	TROUGH LAITHE FARM, BARROWFORD	Project No:	5883	Trial Pit Ref.:	TP115
Method:	140 LCV Tracked Excavator	Weather:	Sunny	Date:	28/04/2014
					Sheet 15 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil) Assumed as loose ¹ .		
0.5	B			Orange/brown, silty, fine to coarse SAND. Assumed as loose to medium dense ¹ .		
0.9	B		0.8			
1.0	SV	(80)	1m	Firm to stiff, grey/orange, silty, slightly gravelly CLAY. Gravel is fine to coarse, angular to subangular, mudstone.		
1.8	B		1.9			
2.0	B		2m	Very weak, dark blue/grey, thinly laminated, highly fractured, completely weathered MUDSTONE, recovered as gravel. Assumed as very dense ² .		
			2.1	Trial pit terminated.		
			3m			
			4m			

Remarks:
¹Based upon trenchside stability characteristics.
²Base scratched with toothed bucket for 5 minutes, excavating 0.2 metres.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 40 minutes.

Stability: Partial collapse in mudstone in upslope face during excavation. No further collapse within 40 minutes of excavation.		Groundwater: None observed during excavation or after 40 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS	

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Project : TROUGH LAITHE FARM, BARROWFORD	Project No: 5883	Trial Pit Ref.: TP116
Method: 140 LCV Machine Excavator	Weather: Sunny	Date: 29/04/2014
Sheet 16 of 69		

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND with rootlets (similar to topsoil) Assumed as loose ¹ .		
				Grey/orange, clayey, fine to coarse SAND with some fine to coarse, angular to subangular, mudstone gravel. Assumed as very loose ¹ .		
0.8	B		1m			
1.6	B		2m	Below 1.5m: Very gravelly including cobbles.		
			2.0			
				Trial pit terminated due to collapse.		
			3m			
			4m			

Remarks:

¹Based upon trenchside stability characteristics.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 25 minutes.

Stability: Upslope face collapsed during excavation. No further collapse after 25 minutes.	Groundwater: None observed during excavation or after 25 minutes.
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO
Processed By: AJ	Approved by: PRS

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP117
Method: 140 LCV Machine Excavator	Weather: Sunny	Date: 29/04/2014	Sheet 17 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND with rootlets (similar to topsoil) Assumed as loose ¹ .		
				Grey/orange, clayey, fine to coarse SAND with some fine to coarse, angular to subangular, mudstone gravel. Assumed as very loose ¹ .		
0.8	B					
			1m			
1.5	B					1.5 (s/s)
2.0	B		2m			
2.5	B		2.55	Trial pit terminated due to collapse.		2.4 (TWL)
			3m			
			4m			

Remarks:

¹Based upon trenchside stability characteristics.

Strata description based upon Coopers logging of retrieved samples.

Trial pit left open for 20 minutes

Stability: Upslope face collapsed during excavation between 0-1m No further collapse within 20 minutes of excavation.		Groundwater: Groundwater seeping in from approximately 1.5m on upslope face during excavation. Groundwater at 2.4m when backfilled.	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: <div style="text-align: center;">MO</div>	Processed By: <div style="text-align: center;">AJ</div>	Approved by: <div style="text-align: center;">PRS</div>

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP118
Method: 140 LCV Machine Excavator	Weather: Sunny	Date: 29/04/2014	Sheet 18 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND with rootlets (similar to topsoil) Assumed as loose ¹ .		
				Orange/grey, silty, clayey, fine to coarse SAND with some fine to coarse, angular to subangular, mudstone gravel including cobbles. Assumed as loose ¹ .		
0.7	B					
			1m			
1.5	B			Below 1.4m: Very silty		
			2m			
2.3	B		2.3			
				Firm, brown, grey, very silty, gravelly CLAY. Gravel inclusions comprised fine to coarse mudstone.		
3.0	B		3m	3.0		
				Trial pit terminated		
			4m			

Remarks:

¹Based upon trenchside stability characteristics.

Strata description based upon Coopers logging of retrieved samples.

Trial pit left open for 20 minutes.

Stability: Partial upslope face collapse between 1.3m and 2.2m No further collapse within 20 minutes of excavation.		Groundwater: None observed during excavation or after 20 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS	

Approved by:	PRS
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Trial Pit Ref.: **TP120**

Sheet 20 of 69

Samples and Tests				Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m ²					
0.1	B	(20)	0		Dark brown, fine to coarse SAND with rootlets (similar to topsoil) Assumed as loose ¹ .		
0.6	B		0.2		Brown/grey/orange, silty, clayey, fine to coarse SAND with some fine to coarse, angular to subangular, mudstone gravel. Assumed as very loose ¹ .		
1.4	B		1m				
2.1	B		2m	2.0	Very soft, dark blue/grey SILT.	X X X X X X X X	
2.1	SV		2.3		Trial pit terminated due to collapse		
			3m				
			4m				

¹Based upon trenchside stability characteristics.
Strata description based upon Coopers logging of retrieved samples.
Trial pit left open for 15 minutes.

None observed during excavation or after 15 minutes

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP121
Method: 140 LCV Machine Excavator	Weather: Sunny	Date: 29/04/2014	Sheet 21 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND with rootlets (similar to topsoil) Assumed as loose ¹ .		
0.6	B			Orange/brown, silty, gravelly, fine to coarse SAND with some rootlets and mudstone. Assumed as loose to medium dense ¹ .		0.8 (l/d)
1.4	B		1.5			
1.9	B		2.2	Firm, dark brown/grey, silty, very gravelly CLAY. Gravel is fine to coarse mudstone.		
				Trial pit terminated onto bedrock		

Remarks:
¹Based upon trenchside stability characteristics.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 25 minutes.

Stability: 100	Groundwater: Land drain observed at 0.8m. Dry. None observed during excavation or after 25 minutes
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO Processed By: AJ Approved by: PRS

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP122
Method: 140 LCV Machine Excavator	Weather: Sunny	Date: 29/04/2014	Sheet 22 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.05	B		0.1	Dark brown, fine to coarse SAND with rootlets (similar to topsoil)		
0.4	B			Brown/grey/orange, silty, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to subangular, mudstone. Assumed as loose ¹ .		
0.7	B		0.6	Firm, dark blue/grey/brown, silty, gravelly CLAY. Gravel comprised as fine to coarse mudstone.		
1.4	B		1.6	Trial pit terminated		
			2m			
			3m			
			4m			

Remarks:
¹Based upon trenchside stability characteristics.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 20 minutes.

Stability: Sides stable during excavation and after 20 minutes of excavation.		Groundwater: None observed during excavation or after 20 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS	



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Trial Pit Ref.:
TP123

Sheet 23 of 69

Samples and Tests				Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m ²					
0.1	B		0	0.2	Dark brown, fine to coarse SAND with rootlets (similar to topsoil) Assumed as loose¹.		
0.6	B				Brown/grey/orange, silty, clayey, fine to coarse SAND. Assumed as loose¹.		
1.5	B		1m				
2.3	B		2m	2.2	Firm brown/grey silty gravelly CLAY. Gravel is fine to coarse mudstone		
2.8	B		3m	3.0	Trial pit terminated		2.9 (TWL)

¹Based upon trenchside stability characteristics.
Strata description based upon Coopers logging of retrieved samples.
Trial pit left open for 20 minutes.

Processed By:	Approved by:
AJ	PRS

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Project : **TROUGH LAITHE FARM, BARROWFORD**

Project No: **5883**


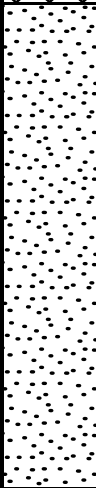
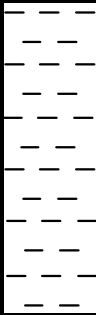
Trial Pit Ref.: **TP124**

Method: **140 LCV Machine Excavator**

Weather: **Sunny**

Date: **29/04/2014**

Sheet 24 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m ²				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND with rootlets (similar to topsoil) Assumed as loose ¹ .		
0.7	B			Brown/grey/orange, silty, clayey, gravelly fine to coarse SAND. Gravel is fine to coarse, angular to subangular, mudstone. Assumed as loose to medium dense ¹ .		
1.5	B		1.9			
2.1	B		2m	Stiff, dark blue/grey silty, sandy, very gravelly CLAY. Gravel includes fine to coarse mudstone.		
2.8	B		3m			
			3.0	Trial pit terminated		
			4m			

Remarks:

¹Based upon trenchside stability characteristics.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 15 minutes.

Stability:

Sides stable during excavation, no further collapse within 15 minutes of excavation.

Processed in accordance with:
 BS 5930, BS EN ISO 14689-1:2003,
 BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004

Logged By:
 MO

Groundwater:

None observed during excavation or after 15 minutes

Processed By: AJ
 Approved by: PRS

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP125
Method: 140 LCV Machine Excavator	Weather: Sunny	Date: 29/04/2014	Sheet 25 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND with rootlets (similar to topsoil) Assumed as loose ¹ .		
0.7	B		1.35	Brown/grey/orange, silty, clayey, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to sub-angular, mudstone. Assumed as loose to medium dense ¹ .		
1.45	B		1.9	Firm, dark blue/grey/brown, very silty, gravelly CLAY with cobbles of mudstone.		
2.0	B		2.1	Brown, silty, fine to coarse SAND and GRAVEL. Gravel consists of fine to coarse mudstone. Assumed as dense ¹ .		
				Trial pit terminated		

Remarks:
¹Based upon trenchside stability characteristics.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 25 minutes.

Stability: Partial collapse of mudstone in upslope face during excavation. No further collapse after 25 minutes.		Groundwater: None observed during excavation or after 25 minutes	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP126
Method: 140 LCV Machine Excavator	Weather: Sunny	Date: 29/04/2014	Sheet 26 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.05	B		0.1	Dark brown, fine to coarse SAND with rootlets (similar to topsoil)		
0.4	B			Firm to stiff, dark blue/grey/orange, silty, gravelly CLAY.		
0.5	SV	(76)		Gravel is fine to coarse, angular to subangular, mudstone.		
0.8	SV	(90)				
0.9	B					
			1m			
			1.2			
1.5	B			Firm, dark brown/grey/orange, very silty, sandy, gravelly CLAY.		
				Gravel is fine to coarse, angular to sub-angular very weak mudstone.		
			2m			
2.2	B					
			2.4			2.2 (TWL)
				Trial pit terminated		2.4 (s/s)
			3m			
			4m			

Remarks:

¹Based upon trenchside stability characteristics.

Strata description based upon Coopers logging of retrieved samples.

Trial pits left open for 25 minutes.

Stability: Sides stable during excavation. No collapse within 25 minutes after excavation.		Groundwater: Groundwater seeping in at base during excavation Groundwater at 2.2m after 25 minutes.		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS	

Processed By: AJ	Approved by: PRS
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Park House, Sandpiper Court, Chester Business Park Chester, CH4 9QU (T) 01244 684910 (F) 01244 684911 (E) admin@coopers.co.uk (W) www.coopers.co.uk	<h2 style="margin: 0;">TRIAL HOLE LOG</h2>	 coopers <small>chartered consulting engineers</small>
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Project : TROUGH LAITHE FARM, BARROWFORD	Project No: 5883	Trial Pit Ref.: TP128
Method: 140 LCV Machine Excavator	Weather: Sunny	Date: 29/04/2014
		Sheet 28 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.2	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil) Assumed as loose ¹ .		
				Dark grey/orange, silty, fine to coarse SAND. Assumed as very loose ¹ .		
0.7	B					
			1m	1.0		
1.4	B			Brown, silty, fine to coarse SAND. Assumed as very loose ¹ .		
			2m			
2.1	B					
			2.4			2.3 (TWL)
				Trial pit terminated due to collapse		
			3m			
			4m			

Remarks:
¹Based upon trenchside stability characteristics.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 20 minutes.

Stability: Upslope and downslope face collapse during excavation No further collapse after 20 minutes		Groundwater: Groundwater seeping in at base during excavation Groundwater at 2.3m after 20 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: <div style="text-align: center;">MO</div>	Processed By: <div style="text-align: center;">AJ</div>	Approved by: <div style="text-align: center;">PRS</div>	

Processed By: AJ	Approved by: PRS
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Processed By: AJ	Approved by: PRS
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Approved by:	PRS
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Project : TROUGH LAITHE FARM, BARROWFORD	Project No: 5883	Trial Pit Ref.: TP132
Method: 140 LCV Machine Excavator	Weather: Sunny	Date: 29/04/2014
Sheet 32 of 69		

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil) Assumed as loose ¹ .		
				Stiff, brown/grey/orange, silty CLAY.		
0.5	SV	(130)				
0.6	B		0.8			
			1.0	Very weak, brown/grey/orange highly weathered, thinly laminated MUDSTONE excavated as gravel and cobble laths and blocks of mudstone. Assumed as very dense ² .		
				Trial pit terminated		
			2m			
			3m			
			4m			

Remarks:











































¹Based upon trenchside stability characteristics.

²Base scratched with toothed bucket for 3 minutes, excavating 0.2 metres.

Strata description based upon Coopers logging of retrieved samples.

Trial pit left open for 25 minutes.










Stability: Sides stable during excavation. No collapse within 25 minutes of excavation.		Groundwater: None observed during excavation or after 25 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS	

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Project : TROUGH LAITHE FARM, BARROWFORD					Project No: 5883		Trial Pit Ref.: TP133		
Method: 140 LCV Machine Excavator				Weather: Sunny		Date: 29/04/2014		Sheet 33 of 69	
Samples and Tests			Depth	Description of Strata			Legend	Water	
Depth (m)	Type	Hand Vane kN/m2							
			0						
0.1	B			0.3	Dark brown, fine to coarse SAND (similar to topsoil) Assumed as loose ¹ .				
0.5	SV	(80)			Firm to stiff, brown/grey/orange, silty, gravelly CLAY. Gravel is fine to coarse, angular to subangular, mudstone and cobbles.				
0.7	B								
			1m						
1.2	SV	(92)							
1.4	B								
			1.6						
1.7	B			1.9	Very weak, dark blue/grey, thinly laminated, highly fractured highly weathered MUDSTONE excavated as angular gravel, cobbles, laths and blocks of mudstone. Assumed as very dense ² .				
			2m		Trial pit terminated onto bedrock				
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									

Remarks:
¹Based upon trenchside stability characteristics.
²Base scratched with toothed bucket for 5 minutes excavating 0.3 metres.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 30 minutes.

Stability: Sides stable during excavation. No collapse within 30 minutes of excavation		Groundwater: None observed during excavation or after 30 minutes	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: AJ	Approved by: PRS

Approved by:	PRS
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








Park House, Sandpiper Court, Chester Business Park Chester, CH4 9QU (T) 01244 684910 (F) 01244 684911 (E) admin@coopers.co.uk (W) www.coopers.co.uk				TRIAL HOLE LOG		 coopers chartered consulting engineers				
Project : TROUGH LAITHE FARM, BARROWFORD					Project No: 5883		Trial Pit Ref.: TP135			
Method: 140 LCV Machine Excavator				Weather: Sunny		Date: 29/04/2014		Sheet 35 of 69		
Samples and Tests			Depth		Description of Strata		Legend		Water	
Depth (m)	Type	Hand Vane kN/m2	0							
0.2	B		0.2		Dark brown, fine to coarse SAND (similar to topsoil) Assumed as loose ¹ .					
0.8	B				Stiff becoming firm, brown/grey/orange, silty, gravelly CLAY. Gravel is fine to coarse, angular to subangular, mudstone.					
1.6	B		1m							
			2m		2.0				1.9 (TWL)	
					Trial pit terminated ²					
			3m							
			4m							

Remarks:
¹Based upon trenchside stability characteristics.
²Trial pit terminated onto very dense stratum excavated as angular gravel, cobbles and boulders of very weak mudstone.
 Strata description based upon Coopers logging of retrieved samples.
 Trial pit left open for 25 minutes

Stability: Sides stable during excavation. No collapse within 25 minutes of excavation				Groundwater: Groundwater seeping in at base during excavation Groundwater at 1.9 metres after 25 minutes.			
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004			Logged By: MO	Processed By: AJ		Approved by: PRS	



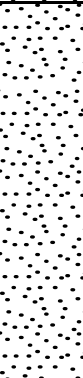






























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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP137
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 30/04/2014	Sheet 37 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B	(104)	0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
				Stiff, brown/grey/orange, dessicated CLAY.		
0.6	SV					
0.9	B	(120)	1m			
						
1.4	SV					
1.6	B		1.7			
1.8	B			Firm, dark blue/grey/brown, silty, gravelly CLAY. Gravel is fine to coarse, angular, weak mudstone.		
2.1	B		2m			
			2.2			
				Trial pit terminated		
			3m			
			4m			

Remarks: Trial pit left open for 20 minutes Strata descriptions based upon Coopers logging of retrieved samples.

Stability: Stable during excavation. No collapse within 20 minutes of excavation.	Groundwater: No groundwater observed during excavation or within 20 minutes.								
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	<table> <tr> <td>Logged By:</td> <td>Processed By:</td> <td>Approved by:</td> <td></td> </tr> <tr> <td>MO</td> <td>SC</td> <td>PRS</td> <td></td> </tr> </table>	Logged By:	Processed By:	Approved by:		MO	SC	PRS	
Logged By:	Processed By:	Approved by:							
MO	SC	PRS							

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.7	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
				Brown, silty, very gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to sub-rounded mudstone and cobbles. Assumed as loose to medium dense ¹ .		
1.7	B		1m			
			1.6			
				Very weak, brown/grey, completed weathered MUDSTONE recovered as brown/grey, very silty, blocky, very gravelly clay.		
			1.9			
			2m	Trial pit terminated		
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						



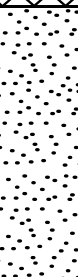

Trial pit left open for 20 minutes.
Strata descriptions based upon Coopers logging of retrieved samples.
¹Based upon trenchside stability characteristics

Stability:		Groundwater:		
Stable during excavation. No collapse within 20 minutes of excavation		Groundwater seeping in at base during excavation Groundwater at 1.8metres after 20 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002. BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS	



Trial Pit Ref.:
TP140

Sheet 40 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.7	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
				Brown/orange/grey, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to sub-rounded, mudstone. Assumed as loose to medium dense ¹ .		
1.3	B		1.2			
			1.45	Firm brown/orange/grey, silty, gravelly CLAY. Gravel consists of fine to coarse natural stone.		
				Trial pit terminated		
			2m			
			3m			
			4m			



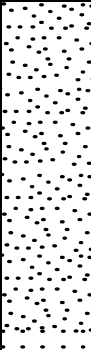

Trial pit left open for 20 minutes.
Strata descriptions based upon Coopers logging of retrieved samples.
¹Based upon trenchside stability characteristics

No groundwater observed during excavation or after 20 minutes

Processed By: SC	Approved by: PRS
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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP141
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 30/04/2014	Sheet 41 of 69



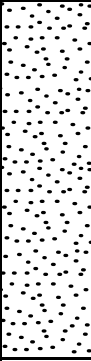
Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
				Brown, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to sub-angular, mudstone. Assumed as loose to medium dense ¹ .		
0.8	B		1m			
			1.5			1.5
1.6	B		1.7	Dark brown/grey slightly silty, very thinly laminated, highly fractured highly weathered MUDSTONE recovered as gravel. Assumed as very dense ² .		(TWL)
				Trial pit terminated		1.7 (s/s)
			2m			
			3m			
			4m			

Remarks: ¹ Based upon trenchside stability characteristics ² Based upon excavator ripability characteristics Strata descriptions based upon Coopers logging of retrieved samples. Trial pit left open for 20 minutes.
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Stability: Stable during excavation. No collapse within 20 minutes of excavation.		Groundwater: Groundwater seeping in at base during excavation Groundwater at 1.5 metres after 20 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS	

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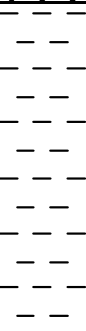
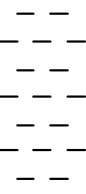

Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP142
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 30/04/2014	Sheet 42 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
			0.2	Dark brown, fine to coarse SAND with rootlets (similar to topsoil)		
0.7	B			Brown, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to sub-angular, mudstone. Assumed as loose to medium dense ¹ .		
			1m			
			1.5			
				Trial pit terminated ²		
			2m			
			3m			
			4m			

Remarks: Trial pit left open for 20 minutes. Strata descriptions based upon Coopers logging of retrieved samples. ¹ Based upon trenchside stability characteristics ² Trial pit terminated onto very dense stratum excavated as angular gravel, cobbles and boulders of very weak mudstone.
--

Stability: Stable during excavation. No collapse within 20 minutes of excavation		Groundwater: No groundwater observed during excavation or after 20 minutes	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS

Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP143
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 30/04/2014	
			Sheet 43 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.2	B	(96)	0.3	Dark brown, fine to coarse SAND (similar to topsoil)		
0.5	SV			Firm to stiff, brown/grey/orange, silty, gravelly CLAY. Gravel is fine to coarse, angular to sub-angular mudstone.		
0.9	B			Below 1.0m: firm		
1.0	SV		1m			
		(50)	1.5			
1.8	B		1.8	Brown/grey/orange, silty, sandy clay bound GRAVEL. Gravel is fine to coarse, angular to sub-angular mudstone. Clay is firm between gravel.		
				Trial pit terminated		
			2m			1.6 (TWL) 1.8 (S/S)
			3m			
			4m			








Remarks:

Trial pit left open for 35 minutes.
Strata descriptions based upon Coopers logging of retrieved samples.

Stability:		Groundwater:		
Stable during excavation. No collapse within 35 minutes of excavation		Groundwater at 1.6m when backfilled Groundwater seeping in at base during excavation		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS	

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP144
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 30/04/2014	Sheet 44 of 69









Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.5	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
			0.5	Brown, very gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to sub-angular mudstone. Assumed as loose to medium dense ¹ .		
				Firm to stiff, brown/grey/orange, silty gravelly CLAY. Gravel is fine to coarse, angular to subangular mudstone.		
1.2	B		1m			
			1.05			
			1.25	Firm, brown/grey/orange, silty, very gravelly CLAY. Gravel is fine to coarse mudstone.		
				Trial pit terminated.		
			2m			
			3m			
			4m			

Remarks: Trial pit left open for 25 minutes. Strata descriptions based upon Coopers logging of retrieved samples. ¹ Based upon trenchside stability characteristics
--

Stability: Stable during excavation. No collapse within 25 minutes of excavation		Groundwater: No groundwater observed during excavation or after 25 minutes	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS

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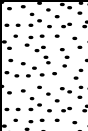
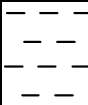
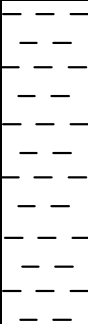
Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP145
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 30/04/2014	Sheet 45 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
0.5	SV	(70)		Firm brown/grey/orange, silty, slightly gravelly CLAY with rootlets. Gravel is fine to coarse, angular to sub-angular, mudstone.		
0.9	B					
1.0	SV	(64)	1m			
1.25	B		1.15	Dark blue/grey/orange, silty GRAVEL bound by a very soft, very silty, gravelly clay. Assume as medium dense ¹ . (assumed to be completely weathered bedrock)		
			2m			
			3m	3.0		
			4m	Trial pit terminated due to collapse		

Remarks: ¹ Based upon trenchside stability characteristics. Strata descriptions based upon Coopers logging of retrieved samples. Trial pit left open for 15 minutes.

Stability: Both sides collapsed whilst digging below 1.15m. No further collapse within 15 minutes of excavation.	Groundwater: No groundwater observed during excavation or after 15 minutes
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO Processed By: SC Approved by: PRS

Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP146 Sheet 46 of 69
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 30/04/2014	





















Samples and Tests				Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m ²					
			0				
			0.2		Dark brown, fine to coarse SAND (similar to topsoil)		
			0.7		Brown/grey, silty, clayey, fine to coarse SAND with rootlets. Assumed as loose to medium dense ¹ .		
0.6	B	(16)	1m		Very soft, grey/orange, very silty CLAY.		
0.8	SV		1.1		Firm to stiff dark blue/grey/orange, very silty CLAY (completely weathered mudstone.)		
0.9	B		2m		Trial pit terminated		
1.2	B	(80)	2.3				
1.4	SV		3m				
2.0	SV	(92)	4m				

Trial pit left open for 19 minutes.
Strata descriptions based upon Coopers logging of retrieved samples.
¹Based upon trenchside stability characteristics

Stability:		Groundwater:		
Stable during excavation. No collapse within 19 minutes of excavation		No groundwater observed during excavation or after 19 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002. BS EN ISO 14688-2:2004	Logged By: MO	Processed By:	Approved by:	
		SC	PRS	



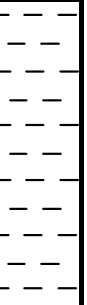
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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP147
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 30/04/2014	Sheet 47 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
			0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
0.4	SV	(38)		Soft, brown/grey/orange, silty, very sandy, slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-angular mudstone.		
						
0.9	B					
0.9	SV	(42)	1m			
			1.2			
1.5	B		1.6	Very weak, dark blue/grey, clayey, thinly laminated, highly fractured, highly weathered MUDSTONE. Excavated as gravel, cobbles and boulders. Assumed as very dense ¹ .		
				Trial pit terminated on mudstone bedrock		
						
			2m			
						
						
						
						
			3m			
						
						
						
			4m			

Remarks: ¹ Based upon excavator ripability characteristics Strata descriptions based upon Coopers logging of retrieved samples. Trial pit left open for 40 minutes

Stability: Clay collapsed just before backfilling		Groundwater: No groundwater observed during excavation or within 40 minutes	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS







Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.2	B		0.3	Dark brown, fine to coarse SAND (similar to topsoil)		
0.6	B			Firm to stiff, brown, very gravelly, fine to coarse sandy CLAY. Gravel is fine to coarse, angular to sub-rounded, mudstone.		
1.4	B		1.7	Trial pit terminated ¹		1.5 (TWL) 1.7 (s/s)
			2m			
			3m			
			4m			

Trial pit left open for 20 minutes.
Strata descriptions based upon Coopers logging of retrieved samples.
¹Trial pit terminated onto very dense strata. Excavated as angular gravel, cobbles and laths mudstone.

Stability:		Groundwater:		
Stable during excavation. No collapse within 20 minutes of excavation		Groundwater seeping at base Groundwater at 1.5 metres after 20 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002 BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS	

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP149
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 30/04/2014	Sheet 49 of 69



Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
				Firm, brown/grey/orange, gravelly, fine to coarse, sandy CLAY. Gravel is fine to coarse, angular to sub-angular mudstone.		
			1m			
			1.2			
1.3	SV	(76)	1.5	Firm to stiff, brown/grey/orange, silty, fine to coarse, sandy, gravelly CLAY. Gravel is fine to coarse, angular to sub-angular, mudstone.		1.4
				Trial pit terminated		(TWL)
			2m			
			3m			
			4m			

Remarks: Trial pit left open for 17 minutes. Strata descriptions based upon Coopers logging of retrieved samples.
--

Stability: Stable during excavation. No collapse within 17 minutes of excavation.		Groundwater: Groundwater seeping in at base during excavation Groundwater at 1.4 metres after 17 minutes	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP150
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 30/04/2014	Sheet 50 of 69































Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
			0.3	Dark brown, fine to coarse SAND with abundant rootlets (similar to topsoil)		
0.6	SV	(70)		Firm, grey/orange, silty, fine to coarse, sandy, gravelly CLAY with rootlets. Gravel is fine to coarse, angular to sub-angular mudstone.	---	
0.9	B				---	
1.1	SV	(65)	1m		---	

1.7	SV	(50)			---	
			2m	2.0	---	2.0
2.1	B			2.2	---	(TWL)
				Very weak, dark blue/grey, slightly silty, thinly laminated, highly fractured highly weathered MUDSTONE. Excavated as a firm clay bound gravel.	---	2.2
				Trial pit terminated		(s/s)
			3m			
			4m			

Remarks: Trial pit left open for 20 minutes. Strata descriptions based upon Coopers logging of retrieved samples.
--

Stability: Stable during excavation. No collapse within 20 minutes of excavation		Groundwater: Groundwater seeping in at base during excavation. Groundwater at 2.0m when backfilled	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS

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Project : TROUGH LAITHE FARM, BARROWFORD					Project No: 5883	
Method: 140 LCV Tracked Excavator					Weather: Dry, Overcast	
Trial Pit Ref.: TP151					Date: 30/04/2014	
Sheet 51 of 69						

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
			0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
				Firm, brown/grey/orange, silty, fine to coarse, sandy, gravelly CLAY. Gravel is fine to coarse, angular to sub-angular mudstone.		
0.8	B					
0.9	SV	(62)				
			1m			
						
			1.2			
				Dark blue/grey, clayey, completely weathered MUDSTONE recovered as a gravelly clay with occasional cobbles		
1.6	B					
			2m			
						
			2.5			2.4 (TWL)
				Trial pit terminated onto mudstone bedrock		2.5 (s/s)
			3m			
						
			4m			
						
						
						
						
						
						
						
						
						
						
						
						
						


















Remarks:
 Trial pit left open for 35 minutes.
 Strata descriptions based upon Coopers logging of retrieved samples.

Stability: Stable during excavation. No collapse within 35 minutes of excavation		Groundwater: Groundwater seeping in at base during excavation Groundwater at 2.4m when backfilled	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS

Stability:		Groundwater:		
Stable during excavation. No collapse within 30 minutes of excavation		No groundwater observed during excavation or after 30 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002. BS EN ISO 14688-2:2004	Logged By: MO	Processed By:	Approved by:	
		SC	PRS	



Sheet 53 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m ²				
			0			
0.2	SV	(30)	0.5	Very dark brown/black PEAT with rootlets (H3)		
0.4	B					
						
0.9	SV	(20)	1m	Very soft, dark grey/orange, silty CLAY with rootlets.		
1.2	B					
						
						
1.8	B		1.7	Very dark grey, very silty SAND. Assumed as very loose ¹ .		1.8 (TWL)
2.0	B		1.9			
2.3	SV	(24)	2m	Very soft, dark grey SILT.		
						
						
						
			3m	3.0		
						
						
						
			4m	Trial pit terminated due to collapse		

Trial pit left open for 25 minutes.
Strata descriptions based upon Coopers logging of retrieved samples.
¹Based upon trenchside stability characteristics

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP154
Method: 140 LCV Tracked Excavator		Weather: Dry, Overcast	Date: 30/04/2014
Sheet 54 of 69			










Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B			Dark brown, fine to coarse SAND (similar to topsoil)		
			0.2	Brown, silty, fine to coarse SAND. Assumed as very loose ¹ .		
0.7	B					
			0.9			
			1m	Very soft, dark blue/grey/orange, SILT with brown, silty, fine sand pockets.		
1.5	SV	(20)				
1.5	B					
			2m			
2.4	SV	(24)				
2.4	B					
			3m			
			3.0			
				Trial pit terminated		3.0 (s/s)
			4m			

Remarks:
 Trial pit left open for 30 minutes.
 Strata descriptions based upon Coopers logging of retrieved samples.
¹Based upon trenchside stability characteristics

Stability: Whole upslope section collapse during excavation Trial pit back filled immediately due to collapse		Groundwater: Groundwater seeping in at base during excavation Not visible when backfilled due to collapse.	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: <div style="text-align: center;">MO</div>	Processed By: <div style="text-align: center;">SC</div>	Approved by: <div style="text-align: center;">PRS</div>

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP155
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 01/05/2014	Sheet 55 of 69










Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
				Stiff brown/grey/orange, silty, gravelly CLAY. Gravel is fine to coarse, angular to sub-rounded, mudstone and cobbles.		
0.7	SV	(108)				
0.9	B		1m			
1.4	SV	(112)				
			1.9			
2.0	B		2m	Stiff dark brown/grey/orange, slightly silty, gravelly CLAY. Gravel includes fine to coarse mudstone.		
			2.2			
				Trial pit terminated		
			3m			
			4m			

Remarks: Trial pit left open for 20 minutes. Strata descriptions are based upon Coopers logging of retrieved samples.
--

Stability: Stable during excavation. No collapse within 20 minutes of excavation	Groundwater: No groundwater observed during excavation or after 20 minutes
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO Processed By: SC Approved by: PRS

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP156
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 01/05/2014	Sheet 56 of 69



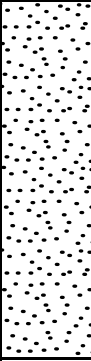
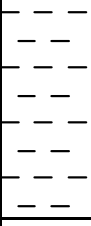

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
			0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
				Firm, brown/grey/orange, silty, gravelly, CLAY. Gravel is fine to coarse, angular to rounded, mudstone and natural stone.		
0.8	SV	(64)				
0.9	B					
			1m			
1.4	SV	(70)				
1.4	B					
			1.5			
				Trial pit terminated		
			2m			
			3m			
			4m			

Remarks: Trial pit left open for 25 minutes. Strata descriptions are based upon Coopers logging of retrieved samples.
--

Stability: Stable during excavation. No collapse within 25 minutes of	Groundwater: No groundwater observed during excavation or after 25 minutes
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO Processed By: SC Approved by: PRS

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP157
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 01/05/2014	Sheet 57 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
			0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
0.6	B			Orangish brown, silty, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to rounded, mudstone and natural stone. Assumed as loose to medium dense ¹ .		
			1m			
			1.5			
1.7	B			Firm to stiff, brown/grey/orange, silty, very gravelly CLAY. Gravel is fine to coarse, angular to rounded mudstone.		
1.9	SV	(90)	2m			
			2.3			
2.4	B		2.5	Very weak, brown/grey completely weathered MUDSTONE recovered as clay.		
				Trial pit terminated onto bedrock		
			3m			
			4m			

Remarks: Trial pit left open for 20 minutes. Strata descriptions are based upon Coopers logging of retrieved samples. ¹ Based upon trenchside stability characteristics.

Stability: Stable during excavation. No collapse within 20 minutes of excavation		Groundwater: No groundwater observed during excavation or after 20 minutes	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP158
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 01/05/2014	Sheet 58 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
			0.4	Dark brown, fine to coarse SAND (similar to topsoil)		
0.7	B			Yellowish brown, silty, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to rounded mudstone and natural stone. Assumed as loose to medium dense ¹ .		
			1m			
1.5	B					
			2m	Below 1.9m: very silty Below 2.0m: very gravelly with some clay inclusions		
2.3	B					
			2.6			
				Trial pit terminated		
			3m			
			4m			



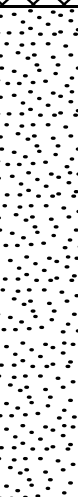
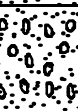
Remarks:
 Trial pit left open for 20 minutes.
 Strata descriptions are based upon Coopers logging of retrieved samples.
¹Based upon trenchside stability characteristics.

Stability: Stable during excavation. No collapse within 20 minutes of excavation		Groundwater: No groundwater observed during excavation or after 20 minutes	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: <div style="text-align: center;">MO</div>	Processed By: <div style="text-align: center;">SC</div>	Approved by: <div style="text-align: center;">PRS</div>



Trial Pit Ref.:
TP159

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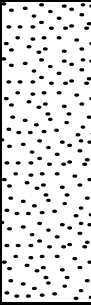
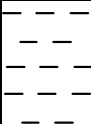
Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.9	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
				Brown, silty, gravelly, fine to coarse SAND with some clay inclusions. Assumed as medium dense ¹ .		
1.7	B		2.0			
2.4	B		2.4	Brown, silty, fine to coarse SAND and GRAVEL. Gravel comprises fine to coarse mudstone. Assumed as medium dense ¹ .		
				Trial pit terminated		
			3m			
			4m			

Trial pit left open for 25 minutes.
Strata descriptions are based upon Coopers logging of retrieved samples.
¹Based upon trenchside stability characteristics.

Stability:		Groundwater:		
Stable during excavation. No collapse within 25 minutes of excavation		No groundwater observed during excavation or after 25 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002. BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS	




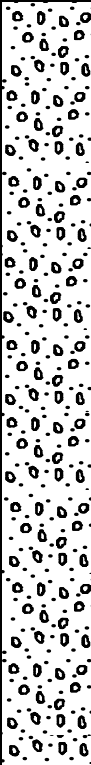
Park House, Sandpiper Court, Chester Business Park Chester, CH4 9QU (T) 01244 684910 (F) 01244 684911 (E) admin@coopers.co.uk (W) www.coopers.co.uk	TRIAL HOLE LOG	 coopers chartered consulting engineers
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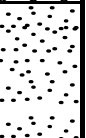












Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP160
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 01/05/2014	
Sheet 60 of 69			

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.1	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
0.6	B			Brown/grey/orange, very silty, slightly gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to sub-rounded mudstone and natural stone. Assumed as loose ¹ .		
1.5	B		1.3	Soft to firm, dark brown/grey, silty, fine to coarse sandy, gravelly CLAY. Gravel includes fine to coarse mudstone.		
			1.8	Trial pit terminated onto bedrock		
			2m			
			3m			
			4m			

Remarks: Trial pit left open for 15 minutes. Strata descriptions are based upon Coopers logging of retrieved samples. ¹ Based upon trenchside stability characteristics.

Stability: Whole upslope face collapsed in sand strata during excavation. No further collapse within 15 minutes of excavation		Groundwater: No groundwater observed during excavation or after 15 minutes	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS

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Project : TROUGH LAITHE FARM, BARROWFORD					Project No: 5883	
Method: 140 LCV Tracked Excavator					Weather: Dry, Overcast	
Trial Pit Ref.: TP161					Date: 01/05/2014	
Sheet 61 of 69						
Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
			0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
0.7	B			Brown, slightly silty, fine to coarse SAND and fine to coarse, angular to sub-angular, mudstone GRAVEL. Including some cobbles. Assumed as very loose ¹ .		
			1m			
			2m			
			3m	3.0		
				Trial pit terminated		
			4m			
Remarks: Trial pit backfilled immediately. Strata descriptions are based upon Coopers logging of retrieved samples. ¹ Based upon trenchside stability characteristics.						
Stability: Sides collapsing during excavation				Groundwater: No groundwater observed during excavation		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004				Logged By: MO	Processed By: SC	Approved by: PRS



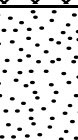



















Samples and Tests				Depth	Description of Strata	Legend	Water			
Depth (m)	Type	Hand Vane kN/m2								
			0							
0.5	B	(108)		0.2	Dark brown, fine to coarse SAND (similar to topsoil)					
					Brown, silty, fine to coarse SAND. Assumed as very loose ¹ .					
				0.7						
0.9	SV	(116)		1m	Stiff, brown/grey/orange, silty, friable, gravelly CLAY. Gravel is fine to coarse, angular to sub-angular mudstone.					
0.9	B									
1.7	SV									
										
										
										
										
2.7	B					2.6				
						2.8		Brown/grey silty, clayey fine to coarse SAND and GRAVEL. Assumed as loose to medium dense ¹ .		
			2.9			B				
3m								Brown, very silty, fine to coarse SAND and fine to coarse, sub-rounded to rounded natural stone GRAVEL. Assumed as loose to medium dense ¹ .		
						3.2				
								Trial pit terminated due to collapse		
4m										

Trial pit left open for 35 minutes.
Strata descriptions are based upon Coopers logging of retrieved samples.
¹Based upon trenchside stability characteristics.

Stability: Upslope face collapse below 2.5m during excavation No further collapse within 35 minutes of excavation		Groundwater: No groundwater observed during excavation or after 35 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002 BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS	





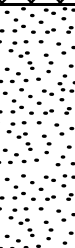
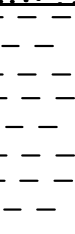
Sheet 63 of 69

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
0.6	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
			0.7	Brown, silty, slightly gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to sub-rounded, mudstone. Assumed as loose to medium dense ¹ .		
1.0	B		1m	Dark blue/grey/orange, clayey completely weathered MUDSTONE. recovered as gravelly clay.		1.2 (s/s)
						
2.0	B		2m			1.9 (TWL)
			2.1			
				Trial pit terminated		
						
			3m			
						
						
			4m			
						
						
						
						
						
						
						
						
						

Trial pit left open for 25 minutes.
Strata descriptions are based upon Coopers logging of retrieved samples.
¹Based upon trenchside stability characteristics.

Stability:		Groundwater:		
Stable during excavation. No further collapse within 25 minutes of excavation		Groundwater seeping in from upslope face at 1.2m Groundwater at 1.9 metres after 25 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002. BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS	

Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP164 Sheet 64 of 69
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 01/05/2014	





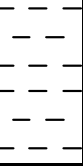
Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m ²				
			0			
0.6	B		0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
				Brown/grey/orange, silty, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to sub-angular mudstone. Assumed as loose to medium dense ¹ .		
			1.1			
1.3	B			Firm, dark brown/grey/orange, very silty, slightly gravelly CLAY. Gravel comprises of fine to coarse mudstone.		
2.0	B		2m	2.0		
				Trial pit terminated		

Trial pit left open for 20 minutes.
Strata descriptions are based upon Coopers logging of retrieved samples.
¹Based upon trenchside stability characteristics.

Stability:		Groundwater:		
Stable during excavation. Partial collapse of material below 1.1 metres when backfilled		No groundwater observed during excavation or after 20 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By:	Approved by:	
		SC	PRS	

[illegible]

Stability:		Groundwater:		
Stable during excavation. No collapse within 25 minutes of excavation		No groundwater observed during excavation or after 25 minutes		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By:	Approved by:	
		SC	PRS	



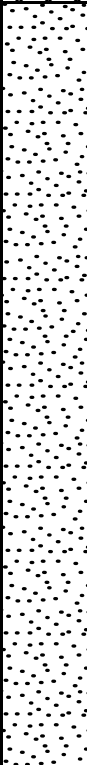
Samples and Tests			Depth	Description of Strata	Legend	Water			
Depth (m)	Type	Hand Vane kN/m2							
0.1	B	(68)	0	Dark brown, fine to coarse SAND (similar to topsoil)					
0.8	B		0.2	Firm, brown/grey/orange, silty, fine to coarse, sandy, slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-rounded mudstone.					
0.9	SV		1m						
			1.35						
1.5	B		2m		Brown/grey/orange, very silty, gravelly, fine to coarse SAND. Assumed as very loose ¹ .				
			2.8					Below 2.0m: very wet	
			3m						Trial pit terminated due to collapse
			4m						

Trial pit left open for 25 minutes.
Strata descriptions are based upon Coopers logging of retrieved samples.
¹Based upon trenchside stability characteristics.

Stability:		Groundwater:		
Whole face collapse below clay both sides during excavation. No further collapse within 25 minutes of excavation		Groundwater observed at 2.0m Groundwater not visible when backfilled due to collapse		
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By:	Approved by:	
		SC	PRS	

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Project : TROUGH LAITHE FARM, BARROWFORD	Project No: 5883	Trial Pit Ref.: TP167
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 01/05/2014
Sheet 67 of 69		



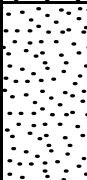
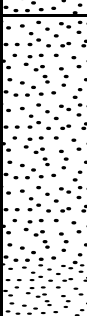

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
			0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
0.7	B			Brown/grey/orange, silty, fine to coarse SAND with some clay inclusions. Assumed as very loose ¹ .		
			1m			
1.6	B			Below 1.5m: very silty		
			2m			
			3m	3.0		
				Trial pit terminated		
			4m			

Remarks: Trial pit left open for 20 minutes. Strata descriptions are based upon Coopers logging of retrieved samples. ¹ Based upon trenchside stability characteristics.

Stability: Whole upslope face collapse after excavation. No further collapse within 20 minutes of excavation		Groundwater: No groundwater observed during excavation Groundwater not visible when backfilled due to collapse	
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO	Processed By: SC	Approved by: PRS

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Project : TROUGH LAITHE FARM, BARROWFORD		Project No: 5883	Trial Pit Ref.: TP168
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 01/05/2014	Sheet 68 of 69



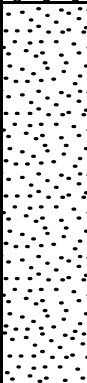

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
			0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
				Brown/grey/orange, silty, fine to coarse SAND with some clay inclusions. Assumed as loose ¹ .		
			0.9			
			1m	Dark blue/grey/orange, very silty, fine SAND with some rootlets. Assumed as very loose ¹ .		
1.2	B					
			2.0	Very soft, dark blue/grey/orange clayey SILT with rootlets.		
2.5	B					
			3.0	Trial pit terminated		
			4m			

Remarks: Trial pit left open for 25 minutes. Strata descriptions are based upon Coopers logging of retrieved samples. ¹ Based upon trenchside stability characteristics.

Stability: Stable during excavation. Partial collapse in SILT within 25 minutes of excavation	Groundwater: No groundwater observed during excavation or after 25 minutes
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO
Processed By: SC	Approved by: PRS

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Project : TROUGH LAITHE FARM, BARROWFORD	Project No: 5883	Trial Pit Ref.: TP169
Method: 140 LCV Tracked Excavator	Weather: Dry, Overcast	Date: 01/05/2014
Sheet 69 of 69		

Samples and Tests			Depth	Description of Strata	Legend	Water
Depth (m)	Type	Hand Vane kN/m2				
			0			
			0.2	Dark brown, fine to coarse SAND (similar to topsoil)		
				Brown/grey/orange, silty, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to sub-angular mudstone. Assumed as loose ¹ .		
			1.6	Very weak, dark blue/grey/orange, clayey, fine to coarse, sandy MUDSTONE recovered as gravel.		
2.6	B		3.0	Trial pit terminated		

Remarks: Trial pit left open for 25 minutes. Strata descriptions are based upon Coopers logging of retrieved samples. ¹ Based upon trenchside stability characteristics.

Stability: Partial collapse between 1.0m and base after excavation. No further collapse within 25 minutes of excavation	Groundwater: No groundwater observed during excavation or after 25 minutes
Processed in accordance with: BS 5930, BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004	Logged By: MO
Processed By: SC	Approved by: PRS