

BOREHOLE RECORD - Window Sampler

Project NORTHUMBERLAND DEVELOPMENT PHASE 2 Engineer BURO HAPPOLD Borehole Project No WS16 PC104225
Client TOTTENHAM HOTSPUR PROPERTY CO LIMITED National Grid Coordinates 533944.449E 191113.317N Ground Level 11.77 m OD

Sampling			Properties			Strata	Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %		Description	Depth	Legend	Level m OD
0.20- 0.50	B					Tarmacadam. [MADE GROUND]	G.L.		11.77
0.20- 0.25	E						0.10		11.67
0.50- 0.70	B					Black angular to subangular fine to coarse gravel of tarmac fragments. [MADE GROUND]	0.20		11.57
0.70	E						0.50		11.27
1.30- 1.40	E					Dark brown slightly clayey sandy gravel with a medium cobble content of subangular brick. Gravel is angular to subangular fine to coarse brick, concrete, quartzite and occasional tarmac fragments. [MADE GROUND]	1.45		10.32
1.50- 1.60	E						1.80		9.97
2.10- 2.30	E					Soft dark brown occasionally grey mottled sandy gravelly clay with a medium cobble content of subangular brick. Gravel is angular to subangular fine to coarse flint, quartzite, brick, concrete and occasional carbonaceous material. [MADE GROUND] At 0.65m, corner of concrete slab. At 0.75m, brick layer.			
3.50	E					Firm greyish brown and orange mottled slightly gravelly CLAY with pockets up to coarse gravel size of dark grey staining. Gravel is subangular to subrounded fine to medium flint. Below 1.65m, sandy and gravelly.			
4.50	E					Brown slightly clayey sandy GRAVEL. Gravel is angular to subrounded fine to coarse flint and quartzite. Between 2.08-2.40m, dark grey oily residue with a moderate hydrocarbon odour. Below 2.50m, moderate hydrocarbon odour.			
						Stiff thinly laminated grey CLAY with no odour.	4.70		7.07
						End of Borehole	5.00		6.77

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20		Inspection Pit	TH/DW	G.L.			10/05/10	08:00	2.50					Damp
2.50	0.08	Window Sampler	AM/TB	1.20		Dry	10/05/10	18:00						
5.00	0.20	Hollow Stem Auger	AM/TB	1.20		Dry	18/05/10	08:00						
				2.50		Dry	18/05/10	18:00						
				2.50		Damp	19/05/10	08:00						
				5.00		Damp	19/05/10	18:00						

Remarks Break out surface (0.50hr)
AGS Inspection pit hand excavated to 1.20m depth.
E sample = 1 x 1000ml plastic jar, 2 x 500ml amber jars and 1 x 60ml vial
A 50mm standpipe was installed to 5.00m with a slotted section from 1.00m to 5.00m with flush lockable protective cover. Detail as follows from base of hole: fine gravel filter up to 1.00m, bentonite seal up to 0.20m, concrete up to 0.10m, tarmacadam up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with Amendment 1 published December 2007 to BS5930:1999

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BOREHOLE RECORD - Window Sampler

Project NORTHUMBERLAND DEVELOPMENT PHASE 2 Engineer BURO HAPPOLD Borehole Project No WS17A PC104225
 Client TOTTENHAM HOTSPUR PROPERTY CO LIMITED National Grid Coordinates 533969.310E 191198.907N Ground Level 11.91 m OD

Sampling			Properties			Strata	Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %		Description	Depth	Legend	Level m OD
0.10- 0.40 0.20	B E					Tarmacadam. [MADE GROUND] Brown sandy gravel with a low to medium cobble content of subangular brick. Gravel is angular to subrounded fine to coarse brick, concrete, quartzite and tarmac fragments. [MADE GROUND] At 0.50m, concrete slab. End of Borehole	G.I. 0.10 0.50		11.91 11.81 11.41

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
0.50		Inspection Pit	TH/DW	G.I. 0.50		Dry	10/05/10 10/05/10	08:00 18:00						None encountered during sampling.

Remarks Break out surface (0.50hr)
 AGS Inspection pit hand excavated to 0.50m.
 Window Sample borehole terminated at 0.50m due to concrete slab and moved to WS17B.
 E sample = 1 x 1000ml plastic jar, 2 x 500ml amber jars and 1 x 60ml vial

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BOREHOLE RECORD - Window Sampler

Project NORTHUMBERLAND DEVELOPMENT PHASE 2 Engineer BURO HAPPOLD Borehole Project No WS18 PC104225
 Client TOTTENHAM HOTSPUR PROPERTY CO LIMITED National Grid Coordinates 533955.985E 191331.780N Ground Level 12.02 m OD

Sampling			Properties		Strata		Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	Level m OD	
0.20- 1.00	B				Tarmacadam. [MADE GROUND]	G.I. 0.05		12.02	11.97
					Brown clayey sandy gravel with a low cobble content of subangular brick and tarmac fragments. Gravel is angular to subrounded fine to coarse brick, concrete, tarmac fragments, ash, clinker and quartzite. [MADE GROUND]	1.00		11.02	
					Soft greyish brown occasionally reddish brown mottled gravelly clay. Gravel is angular to subrounded fine to coarse flint, ash and quartzite. [PROBABLE MADE GROUND]	1.85		10.17	
					Greyish brown slightly clayey gravelly SAND. Gravel is subangular to rounded fine to coarse flint and quartzite.	2.30		9.72	
					Dark orangish brown sandy GRAVEL. Gravel is angular to rounded fine to coarse quartzite and flint.				
					Brown gravelly SAND. Gravel is subangular to rounded fine to coarse flint and quartzite.	4.80		7.22	
					Stiff thinly laminated grey CLAY.	5.80 6.00		6.22 6.02	
					End of Borehole				

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20 3.00 6.00	0.08 0.20	Inspection Pit Window Sampler Hollow Stem Auger	AM/TB AM/TB AM/TB	G.I. 6.00		Damp	11/05/10 11/05/10	08:00 18:00	2.50					Damp

Remarks Break out surface (0.50hr)
 Inspection pit hand excavated to 1.20m depth.
 Environmental sampling carried out by Buro Happold.
 A 50mm standpipe was installed to 6.00m with a slotted section from 1.00m to 6.00m with flush lockable protective cover. Detail as follows from base of hole: fine gravel filter up to 1.00m, bentonite seal up to 0.20m, concrete up to ground level.

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Sampling			Properties			Strata	Scale 1:50							
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %		Description	Depth	Legend	Level m OD					
0.05- 0.25 0.10	B E					Tarmacadam. [MADE GROUND]	G.L. 0.05 0.25 0.35		12.55 12.50 12.30 12.20					
0.50- 1.00 0.50	B E					Light greyish brown sandy gravel with a medium cobble content of subangular brick and concrete. Gravel is subangular to rounded fine to coarse concrete, brick and occasional quartzite. [MADE GROUND]								
1.20- 1.40	E					Concrete. [MADE GROUND]								
1.60- 1.75	E					Dark brown clayey gravelly sand with a medium cobble content of angular brick and occasional cobble sized pockets of orangish brown clay and up to coarse gravel sized pockets of ash. Gravel is subangular to subrounded fine to coarse brick, concrete and occasional quartzite. [MADE GROUND]	1.60		10.95					
2.20- 2.35	E					Soft orangish brown and grey mottled CLAY. Below 2.00m, firm. Below 2.15m, gravelly. Gravel is angular to subrounded fine to coarse flint and quartzite.	2.55		10.00					
3.50	E					Brown slightly clayey sandy GRAVEL. Gravel is angular to rounded fine to coarse flint and quartzite.								
						Stiff thinly laminated grey CLAY.	6.30 6.50		6.25 6.05					
						End of Borehole								
Boring			Progress			Groundwater								
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20		Inspection Pit	TH/DW	G.L.			11/05/10	08:00	3.50					Damp
2.70	0.08	Window Sampler	AM/TB	1.20		Dry	11/05/10	18:00						
6.50	0.20	Hollow Stem Auger	AM/TB	1.20		Dry	12/05/10	08:00						
				6.00		Damp	12/05/10	18:00						
Remarks														
AGS Break out surface (0.50hr) Inspection pit hand excavated to 1.20m depth. E sample = 1 x 1000ml plastic jar, 2 x 500ml amber jars and 1 x 60ml vial A 50mm standpipe was installed to 6.50m with a slotted section from 2.50m to 6.50m with flush lockable protective cover. Detail as follows from base of hole: fine gravel filter up to 2.50m, bentonite seal up to 0.20m, concrete up to ground level.														
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Project NORTHUMBERLAND DEVELOPMENT PHASE 2 Engineer BURO HAPPOLD Borehole Project No WS21 PC104225
 Client TOTTENHAM HOTSPUR PROPERTY CO LIMITED National Grid Coordinates 534078.798E 191285.223N Ground Level 12.14 m OD

Sampling			Properties		Strata	Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	Level m OD
0.30	E				Tarmacadam. [MADE GROUND]	G.I. 0.05 0.25		12.14 12.09 11.89
0.80	E				Concrete. [MADE GROUND]			
					Firm brown sandy gravelly clay with a low cobble content of subangular brick and concrete. Gravel is subangular to rounded fine to coarse brick, concrete, quartzite, occasional clinker, glass and flint. [MADE GROUND]	1.20		10.94
					Firm to stiff brown and grey mottled slightly sandy gravelly CLAY with occasional pockets up to coarse gravel size of ash. Gravel is angular to subangular fine to coarse flint and quartzite. Between 2.10-2.25m, sandy.			
					Orangish brown clayey sandy GRAVEL. Gravel is angular to rounded fine to coarse flint and quartzite.	2.60		9.54
					At 3.50m, slight hydrocarbon odour.			
					Stiff brownish grey CLAY.	5.90 6.00		6.24 6.14
					End of Borehole			

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20 3.00 6.00	0.08 0.20	Inspection Pit Window Sampler Hollow Stem Auger	TH/DW AM/TB AM/TB	G.I. 6.00		Damp	11/05/10 11/05/10	08:00 18:00	3.00					Damp

Remarks Break out surface (0.50hr)
 Inspection pit hand excavated to 1.20m depth.
 Below 1.20m borehole sampled by Buro Happold.
 E sample = 1 x 1000ml plastic jar, 2 x 500ml amber jars and 1 x 60ml vial
 A 50mm standpipe was installed to 6.00m with a slotted section from 1.00m to 6.00m with flush lockable protective cover. Detail as follows from base of hole: fine gravel filter up to 1.00m, bentonite seal up to 0.20m, concrete up to 0.10m, tarmacadam up to ground level.

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Project NORTHUMBERLAND DEVELOPMENT PHASE 2 Engineer BURO HAPPOLD Borehole Project No WS26 PC104225
 Client TOTTENHAM HOTSPUR PROPERTY CO LIMITED National Grid Coordinates 533982.214E 191115.555N Ground Level 11.98 m OD

Sampling			Properties			Strata	Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %		Description	Depth	Legend	Level m OD
0.30- 0.60 0.40	B					Tarmacadam. [MADE GROUND]	G.L.		11.98
	E					0.10	11.88		
0.70- 1.00 0.80	B					Black slightly sandy fine to coarse gravel of tarmac fragments, clinker occasional quartzite, brick and concrete. [MADE GROUND]	0.15		11.83
	E					0.20	11.78		
1.10- 1.20	E					Tarmacadam. [MADE GROUND]	0.25		11.73
						0.30	11.68		
1.30- 1.50	E					Concrete. [MADE GROUND]	0.60		11.38
						0.63	11.35		
1.60- 1.80	E					Light grey sandy gravel of quartzite, flint and concrete. [MADE GROUND]	1.10		10.88
						1.30	10.68		
2.10- 2.30	E					Brown slightly clayey sandy gravel. Gravel is angular to subrounded fine to coarse brick, concrete, quartzite and tarmac fragments. [MADE GROUND] At 0.50m, drainage pipe.	1.50		10.48
						Light orangish brown gravelly sand. Gravel is subangular to rounded fine to medium flint and quartzite. [MADE GROUND]	2.40		9.58
						Soft dark greyish brown slightly sandy gravelly clay with a low cobble content of subrounded brick and concrete. Gravel is subangular to rounded fine to coarse brick, concrete, quartzite and rare timber fragments. [MADE GROUND]	3.40		8.58
						Firm brown slightly sandy gravelly clay. Gravel is angular to subrounded fine to coarse concrete, brick, quartzite, occasional clinker and flint. [MADE GROUND]	4.70		7.28
						Dark greyish brown gravelly sand. Gravel is angular to subrounded fine to coarse concrete, brick, quartzite, occasional clinker and flint. [MADE GROUND]	5.00		6.98
						Soft orangish brown and grey mottled slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse quartzite and occasional flint. Below 1.60m, firm. Below 1.90m, pockets up to coarse gravel size of carbonaceous material. Below 2.00m, slightly sandy. Below 2.30m, gravelly.			
						Orangish brown sandy GRAVEL. Gravel is angular to rounded fine to coarse flint and quartzite.			
						Grey sandy very clayey GRAVEL. Gravel is angular to subrounded fine to coarse flint and quartzite. Below 4.00m, tending to a slightly sandy gravelly clay.			
						Stiff to very stiff thinly laminated grey CLAY.			
						End of Borehole			

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20	0.08 0.20	Inspection Pit	TH/DW	G.L.			10/05/10	08:00	2.50					Damp
3.00		Window Sampler	AM/TB	1.20		Dry	10/05/10	18:00						
5.00		Hollow Stem Auger	AM/TB	1.20		Dry	18/05/10	08:00						
				5.00		Damp	18/05/10	18:00						

Remarks Break out surface (0.50hr)
 Inspection pit hand excavated to 1.20m depth.
 E sample = 1 x 1000ml plastic jar, 2 x 500ml amber jars and 1 x 60ml vial
 A 50mm standpipe was installed to 5.00m with a slotted section from 1.00m to 5.00m with flush lockable protective cover. Detail as follows from base of hole: fine gravel filter up to 1.00m, bentonite seal up to 0.20m, concrete up to 0.10m, tarmacadam up to ground level.

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Project NORTHUMBERLAND DEVELOPMENT PHASE 2 Engineer BURO HAPPOLD

Borehole Project No WS27 PC104225

Client TOTTENHAM HOTSPUR PROPERTY CO LIMITED

Sampling			Properties		Strata	Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	
0.50	D				Light grey concrete. [MADE GROUND]	G.L.		
0.50	E				Dark brown concrete. [MADE GROUND]	0.20		
1.00	D				Brown gravelly sand with a medium cobble content of subangular brick and concrete. Gravel is angular to rounded fine to coarse brick, concrete, quartzite with rare metal fragments, ceramic and wood. [MADE GROUND]	0.34		
1.00	E					1.10		
1.60- 1.70	E				Soft to firm brown sandy gravelly clay. Gravel is angular to subangular fine to coarse brick, concrete and occasional quartzite. [MADE GROUND]	1.70		
1.80- 1.90	E					2.10		
2.10- 2.20	E				Below 1.40m, slightly gravelly and occasionally orangish brown and grey mottled.			
					Firm orangish brown and grey mottled slightly sandy slightly gravelly clay. Gravel is subangular to rounded fine to coarse flint and quartzite. [PROBABLE MADE GROUND]			
					From 2.00m, sandy and gravelly.			
					Brown sandy GRAVEL. Gravel is angular to rounded fine to coarse flint and quartzite. Below 2.30m, light brown.			
					Stiff thinly laminated grey CLAY.	4.00		
					End of Borehole	4.50		

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20	0.08 0.20	Inspection Pit	IB/KW	G.I.			13/05/10	08:00	2.30					Damp
3.00		Windowless Sampler	AM/TB	1.20		Dry	13/05/10	18:00						
4.50		Hollow Stem Auger	AM/TB	1.20		Dry	14/05/10	08:00						
				4.50		Damp	14/05/10	18:00						

Remarks Break out surface (0.50hr)
 Inspection pit hand excavated to 1.20m depth.
 E sample = 1 x 1000ml plastic jar, 2 x 500ml amber jars and 1 x 60ml vial
 A 50mm standpipe was installed to 4.50m with a slotted section from 1.00m to 4.50m with flush lockable protective cover. Detail as follows from base of hole: fine gravel filter up to 1.00m, bentonite seal up to 0.20m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

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Project NORTHUMBERLAND DEVELOPMENT PHASE 2 Engineer BURO HAPPOLD

Borehole Project No WS28 PC104225

Client TOTTENHAM HOTSPUR PROPERTY CO LIMITED

Sampling			Properties		Strata	Scale 1:50	
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend
0.30 0.30	D E				Light grey concrete. [MADE GROUND] At 0.17m, blue plastic membrane.	G.L. 0.18 0.26 0.50	
1.00 1.00	D E				Brown concrete. [MADE GROUND]		
1.40- 1.50	E				Brown sandy gravel with a low cobble content of subangular brick and concrete. Gravel is angular to subrounded fine to coarse brick, concrete, quartzite, flint with rare timber fragments. [MADE GROUND]	1.30	
1.90- 2.10	E				Below 0.30m, slight hydrocarbon odour. Between 0.40-0.50m, layer of dark brown/black ash.	1.80 2.10	
					Firm brown slightly gravelly sandy clay with no odour. Gravel is subangular to rounded fine to coarse flint, quartzite, brick and occasional concrete. [MADE GROUND]		
					Firm to stiff dark brown occasionally reddish brown mottled slightly sandy slightly gravelly clay with frequent reddish brown root traces. Gravel is angular to subrounded fine to coarse flint quartzite, rare brick and carbonaceous gravel. [MADE GROUND]		
					Firm greenish grey slightly organic slightly gravelly CLAY with occasional rootlets and pockets up to coarse gravel size of carbonaceous material. Gravel is angular to rounded fine to medium flint and quartzite.		
					Orangish brown sandy GRAVEL. Gravel is angular to subrounded fine to coarse quartzite and flint.		
					Stiff thinly laminated grey CLAY.	4.80 5.00	
					End of Borehole		

Boring				Progress				Groundwater						
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20 3.00 5.00	0.08 0.20	Inspection Pit Window Sampler Hollow Stem Auger	IB/KW AM/TB AM/TB	G.I. 1.20 1.20 5.00		Dry Dry Damp	13/05/10 13/05/10 14/05/10 14/05/10	08:00 18:00 08:00 18:00	2.60					Damp

Remarks Break out surface (0.50hr)
 Inspection pit hand excavated to 1.20m depth.
 E sample = 1 x 1000ml plastic jar, 2 x 500ml amber jars and 1 x 60ml vial
 A 50mm standpipe was installed to 5.00m with a slotted section from 1.00m to 5.00m with flush lockable protective cover. Detail as follows from base of hole: fine gravel filter up to 1.00m, bentonite seal up to 0.20m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

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Project		NORTHUMBERLAND DEVELOPMENT PHASE 2		Engineer		BURO HAPPOLD		Borehole		WS29	
Client		TOTTENHAM HOTSPUR PROPERTY CO LIMITED		National Grid		533980.207E		Project No		PC104225	
				Coordinates		191191.541N		Ground Level		13.37 m OD	

Sampling			Properties		Strata		Scale 1:50	
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	Level m OD
0.20	E				Tarmacadam. [MADE GROUND] Dark reddish brown gravelly sand with a medium cobble content of subangular brick. Gravel is subangular to subrounded fine to coarse brick, concrete, quartzite and mixed igneous lithologies. [MADE GROUND] At 0.90m, concrete slab. End of Borehole	G.I. 0.10 0.40		13.37 13.27 12.97

Boring				Progress				Groundwater						
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
0.40		Inspection Pit	AM/TB	G.I. 0.40		Dry	18/05/10 18/05/10	08:00 18:00						None encountered during sampling.

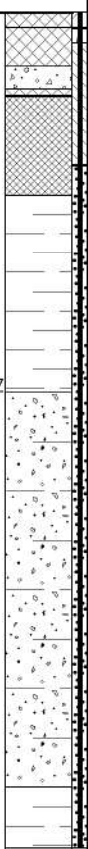
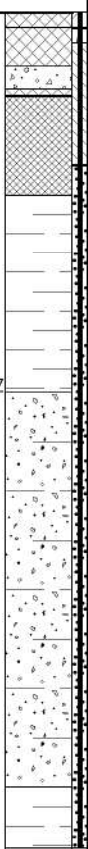
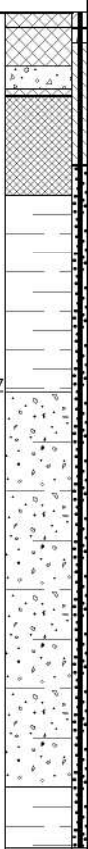
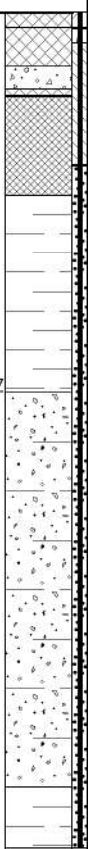
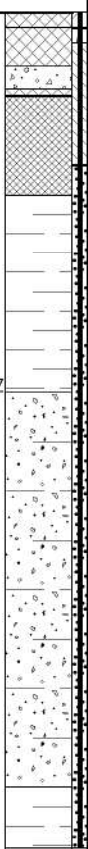
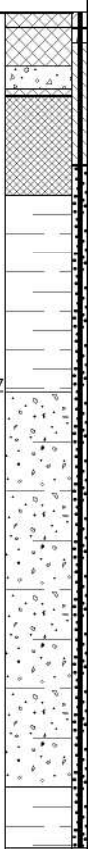
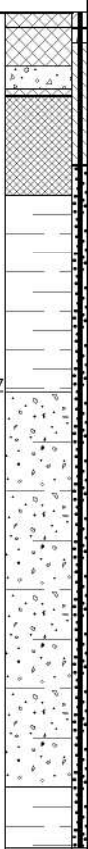
Remarks  Break out surface (0.50hr) Inspection pit hand excavated to 0.40m depth. Window Sample borehole terminated at 0.40m due to concrete slab and moved to WS29A. E sample = 1 x 1000ml plastic jar, 2 x 500ml amber jars and 1 x 60ml vial														Logged by Checked by Figure		DF CPL 1 of 1 15/07/2010	
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All dimensions are in metres. Logged in accordance with Amendment 1 published December 2007 to BS5930:1999

BOREHOLE RECORD - Window Sampler

Project NORTHUMBERLAND DEVELOPMENT PHASE 2 Engineer BURO HAPPOLD Borehole Project No WS29A PC104225
 Client TOTTENHAM HOTSPUR PROPERTY CO LIMITED National Grid Coordinates 533977.649E 191191.976N Ground Level 11.75 m OD

Sampling			Properties			Strata	Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %		Description	Depth	Legend	Level m OD
0.70	E					Tarmacadam. [MADE GROUND]	G.L. 0.10		11.75 11.65
						Dark reddish brown gravelly sand with a medium cobble content of subangular brick. Gravel is subangular to subrounded fine to coarse brick, quartzite and mixed igneous lithologies. [MADE GROUND]	0.35 0.50 0.55		11.40 11.25 11.20
1.41- 0.50	E					Concrete with 5mm rebar. [MADE GROUND] At 0.49m, plastic membrane.	1.20		10.55
						Yellowish brown slightly clayey gravelly sand. Gravel is angular to subrounded fine to coarse brick, quartzite, clinker and occasional metal fragments. [MADE GROUND]			
						Soft to firm dark brown sandy gravelly clay with a low cobble content of brick. Gravel is angular to rounded fine to coarse brick, concrete, quartzite and occasional clinker. [MADE GROUND]	2.50		9.25
						Firm orangish brown and grey mottled CLAY with pockets up to medium gravel size of carbonaceous material. Below 1.60m, stiff. Below 1.75m, slightly gravelly. Gravel is angular to subangular fine to medium flint. Below 1.85m, slightly sandy. Below 2.00m, gravelly.			
						Brown sandy very clayey GRAVEL. Gravel is subangular to rounded fine to coarse flint and quartzite. Below 3.00m, clayey. Below 3.50m, slightly clayey.			
						Stiff thinly laminated grey CLAY.	5.10		6.65
						End of Borehole	5.50		6.25

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20	0.08	Inspection Pit	AM/TB	G.I.			18/05/10	08:00	2.50					Damp
2.50	0.08	Window Sampler	AM/TB	5.50			18/05/10	18:00						
5.50	0.20	Hollow Stem Auger	AM/TB											

Remarks Break out surface (0.50hr)
 AGS sample = 1 x 1000ml plastic jar, 2 x 500ml amber jars and 1 x 60ml vial
 Inspection pit hand excavated to 1.20m depth.
 A 50mm standpipe was installed to 5.50m with a slotted section from 1.00m to 5.50m with flush lockable protective cover. Detail as follows from base of hole: fine gravel filter up to 1.00m, bentonite seal up to 0.20m, concrete up to 0.10m, tarmacadam up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with Amendment 1 published December 2007 to BS5930:1999

Logged by
 Checked by
 Figure

DF
 CPL
 1 of 1
 15/07/2010

geotechnics

Appendix B Chemical Results

Table 1 – Results from the producer site, results highlighted in red identifying unsuitable materials

Table 2 – Baseline data from the receiver site

TABLE 1
Predictor of the monetary demands of clients
This is real five-year plan / number of clients of residential care

Project Information										Geographic Data										Environmental Data										Economic Data										Social Data										Health Data										Education Data										Culture Data										Religion Data										Language Data										Demographics Data										Migration Data										Urbanization Data										Infrastructure Data										Transportation Data										Energy Data										Water Data										Waste Data										Pollution Data										Climate Data										Disaster Data										Security Data										Law Data										Justice Data										Government Data										Military Data										Space Data										Technology Data										Science Data										Medicine Data										Agriculture Data										Industry Data										Construction Data										Manufacturing Data										Retail Data										Food Data										Beverage Data										Tobacco Data										Gambling Data										Housing Data										Transportation Data										Energy Data										Water 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Table 2. Lechate Results

Lab Sample ID	Client Sample ID	Depth to Top	Depth to Bottom	Sample Type	Sample Matrix Code	Units	Method	10/01640/2 WS20	10/01639/2 WS21	10/01655/1 WS19	10/01724/1 WS29a	10/01640/1 WS16	10/01640/3 WS28	UK DWS ¹	Freshwater EQS ²
pH (leachable)						pH	A-T-031w	9.6	-	-	-	8.6	8.5	-	-
Total Dissolved Solids (leachable)						mg/l	A-T-035	129	-	-	-	52	99	-	-
Arsenic (leachable)						µg/l	A-T-025	13	4.10	8.14	14.84	25	2	10	50
Boron (leachable)						µg/l	A-T-025	64	-	-	-	-	-	1000	-
Barium						µg/l		-	26.88	10.27	15.88	15	47	-	-
Cadmium (leachable)						µg/l	A-T-025	<1	<1	<1	<1	<1	<1	5	5
Copper (leachable)						µg/l	A-T-025	53	33.9	4.8	25.5	18	8	2000	1-28* (10)
Chromium (leachable)						µg/l	A-T-025	28	0.53	1.23	4.33	3	2	50	5-50* (50)
Lead (leachable)						µg/l	A-T-025	4	7.40	<1	18	62	3	25	4-20* (20)
Mercury (leachable)						µg/l	A-T-025	0.5	0.10	0.10	0.10	0.5	<0.1	1	1
Nickel (leachable)						µg/l	A-T-025	<1	4.61	0.88	2.53	1	<1	20	50-200* (200)
Selenium (leachable)						µg/l	A-T-025	2	<1	1.08	1.93	<1	<1	10	-
Zinc (leachable)						µg/l	A-T-025	3	15.73	13.27	16.12	13	15	-	8-125* (75)

1. UK Drinking Water Inspectorate: Water Supply (Water Quality) Regulations 2000.

2. Environment Agency: Internal Guidance on the Interpretation and Application of Regulation 15 of the Waste Management Licensing Regulations, 1995 (The Protection of Groundwater) with respect to Landfill 1999

3. Environmental Agency Non-Statutory (Operational) Environmental Quality Standards
(Value in brackets) - Based on hardness value for groundwater >244mg/l

Table 6. Waste Classification

Envirolab Ref.	10/01639/2	10/01655/1	10/01655/2	10/01639/3	10/01724/1	10/01639/1	Landfill Waste Acceptance Criteria Limits		
Location	WS21	WS19	WS26	WS27	WS29a	BH10/05	Inert Waste Landfill ¹	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill ²	Hazardous Waste Landfill ³
Depth (m)	0.80	1.20 -1.40	1.30 -1.50	0.50	MG	MG	0.7	0.7	0.7
Sample Ref.	MG	MG	MG	MG	MG	MG	6A	6A	6A
Sample Type	6A	7	6A	7	5a	6A	6A	6A	6A
Solid Waste Analysis									
pH (pH Units)	6.80	-	-	12.5	8.40	11.30	-	>6	-
Total Organic Carbon (%)	1.86	0.28	1.9	0.8	2.75	4.63	3	5	6
PAH Sum of 17 (mg/kg)	16.2	2.26	6.26	15.3	2.49	6.91	100	-	-
Mineral Oil (mg/kg)	<0.10	<0.10	231	<0.10	<0.10	48.3	500	-	-
Sum of 7 PCBs (mg/kg)	<0.01	<0.01	0.07	<0.01	<0.01	0.01	1	-	-
Sum of BTEX (mg/kg)	<0.01	<0.01	0.72	<0.01	<0.01	<0.01	6	-	-
Eluate Analysis							Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic	0.0410	0.0814	0.0462	0.0209	0.1484	0.1270	0.5	2	25
Barium	0.2688	0.1027	0.1302	0.2532	0.1588	0.2026	20	100	300
Cadmium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	1	5
Chromium	0.0053	0.0123	0.0829	0.1172	0.0433	0.1550	0.5	10	70
Copper	0.3392	0.0477	0.5396	0.0620	0.2548	0.1605	2	50	100
Mercury	<0.001	0.0006	0.0052	<0.001	<0.001	<0.001	0.01	0.2	2
Molybdenum	0.0697	0.0173	0.0663	0.0473	0.0950	0.0985	0.5	10	30
Nickel	0.0461	0.0088	0.0279	0.0072	0.0253	0.0283	0.4	10	40
Lead	0.0737	<0.01	<0.01	<0.01	0.1797	0.3513	0.5	10	50
Antimony	0.0428	0.0212	0.0856	0.0985	0.4162	0.1369	0.06	0.7	5
Selenium	<0.01	0.0108	0.0164	0.0007	0.0193	<0.01	0.1	0.5	7
Zinc	0.1573	0.1327	0.2449	0.1092	0.1612	0.4149	4	50	200
Chloride	161	22	30.7016	58.391	31	66.71	800	15000	25000
Fluoride	3.2	1.5	<1	0.1155	2.8	7.92	10	150	500
Sulphate as SO ₄	369	146	137.50	810.64	364	250.52	1000 ⁴	20000	50000
Total Dissolved Solids ⁶	1730	847	2996.77	2553.26	825	916.44	4000	60000	100000
Phenol Index	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	-	-
Dissolved Organic Carbon	242	<200	<200	<200	<200	<200	500 ⁵	800	1000

- 1 - Waste Acceptance Criteria Limiting values for contaminants in inert waste according to the GUIDANCE ON SAMPLING AND TESTING OF WASTES TO MEET LANDFILL WASTE ACCEPTANCE PROCEDURES
- 2 - Waste Acceptance Criteria Limiting values for contaminants in stable non-reactive hazardous waste in non-hazardous landfill according to the GUIDANCE ON SAMPLING AND TESTING OF WASTES TO MEET LANDFILL WASTE ACCEPTANCE PROCEDURES
- 3 - Waste Acceptance Criteria Limiting values for contaminants in hazardous waste according to the GUIDANCE ON SAMPLING AND TESTING OF WASTES TO MEET LANDFILL WASTE ACCEPTANCE PROCEDURES
- 4 - If an inert waste does not meet the SQ L/S10, alternative limit values of 1500 mg/l SO₄ at C₀ (initial eluate from the percolation test (pCENT/TTS 14405:2003)) AND 6000mg/kg SO₄ at L/S10 (either from the percolation test or batch test BS EN 12457-3), can be used to demonstrate compliance with the acceptance criteria for inert wastes.
- 5 - In the case of soils, aerimitted by the Environment Agency at an inert waste landfill, provided the DOC value of 500 mg/kg, either at the soil's own pH or at a pH value between 7.5 and 8.0
- 6 - The values for TDS on be used instead of values for Cl and SC₄

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W1T 1PD
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Appendix C Material Management Plan re-use of site won gravel and sand

Materials Management Plan (MMP) Form - October 2014

This form should be completed once the lines of evidence have been marshalled in relation to suitability for use, certainty of use and quantity required.

The answers to the questions posed within this form, together with the supporting information will constitute the MMP and must be provided to the Qualified Person.

A Qualified Person may comment on draft versions of this MMP, but will not complete the Declaration until all the relevant documents, demonstrating lines of evidence have been provided for each site.

The person / organisation who will pay the Declaration fee should confirm that they have read and understand the Terms and Conditions relating to the payment of the Declaration fee to CL:AIRE. These can be found on the CL:AIRE website.

The person / organisation agreeing to pay the Declaration Fee - Name, organisation and contact details inc. email address -	Angus Reynolds Angus.Reynolds@tottenhamhotspur.com M: +44 (0) 7585442548 Tottenham Hotspur Football & Athletic Co Ltd Lilywhite House, 782 High Road, London, N17 0BX
--	---

☒ I confirm I have read and understood the Terms & Conditions.

Each question must be answered. If the question is not applicable please state this and provide a brief explanation.

1. Specify the scenario to which this MMP relates, as described in the Definition of Waste: Development Industry Code of Practice (DoW CoP) (1, 2, 3 or 4):

- ☐ 1. Reuse on the Site of Origin
- ☐ 2. Direct Transfer of clean naturally occurring soil / mineral materials
- ☐ 3. Cluster Project
- ☒ 4. Combination of any of the above

In the case of a combination of reuse scenarios, please describe it below (e.g. (i) Reuse on Site of Origin and Direct Transfer of clean naturally occurring unpolluted soils, (ii) Reuse on the Site of Origin with Direct Transfer of clean naturally occurring soil to x number of development sites etc:

Natural uncontaminated River Terrace Gravel material from the site of origin is to be screened locally off site to remove the fines to allow the screened material to then be used in the concrete batching operation to create concrete to be used in the construction of a football stadium on the site of origin.

2. Organisation and name of person preparing this MMP	Rob Frost BuroHappold Engineering T: +44(0) 1225 320 600
---	--

Document Control

Date issued	06/5/16
Revision date	
Summary of revision 1	
Summary of revision 2	

Insert additional lines to the table above for any subsequent revisions.

Note - revisions to the MMP do not trigger an additional Declaration by a Qualified Person, unless an additional site is added to the project.

Revisions to the MMP must be recorded and summarised in the Document Control box above.

Site Details

3. Site / Project name(s)	Tottenham Hotspur Stadium development
Reuse / receiving site name :	Tottenham Hotspur new Stadium site
Donor site name (if Direct Transfer)	

Landowners

4a. Name of Landowner(s) (full address and contact details) – where excavated materials are to be reused	Tottenham Hotspur Football & Athletic Co Ltd Lilywhite House, 782 High Road, London, N17 0BX
4b. Name of Landowner(s) (full address and contact details) – where excavated materials are arising from	Tottenham Hotspur Football & Athletic Co Ltd Lilywhite House, 782 High Road, London, N17 0BX

Summary and objectives

5a. Provide a brief description of the planned project and how excavated materials are to be reused.	The objective of the work is to reduce the carbon footprint of the new stadium development by reducing lorry movements and quarrying of material by re-using excavated River Terrace Gravels from the Stadium basement excavation in the project concrete batching plant to form concrete for use in constructing the new stadium.
--	--

	Excavated material is are to be used in piles and structural concrete for the new stadium.
--	--

General Plans and Schematics

6. <u>Attach</u> a location plan for the site(s) and a plan of the site(s) which identifies where different materials are to be excavated from, stockpile locations (if applicable), where materials are to be treated (if applicable) and where materials are to be reused.	Plan Document Reference(s): Figure 1 (attached)
---	--

7. <u>Attach</u> a schematic of proposed materials movement. Where there is only one source area and one placement area briefly describe it. For all other projects a schematic is required.	Description & Schematic Document Reference: Figure 2 (attached)
---	--

Parties Involved and Consultation – if more than one party please provide additional details for them and identify the location that they will be working e.g. where a site is zoned

8a. Main earthworks contractor(s) (full address and contact details) – Where excavated materials are to be reused	Ryebridge Construction Unit 4, Barratt Industrial Park, Airport Way, Luton, Bedfordshire, LU2 9NH Tel: 01582 451525
8b. Main earthworks contractor(s) (full address and contact details) - Where excavated materials are arising from	Ryebridge Construction Unit 4, Barratt Industrial Park, Airport Way, Luton, Bedfordshire, LU2 9NH Tel: 01582 451525
9. Treatment contractor(s) (full address and contact details) – for treatment on site of origin, or at a Hub site within a fixed STF / Cluster Project	Gravel screening contractor: SE Davis & Son Ltd. Edgioake Lane Astwood Bank Redditch Worcestershire B96 6BG
10. Where wastes and materials are to be transported between sites, provide details of the transport contractor(s) (full address,	Ryebridge Construction Unit 4, Barratt Industrial Park, Airport Way,

contact details and waste carriers registration details (if applicable))	Luton, Bedfordshire, LU2 9NH Tel: 01582 451525
11. Provide Local Authority contact details (full address and named contacts) where excavated materials are to be reused	Alison Bell Lead Officer - Pollution Commercial Environmental Health Haringey Council 6th Floor Alexandra House 10 Station Road Wood Green N22 7TR T. 020 8489 5246
12a. For the site where materials are to be reused and for Hub Site locations provide Environment Agency contact details (full address and named contacts): For all Cluster Projects:	Andy Lake Apollo Court, Bishops Square Business Park, 2 St Albans Rd W, Hatfield, Hertfordshire AL10 9EX EA references: n/a
12b. Attach any relevant documentation from the EA relating to the excavation and reuse of the materials to demonstrate no	

objection to the proposals (see 3.37 of DoW CoP) If the EA has not been consulted please explain why (see paragraph 3.39 of the DoW CoP).	
---	--

Lines of Evidence

There is no one single factor that can be used to decide that a substance or object is waste, or when it is, at what point it ceases to be waste; as complete a picture as possible has to be created.

The following sections require completion to ensure the correct decision is made.

If a requested item is not relevant it is important to clearly state why this is so (e.g. no planning permission required because permitted development status exists).

Suitable for use criteria

13. Please describe or provide copies of the required specification(s) for the materials to be reused on each site.	Document Reference(s): River Terrace Gravel to be screened, 90% of which is gravel and sand, 10% is clay which is unsuitable and will go to landfill. Testing details attached in Appendix 1.
--	--

Where contamination is suspected or known to be present 14a. Please provide copies of or relevant extracts from the risk assessment(s) that has been used to determine the specification for use on the site. This must relate to the place where materials are to be used. This must be in terms of (i) human health (ii) controlled waters and (iii) any other relevant receptors. If a risk assessment is not relevant for a particular receptor given the site setting please explain why below:	n/a
14b. Please attach any relevant documentation from the LA relating to the excavation and reuse of the materials to demonstrate no objection (see 3.37 of the CoP)	LA Document references:
14c. Please attach any relevant documentation from the EA relating to the excavation and reuse of the materials to demonstrate no objection (see 3.37 and Table 2 of the CoP)	EA Document references:
14d. Please attach any relevant	Document Reference(s)

documentation from any other regulators (if relevant) relating to the excavation and reuse of the materials to demonstrate no objection (see 3.37 of the CoP)	
Where contamination is not suspected 15a. Please attach copies of or relevant extracts from the Desk Top Study that demonstrates that there is no suspicion of contamination. 15b. Please attach copies of or relevant extracts from the site investigation/testing reports that adequately characterise the clean materials to be used (if appropriate). 15c. Please attach copies of any other relevant information (if available) confirming that land contamination is not an issue.	Document Reference(s) Natural uncontaminated material used to create concrete for construction purposes. The material is visually distinct in terms of appearance and depth from overlying Made Ground (which has been removed). Site investigation data confirms this. Document Reference(s) Chemical data from the site investigation provided in Appendix 2 in addition to testing undertaken on a test batch of gravel prior and post washing. Document Reference(s) n/a

NB: It is your responsibility to assess the nature of the material to be used and that it fits within the limitations of the scenario under which it is to be used

Certainty of use

Various lines of evidence are required to demonstrate that the materials are certain to be used. This includes:

- The production of this MMP
- An appropriate planning permission (or conditions that link with the reuse of the said materials)
- An agreed Remediation Strategy(ies)
- An agreed Design Statement(s)
- Details of the contractual arrangements

Please identify in the following sections what lines of evidence relate to the site(s) where the materials are to be used.

16a. Planning Permission(s) relating to the site where materials are to be reused Please provide a copy of the relevant planning permission	Document Reference: THFC new stadium planning permission – Outline permission provided full permission pending. Planning permission for use of 44 White Hart Lane for screening and concrete batching Both in Appendix 3.
16b. Explain how the reuse of the excavated materials fits within the planning permission(s) for each site.	The material will form some of the concrete which will create the approved stadium.
16c. If planning permission is not required for any one site please explain why below e.g. permitted development, clean up of a	n/a

chemical spill, surrender of an Environmental Permit, re-contouring within the existing permission.	
Where contamination is suspected or is known to be present 17. Please provide a copy of any Remediation Strategy(ies) that have been agreed with relevant regulators.	Document Reference(s): n/a
Where contamination is not suspected 18. Please provide a copy of any Design Statement(s) that have been agreed (e.g. with the planning authority or in the case of permitted developments the client).	Document Reference(s): n/a

Quantity of Use

19. Please provide a breakdown of the excavated materials for each site and how much will be placed at each site or sub area of each site. Where this is not specific to a single readily identifiable source refer to an annotated plan, schematic or attach a tabulated summary.	Document Reference(s): The total excavated volume of River Terrace Gravel from the new stadium site is estimated to be 96,000m³. 10% of which will be unsuitable for use in the concrete batching. The total volume of material that is to be used to create concrete following screening is therefore 86,400m³. This concrete volume will be used on site as part of the works. It is estimated that the total volume of concrete needed to complete the stadium super structure is between 105,000 m³ and 120,000m³.
20a. How has consolidation/compaction being considered in the above mass balance calculations?	No
20b. How has loss due to treatment being considered in the above mass balance calculations (if applicable)?	Yes, 10% loss due to removal of clay from as dug volume.
20c. How has the addition of treatment materials being considered in the above mass balance calculations (if applicable)? Note - An exact figure is not required but one that is reasonable in the circumstances and can be justified if challenged.	No treatment material added, water added as part of the sorting but this drains off prior to use in the batching plant.

Contingency arrangements

Explain what is to happen in the following situations and identify the appropriate clauses in the contract(s) (Such clauses must be provided to the Qualified Person, preferably as a summary document): or

21a. What is to happen to, and who is to pay for out of specification materials?	Reference: Following screening of the River Terrace deposits some silty clay material is produced. This material is out of specification and is removed to landfill. The cost of this removal is paid for by THFC via their agreement with the operator of the screening plant SE Davis & Son Ltd.
21b. What is to happen to, and who is to pay for any excess materials?	Reference: Any material that is unsuitable for use in the concrete batching plant THFC
21c. What happens if the project programme slips in relation to excavated materials or materials under -going treatment?	Reference: The screening plant would be standing or the concrete batching plant would need to import gravel and sand to add to create concrete from another source.
21d. Other identified risk scenarios for the project (relating to excavated materials)?	Reference: None identified

The Tracking System

Where contamination is suspected or known to be present, state the procedures put in place to:

22a. For all sites please describe the tracking system to be employed to monitor materials movements.	A ticketing system stating the approximate material volume is used for transportation of material from the producer site to the storage site and from the storage site to the
Where contamination is suspected or known to be present, state the procedures put in place to: 22b. Prevent contaminants not suitable for the treatment process being accepted	n/a
Where contamination is suspected or known to be present, state the procedures put in place to: 22c. Prevent cross contamination of materials not in need of treatment, wastes awaiting treatment and treated materials	n/a
Where contamination is suspected or known to be present, state the procedures put in place to: 22d. Demonstrate that materials that do not require treatment and successfully treated materials reach their specific destination	n/a

Where contamination is suspected or known to be present, state the procedures put in place to: 22e. Ensure that waste for off-site disposal or treatment is properly characterised and goes to the correct facility	n/a
23. Please attach a copy of the tracking forms / control sheets that are to be used to monitor materials movements. To include transfer of loads on site into stockpiles prior to treatment (if applicable), stockpiled after treatment (if applicable), stockpiled awaiting use (as appropriate) and final placement.	Document reference(s) Examples provided in Appendix 3
For Hub Sites within Cluster Projects & where materials need treatment before reuse 24. Please attach a copy of the Environmental Permit covering the	Permit reference / EA letter reference: N/A

treatment process. Alternatively if the treatment is covered by a Mobile Plant Permit and associated Deployment Form, attach a copy of the EA agreement to the Deployment Form.	
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Records

25. Where, and in what form, are records to be kept? Note – records e.g. transfer notes, delivery tickets, Desk Top Study, Site Investigation, Risk Assessment(s), Verification Report(s) need to be kept for at least 2 years after the completion of the works and production of the Verification Report	Records of material movements will be retained by Ryebridge.
--	---

Verification Plan

26. Provide or explain the Verification Plan which sets out how you will record the placement of materials and prove that excavated materials have been reused in the correct location and in the correct quantities within the development works (see 3.4 of the DoW CoP).	Document Reference Data from the concrete batching plant will confirm the volume used and records of the volume of unsuitable material sent to landfill will confirm that volume.
--	---

FIGURES

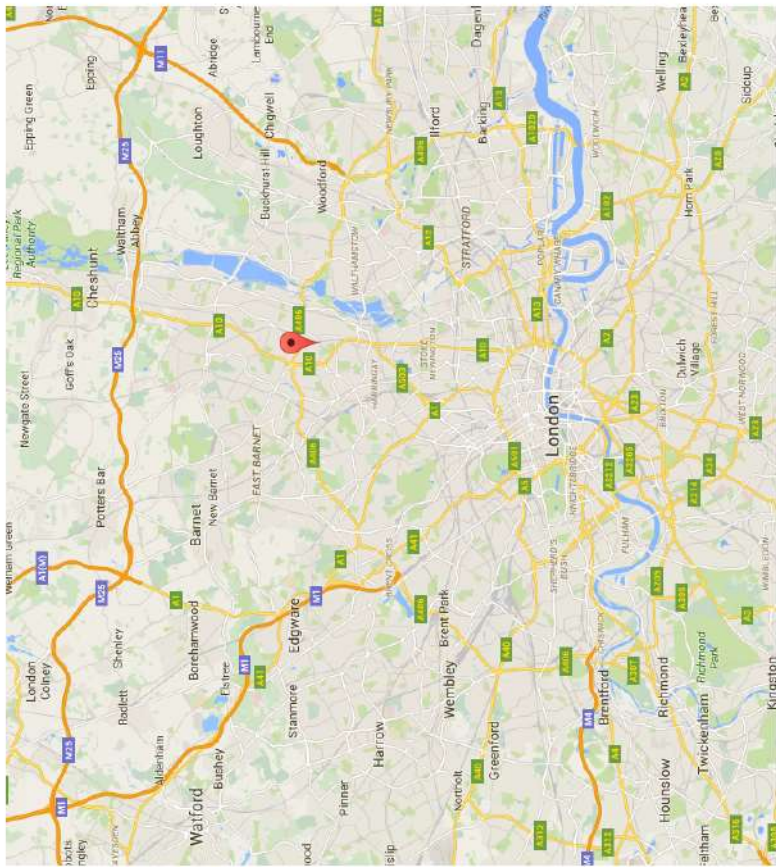
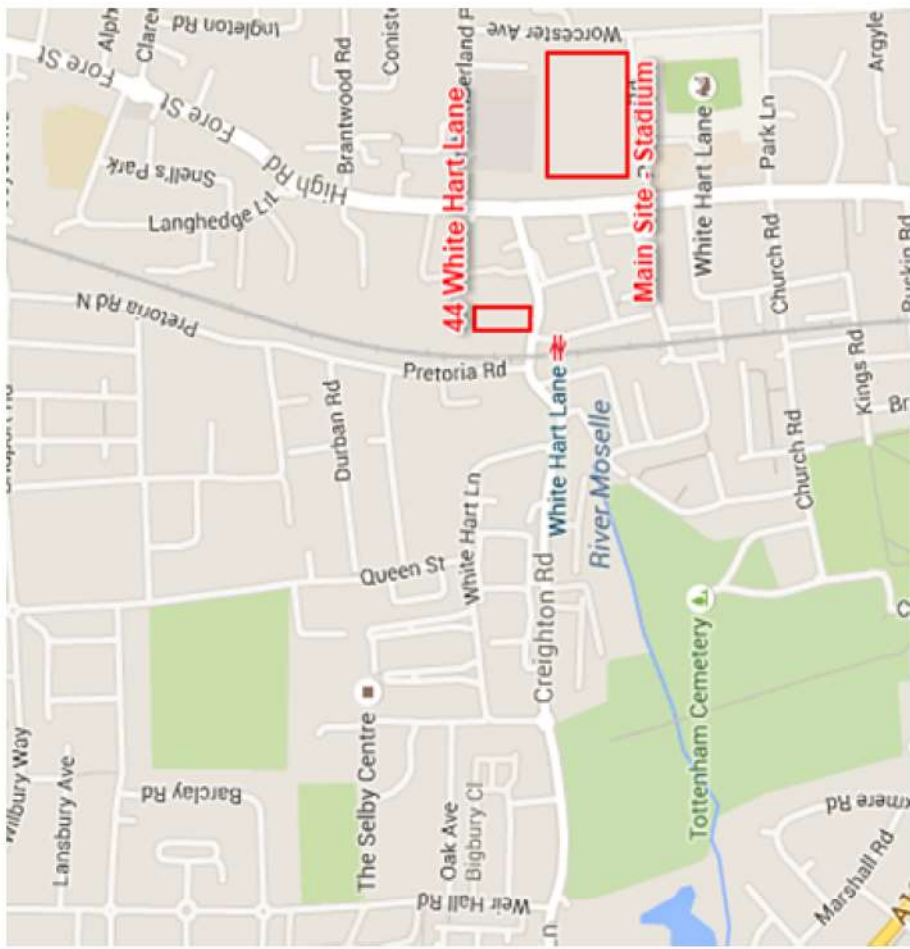


Figure 1

Significantly more concrete is required for the stadium construction than can be created from the total excavated River Terrace Gravel volume.

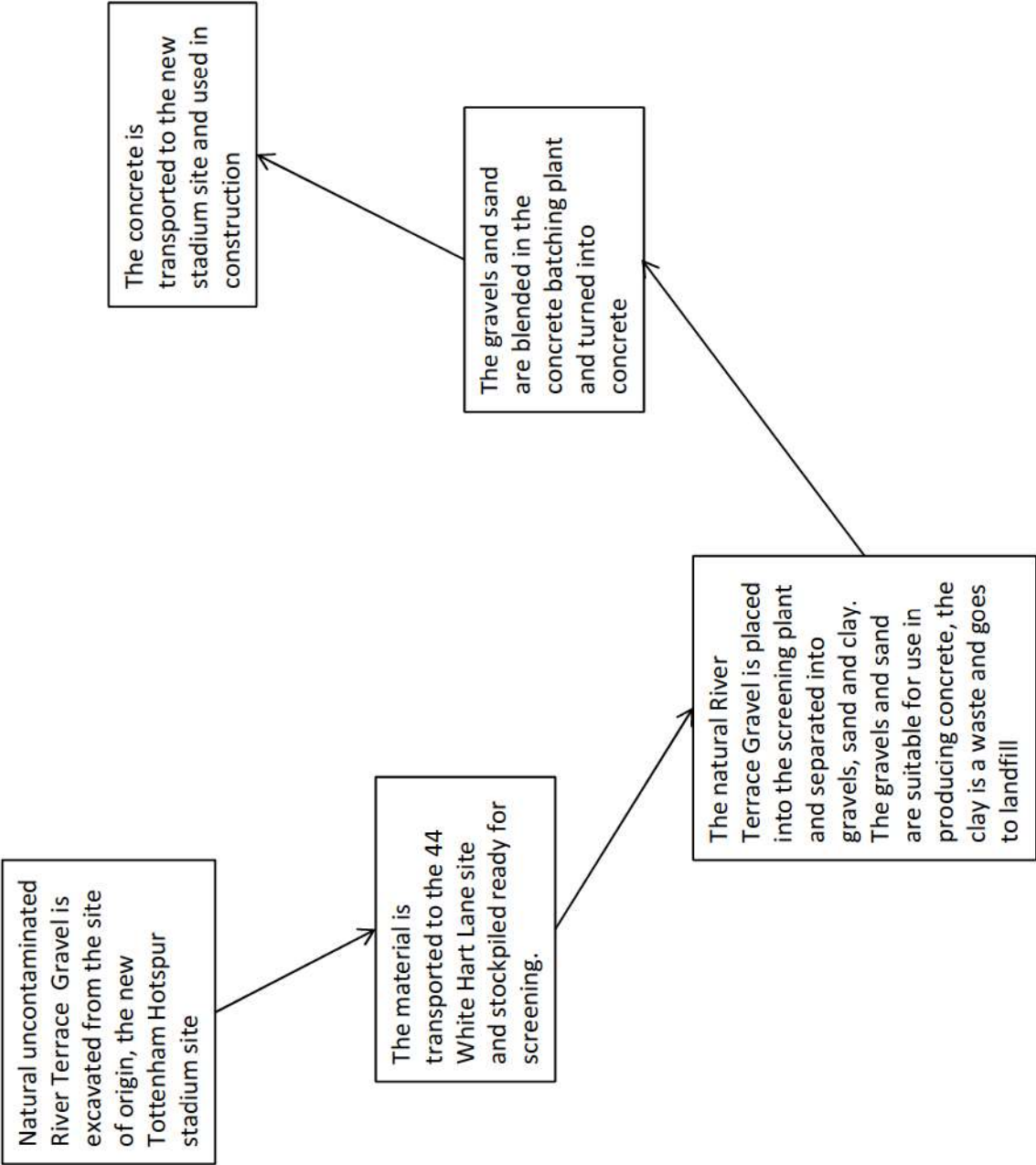


Figure 2

APPENDIX 1

Lafarge Redland Aggregates Limited
West Midlands Area
Six Hills Service Center
Melton Mowbray
Leicestershire
LE14 3PD

Date: 09 April 2015
Test Report Ref: STR 408240

Page 1 of 2

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Particle Size Distribution (PSD) of a soil sample-washing and sieving method in accordance with **BS EN 933-1: 2012**.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S51893
Client Ref. No:	0/4mm Sand
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	23/03/2015
Date of Start of Test:	01/04/2015
Sampling Location:	Unknown
Name of Source:	Unknown
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	0/4mm Sand
Target Specification:	N/A

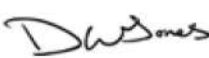
RESULTS:

SEE ATTACHED

Comments

None

Certificate
Prepared by:-


Dyfed Jones
Job Coordinator

Approved by: -



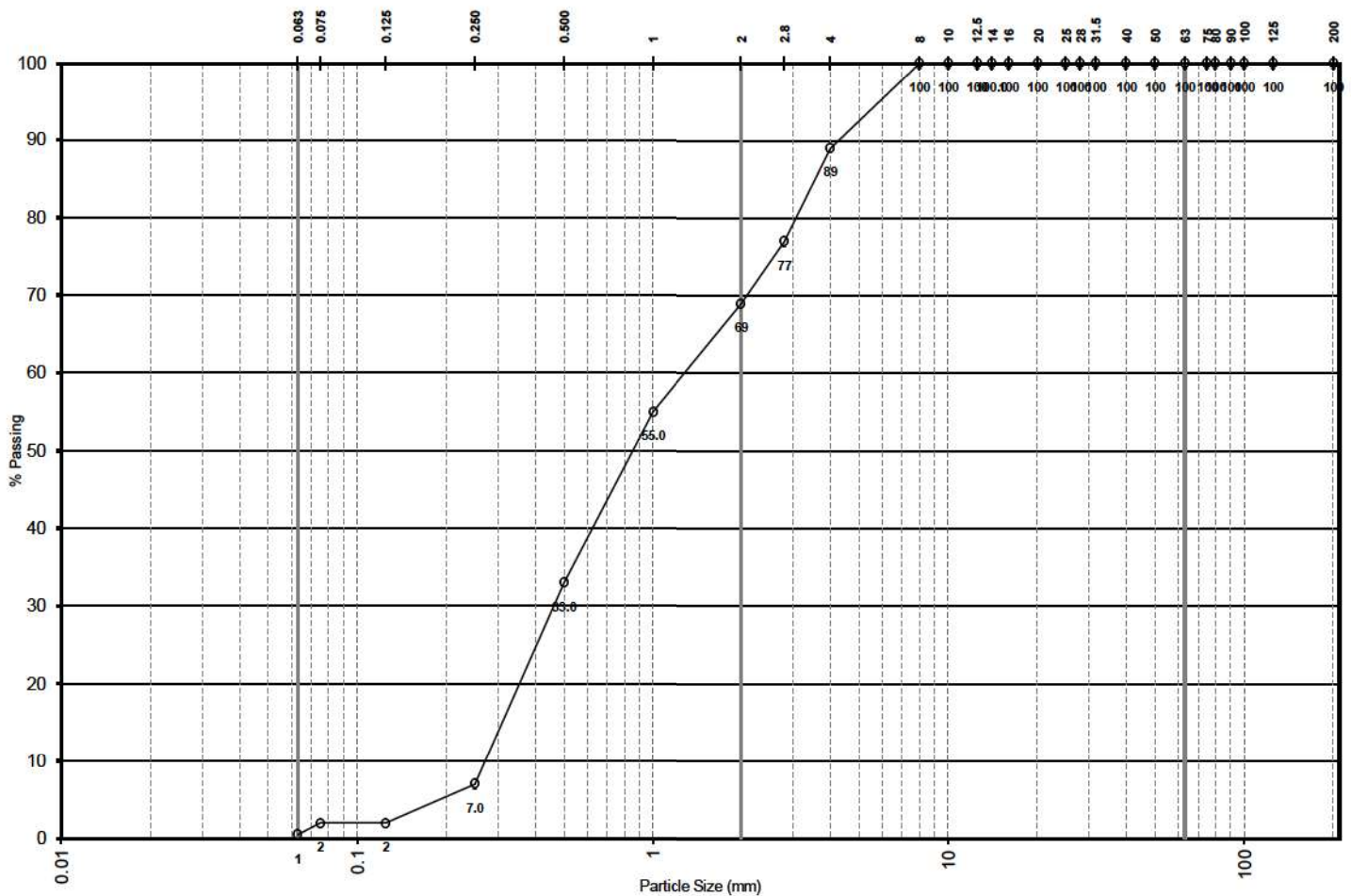
Eric Goulden
Technical Manager

Test Report Ref: STR 408240: Page 2 of 2

MATERIAL DESCRIPTION

0/4mm Sand

Sieve Size mm	% Passing	Sieve Size mm	% Passing
200	100	14	100
125	100	12.5	100
100	100	10.0	100
90	100	8.0	100
80	100	4.0	89
75	100	2.8	77
63	100	2.0	69
50	100	1.0	55
40	100	0.500	33
31.5	100	0.250	7
28	100	0.125	2
25	100	0.075	2
20	100	0.063	0.5
16	100		



Lafarge Redland Aggregates Limited
West Midlands Area
Six Hills Service Center
Melton Mowbray
Leicestershire
LE14 3PD

Date: 09 April 2015
Test Report Ref: STR 408912

Page 1 of 2

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Particle Size Distribution (PSD) of a soil sample-washing and sieving method in accordance with **BS EN 933-1: 2012**.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S51893
Client Ref. No:	4/10mm Aggregate
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	23/03/2015
Date of Start of Test:	01/04/2015
Sampling Location:	Unknown
Name of Source:	Unknown
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	4/10mm Aggregate
Target Specification:	N/A

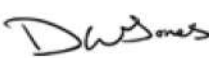
RESULTS:

SEE ATTACHED

Comments

None

Certificate
Prepared by:-


Dyfed Jones
Job Coordinator

Approved by: -



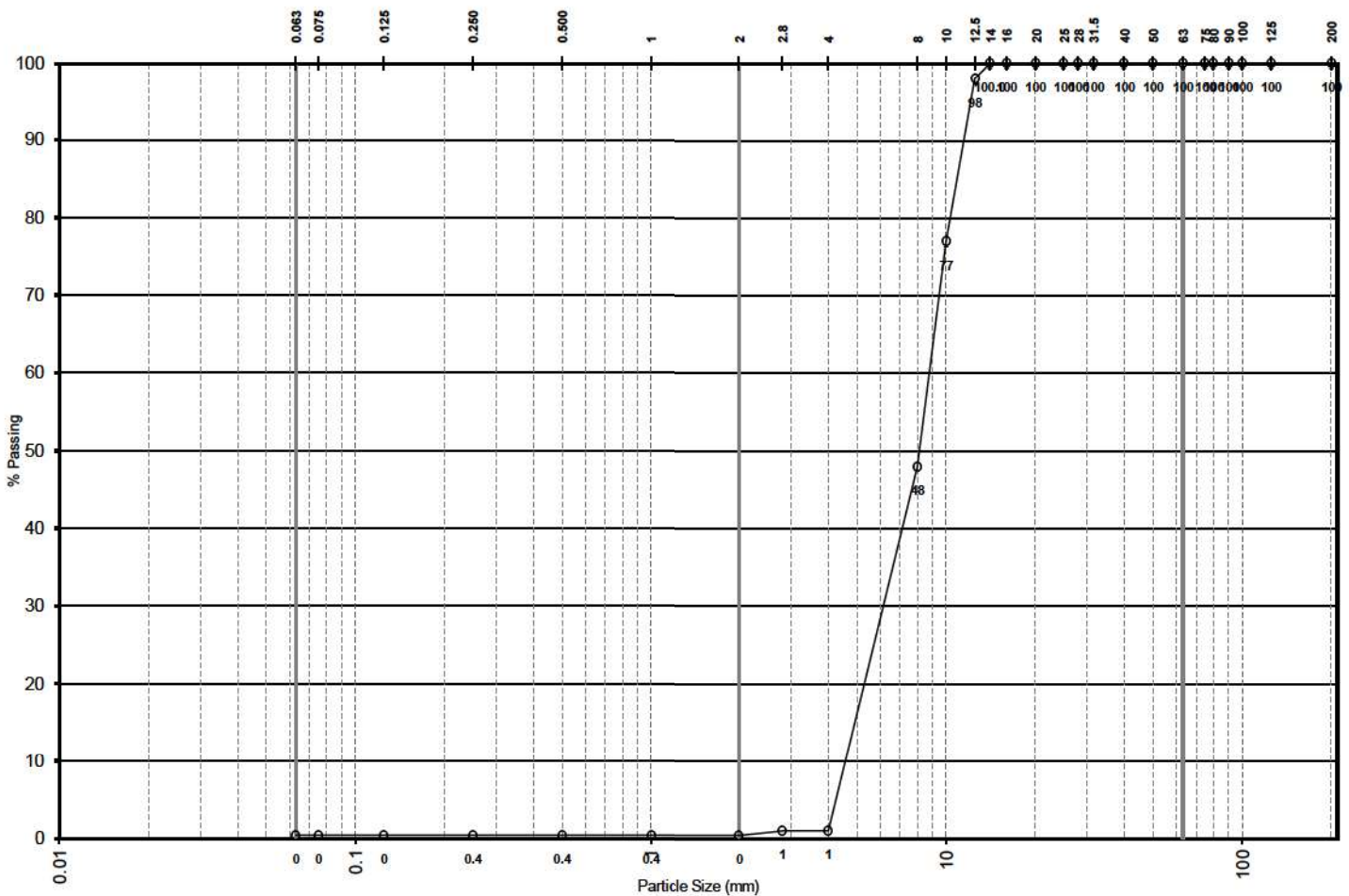
Eric Goulden
Technical Manager

Test Report Ref: STR 408912: Page 2 of 2

MATERIAL DESCRIPTION

4/10mm Aggregate

Sieve Size mm	% Passing	Sieve Size mm	% Passing
200	100	14	100
125	100	12.5	98
100	100	10.0	77
90	100	8.0	48
80	100	4.0	1
75	100	2.8	1
63	100	2.0	0.4
50	100	1.0	0.4
40	100	0.500	0.4
31.5	100	0.250	0.4
28	100	0.125	0.4
25	100	0.075	0.4
20	100	0.063	0.4
16	100		



Lafarge Redland Aggregates Limited
West Midlands Area
Six Hills Service Center
Melton Mowbray
Leicestershire
LE14 3PD

Date: 09 April 2015
Test Report Ref: STR 408923

Page 1 of 2

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Particle Size Distribution (PSD) of a soil sample-washing and sieving method in accordance with **BS EN 933-1: 2012**.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S51893
Client Ref. No:	10/20mm Aggregate
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	23/03/2015
Date of Start of Test:	01/04/2015
Sampling Location:	Unknown
Name of Source:	Unknown
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	10/20mm Aggregate
Target Specification:	N/A

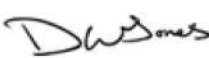
RESULTS:

SEE ATTACHED

Comments

None

Certificate
Prepared by:-


Dyfed Jones
Job Coordinator

Approved by: -



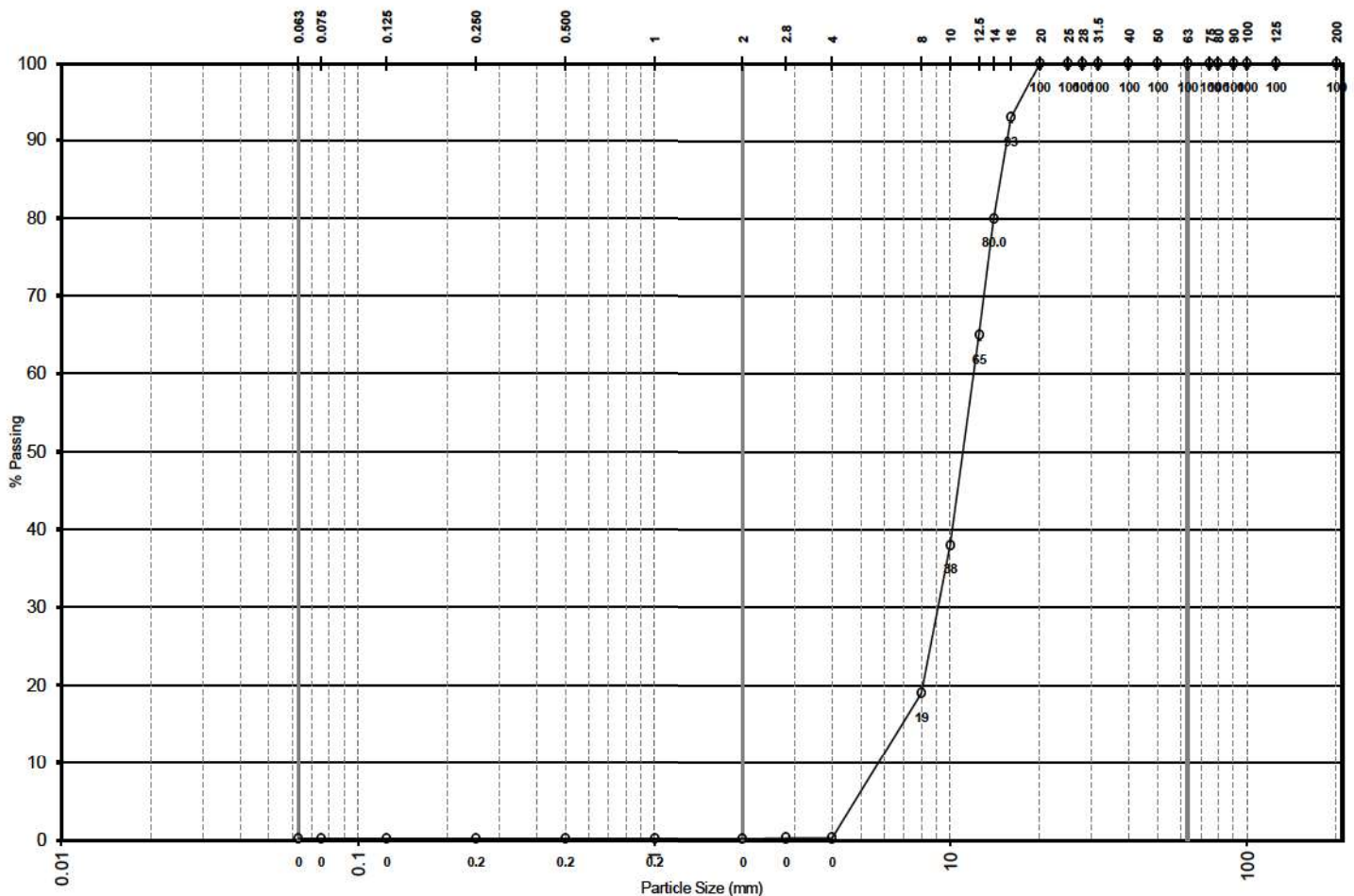
Eric Goulden
Technical Manager

Test Report Ref: STR 408923: Page 2 of 2

MATERIAL DESCRIPTION

10/20mm Aggregate

Sieve Size mm	% Passing	Sieve Size mm	% Passing
200	100	14	80
125	100	12.5	65
100	100	10.0	38
90	100	8.0	19
80	100	4.0	0.3
75	100	2.8	0.3
63	100	2.0	0.2
50	100	1.0	0.2
40	100	0.500	0.2
31.5	100	0.250	0.2
28	100	0.125	0.2
25	100	0.075	0.2
20	100	0.063	0.2
16	93		



Euromix Concrete Tottenham Hotspur FC Trials				
Materials				
Cement & Replacements	CEM I	LT, Cookstown		
	PFA EN450 S	LT, West Burton		
Coarse Aggregate	10/20mm	Tottenham		
	04/10mm	Tottenham		
Fine Aggregate	00/04mm	Tottenham		
Admixtures	MasterGlenium 123	BASF		
Mix Design SSD [kg/m³]				
Date	12/05/2015	12/05/2015		
Trial Mix Number	TM 35857	TM 35858		
	MIX 1	MIX 2		
CEM I	255	276		
10/20mm	597	736		
04/10mm	319	398		
Tottenham	921	705		
Water	174	165		
Admixtures				
	MasterGlenium 123	MasterGlenium 123		
Dosage % (w/w)	0.90%	0.70%		
kg/m³	3.55	2.99		
Physical Properties				
Plastic Density kg/m³	2365	2384		
Data				
Free W/C ratio	0.499	0.437		
Total W/C ratio	0.551	0.485		
Slump (mm)				
Initial	160	60		
Compressive Strength N/mm²				
7 Day	32.6	42.2		
7 Day	32.2	42.6		
7 Day	34.1	41.9		
28 Day				
28 Day				
28 Day				
COMMENTS				
	Mix looked OK however very little change was seen with addition of 5L water and 0.2% increase in admixture - slump increased from 100 to 130mm	Mix was very coarse - increase in fines needed.		

APPENDIX 2