

APPENDIX 4

Exploratory Hole Logs

Borehole Logging Record :WS1

DRILLING DETAILS	Drilling Date: 14th August 2017	Drilled Depth: (mBGL)
Drilling Company: Exploration Ltd	Location: Shaw Lane : Barnsley	Bore Diameter: 87 (mm)
Drilling Method: WS	Ground Elevation: (mAMSL)	TOC Elevation: (mAGL)













Sample Reference	Sample Range	Depth (mBGL)	Graphic Log	Soil or Rock Field Material Description	SPT (blows/300mm)	In Situ/ Lab Test	Piezometer Construction Details And Groundwater Levels
					0 10 20 30 40 50 60		
J4		0.00		MG Greyish brown gravel and cobbles of concrete, mortar and brick with occasional medium gravel of quartzite. Locally clayey.			
J1		0.50		MG Firm, grey mottled black, friable silty organic clay. Occasional angular concrete and fine, light brown mottled orangish brown sandstone. Between 0.4m and 0.43m; car parts noted comprising rubber mounting, metal cylinder, plastic fragments and nuts and bolts.			
W		1.00		MG Brown silty sandy gravel. Gravel is slag stained light bluish green. Locally firm, orangish brown clayey. Occasional gravel of unidentified white powdery substance.			▼
J2		1.50		MG Light brown mottled red, sandy gravel and cobbles. Gravel is light brown sandstone, cobbles are red brick.	▲	3,3,3,2,2,2 (9)	
J3		2.00		MG Light brown mottled orangish brown clayey gravel. Gravel is fine to medium, brick, cement and sandstone. Wet.			
		2.50		MG Firm, light grey mottled greensih grey, slightly sandy, silty clay. Black staining between 1.32m and 1.45m; potential oil staining. Becoming soft consistency below 1.6m. One cobble and occasional gravel of concrete noted between 1.66m and 1.75m bgl.	▲	1,1,2,2,2,3 (9)	
		2.50		MG Soft, dark brown, very sandy, gravelly clay. Gravel is fine, brick, concrete and quartzite. Wet. NO RECOVERY			
		2.50		Soft, black, spongy, friable pseudofibrous PEAT. Fine fibres noted.			
		3.00		Firm, greenish grey becoming bluish grey mottled black CLAY. Becoming orangish brown below 2.92m. (ALLUVIUM)			
		3.00		NO RECOVERY. Wet strata..	▲	6,6,6,5,5,5 (21)	
		4.00					
		4.50			▲	5,7,8,9,9,1 0(36)	

Groundwater Observations:

Groundwater resting at 1.08m bgl at end of day.

Borehole Logging Record :WS2

DRILLING DETAILS	Drilling Date: 14th August 2017	Drilled Depth: (mBGL)
Drilling Company: Exploration Ltd	Location: Shaw Lane : Barnsley	Bore Diameter: 87 (mm)
Drilling Method: WS	Ground Elevation: (mAMSL)	TOC Elevation: (mAGL)

Sample Reference	Sample Range	Depth (mBGL)	Graphic Log	Soil or Rock Field Material Description	SPT (blows/300mm)	In Situ/ Lab Test	Piezometer Construction Details And Groundwater Levels
		0.00		MG: Concrete pavement.			
J5		0.50		MG Grey brown, silty, sandy gravel. Gravel is concrete, brick, grey and black shale, and orangish brown sandstone. Occasional cobbles of similar lithologies.			
		1.00		MG Cobbles of concrete over red friable brick over light greyish white, weak friable sandstone.			
J6		1.50		MG Dark grey sandy gravel of 'breeze blocks'. MG 20% recovery. Medium dense, black sandy fine to medium gravel. Gravel is ash and low density, coke-like vesicular slag. Rare medium to coarse concrete, brick and fine shale gravel. Locally with admixed firm brown clay.	▲	3,3,4,9,4,1 2(29)	
W		2.00		MG 'Cavings'			▼
J7		2.50		Soft black mottled grey pseudofibrous PEAT.	▲	3,1,0,0,1,0 (1)	
		3.00		Soft, bluish grey mottled black CLAY. Becoming firm below 2.65m bgl. 20mm thick bed of fine light grey sand at base. (ALLUVIUM)			
		3.50		Firm, becoming soft, orangish brown mottled light blue grey 'crumb' texture CLAY. Occasional medium black and dark orangish brown shale. Occasional fine, sub-rounded ironstone concretions. (Possible weathered MIDDLE PENNINE COAL MEASURES FORMATION)	▲	6,6,6,5,4,6 (21)	
		4.00		NO RECOVERY. Wet strata.			
		4.50				4,5,6,10,8, 9(33)	

Groundwater Observations:

Groundwater resting at 1.76m bgl at end of day.

Borehole Logging Record :WS3



DRILLING DETAILS	Drilling Date: 14th August 2017	Drilled Depth: (mBGL)
Drilling Company: Exploration Ltd	Location: Shaw Lane : Barnsley	Bore Diameter: 87 (mm)
Drilling Method: WS	Ground Elevation: (mAMSL)	TOC Elevation: (mAGL)

Sample Reference	Sample Range	Depth (mBGL)	Graphic Log	Soil or Rock Field Material Description	SPT (blows/300mm)	In Situ/ Lab Test	Piezometer Construction Details And Groundwater Levels
		0.00		MG: Concrete pavement.			
		0.50		MG 70% recovery. Sandy gravel and cobbles of concrete.			
		1.00		MG Gravel and cobbles of red brick and concrete.			
J8		1.50		MG Black, slightly sandy, silty, very gravelly clay. Gravel is fine to medium brick, black shale, coal and greenish grey mottled brown sandstone.			
		2.00		MG Light grey mottled orangish brown cobbles of sandstone.			
J9		2.50		MG Black, slightly sandy, silty, very gravelly clay. Gravel is fine to medium brick, black shale, coal and greenish grey mottled brown sandstone.			
		2.50		NO RECOVERY. Very soft to soft black pseudofibrous PEAT.			
		2.50		Soft to firm, grey mottled black and dark grey CLAY (ALLUVIUM)			
		2.50		Soft, orangish brown mottled light grey CLAY (ALLUVIUM)			
J10		3.00		Brown, orangish brown interbedded light greyish white 'crumb' textured very sandy CLAY. Occasional to frequent fine to medium sandstone, shale and ironstone. 40% recovery between 3.0m to 4.0m, with occasional cobbles of orangish brown sandstone (ALLUVIUM).			
		3.50					
J11		4.00		Stiff dark grey CLAY with relict shaly cleavage (possible weathered MIDDLE PENNINE COAL MEASURES FORMATION)			
		4.50					

Groundwater Observations:
 No groundwater observed.

Borehole Logging Record :WS4



DRILLING DETAILS	Drilling Date: 14th August 2017	Drilled Depth: (mBGL)
Drilling Company: Exploration Ltd	Location: Shaw Lane : Barnsley	Bore Diameter: 87 (mm)
Drilling Method: WS	Ground Elevation: (mAMSL)	TOC Elevation: (mAGL)

Sample Reference	Sample Range	Depth (mBGL)	Graphic Log	Soil or Rock Field Material Description	SPT (blows/300mm)	In Situ/ Lab Test	Piezometer Construction Details And Groundwater Levels
		0.00		MG: Concrete pavement.			
J12	[Red diagonal lines]	0.50		MG Light greyish brown gravel and cobbles of concrete with rare brick and bituminous surfacing fragments near base.			
J13	[Red diagonal lines]	1.00		MG Sandy gravel and cobbles of sandstone and concrete. MG Sandy gravel and cobbles of dark red mudstone with frequent rootlets and topsoil pockets.			
		1.50		NO RECOVERY MG Soft/loose dark grey mottled brown and black, very sandy, very gravelly clay. Gravel is fine to medium coke-like slag, brick, coal, shale and sandstone.			
J14	[Red diagonal lines]	2.00		MG Light greyish brown sandy gravel and cobbles of fine to medium sandstone. MG Black sandy fine gravel. Gravel is low-density coke-like slag.			
		2.50		NO RECOVERY			
J15	[Red diagonal lines]	3.00		Soft, black mottled grey organic CLAY. Becoming soft to firm grey mottled black below 2.5m bgl (ALLUVIUM).			
J16	[Red diagonal lines]	3.50		50% recovery. Soft, orangish brown mottled light grey sandy, gravelly CLAY. Below 2.85m; becoming very gravelly. Gravel is fine to medium angular sandstone with occasional coarse gravels and cobbles of rounded, strong sandstone. Coal fragments noted below 3.5m bgl (ALLUVIUM).			
		4.00		Stiff, bluish grey mottled brown CLAY. (Possibly weathered MIDDLE PENNINE COAL MEASURES FORMATION).			
		4.50					

Groundwater Observations:
No groundwater observed.

Borehole Logging Record :WS5



DRILLING DETAILS	Drilling Date: 14th August 2017	Drilled Depth: (mBGL)
Drilling Company: Exploration Ltd	Location: Shaw Lane : Barnsley	Bore Diameter: 87 (mm)
Drilling Method: WS	Ground Elevation: (mAMSL)	TOC Elevation: (mAGL)

Sample Reference	Sample Range	Depth (mBGL)	Graphic Log	Soil or Rock Field Material Description	SPT (blows/300mm)	In Situ/ Lab Test	Piezometer Construction Details And Groundwater Levels
		0.00		MG: Concrete pavement.			
		0.50		MG Light grey and greyish brown sandy gravel and cobbles of concrete.			
J17		1.00		MG Brown and red speckled orangish brown, sandy gravel. Gravel is fine to medium brick, black coke-like slag, very weak fine grained orangish brown sandstone, grey sandstone, quartzite and white powdery substance. Occasional cobbles of brick, concrete and white sandstone. Frequent fine black slag gravel between 0.7m and 0.8m bgl. MG Red gravel and cobbles of brick.			
J18		1.50		MG Black, sandy gravel of fine to medium shale/black mudstone. Very slight diesel and chemical odour.			
W		1.65		MG White, sandy gravel and cobbles of fine weak concrete. No aggregate.			▼
J19		2.00		MG Soft, orangish brown gravelly clay. Gravel is sandstone. Becoming black, fibrous, very organic peaty clay with occasional sandstone gravels. Very slight aged diesel/chemical odour.			
J20		2.50		MG Black sandy fine gravel of low-density vesicular slag/ash. Wet.			
		2.50		Soft to firm grey mottled black organic rich CLAY (ALLUVIUM).			
J21		3.00		Soft, orangish mottled light grey 'crumb' textured CLAY. Occasional fine gravel of angular sandstone. Becoming firm to stiff at 3.1m; stiff below 3.3m and; very stiff below 3.5m. (ALLUVIUM, possibly grading to weathered bedrock).			
		4.00					
		4.50					

Groundwater Observations:

Groundwater resting at 1.65m bgl at end of day.

Borehole Logging Record :WS6



DRILLING DETAILS	Drilling Date: 14th August 2017	Drilled Depth: (mBGL)
Drilling Company: Exploration Ltd	Location: Shaw Lane : Barnsley	Bore Diameter: 87 (mm)
Drilling Method: WS	Ground Elevation: (mAMSL)	TOC Elevation: (mAGL)

Sample Reference	Sample Range	Depth (mBGL)	Graphic Log	Soil or Rock Field Material Description	SPT (blows/300mm)	In Situ/ Lab Test	Piezometer Construction Details And Groundwater Levels
					0 10 20 30 40 50 60		
J22	[Red diagonal hatching]	0.00	[Concrete pattern]	MG: Concrete pavement.			[Cross-hatch pattern]
			[Cross-hatch pattern]	MG Greyish brown sandy gravel of concrete.			
		0.50	[Cross-hatch pattern]	MG Red, fine to coarse gravel of brick.			
J23	[Red diagonal hatching]		[Cross-hatch pattern]	MG Greenish grey cobble of fine to medium grained sandstone.			
			[Cross-hatch pattern]	MG Black sand and gravel. Gravel is coal with rare brick. Occasional cobbles of concrete and 'breeze block' observed. Slight aged diesel odour.			
J24	[Red diagonal hatching]		[Cross-hatch pattern]	MG Black coal gravel.			
			[Cross-hatch pattern]	MG Black coal gravel with distinctive cleavage and occasional brick.			
		1.50	[Cross-hatch pattern]	MG Red, becoming grey brick gravel.			
			[Cross-hatch pattern]	MG Orangish brown mottled bluish grey, clayey gravel. Gravel is bluish grey sandstone. Lenses of black/dark brown mottled red sandy fine gravel of brick and slag.			
			[Cross-hatch pattern]	MG Cobbles of light grey and white concrete.			
		2.00	[Cross-hatch pattern]	MG Black sandy gravel. Gravel is fine to medium, angular black mudstone and shale. Damp.			
J25	[Red diagonal hatching]	2.50	[Dotted pattern]	Soft, dark grey mottled black organic CLAY. Becoming firm below 1.8m bgl. Damp. (ALLUVIUM).			
		3.00	[Dotted pattern]	Firm, orangish brown mottled light bluish grey CLAY. Below 3.7m; becoming stiff consistency, fissured and dark grey mottled orangish brown.(ALLUVIUM).			
		3.50	[Dotted pattern]				
J26	[Red diagonal hatching]	4.00	[Dotted pattern]				
		4.50	[Dotted pattern]				

Groundwater Observations:

Sampler tubes wet below 2.0m bgl.

Borehole Logging Record :WS7



DRILLING DETAILS	Drilling Date: 14th August 2017	Drilled Depth: (mBGL)
Drilling Company: Exploration Ltd	Location: Shaw Lane : Barnsley	Bore Diameter: 87 (mm)
Drilling Method: WS	Ground Elevation: (mAMSL)	TOC Elevation: (mAGL)

Sample Reference	Sample Range	Depth (mBGL)	Graphic Log	Soil or Rock Field Material Description	SPT (blows/300mm)	In Situ/ Lab Test	Piezometer Construction Details And Groundwater Levels
		0.00		MG: Concrete pavement.			
		0.00 - 0.50		MG Greyish brown sandy gravel of concrete. Cobble of brick at base.			
J27		0.50 - 1.00		MG Black, very compact, friable silt, sand and fine gravel of coal and shale; Occasional grey coke or 'breeze block gravel observed. Includes some admixed vehicle parts (rubber, resin, plastics, metal, electrical parts), pottery and glass fragments to 0.8m bgl. Slight engine oil or aged diesel odour. Artifacts of rubber, resin, plastic, metal electrical parts and metal fragments noted.			
J28		1.00 - 2.00		MG: Compact clayey gravel of coal, brick, burnt shale and mudstone.			
		2.00 - 4.50		10% recovery. Firm orangish brown mottled grey CLAY (ALLUVIUM).			

Groundwater Observations:
 No groundwater observed.

Borehole Logging Record :WS8

DRILLING DETAILS	Drilling Date: 14th August 2017	Drilled Depth: (mBGL)
Drilling Company: Exploration Ltd	Location: Shaw Lane : Barnsley	Bore Diameter: 87 (mm)
Drilling Method: WS	Ground Elevation: (mAMSL)	TOC Elevation: (mAGL)

Sample Reference	Sample Range	Depth (mBGL)	Graphic Log	Soil or Rock Field Material Description	SPT (blows/300mm)	In Situ/ Lab Test	Piezometer Construction Details And Groundwater Levels
					0 10 20 30 40 50 60		
J29	0.00 - 0.50	0.00		MG Brown mottled greyish brown, very sandy, gravelly clay. Gravel is medium concrete and rounded sandstone. Locally with cobbles of light brown mortar and weak concrete. Fine to medium black vesicular slag gravel between 0.45m and 0.5m; paving slab fragment at 0.55m.			
		0.50		MG Brown speckled red, slightly clayey, silty, gravelly sand. Gravel is fine, rounded quartzite, brick, burnt shale with coarse gravel of brick.			
W J30	1.50 - 2.00	1.00		MG Medium dense, red sandy fine to medium sandy gravel of brick. Frequent grey shale below 1.2m bgl.	▲	4,3,3,4,5,6 (18)	▼
		1.50		MG Greenish grey, coarse, angular gravel of sandstone. MG Medium gravel of coal and black shale with occasional clinker gravel, with a soft clayey matrix.			
J32	2.00 - 2.50	2.00		Soft, dark grey mottled black organic CLAY (ALLUVIUM).		3,2,2,3,3,3 (11)	
		2.50		Soft to firm, light grey mottled orangish brown CLAY (ALLUVIUM)	▲		
J31	3.50 - 4.00	3.00		Soft, orangish brown mottled white and light grey CLAY. Becoming slightly gravelly and 'crumb' textured below 2.75m. Gravel is fine weak orangish brown fine grained sandstone. Between 3.1m and 3.3m; mottled dark brown. Below 3.6m; becoming mottled black and very gravelly. Gravel is medium to coarse, angular coarse grained sandstone with black ironstone mottling (ALLUVIUM).	▲	6,5,5,5,6,5 (21)	
		4.00		Stiff to very stiff greyish brown fissured gravelly CLAY. Gravel is medium, smooth, weak to moderately strong sub-angular to sub-rounded greyish brown brown and orangish brown mudstone. Rootmarkings noted.	▲		

Groundwater Observations:

Groundwater resting at 1.52m bgl at end of day.

Borehole Logging Record :WS9



DRILLING DETAILS	Drilling Date: 14th August 2017	Drilled Depth: (mBGL)
Drilling Company: Exploration Ltd	Location: Shaw Lane : Barnsley	Bore Diameter: 87 (mm)
Drilling Method: WS	Ground Elevation: (mAMSL)	TOC Elevation: (mAGL)

Sample Reference	Sample Range	Depth (mBGL)	Graphic Log	Soil or Rock Field Material Description	SPT (blows/300mm)	In Situ/ Lab Test	Piezometer Construction Details And Groundwater Levels
J36		0.00		MG Concrete slab.			
		-0.50		MG Brown sandy gravel of angular sandstone and occasional rounded quartzite gravel, over cobbles of yellowish brown medium sandstone over red brick cobbles.			
		-1.00		MG Black, silty, sandy gravel. Gravel is fine to medium glass, brick, burnt shale, timber fragments and rounded sandstone. Slight to moderate diesel odour noted. MG Concrete boulder or obstruction.	▲	25/20mm, 47,3/5mm(>50)	
		-1.50					
		-2.00					
		-2.50					
		-3.00					
		-3.50					
		-4.00					
		-4.50					

Groundwater Observations:
 No groundwater observed.

Borehole Logging Record :WS9A



DRILLING DETAILS	Drilling Date: 14th August 2017	Drilled Depth: (mBGL)
Drilling Company: Exploration Ltd	Location: Shaw Lane : Barnsley	Bore Diameter: 87 (mm)
Drilling Method: WS	Ground Elevation: (mAMSL)	TOC Elevation: (mAGL)

Sample Reference	Sample Range	Depth (mBGL)	Graphic Log	Soil or Rock Field Material Description	SPT (blows/300mm)	In Situ/ Lab Test	Piezometer Construction Details And Groundwater Levels
J37		0.00		MG Concrete slab.			
		-0.50		MG Greyish brown, angular to rounded gravel of brick, limestone, dolerite and light grey sandstone. (Sub-base) MG Red, sandy gravel of red brick and 'breeze block'. One cobble of dolerite at top.			
		-1.00		MG Black, silty, sandy fine gravel of brick and blackened limestone (waste road planings?). Occasional coarse gravel of concrete, weak brown sandstone and metamorphic lithologies. One metal screw and timber fragments noted. Frequent brick and rare glass below 0.9m. MG Concrete boulder or obstruction.	▲	25/15mm, 46,4/5mm(>50)	
		-1.50					
		-2.00					
		-2.50					
		-3.00					
		-3.50					
		-4.00					
		-4.50					

Groundwater Observations:
 No groundwater observed.

Borehole Logging Record :WS9B



DRILLING DETAILS	Drilling Date: 14th August 2017	Drilled Depth: (mBGL)
Drilling Company: Exploration Ltd	Location: Shaw Lane : Barnsley	Bore Diameter: 87 (mm)
Drilling Method: WS	Ground Elevation: (mAMSL)	TOC Elevation: (mAGL)

Sample Reference	Sample Range	Depth (mBGL)	Graphic Log	Soil or Rock Field Material Description	SPT (blows/300mm)	In Situ/ Lab Test	Piezometer Construction Details And Groundwater Levels
		0.00		MG Concrete.			
J38		0.50		MG Brown sandy gravel and cobbles of dolerite and brick. Lenses of black very silty clay noted between 0.29m and 0.32m. Similar lens with glass fragments between 0.43m and 0.51m. Faint hydrocarbon odour.			
J41		1.00		MG Black, clayey, fine sandy silt, Occasional coarse sand and fine gravel of angular limestone and medium to coarse brick gravel. One timber fragment noted. Faint oily or tarry odour noted. (Highways waste?)			
W		1.37		MG Red brick gravel.	▲	15,10/55m m,11,10,1 1,8(40)	▼
J39		1.50		MG Black speckled white sand and fine to medium gravel of black vesicular slag.			
		2.00		MG Brown mottled yellowish brown sandy gravel and cobbles of angular medium grained sandstone. Becoming greyish brown, tabular.			
		2.00		NO RECOVERY	▲	1,0,1,0,0,1 (2)	
J40		2.65		Soft, black, spongy, pseudofibrous PEAT. Grading into soft to firm dark grey mottled black organic CLAY below 2.65m. (ALLUVIUM)			
		3.00		Firm orangish brown mottled bluish grey and light grey CLAY (ALLUVIUM).			
		3.00		NO RECOVERY.	▲	4,3,3,4,4,4 (15)	
		4.00					
		4.50			▲	4,5,5,7,7,7 (26)	

Groundwater Observations:

Groundwater resting at 1.37m bgl at end of day.

Borehole Logging Record :WS10



DRILLING DETAILS	Drilling Date: 14th August 2017	Drilled Depth: (mBGL)
Drilling Company: Exploration Ltd	Location: Shaw Lane : Barnsley	Bore Diameter: 87 (mm)
Drilling Method: WS	Ground Elevation: (mAMSL)	TOC Elevation: (mAGL)

Sample Reference	Sample Range	Depth (mBGL)	Graphic Log	Soil or Rock Field Material Description	SPT (blows/300mm)	In Situ/ Lab Test	Piezometer Construction Details And Groundwater Levels
					0 10 20 30 40 50 60		
		0.00		MG Concrete slab.			
		0.50		MG Brown mottled white, clayey gravel. Gravel is medium to coarse, white concrete and fine, angular limestone, weak ironstone and rounded quartzite. MG Red cobbles of brick.			
		1.00		MG Light grey sandy gravel and cobbles of angular concrete.			
J33		1.50		MG Red mottled grey sandy gravel of brick and concrete.			
W1+2		1.50		MG Black, slightly clayey, very fine sandy silt. Occasional gravel of glass. Moderate aged diesel odour.			▼
		1.50		MG Red gravel and cobbles of brick. MG Red cobble of brick and metal strip. NO RECOVERY.			
WAC34		2.00		MG Gravel of medium to coarse red brick fragments in a black viscous matrix (heavy lubricating oil or grease), with admixed pockets of very soft, black, organic silt.			
J35		2.50		Firm, greenish grey mottled black, organic CLAY. Locally soft consistency. Below 2.5m bgl; becoming orangish brown mottled light grey. (ALLUVIUM)			
		3.00		Soft, orangish brown mottled black, slightly gravelly CLAY. Gravel is fine angular ironstone and sandstone. (ALLUVIUM).			
		3.50		Stiff, orangish brown fissured grey CLAY. Occasional fine to medium, sub-angular to sub-rounded fine grained sandstone, siltstone and mudstone. (GLACIAL TILL?)			
		4.00		Stiff, grey mottled bluish grey, shaly CLAY. (Weathered MIDDLE PENNINE COAL MEASURES FORMATION)			
		4.50					

Groundwater Observations:

Groundwater resting at 1.50m bgl at end of day.

Borehole Logging Record :WS11

DRILLING DETAILS




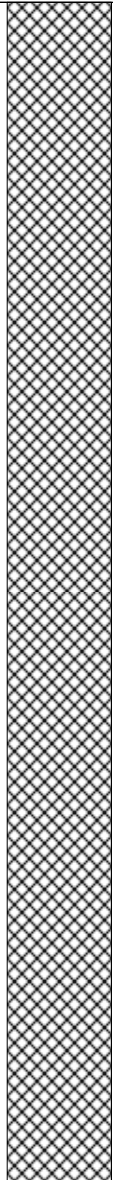










Drilling Company: Exploration Ltd
Drilling Method: WS

Drilling Date: 14th August 2017

Location: Shaw Lane : Barnsley
Ground Elevation: (mAMSL)

Drilled Depth: (mBGL)

Bore Diameter: 87 (mm)
TOC Elevation: (mAGL)

Sample Reference	Sample Range	Depth (mBGL)	Graphic Log	Soil or Rock Field Material Description	SPT (blows/300mm)	In Situ/ Lab Test	Piezometer Construction Details And Groundwater Levels
					0 10 20 30 40 50 60		
		0.00		MG Concrete slab.			
J42		0.50		MG Grey mottled dark brown and black, very clayey, very silty, slightly gravelly cobbles. Cobbles are concrete. Gravel is fine to medium, angular sandstone, limestone and roadstone. Occasional plastic sheeting and glass fragments. One cobble of light grey shale at 0.5m.			
J43		1.00		MG Silty, sandy, medium gravels of brick, concrete, weak sandstone, black lustrous vesicular slag, timber and rounded quartzite. Occasional glass. Between 1.3m and 1.7m; becoming more ashy.			
J44		1.50		MG Red gravel and cobbles of brick.			
J45		2.00		Soft, black, clayey, very silty pseudofibrous PEAT.			
		2.50		Firm, light grey mottled orangish brown CLAY. Locally soft and soft to firm consistency. (ALLUVIUM).			
		2.50		Firm, orangish brown mottled grey, 'crumb' textured CLAY with fine gravelly lithorelicts. NO RECOVERY.			
		3.00		Poor recovery. Very gravelly wet strata.			
		3.50		Stiff, orangish brown and grey fissured clay. Possible angular mudstone lithorelicts. (Possible weathered MIDDLE PENNINE COAL MEASURES FORMATION). NO RECOVERY.			
		4.00					
		4.50					

Groundwater Observations:

Wet strata below 3.0m.

APPENDIX 5

Chemical Contamination Test Certificates



Paul Palgrave
CSG Consulting Engineers Ltd
29 Greenlands Business Centre
Studley Road
Redditch
B98 7HD

QTS Environmental Ltd
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Rose Lane Industrial Estate
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Lenham Heath
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t: 01622 850410
russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 17-64415

Site Reference: Shaw Lane Barnsley

Project / Job Ref: 759

Order No: 2042

Sample Receipt Date: 15/08/2017

Sample Scheduled Date: 18/09/2017

Report Issue Number: 1

Reporting Date: 22/09/2017

Authorised by:

Kevin Old
Associate Director of Laboratory

Authorised by:

Russell Jarvis
Associate Director of Client Services

QTSE is the trading name of DETS Ltd, company registration number 03705645



QTS Environmental Ltd
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Maidstone
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Water Analysis Certificate						
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17	14/09/17	14/09/17	14/09/17	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS1	PP/759/SLB/WS2	PP/759/SLB/WS5	PP/759/SLB/WS8	PP/759/SLB/WS9
Project / Job Ref: 759	Additional Refs	Water	Water	Water	Water	Water
Order No: 2042	Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 22/09/2017	QTSE Sample No	291170	291171	291172	291173	291174

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.7	8.1	7.7	7.3	7.4
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Ammonia as NH ₄	ug/l	< 50	NONE	4060	599	5050	1240	9310
Dissolved Oxygen	mg/l	< 0.01	NONE	5.5	6.5	5.4	6	4.1
Arsenic (dissolved)	ug/l	< 5	ISO17025	11	< 5	9	< 5	6
Barium (dissolved)	ug/l	< 5	ISO17025	219	58	102	92	228
Beryllium (dissolved)	ug/l	< 3	ISO17025	< 3	< 3	< 3	< 3	< 3
Boron (dissolved)	ug/l	< 5	ISO17025	291	388	608	181	737
Cadmium (dissolved)	ug/l	< 0.4	ISO17025	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium (dissolved)	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Copper (dissolved)	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Lead (dissolved)	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Mercury (dissolved)	ug/l	< 0.05	ISO17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	ug/l	< 5	ISO17025	< 5	< 5	< 5	8	< 5
Selenium (dissolved)	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Vanadium (dissolved)	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Zinc (dissolved)	ug/l	< 2	ISO17025	7	4	2	15	< 2
Tentative Petroleum Type	N/a	N/a	NONE					

Subcontracted analysis ^(S)
 Insufficient sample ^{I/S}
 Unsuitable Sample ^{U/S}



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Water Analysis Certificate					
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17	14/09/17		
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied		
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS1 0	PP/759/SLB/WS1 0		
Project / Job Ref: 759	Additional Refs	Water1	Water2		
Order No: 2042	Depth (m)	None Supplied	None Supplied		
Reporting Date: 22/09/2017	QTSE Sample No	291175	291176		

Determinand	Unit	RL	Accreditation				
pH	pH Units	N/a	ISO17025		7.9		
Free Cyanide	ug/l	< 5	NONE		< 5		
Ammonia as NH ₄	ug/l	< 50	NONE		195000		
Dissolved Oxygen	mg/l	< 0.01	NONE		4.2		
Arsenic (dissolved)	ug/l	< 5	ISO17025		15		
Barium (dissolved)	ug/l	< 5	ISO17025		468		
Beryllium (dissolved)	ug/l	< 3	ISO17025		< 3		
Boron (dissolved)	ug/l	< 5	ISO17025		1000		
Cadmium (dissolved)	ug/l	< 0.4	ISO17025		< 0.4		
Chromium (dissolved)	ug/l	< 5	ISO17025		< 5		
Copper (dissolved)	ug/l	< 5	ISO17025		< 5		
Lead (dissolved)	ug/l	< 5	ISO17025		< 5		
Mercury (dissolved)	ug/l	< 0.05	ISO17025		0.06		
Nickel (dissolved)	ug/l	< 5	ISO17025		< 5		
Selenium (dissolved)	ug/l	< 5	ISO17025		< 5		
Vanadium (dissolved)	ug/l	< 5	ISO17025		< 5		
Zinc (dissolved)	ug/l	< 2	ISO17025		< 2		
Tentative Petroleum Type	N/a	N/a	NONE	Typical of diesel range organics			

Subcontracted analysis ^(S)

Insufficient sample ^{I/S}

Unsuitable Sample ^{U/S}



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Water Analysis Certificate - Speciated PAH					
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17	14/09/17	14/09/17	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS1	PP/759/SLB/WS2	PP/759/SLB/WS5	PP/759/SLB/WS8
Project / Job Ref: 759	Additional Refs	Water	Water	Water	Water
Order No: 2042	Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 22/09/2017	QTSE Sample No	291170	291171	291172	291173

Determinand	Unit	RL	Accreditation					
Naphthalene	ug/l	< 0.01	NONE	0.20	0.01	< 0.01	< 0.01	0.10
Acenaphthylene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	ug/l	< 0.01	NONE	0.15	< 0.01	< 0.01	< 0.01	0.04
Fluorene	ug/l	< 0.01	NONE	0.08	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	ug/l	< 0.01	NONE	0.13	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	ug/l	< 0.01	NONE	0.04	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	ug/l	< 0.01	NONE	0.03	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	ug/l	< 0.01	NONE	0.03	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	ug/l	< 0.008	NONE	< 0.008	< 0.008	< 0.008	< 0.008	< 0.008
Total EPA-16 PAHs	ug/l	< 0.01	NONE	0.66	0.01	< 0.01	< 0.01	0.14



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Water Analysis Certificate - Speciated PAH			
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17	
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS1 0	
Project / Job Ref: 759	Additional Refs	Water2	
Order No: 2042	Depth (m)	None Supplied	
Reporting Date: 22/09/2017	QTSE Sample No	291176	

Determinand	Unit	RL	Accreditation				
Naphthalene	ug/l	< 0.01	NONE	0.12			
Acenaphthylene	ug/l	< 0.01	NONE	< 0.01			
Acenaphthene	ug/l	< 0.01	NONE	0.06			
Fluorene	ug/l	< 0.01	NONE	0.06			
Phenanthrene	ug/l	< 0.01	NONE	0.06			
Anthracene	ug/l	< 0.01	NONE	< 0.01			
Fluoranthene	ug/l	< 0.01	NONE	< 0.01			
Pyrene	ug/l	< 0.01	NONE	< 0.01			
Benzo(a)anthracene	ug/l	< 0.01	NONE	< 0.01			
Chrysene	ug/l	< 0.01	NONE	< 0.01			
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	< 0.01			
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	< 0.01			
Benzo(a)pyrene	ug/l	< 0.01	NONE	< 0.01			
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01			
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01			
Benzo(ghi)perylene	ug/l	< 0.008	NONE	< 0.008			
Total EPA-16 PAHs	ug/l	< 0.01	NONE	0.30			



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Water Analysis Certificate - TPH CWG Banded						
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17	14/09/17	14/09/17	14/09/17	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS1	PP/759/SLB/WS2	PP/759/SLB/WS5	PP/759/SLB/WS8	PP/759/SLB/WS9
Project / Job Ref: 759	Additional Refs	Water	Water	Water	Water	Water
Order No: 2042	Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 22/09/2017	QTSE Sample No	291170	291171	291172	291173	291174

Determinand	Unit	RL	Accreditation						
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic >C21 - C34	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	ug/l	< 70	NONE	< 70	< 70	< 70	< 70	< 70	< 70
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic >C12 - C16	ug/l	< 10	NONE	12	< 10	< 10	< 10	< 10	< 10
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	ug/l	< 70	NONE	< 70	< 70	< 70	< 70	< 70	< 70
Total >C5 - C35	ug/l	< 140	NONE	< 140	< 140	< 140	< 140	< 140	< 140



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Water Analysis Certificate - TPH CWG Banded					
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17			
CSG Consulting Engineers Ltd	Time Sampled	None Supplied			
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS1 0			
Project / Job Ref: 759	Additional Refs	Water2			
Order No: 2042	Depth (m)	None Supplied			
Reporting Date: 22/09/2017	QTSE Sample No	291176			

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10			
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10			
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10			
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10			
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10			
Aliphatic >C16 - C21	ug/l	< 10	NONE	< 10			
Aliphatic >C21 - C34	ug/l	< 10	NONE	< 10			
Aliphatic (C5 - C34)	ug/l	< 70	NONE	< 70			
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10			
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10			
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10			
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10			
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10			
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10			
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10			
Aromatic (C5 - C35)	ug/l	< 70	NONE	< 70			
Total >C5 - C35	ug/l	< 140	NONE	< 140			



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Water Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17	14/09/17	14/09/17	14/09/17	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS1	PP/759/SLB/WS2	PP/759/SLB/WS5	PP/759/SLB/WS8	PP/759/SLB/WS9
Project / Job Ref: 759	Additional Refs	Water	Water	Water	Water	Water
Order No: 2042	Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 22/09/2017	QTSE Sample No	291170	291171	291172	291173	291174

Determinand	Unit	RL	Accreditation					
Benzene	ug/l	< 1	ISO17025	< 1	< 1	< 1	< 1	< 1
Toluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
p & m-xylene	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10
o-xylene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
MTBE	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10



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Water Analysis Certificate - BTEX / MTBE					
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17			
CSG Consulting Engineers Ltd	Time Sampled	None Supplied			
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS1 0			
Project / Job Ref: 759	Additional Refs	Water2			
Order No: 2042	Depth (m)	None Supplied			
Reporting Date: 22/09/2017	QTSE Sample No	291176			

Determinand	Unit	RL	Accreditation				
Benzene	ug/l	< 1	ISO17025	< 1			
Toluene	ug/l	< 5	ISO17025	< 5			
Ethylbenzene	ug/l	< 5	ISO17025	< 5			
p & m-xylene	ug/l	< 10	ISO17025	< 10			
o-xylene	ug/l	< 5	ISO17025	< 5			
MTBE	ug/l	< 10	ISO17025	< 10			



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Water Analysis Certificate - Volatile Organic Compounds (VOC)

QTS Environmental Report No: 17-64415	Date Sampled	14/09/17	14/09/17	14/09/17	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS1	PP/759/SLB/WS2	PP/759/SLB/WS5	PP/759/SLB/WS10
Project / Job Ref: 759	Additional Refs	Water	Water	Water	Water2
Order No: 2042	Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 22/09/2017	QTSE Sample No	291170	291171	291172	291176

Determinand	Unit	RL	Accreditation				
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Vinyl Chloride	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Chloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Chloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Bromomethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
MTBE	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
1,1-Dichloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
cis-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
2,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Chloroform	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Bromochloromethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10
1,1,1-Trichloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
1,1-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Carbon Tetrachloride	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
1,2-Dichloroethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10
Benzene	ug/l	< 1	ISO17025	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Trichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Bromodichloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Dibromomethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
TAME	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Toluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10
1,3-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Tetrachloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Dibromochloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Chlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Ethyl Benzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
m,p-Xylene	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10
o-Xylene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Styrene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Bromoform	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10
Isopropylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10
1,2,3-Trichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
n-Propylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Bromobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
1,3,5-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
4-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
tert-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
1,2,4-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
sec-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
p-Isopropyltoluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
1,3-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
1,4-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
n-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
1,2-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10
Hexachlorobutadiene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5



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Water Analysis Certificate - Volatile Organic Compounds TIC (VOC)		
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS1
Project / Job Ref: 759	Additional Refs	Water
Order No: 2042	Depth (m)	None Supplied
Reporting Date: 22/09/2017	QTSE Sample No	291170

Compound No	Compound Name	% Match	Units	RL	Estimated Concentration
1	N/a	N/a	µg/l	< 5	< 5
2	N/a	N/a	µg/l	< 5	< 5
3	N/a	N/a	µg/l	< 5	< 5
4	N/a	N/a	µg/l	< 5	< 5
5	N/a	N/a	µg/l	< 5	< 5

There were no / other compounds identified with a match of >90%



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Water Analysis Certificate - Volatile Organic Compounds TIC (VOC)		
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS2
Project / Job Ref: 759	Additional Refs	Water
Order No: 2042	Depth (m)	None Supplied
Reporting Date: 22/09/2017	QTSE Sample No	291171

Compound No	Compound Name	% Match	Units	RL	Estimated Concentration
1	N/a	N/a	µg/l	< 5	< 5
2	N/a	N/a	µg/l	< 5	< 5
3	N/a	N/a	µg/l	< 5	< 5
4	N/a	N/a	µg/l	< 5	< 5
5	N/a	N/a	µg/l	< 5	< 5

There were no / other compounds identified with a match of >90%



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Water Analysis Certificate - Volatile Organic Compounds TIC (VOC)		
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS5
Project / Job Ref: 759	Additional Refs	Water
Order No: 2042	Depth (m)	None Supplied
Reporting Date: 22/09/2017	QTSE Sample No	291172

Compound No	Compound Name	% Match	Units	RL	Estimated Concentration
1	N/a	N/a	µg/l	< 5	< 5
2	N/a	N/a	µg/l	< 5	< 5
3	N/a	N/a	µg/l	< 5	< 5
4	N/a	N/a	µg/l	< 5	< 5
5	N/a	N/a	µg/l	< 5	< 5

There were no / other compounds identified with a match of >90%



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Water Analysis Certificate - Volatile Organic Compounds TIC (VOC)		
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS10
Project / Job Ref: 759	Additional Refs	Water2
Order No: 2042	Depth (m)	None Supplied
Reporting Date: 22/09/2017	QTSE Sample No	291176

Compound No	Compound Name	% Match	Units	RL	Estimated Concentration
1	N/a	N/a	µg/l	< 5	< 5
2	N/a	N/a	µg/l	< 5	< 5
3	N/a	N/a	µg/l	< 5	< 5
4	N/a	N/a	µg/l	< 5	< 5
5	N/a	N/a	µg/l	< 5	< 5

There were no / other compounds identified with a match of >90%



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Water Analysis Certificate - Semi Volatile Organic Compounds (SVOC)					
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17	14/09/17	14/09/17	
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS2	PP/759/SLB/WS5	PP/759/SLB/WS1	
Project / Job Ref: 759	Additional Refs	Water	Water	Water2	
Order No: 2042	Depth (m)	None Supplied	None Supplied	None Supplied	
Reporting Date: 22/09/2017	QTSE Sample No	291171	291172	291176	

Determinand	Unit	RL	Accreditation				
Phenol	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
1,2,4-Trichlorobenzene	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
2-Nitrophenol	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Nitrobenzene	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
0-Cresol	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
bis(2-chloroethoxy)methane	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
bis(2-chloroethyl)ether	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dichlorophenol	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
2-Chlorophenol	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichlorobenzene	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dimethylphenol	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Isophorone	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Hexachloroethane	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
p-Cresol	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
2-Nitroaniline	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylnaphthalene	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorocyclopentadiene	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobutadiene	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Dimethyl phthalate	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloroaniline	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
4-Nitrophenol	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
4-Chlorophenyl phenyl ether	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
3-Nitroaniline	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
4-Nitroaniline	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
4-Bromophenyl phenyl ether	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobenzene	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dinitrotoluene	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Diethyl phthalate	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzofuran	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Azobenzene	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Dibutyl phthalate	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Carbazole	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
bis(2-ethylhexyl)phthalate	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Benzyl butyl phthalate	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Di-n-octyl phthalate	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1



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Water Analysis Certificate - Semi Volatile Organic Compounds TIC (SVOC)		
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS2
Project / Job Ref: 759	Additional Refs	Water
Order No: 2042	Depth (m)	None Supplied
Reporting Date: 22/09/2017	QTSE Sample No	291171

Compound No	Compound Name	% Match	Units	RL	Estimated Concentration
1	Butylated Hydroxytoluene	98	µg/l	< 0.1	0.6
2		N/a	µg/l	< 0.1	< 0.1
3	N/a	N/a	µg/l	< 0.1	< 0.1
4	N/a	N/a	µg/l	< 0.1	< 0.1
5	N/a	N/a	µg/l	< 0.1	< 0.1

There were no / other compounds identified with a match of >90%



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Water Analysis Certificate - Semi Volatile Organic Compounds TIC (SVOC)		
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS5
Project / Job Ref: 759	Additional Refs	Water
Order No: 2042	Depth (m)	None Supplied
Reporting Date: 22/09/2017	QTSE Sample No	291172

Compound No	Compound Name	% Match	Units	RL	Estimated Concentration
1	N/a	N/a	µg/l	< 0.1	< 0.1
2	N/a	N/a	µg/l	< 0.1	< 0.1
3	N/a	N/a	µg/l	< 0.1	< 0.1
4	N/a	N/a	µg/l	< 0.1	< 0.1
5	N/a	N/a	µg/l	< 0.1	< 0.1

There were no / other compounds identified with a match of >90%



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Water Analysis Certificate - Semi Volatile Organic Compounds TIC (SVOC)		
QTS Environmental Report No: 17-64415	Date Sampled	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied
Site Reference: Shaw Lane Barnsley	TP / BH No	PP/759/SLB/WS10
Project / Job Ref: 759	Additional Refs	Water2
Order No: 2042	Depth (m)	None Supplied
Reporting Date: 22/09/2017	QTSE Sample No	291176

Compound No	Compound Name	% Match	Units	RL	Estimated Concentration
1	Octadecanoic acid, 2-methylpropyl ester	90	µg/l	< 0.1	0.6
2	N/a	N/a	µg/l	< 0.1	< 0.1
3	N/a	N/a	µg/l	< 0.1	< 0.1
4	N/a	N/a	µg/l	< 0.1	< 0.1
5	N/a	N/a	µg/l	< 0.1	< 0.1

There were no / other compounds identified with a match of >90%

Soil Analysis Certificate - Methodology & Miscellaneous Information
QTS Environmental Report No: 17-64415
CSG Consulting Engineers Ltd
Site Reference: Shaw Lane Barnsley
Project / Job Ref: 759
Order No: 2042
Reporting Date: 22/09/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detection	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered



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QTS Environmental Report No: 17-64443

Site Reference: Shaw Lane, Barnsley

Project / Job Ref: 759

Order No: 2043

Sample Receipt Date: 15/09/2017

Sample Scheduled Date: 19/09/2017

Report Issue Number: 1

Reporting Date: 25/09/2017

Authorised by:

Russell Jarvis
Associate Director of Client Services

Authorised by:

Dave Ashworth
Deputy Quality Manager

QTSE is the trading name of DETS Ltd, company registration number 03705645



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Soil Analysis Certificate						
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17	14/09/17	14/09/17	14/09/17	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS2	PP/759/SLB/WS2	PP/759/SLB/WS2	PP/759/SLB/WS3	PP/759/SLB/WS3
Project / Job Ref: 759	Additional Refs	5	6	7	8	10
Order No: 2043	Depth (m)	0.40 - 0.50	1.00 - 2.00	2.30 - 2.40	0.90 - 1.00	2.80 - 3.00
Reporting Date: 25/09/2017	QTSE Sample No	291254	291255	291256	291257	291258

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected		
pH	pH Units	N/a	MCERTS	8.9	7.8		7.7
Total Cyanide	mg/kg	< 2	NONE		< 2		< 2
Total Sulphate as SO ₄	mg/kg	< 200	NONE		1979		3144
Total Sulphate as SO ₄	%	< 0.02	NONE		0.20		0.31
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	364			91
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.36			0.09
Sulphide	mg/kg	< 5	NONE		< 5		< 5
Organic Matter	%	< 0.1	MCERTS		9.2	5.1	1
Arsenic (As)	mg/kg	< 2	MCERTS		33		27
W/S Boron	mg/kg	< 1	NONE		3		1.2
Cadmium (Cd)	mg/kg	< 0.2	MCERTS		0.8		0.5
Chromium (Cr)	mg/kg	< 2	MCERTS		15		9
Copper (Cu)	mg/kg	< 4	MCERTS		283		51
Lead (Pb)	mg/kg	< 3	MCERTS		111		32
Mercury (Hg)	mg/kg	< 1	NONE		< 1		< 1
Nickel (Ni)	mg/kg	< 3	MCERTS		23		23
Selenium (Se)	mg/kg	< 3	NONE		< 3		< 3
Zinc (Zn)	mg/kg	< 3	MCERTS		213		55
Total Phenols (monohydric)	mg/kg	< 2	NONE		< 2		< 2
Tentative Petroleum Type	N/a	N/a	NONE				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C
 Subcontracted analysis (S)



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Soil Analysis Certificate						
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17	14/09/17	14/09/17	14/09/17	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS5	PP/759/SLB/WS6	PP/759/SLB/WS6	PP/759/SLB/WS7	PP/759/SLB/WS8
Project / Job Ref: 759	Additional Refs	17	22	23	27	29
Order No: 2043	Depth (m)	0.70 - 0.80	0.10 - 0.30	0.90 - 1.00	0.70 - 0.85	0.30 - 0.40
Reporting Date: 25/09/2017	QTSE Sample No	291259	291263	291264	291267	291268

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected		Not Detected
pH	pH Units	N/a	MCERTS	10.0	11.7	9.0	8.6
Total Cyanide	mg/kg	< 2	NONE	< 2		< 2	< 2
Total Sulphate as SO ₄	mg/kg	< 200	NONE	4630		4503	4517
Total Sulphate as SO ₄	%	< 0.02	NONE	0.46		0.45	0.45
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS		473	173	281
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS		0.47	0.17	0.28
Sulphide	mg/kg	< 5	NONE	< 5		70	12
Organic Matter	%	< 0.1	MCERTS				5.6
Arsenic (As)	mg/kg	< 2	MCERTS	8		19	5
W/S Boron	mg/kg	< 1	NONE	2.2		7.3	4.2
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.2		2	1.9
Chromium (Cr)	mg/kg	< 2	MCERTS	18		51	29
Copper (Cu)	mg/kg	< 4	MCERTS	26		195	206
Lead (Pb)	mg/kg	< 3	MCERTS	99		131	144
Mercury (Hg)	mg/kg	< 1	NONE	< 1		< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	16		29	19
Selenium (Se)	mg/kg	< 3	NONE	< 3		< 3	< 3
Zinc (Zn)	mg/kg	< 3	MCERTS	62		486	379
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2		< 2	< 2
Tentative Petroleum Type	N/a	N/a	NONE				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C
 Subcontracted analysis (S)



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Soil Analysis Certificate						
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17	14/09/17	14/09/17	14/09/17	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS8	PP/759/SLB/WS8	PP/759/SLB/WS1	PP/759/SLB/WS1	PP/759/SLB/WS9
Project / Job Ref: 759	Additional Refs	30	31	34	35	38
Order No: 2043	Depth (m)	1.55 - 1.70	3.55 - 3.77	2.00 - 2.30	2.40 - 2.50	0.40 - 0.50
Reporting Date: 25/09/2017	QTSE Sample No	291269	291270	291272	291273	291275

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025				
pH	pH Units	N/a	MCERTS	7.5	7.7	7.5	11.6
Total Cyanide	mg/kg	< 2	NONE	< 2			< 2
Total Sulphate as SO ₄	mg/kg	< 200	NONE	827			19710
Total Sulphate as SO ₄	%	< 0.02	NONE	0.08			1.97
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	26	112	97	
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.03	0.11	0.10	
Sulphide	mg/kg	< 5	NONE	324			236
Organic Matter	%	< 0.1	MCERTS	8.2			
Arsenic (As)	mg/kg	< 2	MCERTS	22			11
W/S Boron	mg/kg	< 1	NONE	4.6			1.7
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.4			3.2
Chromium (Cr)	mg/kg	< 2	MCERTS	12			57
Copper (Cu)	mg/kg	< 4	MCERTS	56			276
Lead (Pb)	mg/kg	< 3	MCERTS	30			458
Mercury (Hg)	mg/kg	< 1	NONE	< 1			< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	24			26
Selenium (Se)	mg/kg	< 3	NONE	< 3			< 3
Zinc (Zn)	mg/kg	< 3	MCERTS	75			587
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2			< 2
Tentative Petroleum Type	N/a	N/a	NONE			Typical of lubricating oil range organics	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C
 Subcontracted analysis (S)



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Soil Analysis Certificate					
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17			
CSG Consulting Engineers Ltd	Time Sampled	None Supplied			
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS1			
Project / Job Ref: 759	Additional Refs	42			
Order No: 2043	Depth (m)	0.20 - 0.40			
Reporting Date: 25/09/2017	QTSE Sample No	291278			

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected			
pH	pH Units	N/a	MCERTS				
Total Cyanide	mg/kg	< 2	NONE				
Total Sulphate as SO ₄	mg/kg	< 200	NONE				
Total Sulphate as SO ₄	%	< 0.02	NONE				
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS				
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS				
Sulphide	mg/kg	< 5	NONE				
Organic Matter	%	< 0.1	MCERTS				
Arsenic (As)	mg/kg	< 2	MCERTS				
W/S Boron	mg/kg	< 1	NONE				
Cadmium (Cd)	mg/kg	< 0.2	MCERTS				
Chromium (Cr)	mg/kg	< 2	MCERTS				
Copper (Cu)	mg/kg	< 4	MCERTS				
Lead (Pb)	mg/kg	< 3	MCERTS				
Mercury (Hg)	mg/kg	< 1	NONE				
Nickel (Ni)	mg/kg	< 3	MCERTS				
Selenium (Se)	mg/kg	< 3	NONE				
Zinc (Zn)	mg/kg	< 3	MCERTS				
Total Phenols (monohydric)	mg/kg	< 2	NONE				
Tentative Petroleum Type	N/a	N/a	NONE				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C
 Subcontracted analysis (S)



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Soil Analysis Certificate - Speciated PAHs						
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17	14/09/17	14/09/17	14/09/17	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS2	PP/759/SLB/WS3	PP/759/SLB/WS5	PP/759/SLB/WS5	PP/759/SLB/WS6
Project / Job Ref: 759	Additional Refs	6	8	17	18	23
Order No: 2043	Depth (m)	1.00 - 2.00	0.90 - 1.00	0.70 - 0.80	1.30 - 1.40	0.90 - 1.00
Reporting Date: 25/09/2017	QTSE Sample No	291255	291257	291259	291260	291264

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	0.40	0.35	0.63	0.34	0.62
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.36
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.77
Phenanthrene	mg/kg	< 0.1	MCERTS	0.60	0.42	0.74	0.42	2.02
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.16	0.11	0.42
Fluoranthene	mg/kg	< 0.1	MCERTS	0.60	0.21	0.70	0.24	1.64
Pyrene	mg/kg	< 0.1	MCERTS	0.49	0.20	0.63	0.22	1.85
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.19	< 0.1	0.28	< 0.1	0.47
Chrysene	mg/kg	< 0.1	MCERTS	0.22	0.12	0.42	0.14	0.75
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.19	< 0.1	0.38	0.14	0.78
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.17	< 0.1	0.29
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.29	< 0.1	0.48
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.17	< 0.1	0.31
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.19	< 0.1	0.31
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	2.7	< 1.6	4.8	1.6	11.1

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Soil Analysis Certificate - Speciated PAHs						
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17	14/09/17	14/09/17	14/09/17	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS7	PP/759/SLB/WS8	PP/759/SLB/WS1	PP/759/SLB/WS1	PP/759/SLB/WS9
Project / Job Ref: 759	Additional Refs	27	30	33	34	36
Order No: 2043	Depth (m)	0.70 - 0.85	1.55 - 1.70	1.20 - 1.35	2.00 - 2.30	0.80 - 1.00
Reporting Date: 25/09/2017	QTSE Sample No	291267	291269	291271	291272	291274

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	0.24	0.77	0.20	< 0.1	0.13
Acenaphthylene	mg/kg	< 0.1	MCERTS	0.12	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	0.62	< 0.1	0.20	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	1.45	1.39	0.64	0.55	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	0.27	0.12	0.24	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	1.22	0.59	0.89	0.63	0.64
Pyrene	mg/kg	< 0.1	MCERTS	2.02	0.44	1.43	0.56	0.96
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.62	0.14	0.45	0.22	0.31
Chrysene	mg/kg	< 0.1	MCERTS	1.13	0.23	0.64	0.25	0.50
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	1.38	0.22	0.91	0.23	0.60
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.36	< 0.1	0.25	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.62	< 0.1	0.54	0.17	0.34
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.57	< 0.1	0.43	< 0.1	0.23
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.54	< 0.1	0.35	< 0.1	0.24
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	11.2	3.9	7.2	2.6	3.9

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Soil Analysis Certificate - Speciated PAHs			
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17	
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS9 B	
Project / Job Ref: 759	Additional Refs	38	
Order No: 2043	Depth (m)	0.40 - 0.50	
Reporting Date: 25/09/2017	QTSE Sample No	291275	

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	1.47			
Acenaphthylene	mg/kg	< 0.1	MCERTS	0.20			
Acenaphthene	mg/kg	< 0.1	MCERTS	0.79			
Fluorene	mg/kg	< 0.1	MCERTS	1.46			
Phenanthrene	mg/kg	< 0.1	MCERTS	3.93			
Anthracene	mg/kg	< 0.1	MCERTS	0.82			
Fluoranthene	mg/kg	< 0.1	MCERTS	3.86			
Pyrene	mg/kg	< 0.1	MCERTS	4.12			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	1.28			
Chrysene	mg/kg	< 0.1	MCERTS	1.70			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	1.96			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.70			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	1.35			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.92			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.16			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.78			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	25.5			

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Soil Analysis Certificate - EPH Texas Banded						
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17	14/09/17	14/09/17		
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS5	PP/759/SLB/WS6	PP/759/SLB/WS9		
Project / Job Ref: 759	Additional Refs	19	24	41		
Order No: 2043	Depth (m)	1.90 - 2.00	1.00 - 1.10	0.90 - 1.00		
Reporting Date: 25/09/2017	QTSE Sample No	291261	291265	291277		

Determinand	Unit	RL	Accreditation				
EPH Texas (C6 - C8)	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	
EPH Texas (>C8 - C10)	mg/kg	< 1	MCERTS	3	8	268	
EPH Texas (>C10 - C12)	mg/kg	< 1	MCERTS	5	38	652	
EPH Texas (>C12 - C16)	mg/kg	< 1	MCERTS	10	236	1849	
EPH Texas (>C16 - C21)	mg/kg	< 1	MCERTS	16	316	3142	
EPH Texas (>C21 - C40)	mg/kg	< 6	MCERTS	270	591	11264	
EPH Texas (C6 - C40)	mg/kg	< 6	NONE	304	1189	17174	

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Soil Analysis Certificate - EPH Banded (Type F)					
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17	14/09/17	14/09/17	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS5	PP/759/SLB/WS6	PP/759/SLB/WS1	PP/759/SLB/WS9
Project / Job Ref: 759	Additional Refs	21	25	35	40
Order No: 2043	Depth (m)	2.80 - 2.90	2.40 - 2.50	2.40 - 2.50	2.60 - 2.70
Reporting Date: 25/09/2017	QTSE Sample No	291262	291266	291273	291276

Determinand	Unit	RL	Accreditation				
EPH (>C8 - C10)	mg/kg	< 1	MCERTS	< 1	4	< 1	< 1
EPH (>C10 - C12)	mg/kg	< 1	MCERTS	< 1	3	< 1	< 1
EPH (>C12 - C16)	mg/kg	< 1	MCERTS	< 1	11	< 1	9
EPH (>C16 - C21)	mg/kg	< 1	MCERTS	< 1	18	< 1	37
EPH (>C21 - C40)	mg/kg	< 6	MCERTS	< 6	33	< 6	104
EPH (C8 - C40)	mg/kg	< 6	MCERTS	< 6	69	< 6	150

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Soil Analysis Certificate - TPH CWG Banded						
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17	14/09/17	14/09/17	14/09/17	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS5	PP/759/SLB/WS6	PP/759/SLB/WS10	PP/759/SLB/WS11	PP/759/SLB/WS9
Project / Job Ref: 759	Additional Refs	18	23	33	34	36
Order No: 2043	Depth (m)	1.30 - 1.40	0.90 - 1.00	1.20 - 1.35	2.00 - 2.30	0.80 - 1.00
Reporting Date: 25/09/2017	QTSE Sample No	291260	291264	291271	291272	291274

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	13	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	62	8	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	427	388	< 3	72
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	49	1014	2466	< 3	1240
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	2119	5686	14981	105	10807
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	2168	7203	17844	105	12119
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	3	2	< 2	< 2	16
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	9	17	< 2	< 2	45
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	24	175	57	< 2	220
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	26	456	624	6	415
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	449	1359	3589	31	3022
Aromatic (C5 - C35)	mg/kg	< 21	NONE	512	2009	4270	37	3719
Total >C5 - C35	mg/kg	< 42	NONE	2680	9212	22114	143	15838

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Soil Analysis Certificate - TPH CWG Banded					
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17			
CSG Consulting Engineers Ltd	Time Sampled	None Supplied			
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS9 B			
Project / Job Ref: 759	Additional Refs	38			
Order No: 2043	Depth (m)	0.40 - 0.50			
Reporting Date: 25/09/2017	QTSE Sample No	291275			

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01			
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05			
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	130			
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	351			
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	1359			
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	3226			
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	7704			
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	12770			
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01			
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05			
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	26			
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	129			
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	631			
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	1212			
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	2275			
Aromatic (C5 - C35)	mg/kg	< 21	NONE	4272			
Total >C5 - C35	mg/kg	< 42	NONE	17042			

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Soil Analysis Certificate - BTEX / MTBE					
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17	14/09/17	14/09/17	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS5	PP/759/SLB/WS6	PP/759/SLB/WS1	PP/759/SLB/WS9
Project / Job Ref: 759	Additional Refs	18	23	33	34
Order No: 2043	Depth (m)	1.30 - 1.40	0.90 - 1.00	1.20 - 1.35	2.00 - 2.30
Reporting Date: 25/09/2017	QTSE Sample No	291260	291264	291271	291274

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	13	< 2	< 2	< 2
Toluene	ug/kg	< 5	MCERTS	< 5	31	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	13	< 2	< 2	36
p & m-xylene	ug/kg	< 2	MCERTS	< 2	46	< 2	< 2	81
o-xylene	ug/kg	< 2	MCERTS	< 2	36	< 2	< 2	41
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5

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Soil Analysis Certificate - BTEX / MTBE			
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17	
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS9 B	
Project / Job Ref: 759	Additional Refs	38	
Order No: 2043	Depth (m)	0.40 - 0.50	
Reporting Date: 25/09/2017	QTSE Sample No	291275	

Determinand	Unit	RL	Accreditation				
Benzene	ug/kg	< 2	MCERTS	< 2			
Toluene	ug/kg	< 5	MCERTS	< 5			
Ethylbenzene	ug/kg	< 2	MCERTS	259			
p & m-xylene	ug/kg	< 2	MCERTS	408			
o-xylene	ug/kg	< 2	MCERTS	467			
MTBE	ug/kg	< 5	MCERTS	< 5			

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Soil Analysis Certificate - Volatile Organic Compounds (VOC)

QTS Environmental Report No: 17-64443	Date Sampled	14/09/17	14/09/17	14/09/17	
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS1 0	PP/759/SLB/WS9	PP/759/SLB/WS9 B	
Project / Job Ref: 759	Additional Refs	33	36	38	
Order No: 2043	Depth (m)	1.20 - 1.35	0.80 - 1.00	0.40 - 0.50	
Reporting Date: 25/09/2017	QTSE Sample No	291271	291274	291275	

Determinand	Unit	RL	Accreditation			
Dichlorodifluoromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
Vinyl Chloride	ug/kg	< 5	MCERTS	< 5	< 5	< 5
Chloromethane	ug/kg	< 10	MCERTS	< 10	< 10	< 10
Chloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
Bromomethane	ug/kg	< 10	MCERTS	< 10	< 10	< 10
Trichlorofluoromethane	ug/kg	< 5	MCERTS	< 5	58	87
1,1-Dichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5
trans-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
1,1-Dichloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
cis-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
2,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
Chloroform	ug/kg	< 5	MCERTS	< 5	< 5	< 5
Bromochloromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
1,1,1-Trichloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
1,1-Dichloropropene	ug/kg	< 10	MCERTS	< 10	< 10	< 10
Carbon Tetrachloride	ug/kg	< 5	MCERTS	< 5	< 5	< 5
1,2-Dichloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2
1,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
Trichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
Bromodichloromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
Dibromomethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
TAME	ug/kg	< 5	MCERTS	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
1,1,2-Trichloroethane	ug/kg	< 10	MCERTS	< 10	< 10	< 10
1,3-Dichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
Tetrachloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
Dibromochloromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
1,2-Dibromoethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
Chlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
1,1,1,2-Tetrachloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
Ethyl Benzene	ug/kg	< 2	MCERTS	< 2	36	259
m,p-Xylene	ug/kg	< 2	MCERTS	< 2	81	408
o-Xylene	ug/kg	< 2	MCERTS	< 2	41	467
Styrene	ug/kg	< 5	MCERTS	< 5	61	1846
Bromoform	ug/kg	< 10	MCERTS	< 10	< 10	< 10
Isopropylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	221
1,1,2,2-Tetrachloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
1,2,3-Trichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5
n-Propylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	514
Bromobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
2-Chlorotoluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
1,3,5-Trimethylbenzene	ug/kg	< 5	MCERTS	< 5	27	1256
4-Chlorotoluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
tert-Butylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
1,2,4-Trimethylbenzene	ug/kg	< 5	MCERTS	< 5	42	3438
sec-Butylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	367
p-Isopropyltoluene	ug/kg	< 5	MCERTS	< 5	< 5	294
1,3-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
1,4-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
n-Butylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	887
1,2-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/kg	< 10	MCERTS	< 10	< 10	< 10
Hexachlorobutadiene	ug/kg	< 5	MCERTS	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C



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Soil Analysis Certificate - Volatile Organic Compounds TIC (VOC)		
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS10
Project / Job Ref: 759	Additional Refs	33
Order No: 2043	Depth (m)	1.20 - 1.35
Reporting Date: 25/09/2017	QTSE Sample No	291271

Compound No	Compound Name	% Match	Units	RL	Estimated Concentration
1	N/a	N/a	µg/kg	< 10	< 10
2	N/a	N/a	µg/kg	< 10	< 10
3	N/a	N/a	µg/kg	< 10	< 10
4	N/a	N/a	µg/kg	< 10	< 10
5	N/a	N/a	µg/kg	< 10	< 10

There were no / other compounds identified with a match of >90%



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Soil Analysis Certificate - Volatile Organic Compounds TIC (VOC)		
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS9
Project / Job Ref: 759	Additional Refs	36
Order No: 2043	Depth (m)	0.80 - 1.00
Reporting Date: 25/09/2017	QTSE Sample No	291274

Compound No	Compound Name	% Match	Units	RL	Estimated Concentration
1	1-Propene, 3-3'-thiobis[2-methyl-	98	µg/kg	< 10	104
2	N/a	N/a	µg/kg	< 10	< 10
3	N/a	Na	µg/kg	< 10	< 10
4	N/a	N/a	µg/kg	< 10	< 10
5	N/a	N/a	µg/kg	< 10	< 10

There were no / other compounds identified with a match of >90%



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Soil Analysis Certificate - Volatile Organic Compounds TIC (VOC)		
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS9B
Project / Job Ref: 759	Additional Refs	38
Order No: 2043	Depth (m)	0.40 - 0.50
Reporting Date: 25/09/2017	QTSE Sample No	291275

Compound No	Compound Name	% Match	Units	RL	Estimated Concentration
1	Benzene, 1-ethyl-2-methyl-	93	µg/kg	< 10	286
2	N/a	N/a	µg/kg	< 10	< 10
3	N/a	N/a	µg/kg	< 10	< 10
4	N/a	N/a	µg/kg	< 10	< 10
5	N/a	N/a	µg/kg	< 10	< 10

There were no / other compounds identified with a match of >90%



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Soil Analysis Certificate - Semi Volatile Organic Compounds (SVOC)			
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17	
CSG Consulting Engineers Ltd	Time Sampled	None Supplied	
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS1 0	
Project / Job Ref: 759	Additional Refs	34	
Order No: 2043	Depth (m)	2.00 - 2.30	
Reporting Date: 25/09/2017	QTSE Sample No	291272	

Determinand	Unit	RL	Accreditation				
Phenol	mg/kg	< 0.1	NONE	< 0.1			
1,2,4-Trichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1			
2-Nitrophenol	mg/kg	< 0.1	NONE	< 0.1			
Nitrobenzene	mg/kg	< 0.1	MCERTS	< 0.1			
0-Cresol	mg/kg	< 0.1	NONE	< 0.1			
bis(2-chloroethoxy)methane	mg/kg	< 0.1	MCERTS	< 0.1			
bis(2-chloroethyl)ether	mg/kg	< 0.1	MCERTS	< 0.1			
2,4-Dichlorophenol	mg/kg	< 0.1	MCERTS	< 0.1			
2-Chlorophenol	mg/kg	< 0.1	ISO17025	< 0.1			
1,3-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1			
1,4-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1			
1,2-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1			
2,4-Dimethylphenol	mg/kg	< 0.15	ISO17025	< 0.15			
Isophorone	mg/kg	< 0.1	NONE	< 0.1			
Hexachloroethane	mg/kg	< 0.1	MCERTS	< 0.1			
p-Cresol	mg/kg	< 0.15	MCERTS	< 0.15			
2,4,6-Trichlorophenol	mg/kg	< 0.1	MCERTS	< 0.1			
2,4,5-Trichlorophenol	mg/kg	< 0.15	MCERTS	< 0.15			
2-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1			
4-Chloro-3-methylphenol	mg/kg	< 0.1	NONE	< 0.1			
2-Methylnaphthalene	mg/kg	< 0.1	MCERTS	< 0.1			
Hexachlorocyclopentadiene	mg/kg	< 0.1	NONE	< 0.1			
Hexachlorobutadiene	mg/kg	< 0.1	ISO17025	< 0.1			
2,6-Dinitrotoluene	mg/kg	< 0.1	MCERTS	< 0.1			
Dimethyl phthalate	mg/kg	< 0.1	NONE	< 0.1			
2-Chloronaphthalene	mg/kg	< 0.1	MCERTS	< 0.1			
4-Chloroaniline	mg/kg	< 0.15	NONE	< 0.15			
4-Nitrophenol	mg/kg	< 0.1	NONE	< 0.1			
4-Chlorophenyl phenyl ether	mg/kg	< 0.1	MCERTS	< 0.1			
3-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1			
4-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1			
4-Bromophenyl phenyl ether	mg/kg	< 0.1	MCERTS	< 0.1			
Hexachlorobenzene	mg/kg	< 0.1	MCERTS	< 0.1			
2,4-Dinitrotoluene	mg/kg	< 0.1	MCERTS	< 0.1			
Diethyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1			
Dibenzofuran	mg/kg	< 0.1	MCERTS	< 0.1			
Azobenzene	mg/kg	< 0.1	NONE	< 0.1			
Dibutyl phthalate	mg/kg	< 0.1	ISO17025	< 0.1			
Carbazole	mg/kg	< 0.1	ISO17025	< 0.1			
bis(2-ethylhexyl)phthalate	mg/kg	< 0.15	MCERTS	< 0.15			
Benzyl butyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1			
Di-n-octyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C



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Soil Analysis Certificate - Semi Volatile Organic Compounds TIC (SVOC)		
QTS Environmental Report No: 17-64443	Date Sampled	14/09/17
CSG Consulting Engineers Ltd	Time Sampled	None Supplied
Site Reference: Shaw Lane, Barnsley	TP / BH No	PP/759/SLB/WS10
Project / Job Ref: 759	Additional Refs	34
Order No: 2043	Depth (m)	2.00 - 2.30
Reporting Date: 25/09/2017	QTSE Sample No	291272

Compound No	Compound Name	% Match	Units	RL	Estimated Concentration
1	N/a	N/a	mg/kg	< 0.1	< 0.1
2	N/a	N/a	mg/kg	< 0.1	< 0.1
3	N/a	N/a	mg/kg	< 0.1	< 0.1
4	N/a	N/a	mg/kg	< 0.1	< 0.1
5	N/a	N/a	mg/kg	< 0.1	< 0.1

There were no / other compounds identified with a match of >90%



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Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 17-64443	
CSG Consulting Engineers Ltd	
Site Reference: Shaw Lane, Barnsley	
Project / Job Ref: 759	
Order No: 2043	
Reporting Date: 25/09/2017	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
291254	PP/759/SLB/WS2	5	0.40 - 0.50	12	Brown sandy clay with brick and concrete
291255	PP/759/SLB/WS2	6	1.00 - 2.00	22.2	Black sandy clay with coal and tar
291256	PP/759/SLB/WS2	7	2.30 - 2.40	34.9	Black sandy clay with coal
291257	PP/759/SLB/WS3	8	0.90 - 1.00	6.9	Black sandy clay with stones
291258	PP/759/SLB/WS3	10	2.80 - 3.00	11.9	Brown sandy clay with stones
291259	PP/759/SLB/WS5	17	0.70 - 0.80	11.6	Brown sandy clay with brick and concrete
291260	PP/759/SLB/WS5	18	1.30 - 1.40	9.3	Black sandy clay and coal
291261	PP/759/SLB/WS5	19	1.90 - 2.00	15.2	Black sandy clay with stones and concrete
291262	PP/759/SLB/WS5	21	2.80 - 2.90	19.2	Light brown sandy clay
291263	PP/759/SLB/WS6	22	0.10 - 0.30	11.7	Brown sandy clay with stones and concrete
291264	PP/759/SLB/WS6	23	0.90 - 1.00	9	Black sandy clay with brick and concrete
291265	PP/759/SLB/WS6	24	1.00 - 1.10	11.7	Black sandy clay with brick and concrete
291266	PP/759/SLB/WS6	25	2.40 - 2.50	17.7	Black sandy clay with coal and tar
291267	PP/759/SLB/WS7	27	0.70 - 0.85	7.5	Brown sandy clay with brick and concrete
291269	PP/759/SLB/WS8	30	1.55 - 1.70	13.9	Black sandy clay with coal
291270	PP/759/SLB/WS8	31	3.55 - 3.77	11.2	Brown sandy clay with stones
291271	PP/759/SLB/WS10	33	1.20 - 1.35	20	Black sandy clay with coal and concrete
291272	PP/759/SLB/WS10	34	2.00 - 2.30	27.4	Black sandy clay with coal and tar
291273	PP/759/SLB/WS10	35	2.40 - 2.50	17.7	Brown sandy clay
291274	PP/759/SLB/WS9	36	0.80 - 1.00	5.5	Black sandy clay with glass and coal
291275	PP/759/SLB/WS9B	38	0.40 - 0.50	8.9	Black sandy clay with concrete
291276	PP/759/SLB/WS9B	40	2.60 - 2.70	55.8	Black clay with coal
291277	PP/759/SLB/WS9B	41	0.90 - 1.00	7.8	Black sandy clay with brick

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/S}

Unsuitable Sample ^{U/S}

Soil Analysis Certificate - Methodology & Miscellaneous Information
QTS Environmental Report No: 17-64443
CSG Consulting Engineers Ltd
Site Reference: Shaw Lane, Barnsley
Project / Job Ref: 759
Order No: 2043
Reporting Date: 25/09/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received