

13 February 2019

Your ref:
Planning ref:
Our ref: J16120/db/c03

Gary Webster
BDW Southampton
Tollbar House
Tollbar Way
Hedge End
Southampton
SO30 2UH

Dear Mr Webster,

RE: FORTY ACRE FARM DEVELOPMENT SITE, BEDHAMPTON
GROUND INVESTIGATION FINDINGS BRIEFING NOTE

To support the ground works tender package of information, this briefing note together with the enclosed factual records provide a summary of the ground conditions at this site and their implications with regards to the proposed development.

This letter is provided in accordance with our standard terms and conditions of contract and should be viewed as preliminary advice and recommendation pending consideration of the full set of laboratory test results.

Development Proposals

This site is to be developed through a residential housing scheme that is to be constructed upon a raised earthworks platform that is required to be formed using imported fill materials to ensure that the development is raised above potential flood risk levels.

The scheme is to include a range of two storey traditional housing units together with access roads, areas of hardstanding for car parking, private domestic gardens and areas of ancillary soft landscaping. In addition, a series of surface water attenuation basins are to be formed within the southern part of the site together with a new area of ecology focused soft landscaping to the east.

Desk Study summary and Environmental Setting

The majority of the site has not been previously developed and may be defined as a greenfield site that is currently used for agriculture and as a site for a weekly car boot sale. Within the southern central part of the site is a former farmyard area comprising a series of barns and outbuildings together with areas of hardstanding. This part of the site has subsequently been used as an office, workshop and storage area for a local building contractor.

Desk study searches indicate the presence of an historical landfill site approximately 170m to the southeast of the site (approximately 300m to the southeast of the residential development area) and has not indicated any other issues of potential concern in the vicinity of the site. The site is not indicated to be located in an area affected by radon.

Prevailing Ground Conditions

The ground investigation entailed 36 small diameter boreholes drilled in locations across the site to depths of up to 5.45 m below ground level and encountered variable ground conditions.

Further works in the form of deep cable percussion drilled boreholes to 15m below ground level are currently underway to provide information to support the design of piled foundations. The results of these works will be issued as an addendum to this letter report in due course.

Across the majority of the site, beneath an initial layer of topsoil extending to a depth of about 0.30 m below ground level (and locally deeper where ploughed and cultivated) Raised Beach Deposits were encountered to depths of between 1.60 m and in excess of at least 4.00 m below ground level.

The Raised Beach Deposits were found to comprise a mixture of firm, stiff, soft and very soft clay, silt and sand soils. The clay soils have been found to be medium plasticity clay although no evidence of the effects of trees or significantly widespread desiccation was noted as part of the site investigation works.

Underlying the Raised Beach Deposits, where proved, weathered becoming sound white chalk was encountered to the maximum depth of ground investigation.

No visual or olfactory indications of contamination were noted across the majority of the site as part of the site investigation works.

Within the southern central part of the site, outside of the main development area, ground conditions within the vicinity of the former farm yard included made ground to a depth of 0.80 m overlying layers of peat. Soil contamination testing has not indicated the presence of soil contamination although the scope of investigation within this part of the site has been limited by the ongoing use of the buildings and yard storage area.

Groundwater was encountered as part of the site works and monitoring of installed standpipes to date has indicated the presence of near surface ground water, which is particularly shallow during the winter months at less than 1.00 m below existing ground level.

Foundations

The foundation strategy for this site is intrinsically linked to the earthworks filling strategy and the variation of the near surface ground conditions at this site.

In order to provide a site wide foundation strategy that is unconstrained by the detailed timing of the earthworks filling strategy and the seasonal fluctuations of groundwater the development is based upon a fully piled scheme.

Estimated pile capacities have been used for the assessment of pile diameters and the depth of piling will need to be determined upon the basis of the findings of the deep cable percussion drilled boreholes that are currently in hand. Piles are likely to extend into the chalk beneath the site and are likely to extend to depths of about 12 m below ground level, subject to the findings of the further work

Chemical analyses of selected soil samples have revealed generally low concentrations of soluble sulphate, corresponding to Class DS-1 AC-1s of Table 2 of BRE Special Digest 1: SD1 Part 1. The guidelines contained in the above digest should be followed in the design of foundation concrete.

We currently await the results of sulphate testing to inform the specification of foundation concrete, although we would not anticipate onerous conditions requiring specialized concrete mixes.

Road Pavement Construction

The design of road pavements will be controlled by the earthworks strategy in terms of material type and method of placement.

Consideration could be given to the use of granular fill within proposed road corridors, with the depth of fill placement required to raise level likely to exceed the requirement for road pavement design. Consideration could also be given to the use of lime or cement stabilization to improve the material properties of placed fill materials, subject to discussion and agreement with the adopting authority for area of adoptable roads.

It is important to note that any formation levels formed within clay soils will be very susceptible to moisture content variation and may degrade rapidly with any site trafficking.

Soil Contamination

No visual or olfactory indications of contamination were noted as part of the site investigation works.

The results of testing have essentially confirmed that no raised or elevated concentrations of a wide range of potential soil contaminants have been encountered within the representative selected soil samples tested.

The desk study has not indicated a raised potential for unexpected ground contamination across the majority of the site, although within the vicinity of the historical farm yard buildings that are now used as an office, workshops and stores for a local building contractor, there is an increased risk of localised contamination associated with the potential use, storage and possible spillage of a wide range of oils, greases, solvents and fuels.

Soil Gas and Radon Protection

The site is not within a radon affected area such that radon precautions are not required.

The desk study has indicated the presence of an historical landfill sit to the southeast of the site which could present a potential for relic potentially mobile ground and soil gas contamination, although the time that has elapsed since landfilling ceased at this site, will have mitigated the risk currently posed by this landfill site.

Limited soil gas monitoring has not indicated the presence of elevated soil gas conditions of concern such that a requirement for gas protection with regards to methane and carbon dioxide is not envisaged.

Earthworks Strategy

The development at this site is to be constructed upon a raised earthworks platform required for flood protection.

The raised plateau will require the importation and placement of approximately 80,000m³ of fill materials.

It is anticipated that the earthworks filling will be carried out in accordance with the requirements of a Materials Management Plan produced in accordance with the Code of Practice for the Definition of Waste whereby a series of earthworks suitable fill donor sites will be linked with this receiving site, although consideration may be given to the sourcing of fill materials under a U1 Environment Agency Waste Exemption.

Regardless of the legal regime within which the earthworks filling is carried out, materials imported to site will need to be geotechnically and chemically suitable for the proposed end use.

Buried Utilities

Precautions to ensure the protection of potentially sensitive underground services with regards to ground contamination are not envisaged as part of the development of this site, although new services will be lain within imported and placed earthworks fill required to create the raised development plateau, such that the nature of these fill materials will control the requirement for any protection to buried services.

We trust that this briefing note provides sufficient information for your needs at present and will provide an addendum to this briefing note once the results of the pile design ground investigation works are available. In the meantime, please do not hesitate to contact me directly should you have any queries or questions or wish to discuss any of the issues raised.

Yours sincerely
Wilson Bailey Partnership

Dominic Brightman
BSc MSc DIC FGS CGeol ARSM

Site Forty Acre Farm, Havant Road, Bedhampton

Client BDW Southampton



Project Name

40 Acre Farm

Project No.

J16120

Co-ords: -

Hole Type

WLS

Location: Havant Road, Bedhampton

Level: -

Scale

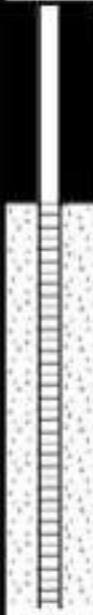
1:50

Client: BDW Southampton

Dates: 03/08/2016

Logged By

DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.35			TOPSOIL	
		0.50	D					Firm locally stiff pale brown and orange-brown silty slightly sandy CLAY with abundant fine gravel and occasional flint cobbles	1
		1.00	D		1.20			Pale yellowish silty SAND with abundant fine chalk fragments, occasional flint cobbles and pockets of firm brown clay	
		1.50	D						2
		2.00	D						
		2.50	D						
					3.00			End of Borehole at 3.00 m	3
									4
									5
									6
									7
									8
									9

Remarks: Groundwater not encountered. Standpipe installed with a response zone from 1.00m to 3.00m.

Project Name
40 Acre Farm

Project No.
J16120

Co-ords: -

Hole Type
WLS

Location: Havant Road, Bedhampton

Level: -

Scale
1:50

Client: BDW Southampton

Dates: 03/08/2016

Logged By
DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
	▽				0.20			TOPSOIL	
		0.50	D					Soft slightly sandy very clayey SILT locally grading into very silty clay with occasional fine to medium flint gravel and occasional fine chalk fragments	1
		1.00	D						
		1.40	D						
		1.50	D					Soft and very soft pale yellowish brown and brown silty fine SAND with abundant fine chalk fragments and scattered fine flint gravel	2
		2.00	D						
		2.30	D					Off white, yellowish brown and orange-brown mottled clayey sandy SILT with abundant chalk and fine flint gravel and occasional fine to medium flint gravel	3
		2.50	D						
		3.00	D						
		3.40	D					Soft pale grey CLAY	
4.00					End of Borehole at 4.00 m			4	
									5
									6
									7
									8
									9

Remarks: Groundwater encountered at 2.40m.

Project Name

40 Acre Farm

Project No.

J16120

Co-ords: -

Hole Type

WLS

Location: Havant Road, Bedhampton

Level: -

Scale

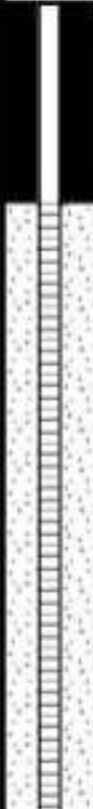
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Client: BDW Southampton

Dates: 03/08/2016

Logged By

DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			MADE GROUND (crushed tarmac and brick rubble)	
		0.50	D					Soft pale brown and brown silty locally very silty CLAY with scattered fine flint and chalk gravel	1
		1.00	D						
		1.50	D						
		2.00	D						2
		2.30			2.30				
		2.50	D					Pale yellowish brown, pale brown, pale orange-brown and off hite sandy clayey SILT with scattered fine flint and chalk gravel	
		3.00	D						3
		3.20			3.20			Pale yellowish orange-brown silty SAND with fine chalk and flint gravel	
		3.50	D		3.50			Soft pale grey CLAY with yellowish brown mottled chalk gravel	
		4.00			4.00			End of Borehole at 4.00 m	4
									5
									6
									7
									8
									9

Remarks: Groundwater seepage at 3.20m. Standpipe installed with a response zone from 1.00m to 4.00m.

Project Name

40 Acre Farm

Project No.

J16120

Co-ords: -

Hole Type

WLS

Location: Havant Road, Bedhampton

Level: -

Scale

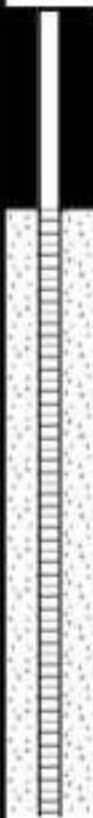
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Client: BDW Southampton

Dates: 03/08/2016

Logged By

DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.15			0.15			TOPSOIL	
		0.50	D					Firm orange-brown silty sandy CLAY with occasional fine chalk and flint gravel	
		1.00	D		1.10			Soft locally firm pale grey and pale brown very sandy silty CLAY with occasional fine chalk gravel	1
		1.50	D						
		2.00	D						2
		2.30			2.30			Pale grey with orange-brown mottled silty clayey fine SAND	
		2.50	D						3
		3.00	D						
		3.50	D		3.60			Off white chalk derived sandy SILT with flint cobbles	
		4.00			4.00			End of Borehole at 4.00 m	4

Remarks: Groundwater encountered at 2.50m. Standpipe installed with a response zone from 1.00m to 4.00m.

Project Name

40 Acre Farm

Project No.

J16120

Co-ords: -

Hole Type

WLS

Location: Havant Road, Bedhampton

Level: -

Scale

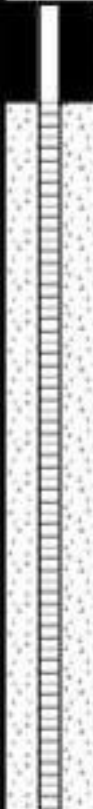
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Client: BDW Southampton

Dates: 03/08/2016

Logged By

DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.15			0.15			TOPSOIL	
		0.50	D					Soft pale brown silty sandy CLAY with abundant fine chalk gravel	1
		1.00	D						
		1.40	D		1.40			Soft pale brown and pale yellowish brown silty sandy CLAY with scattered flint and chalk gravel	2
		2.00	D						
		2.20			2.20			Off white chalk derived very silty GRAVEL of flint and chalk	3
		2.50	D						
		3.00	D						
		3.50	D						
		3.80			3.80			Recovered as completely weathered CHALK	4
		4.00			4.00			End of Borehole at 4.00 m	

Remarks: Groundwater encountered at 1.80m. Standpipe installed with a response zone from 0.50m to 4.00m.

Project Name

40 Acre Farm

Project No.

J16120

Co-ords: -

Hole Type

WLS

Location: Havant Road, Bedhampton

Level: -

Scale

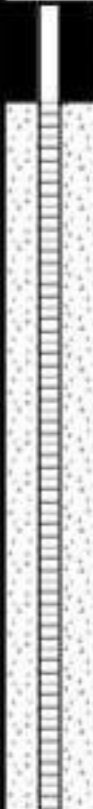
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Client: BDW Southampton

Dates: 03/08/2016

Logged By

DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	D		0.50			TOPSOIL	
		1.00	D		1.20			Firm orange-brown and brown silty sandy CLAY with scattered fine flint and chalk gravel	1
		1.50	D					Soft pale yellowish brown silty sandy CLAY	
		2.00	D						2
		2.50	D		2.30			Soft pale yellowish brown silty sandy CLAY with abundant fine chalk gravel	
		3.00	D						3
		3.50	D						
					4.00			End of Borehole at 4.00 m	4
									5
									6
									7
									8
									9

Remarks: Groundwater not encountered. Standpipe installed with a response zone from 0.50m to 4.00m.

Project Name

40 Acre Farm

Project No.

J16120

Co-ords: -

Hole Type

WLS

Location: Havant Road, Bedhampton

Level: -

Scale

1:50

Client: BDW Southampton

Dates: 03/08/2016

Logged By

DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.25	D		0.30			TOPSOIL	
		0.50	D					Firm brown and dark brown silty sandy CLAY	
		0.75	D						
		1.00	D		0.90			Soft pale yellowish brown very silty locally sandy CLAY with abundant fine flint and chalk gravel and occasional flint cobbles	1
		1.50	D						
		2.00	D						2
		2.50	D						
		3.00	D						3
		3.50	D						
					4.00			End of Borehole at 4.00 m	4
									5
									6
									7
									8
									9

Remarks: Groundwater encountered at 2.80m.

Project Name

40 Acre Farm

Project No.

J16120

Co-ords: -

Hole Type

WLS

Location: Havant Road, Bedhampton

Level: -

Scale

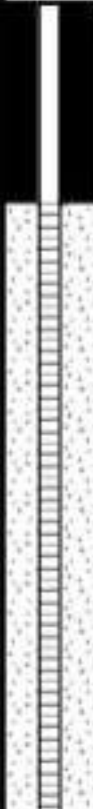
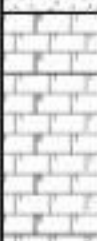
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Client: BDW Southampton

Dates: 03/08/2016

Logged By

DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			TOPSOIL	
		0.50	D					Pale yellowish brown silty sandy chalk derived GRAVEL with abundant weak chalk and flint gravel and occasional flint cobbles	1
		1.00	D						
		1.50	D						
		2.00	D						2
		2.50	D						
					2.80			Recovered as completely weathered CHALK	3
		3.00	D						
		3.50	D						
					4.00			End of Borehole at 4.00 m	4
									5
									6
									7
									8
									9

Remarks: Groundwater not encountered. Standpipe installed with a response zone from 1.0m to 4.00m.

Project Name
40 Acre Farm

Project No.
J16120

Co-ords: -

Hole Type
WLS

Location: Havant Road, Bedhampton

Level: -

Scale
1:50

Client: BDW Southampton

Dates: 03/08/2016

Logged By
DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	D		0.50			Ploughed TOPSOIL	
		1.00	D					Firm locally soft dark brown silty sandy CLAY with occasional flint cobbles	1
		1.50	D						
		2.00	D		1.80			Off white and pale yellowish brown chalk derived sandy SILT with abundant fragments of weak white chalk, occasional flint gravel and scattered flint cobbles	2
		2.50	D						
		3.00	D						3
		3.50	D						
					4.00			End of Borehole at 4.00 m	4
									5
									6
									7
									8
									9

Remarks: Groundwater not encountered.

Project Name
40 Acre Farm

Project No.
J16120

Co-ords: -

Hole Type
WLS

Location: Havant Road, Bedhampton

Level: -

Scale
1:50

Client: BDW Southampton

Dates: 03/08/2016

Logged By
DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.25	D		0.30			MADE GROUND (reworked topsoil wth gravel)	
		0.50	D					Firm becoming soft below 1.20m brown silty sandy CLAY with occasional fine chalk fragments	
		1.00	D						1
		1.50	D						
		2.00	D						2
		2.30	D		2.30				
		2.50	D					Soft and very soft pale yellowish brown and off white sandy SILT with abundant fine chalk fragments	
		3.00	D		3.00				3
								End of Borehole at 3.00 m	
									4
									5
									6
									7
									8
									9

Remarks: Groundwater encountered at 2.80m.

Project Name
40 Acre Farm

Project No.
J16120

Co-ords: -

Hole Type
WLS

Location: Havant Road, Bedhampton

Level: -

Scale
1:50

Client: BDW Southampton

Dates: 03/08/2016

Logged By
DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10			0.10			MADE GROUND (tarmac)	
		0.50	D		0.60			MADE GROUND (black sandy gravel with brick and gravel)	
		1.00	D					Very soft grey silty CLAY with occasional decayed organic matter	1
	▽	1.50	D						2
		2.00	D						3
		2.50	D						4
		2.80			2.80			Very soft pale grey silty clayey locally clayey SILT with occasional weak chalk gravel	5
		3.00			3.00			End of Borehole at 3.00 m	6
									7
									8
									9
									10
									11
									12
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									14
									15
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									50

Remarks: Groundwater encountered at 1.50m.

Project Name
40 Acre Farm

Project No.
J16120

Co-ords: -

Hole Type
WLS

Location: Havant Road, Bedhampton

Level: -

Scale
1:50

Client: BDW Southampton

Dates: 03/08/2016

Logged By
DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	D		0.60			MADE GROUND (black sandy clay with abundant brick and gravel)	
		1.00	D					Very soft pale grey silty CLAY with occasional decayed organic matter - possible made ground	1
		1.50	D		1.80			Black amorphous PEAT with layers of decayed fibrous organic matter	2
		2.00	D		2.30			Soft pale grey clayey SILT with occasional weak chalk gravel	
		2.50	D		3.00			End of Borehole at 3.00 m	3
									4
									5
									6
									7
									8
									9

Remarks: Grounwater encountered at 1.80m.

Project Name
40 Acre Farm

Project No.
J16120

Co-ords: -

Hole Type
WLS

Location: Havant Road, Bedhampton

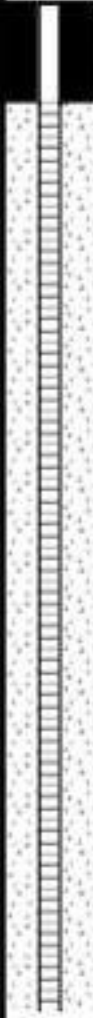
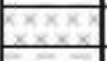
Level: -

Scale
1:50

Client: BDW Southampton

Dates: 06/08/2016

Logged By
DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.25	D		0.35			TOPSOIL (dry and dusty)	
		0.50	D					"Stiff" dark orange-brown and brown silty sandy CLAY with occasional fine gravel, roots, rootlets and root hairs - desiccated soil	
		1.00 1.00	SPT D	N=14 (2,3/ 3,3,4,4)					1
		1.50	D		2.00			Firm dark orange-brown and brown silty sandy CLAY	2
		2.00 2.00	SPT D	N=8 (2,2/ 2,2,2,2)		2.15		Soft locally firm pale yellowish brown, pale orange-brown and pale grey very silty sandy CLAY with abundant fine chalk gravel	
		2.50	D						
		3.00 3.00	SPT D	N=7 (2,2/ 2,1,2,2)	4.40			Pale off white SILT	3
		3.50	D						
		4.00 4.00	SPT D	N=8 (1,2/ 2,2,2,2)		4.60		Soft pale grey very silty CLAY	4
		4.50	D		5.00				
		5.00	SPT	N=7 (1,2/ 2,1,2,2)					
								End of Borehole at 5.00 m	5
									6
									7
									8
									9

Remarks: Groundwater encountered at 3.20m. Standpipe installed with a response zone from 0.50m to 5.00m.

Project Name

40 Acre Farm

Project No.

J16120

Co-ords: -

Hole Type

WLS

Location: Havant Road, Bedhampton

Level: -

Scale

1:50

Client: BDW Southampton

Dates: 06/08/2016

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DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30			TOPSOIL	
		0.50	D		0.80			Stiff brown and dark orange-brown silty sandy CLAY	
		0.75	D						
		1.00	D						
		1.50	D		1.80			Firm becoming soft brown and dark orange-brown silty sandy CLAY	1
		2.00	D						
		2.50	D		2.60			Very soft pale grey silty CLAY with fine chalk gravel	2
		3.00	D						
		3.50	D						
		4.00	D		4.00			White and off white completely weathered CHALK	3
								End of Borehole at 4.00 m	4
									5
									6
									7
									8
									9

Remarks: Groundwater seepage at 2.60m. Standpipe installed with a resonance zone from 0.50m to 4.00m.

Project Name
40 Acre Farm

Project No.
J16120

Co-ords: -

Hole Type
WLS

Location: Havant Road, Bedhampton

Level: -

Scale
1:50

Client: BDW Southampton

Dates: 06/08/2016

Logged By
DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.25	D		0.40			TOPSOIL	
		0.50	D					Firm orange-brown silty sandy CLAY with occasional flint cobbles	
		1.00	SPT	N=7	1.80				1
		1.00	D	(1,1/ 1,2,2,2)					
		1.50	D						
		2.00	SPT	N=6				Soft pale yellowish brown silty locally very sandy CLAY with abundant fine chalk gravel	2
		2.00	D	(2,1/ 2,1,2,1)					
		2.50	D						
		3.00	SPT	N=10	4.00				3
		3.00	D	(2,2/ 2,3,2,3)					
		3.50	D						
		4.00	D					End of Borehole at 4.00 m	4
									5
									6
									7
									8
									9

Remarks: Groundwater seepage at 1.90m.

Project Name
40 Acre Farm

Project No.
J16120

Co-ords: -

Hole Type
WLS

Location: Havant Road, Bedhampton

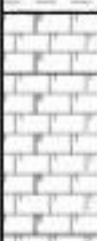
Level: -

Scale
1:50

Client: BDW Southampton

Dates: 07/08/2016

Logged By
DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.35			TOPSOIL	
		0.50	D					Firm brown silty sandy CLAY with occasional fine flint and chalk gravel	1
		1.00	D						
		1.50	D						
		2.00	D		1.90			Soft pale yellowish brown very silty very sandy CLAY with abundant flint and chalk gravel	2
		2.50	D						
		3.00	D		2.80			Recovered as completely weathered white CHALK	3
		3.50	D						
		4.00	D		4.00			End of Borehole at 4.00 m	4
									5
									6
									7
									8
									9

Remarks: Groundwater encountered at 2.30m.

Project Name
40 Acre Farm

Project No.
J16120

Co-ords: -

Hole Type
WLS

Location: Havant Road, Bedhampton

Level: -

Scale
1:50

Client: BDW Southampton

Dates: 07/08/2016

Logged By
DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.25			TOPSOIL	
		0.50	D					Firm brown and dark orange-brown silty sandy CLAY with scattered flint cobbles	1
		1.00	SPT	N=6					
		1.00	D	(1,1/ 1,1,2,2)					
		1.50	D						
		2.00	SPT	N=10					2
		2.00	D	(2,2/ 2,2,3,3)					
		2.50	D						
		3.00	SPT	N=15	3.00			Pale grey and off white clayey SILT with chalk gravel	3
		3.00	D	(2,2/ 3,4,4,4)					
		3.50	D						
		4.00	SPT	N=16	3.80			Recovered as completely weathered CHALK	4
		4.00	D	(4,4/ 4,4,4,4)	4.00			End of Borehole at 4.00 m	
									5
									6
									7
									8
									9

Remarks: Groundwater encountered at 3.80m.

Project Name
40 Acre Farm

Project No.
J16120

Co-ords: -

Hole Type
WLS

Location: Havant Road, Bedhampton

Level: -

Scale
1:50

Client: BDW Southampton

Dates: 07/08/2016

Logged By
DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.35			TOPSOIL	
		0.50	D					Firm brown silty sandy CLAY with occasional flint cobbles	1
		1.00	D						
		1.50	D						
		2.00	D		2.10			Pale yellowish silty SAND with layers of silty sandy clay and abundant fine flint and chalk gravel	2
		2.50	D						
		3.00	D		2.80			Pale brown silty SAND with abundant fine chalk gravel	3
		3.50	D						
		4.00	D		4.00			End of Borehole at 4.00 m	4
									5
									6
									7
									8
									9

Remarks: Groundwater not encountered. Damp below 3.10m. Poor recovery 2.00m to 3.00m.



Project Name
40 Acre Farm

Project No.
J16120

Co-ords: -

Hole Type
WLS

Location: Havant Road, Bedhampton

Level: -

Scale
1:50

Client: BDW Southampton

Dates: 07/08/2016

Logged By
DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.25			TOPSOIL	
		0.50	D					Firm orange-brown and brown silty sandy CLAY with occasional fine to medium flint and chalk gravel	1
		1.00	SPT	N=8					
		1.00	D	(1,1/ 2,2,2,2)					
		1.50	D						
		2.00	SPT	N=7	1.90			Pale brown and off white clayey silty SAND with abundant fine to medium flint and chalk gravel and occasional flint cobbles	2
		2.00	D	(1,1/ 2,2,1,2)					
		2.50	D						
		3.00	SPT	N=7					3
		3.00	D	(1,2/ 1,2,2,2)					
		3.50	D						
		4.00	SPT	N=7					4
		4.00	D	(2,2/ 1,2,2,2)					
		4.50	D						
		5.00	D		5.00			End of Borehole at 5.00 m	5
									6
									7
									8
									9

Remarks: Groundwater not encountered. Damp below 2.50m.



Dominic Brightman
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t: 01622 850410
russell.jarvis@qtsevenvironmental.com

QTS Environmental Report No: 16-48037

Site Reference: 40 Acre Farm

Project / Job Ref: None Supplied

Order No: None Supplied

Sample Receipt Date: 16/08/2016

Sample Scheduled Date: 16/08/2016

Report Issue Number: 1

Reporting Date: 19/08/2016

Authorised by:



Kevin Old
Associate Director of Laboratory

Authorised by:



Russell Jarvis
Associate Director of Client Services

Soil Analysis Certificate

QTS Environmental Report No: 16-48037	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Geotechnical & Environmental Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: 40 Acre Farm	TP / BH No	BH2	BH5	BH7	BH8	BH9
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.50	0.50	0.50	0.25	0.35
Reporting Date: 19/08/2016	QTSE Sample No	222900	222901	222902	222903	222904

Determinand	Unit	RL	Accreditation					
Asbestos Screen	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.1	7.2	7.8	7.6	7.6
Total Organic Carbon (TOC)	%	< 0.1	MCERTS	0.7	0.9	0.3	0.3	0.8
Arsenic (As)	mg/kg	< 2	MCERTS	7	9	7	9	12
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	21	22	32	26	28
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	9	11	13	12	13
Lead (Pb)	mg/kg	< 3	MCERTS	13	16	10	9	14
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	10	14	24	18	17
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Zinc (Zn)	mg/kg	< 3	MCERTS	44	43	50	43	48
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

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

Analysis carried out on the dried sample is corrected for the stone content.

The samples have been examined to identify the presence of asbestiform minerals by polarising light microscopy and dispersion staining technique to In-House Procedures QTSE600 Determination of Asbestos in Bulk Materials; Asbestos in Soils/Sediments (fibre screening and identification).

This report refers to samples as received, and QTS Environmental Ltd, takes no responsibility for the accuracy or competence of sampling by others.

The material description shall be regarded as tentative and is not included in our scope of UKAS Accreditation.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Asbestos Analyst: Graham Revell

RL: Reporting Limit

Pinch Test: Where pinch test is positive it is reported "Loose Fibres - PT" with type(s).

Subcontracted analysis ⁽²⁾

Soil Analysis Certificate

QTS Environmental Report No: 16-48037	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Geotechnical & Environmental Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: 40 Acre Farm	TP / BH No	BH12	BH14	BH15	BH16	BH17
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.25	0.25	0.25	0.50	0.50
Reporting Date: 19/08/2016	QTSE Sample No	222905	222906	222907	222908	222909

Determinand	Unit	RL	Accreditation					
Asbestos Screen	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.7	7.7	7.8	7.6	7.4
Total Organic Carbon (TOC)	%	< 0.1	MCERTS	1.9	1.1	1	0.5	4.6
Arsenic (As)	mg/kg	< 2	MCERTS	14	7	11	13	9
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	1.2	1.2
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3	0.2	< 0.2	< 0.2	0.7
Chromium (Cr)	mg/kg	< 2	MCERTS	19	18	25	26	16
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	19	12	14	13	21
Lead (Pb)	mg/kg	< 3	MCERTS	55	18	20	14	73
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	14	10	14	24	13
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Zinc (Zn)	mg/kg	< 3	MCERTS	64	42	51	48	474
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

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

Analysis carried out on the dried sample is corrected for the stone content.

The samples have been examined to identify the presence of asbestiform minerals by polarising light microscopy and dispersion staining technique to In-House Procedures QTSE600 Determination of Asbestos in Bulk Materials; Asbestos in Soils/Sediments (fibre screening and identification).

This report refers to samples as received, and QTS Environmental Ltd, takes no responsibility for the accuracy or competence of sampling by others.

The material description shall be regarded as tentative and is not included in our scope of UKAS Accreditation.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Asbestos Analyst: Graham Revell

RL: Reporting Limit

Pinch Test: Where pinch test is positive it is reported "Loose Fibres - PT" with type(s).

Subcontracted analysis ⁽²⁾

Soil Analysis Certificate

QTS Environmental Report No: 16-48037	Date Sampled	None Supplied	None Supplied	None Supplied		
Wilson Bailey Geotechnical & Environmental Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: 40 Acre Farm	TP / BH No	BH17	BH17	BH17		
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	1.00	2.00	2.50		
Reporting Date: 19/08/2016	QTSE Sample No	222910	222911	222912		

Determinand	Unit	RL	Accreditation					
Asbestos Screen	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected		
pH	pH Units	N/a	MCERTS	7.5	7.4	8.0		
Total Organic Carbon (TOC)	%	< 0.1	MCERTS	0.6	4.4	0.4		
Arsenic (As)	mg/kg	< 2	MCERTS	11	10	< 2		
W/S Boron	mg/kg	< 1	NONE	1	3.5	< 1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	23	21	8		
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2		
Copper (Cu)	mg/kg	< 4	MCERTS	20	20	7		
Lead (Pb)	mg/kg	< 3	MCERTS	24	29	4		
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	21	14	6		
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3		
Zinc (Zn)	mg/kg	< 3	MCERTS	59	67	19		
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2		

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

Analysis carried out on the dried sample is corrected for the stone content.

The samples have been examined to identify the presence of asbestiform minerals by polarising light microscopy and dispersion staining technique to In-House Procedures QTSE600 Determination of Asbestos in Bulk Materials; Asbestos in Soils/Sediments (fibre screening and identification).

This report refers to samples as received, and QTS Environmental Ltd, takes no responsibility for the accuracy or competence of sampling by others.

The material description shall be regarded as tentative and is not included in our scope of UKAS Accreditation.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Asbestos Analyst: Graham Revell

RL: Reporting Limit

Pinch Test: Where pinch test is positive it is reported "Loose Fibres - PT" with type(s).

Subcontracted analysis ⁽²⁾

Soil Analysis Certificate - Speciated PAHs

QTS Environmental Report No: 16-48037	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Geotechnical & Environmental L	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: 40 Acre Farm	TP / BH No	BH2	BH5	BH7	BH8	BH9
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.50	0.50	0.50	0.25	0.35
Reporting Date: 19/08/2016	QTSE Sample No	222900	222901	222902	222903	222904

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.13	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

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

Soil Analysis Certificate - Speciated PAHs

QTS Environmental Report No: 16-48037	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Geotechnical & Environmental L	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: 40 Acre Farm	TP / BH No	BH12	BH14	BH15	BH16	BH17
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.25	0.25	0.25	0.50	0.50
Reporting Date: 19/08/2016	QTSE Sample No	222905	222906	222907	222908	222909

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	0.19
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.45
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.38	< 0.1	< 0.1	< 0.1	0.59
Pyrene	mg/kg	< 0.1	MCERTS	0.32	< 0.1	< 0.1	< 0.1	0.50
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.15	< 0.1	< 0.1	< 0.1	0.17
Chrysene	mg/kg	< 0.1	MCERTS	0.23	< 0.1	< 0.1	< 0.1	0.26
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.28	< 0.1	< 0.1	< 0.1	0.33
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.15	< 0.1	< 0.1	< 0.1	0.15
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.24	< 0.1	< 0.1	< 0.1	0.22
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.16	< 0.1	< 0.1	< 0.1	0.20
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	0.13	< 0.1	< 0.1	< 0.1	0.17
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	2	< 1.6	< 1.6	< 1.6	3.2

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

Soil Analysis Certificate - Speciated PAHs

QTS Environmental Report No: 16-48037	Date Sampled	None Supplied	None Supplied	None Supplied		
Wilson Bailey Geotechnical & Environmental L	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: 40 Acre Farm	TP / BH No	BH17	BH17	BH17		
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	1.00	2.00	2.50		
Reporting Date: 19/08/2016	QTSE Sample No	222910	222911	222912		

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	

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

Soil Analysis Certificate - TPH CWG Banded

QTS Environmental Report No: 16-48037	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Geotechnical & Environmental L	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: 40 Acre Farm	TP / BH No	BH2	BH5	BH7	BH8	BH9
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.50	0.50	0.50	0.25	0.35
Reporting Date: 19/08/2016	QTSE Sample No	222900	222901	222902	222903	222904

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	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
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	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

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

Soil Analysis Certificate - TPH CWG Banded

QTS Environmental Report No: 16-48037	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Geotechnical & Environmental L	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: 40 Acre Farm	TP / BH No	BH12	BH14	BH15	BH16	BH17
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.25	0.25	0.25	0.50	0.50
Reporting Date: 19/08/2016	QTSE Sample No	222905	222906	222907	222908	222909

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	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
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	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

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

Soil Analysis Certificate - TPH CWG Banded

QTS Environmental Report No: 16-48037	Date Sampled	None Supplied	None Supplied	None Supplied		
Wilson Bailey Geotechnical & Environmental L	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: 40 Acre Farm	TP / BH No	BH17	BH17	BH17		
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	1.00	2.00	2.50		
Reporting Date: 19/08/2016	QTSE Sample No	222910	222911	222912		

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10		
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21		
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10		
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21		
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42		

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

Soil Analysis Certificate - BTEX / MTBE

QTS Environmental Report No: 16-48037	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Geotechnical & Environmental L	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: 40 Acre Farm	TP / BH No	BH2	BH5	BH7	BH8	BH9
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.50	0.50	0.50	0.25	0.35
Reporting Date: 19/08/2016	QTSE Sample No	222900	222901	222902	222903	222904

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

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

Soil Analysis Certificate - BTEX / MTBE

QTS Environmental Report No: 16-48037	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Geotechnical & Environmental Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: 40 Acre Farm	TP / BH No	BH12	BH14	BH15	BH16	BH17
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.25	0.25	0.25	0.50	0.50
Reporting Date: 19/08/2016	QTSE Sample No	222905	222906	222907	222908	222909

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

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

Soil Analysis Certificate - BTEX / MTBE

QTS Environmental Report No: 16-48037	Date Sampled	None Supplied	None Supplied	None Supplied		
Wilson Bailey Geotechnical & Environmental L	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: 40 Acre Farm	TP / BH No	BH17	BH17	BH17		
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	1.00	2.00	2.50		
Reporting Date: 19/08/2016	QTSE Sample No	222910	222911	222912		

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

Soil Analysis Certificate - Sample Descriptions

QTS Environmental Report No: 16-48037

Wilson Bailey Geotechnical & Environmental Ltd

Site Reference: 40 Acre Farm

Project / Job Ref: None Supplied

Order No: None Supplied

Reporting Date: 19/08/2016

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 222900	BH2	None Supplied	0.50	13.9	Brown loamy clay
^ 222901	BH5	None Supplied	0.50	12	Brown loamy clay
^ 222902	BH7	None Supplied	0.50	15.8	Light brown clay
^ 222903	BH8	None Supplied	0.25	15.7	Light brown clay
^ 222904	BH9	None Supplied	0.35	13.7	Light brown loamy clay
^ 222905	BH12	None Supplied	0.25	14.6	Brown loamy clay
^ 222906	BH14	None Supplied	0.25	12	Brown loamy clay
^ 222907	BH15	None Supplied	0.25	12	Brown loamy clay
^ 222908	BH16	None Supplied	0.50	17.8	Brown clay
^ 222909	BH17	None Supplied	0.50	32.1	Brown loamy clay with brick and chalk
^ 222910	BH17	None Supplied	1.00	18.4	Light grey clay
^ 222911	BH17	None Supplied	2.00	40	Black loamy clay with stones
^ 222912	BH17	None Supplied	2.50	11.9	Light grey clay with chalk and stones

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

Insufficient Sample ^{IS}

Unsuitable Sample ^{US}

^ no sampling date provided; unable to confirm if samples are within acceptable holding times

Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-48037

Wilson Bailey Geotechnical & Environmental Ltd

Site Reference: 40 Acre Farm

Project / Job Ref: None Supplied

Order No: None Supplied

Reporting Date: 19/08/2016

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 diphenvicarbazine 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



Dominic Brightman
Wilson Bailey Geotechnical & Environmental Ltd
Carters Cottage
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Wiltshire
BA12 0SN

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QTS Environmental Report No: 16-48972

Site Reference: 40 Acre Farm

Project / Job Ref: None Supplied

Order No: None Supplied

Sample Receipt Date: 09/09/2016

Sample Scheduled Date: 09/09/2016

Report Issue Number: 2

Reporting Date: 02/02/2018

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



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate						
QTS Environmental Report No: 16-48972	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Geotechnical & Environmental Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: 40 Acre Farm	TP / BH No	18	20	20	22	26
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.50	0.25	0.75	0.21	0.50
Reporting Date: 02/02/2018	QTSE Sample No	226702	226703	226704	226705	226706

Determinand	Unit	RL	Accreditation					
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.1	7.4	7.7	7.9	7.2
Total Organic Carbon (TOC)	%	< 0.1	MCERTS	0.7	0.5	0.1	0.9	1
Arsenic (As)	mg/kg	< 2	MCERTS	7	6	22	8	10
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.2	0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	19	19	27	19	18
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	8	8	14	11	11
Lead (Pb)	mg/kg	< 3	MCERTS	12	10	10	17	23
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	11	11	27	13	12
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Zinc (Zn)	mg/kg	< 3	MCERTS	42	46	55	48	47
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

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

Subcontracted analysis (S)

Soil Analysis Certificate

QTS Environmental Report No: 16-48972	Date Sampled	None Supplied	None Supplied			
Wilson Bailey Geotechnical & Environmental Ltd	Time Sampled	None Supplied	None Supplied			
Site Reference: 40 Acre Farm	TP / BH No	28	32			
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied			
Order No: None Supplied	Depth (m)	0.50	0.25			
Reporting Date: 02/02/2018	QTSE Sample No	226707	226708			

Determinand	Unit	RL	Accreditation					
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected			
pH	pH Units	N/a	MCERTS	7.5	7.5			
Total Organic Carbon (TOC)	%	< 0.1	MCERTS	0.4	0.2			
Arsenic (As)	mg/kg	< 2	MCERTS	11	9			
W/S Boron	mg/kg	< 1	NONE	< 1	< 1			
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2			
Chromium (Cr)	mg/kg	< 2	MCERTS	28	25			
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2			
Copper (Cu)	mg/kg	< 4	MCERTS	18	12			
Lead (Pb)	mg/kg	< 3	MCERTS	11	10			
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1			
Nickel (Ni)	mg/kg	< 3	MCERTS	22	21			
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3			
Zinc (Zn)	mg/kg	< 3	MCERTS	50	44			
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2			

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

Subcontracted analysis (S)



DETS Ltd
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Tel : 01622 850410



Soil Analysis Certificate - Speciated PAHs

QTS Environmental Report No: 16-48972	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Geotechnical & Environmental L	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: 40 Acre Farm	TP / BH No	18	20	20	22	26
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.50	0.25	0.75	0.21	0.50
Reporting Date: 02/02/2018	QTSE Sample No	226702	226703	226704	226705	226706

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.14
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.13
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

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 - Speciated PAHs

QTS Environmental Report No: 16-48972	Date Sampled	None Supplied	None Supplied			
Wilson Bailey Geotechnical & Environmental L	Time Sampled	None Supplied	None Supplied			
Site Reference: 40 Acre Farm	TP / BH No	28	32			
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied			
Order No: None Supplied	Depth (m)	0.50	0.25			
Reporting Date: 02/02/2018	QTSE Sample No	226707	226708			

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6			

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 - TPH CWG Banded

QTS Environmental Report No: 16-48972	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Geotechnical & Environmental L	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: 40 Acre Farm	TP / BH No	18	20	20	22	26
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.50	0.25	0.75	0.21	0.50
Reporting Date: 02/02/2018	QTSE Sample No	226702	226703	226704	226705	226706

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	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
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	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

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 - TPH CWG Banded

QTS Environmental Report No: 16-48972	Date Sampled	None Supplied	None Supplied			
Wilson Bailey Geotechnical & Environmental L	Time Sampled	None Supplied	None Supplied			
Site Reference: 40 Acre Farm	TP / BH No	28	32			
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied			
Order No: None Supplied	Depth (m)	0.50	0.25			
Reporting Date: 02/02/2018	QTSE Sample No	226707	226708			

Determinand	Unit	RL	Accreditation			
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	4	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	

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 - BTEX / MTBE

QTS Environmental Report No: 16-48972	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Geotechnical & Environmental L	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: 40 Acre Farm	TP / BH No	18	20	20	22	26
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.50	0.25	0.75	0.21	0.50
Reporting Date: 02/02/2018	QTSE Sample No	226702	226703	226704	226705	226706

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 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 - BTEX / MTBE						
QTS Environmental Report No: 16-48972	Date Sampled	None Supplied	None Supplied			
Wilson Bailey Geotechnical & Environmental L	Time Sampled	None Supplied	None Supplied			
Site Reference: 40 Acre Farm	TP / BH No	28	32			
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied			
Order No: None Supplied	Depth (m)	0.50	0.25			
Reporting Date: 02/02/2018	QTSE Sample No	226707	226708			

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

QTS Environmental Report No: 16-48972

Wilson Bailey Geotechnical & Environmental Ltd

Site Reference: 40 Acre Farm

Project / Job Ref: None Supplied

Order No: None Supplied

Reporting Date: 02/02/2018

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 226702	18	None Supplied	0.50	7	Brown clay with vegetation
^ 226703	20	None Supplied	0.25	11.5	Brown clay
^ 226704	20	None Supplied	0.75	15.9	Light brown clay
^ 226705	22	None Supplied	0.21	15	Brown clay
^ 226706	26	None Supplied	0.50	14.8	Brown clay
^ 226707	28	None Supplied	0.50	14.7	Light brown clay
^ 226708	32	None Supplied	0.25	12	Light brown clay

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

Insufficient Sample ^{1/5}

Unsuitable Sample ^{1/5}

^ no sampling date provided; unable to confirm if samples are within acceptable holding times



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Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-48972

Wilson Bailey Geotechnical & Environmental Ltd

Site Reference: 40 Acre Farm

Project / Job Ref: None Supplied

Order No: None Supplied

Reporting Date: 02/02/2018

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 diphenvicarbazine 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 @ 450°C	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



Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results

Job No. 21767	Project Name 40 Acre Farm	Programme	
		Samples received	12/10/2016
Project No. -	Client Wilson Bailey	Schedule received	16/10/2016
		Project started	17/10/2016
		Testing Started	26/10/2016

Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top	Base	Type							
BH18	-	1.00	-	D	Brown sandy silty CLAY with occasional roots	16	100	56	22	34	
BH18	-	2.00	-	D	Brown sandy silty CLAY with rare fine chalk gravel	18	95	39	18	21	
BH18	-	2.10	-	D	Brown sandy silty CLAY with rare fine chalk gravel	21	98	38	18	20	
BH18	-	3.00	-	D	Pale brown and orangish brown silty CLAY with occasional fm chalk gravel	17	90	28	17	11	
BH20	-	1.00	-	D	Brown slightly sandy silty CLAY	23	100	48	21	27	
BH21	-	1.00	-	D	Brown sandy silty CLAY with rare fine chalk gravel	18	95	38	19	19	
BH21	-	2.00	-	D	Brown sandy silty CLAY with rare fine chalk gravel	19	95	28	17	11	
BH22	-	1.00	-	D	Brown slightly sandy silty CLAY	21	100	45	21	24	
BH22	-	1.50	-	D	Brown and orangish brown sandy silty CLAY with rare fm and sub-angular gravel	20	98	41	18	23	
BH22	-	2.50	-	D	Pale brown silty CLAY with rare fine chalk gravel	19	98	32	17	15	
BH23	-	1.00	-	D	Brown sandy silty CLAY with rare fine gravel	15	99	47	21	26	
BH23	-	2.50	-	D	Pale brown and orangish brown silty CLAY with rare fine chalk gravel	17	95	30	16	14	

 2519	Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0	Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com	Checked and Approved Initials J.P. Date: 01/11/2016
			MSF-5-R1(b)



Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results

Job No. 21767	Project Name 40 Acre Farm	Programme	
		Samples received	12/10/2016
Project No. -	Client Wilson Bailey	Schedule received	16/10/2016
		Project started	17/10/2016
		Testing Started	26/10/2016

Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top	Base	Type							
BH24	-	1.00	-	D	Brown and orangish brown slightly sandy silty CLAY with rare fine gravel	20	99	45	20	25	
BH24	-	3.00	-	D	Pale brown slightly gravelly slightly sandy silty CLAY with occasional fm chalk gravel (gravel is fm and sub-angular)	16	85	26	16	10	
BH27	-	1.00	-	D	Brown slightly sandy silty CLAY	20	100	42	20	22	
BH28	-	1.00	-	D	Brown slightly sandy silty CLAY	21	100	49	20	29	
BH32	-	1.00	-	D	Brown and orangish brown slightly sandy silty CLAY	17	100	45	20	25	
BH32	-	1.50	-	D	Brown slightly gravelly CLAY (gravel is fmc and sub-angular to sub-rounded)	17	95	70	31	39	

 2519	Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0	Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com	Checked and Approved Initials J.P. Date: 01/11/2016
			MSF-5-R1(b)



Sulphate Content (Gravimetric Method) for 2:1 Soil: Water Extract and pH Value - Summary of Results

Tested in accordance with BS1377 : Part 3 : 1990, clause 5.3 and clause 9

Job No. 21767	Project Name 40 Acre Farm	Programme	
		Samples received	12/10/2016
Project No.	Client Wilson Bailey	Schedule received	16/10/2016
		Project started	17/10/2016
		Testing Started	19/10/2016

Hole No.	Sample				Soil description	Dry Mass passing 2mm %	SO3 Content g/l	SO4 Content g/l	pH	Remarks
	Ref	Top	Base	Type						
BH18	-	2.00	-	D	Brown sandy silty CLAY with rare fine chalk gravel	97	0.22	0.26	7.48	
BH21	-	1.00	-	D	Brown sandy silty CLAY with rare fine chalk gravel	97	0.15	0.18	7.48	
BH22	-	2.50	-	D	Pale brown silty CLAY with rare fine chalk gravel	98	0.17	0.21	7.50	
BH27	-	1.00	-	D	Brown slightly sandy silty CLAY	100	0.12	0.14	6.80	
BH32	-	1.50	-	D	Brown slightly gravelly CLAY (gravel is fmc and sub-angular to sub-rounded)	97	0.70	0.84	7.53	



Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU
Tel: 01923 711 288
Email: James@k4soils.com

Checked and
Approved
Initials J.P
Date: 01/11/2016



Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results

Job No. 23861	Project Name 40 Acre Farm	Programme	
		Samples received	11/12/2017
Project No. -	Client Wilson Bailey	Schedule received	04/01/2018
		Project started	04/01/2018
		Testing Started	15/01/2018

Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top m	Base m	Type							
GWM1	-	0.50	-	D	Orange brown slightly sandy silty CLAY with rare fine gravel and traces of carbonaceous deposits and fine rootlets	22	97	41	19	22	
GWM1	-	1.00	-	D	Orangish brown and brown mottled slightly sandy silty CLAY with occasional fine rootlets and rare fine gravel	18					
GWM1	-	1.50	-	D	Orange brown and light grey mottled slightly gravelly slightly sandy silty CLAY with occasional roots and rootlets (gravel is fm and sub-angular)	20	96	41	21	20	
GWM3	-	0.50	-	D	Orange brown slightly sandy silty CLAY with rare fine gravel and traces of rootlets	22					
GWM3	-	1.00	-	D	Orange brown slightly gravelly slightly sandy silty CLAY with traces of fine rootlets (gravel is fm and angular to rounded)	22	96	49	21	28	
GWM5	-	0.50	-	D	Greyish brown mottled dark reddish brown slightly gravelly slightly sandy silty CLAY (gravel is fmc and sub-angular to angular)	21					
GWM5	-	1.00	-	D	Brown and pale brown mottled slightly gravelly slightly sandy silty CLAY with occasional rootlets (gravel is fm and sub-angular)	25	97	43	19	24	
GWM5	-	1.50	-	D	Orangish brown and pale grey mottled slightly gravelly slightly sandy silty CLAY with occasional rootlets (gravel is fm and sub-angular)	28					
GWM5	-	2.00	-	D	Orangish brown and light grey mottled slightly sandy silty CLAY with scattered fine chalk fragments	20	99	33	19	14	
BH101	-	1.00	-	D	Grey, orangish brown and brown mottled slightly sandy silty CLAY with traces of fine rootlets	24					
BH101	-	2.00	-	D	Orangish brown, brown and grey mottled slightly gravelly slightly sandy silty CLAY (gravel is fine chalk fragments)	24	92	41	20	21	
BH102	-	1.00	-	D	Orangish brown and pale grey mottled slightly gravelly slightly sandy silty CLAY (gravel is fine chalk fragments)	22					

 2519	Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0	Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com	Checked and Approved Initials J.P. Date: 24/01/2018
	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)		MSF-5-R1(b)



Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results

Job No. 23861	Project Name 40 Acre Farm	Programme	
		Samples received	11/12/2017
Project No. -	Client Wilson Bailey	Schedule received	04/01/2018
		Project started	04/01/2018
		Testing Started	15/01/2018

Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top m	Base m	Type							
BH103	-	0.50	-	D	Light brown slightly sandy silty CLAY	24	100	37	20	17	
BH103	-	1.00	-	D	Light greenish brown slightly gravelly slightly sandy silty calcareous CLAY (gravel is fm chalk fragments and gravel)	32					
BH103	-	1.50	-	D	Light orange brown slightly sandy silty CLAY with rare fine chalk fragments	21	96	35	20	15	
BH103	-	2.00	-	D	Light orange brown slightly sandy silty CLAY with rare fine chalk fragments	21					
BH103	-	2.50	-	D	Light orangish brown slightly sandy silty CLAY with rare fine sub-angular gravel	22	97	31	20	11	
BH103	-	3.00	-	D	Light orangish brown slightly sandy silty CLAY	23					
BH104	-	0.50	-	D	Greyish brown slightly sandy silty CLAY with rare fm sub-angular gravel and traces of fine rootlets	21	96	35	19	16	
BH104	-	1.00	-	D	Greyish brown slightly sandy silty CLAY with rare fm sub-angular gravel and traces of fine rootlets	22					
BH104	-	1.50	-	D	Orangish brown mottled bluish grey slightly gravelly slightly sandy silty CLAY with occasional fm chalk fragments (gravel is fm and sub-angular to angular)	22	82	50	21	29	
BH104	-	2.00	-	D	Orangish brown mottled bluish grey slightly gravelly slightly sandy silty CLAY with occasional fm chalk fragments (gravel is fm and sub-angular to angular)	22					
BH105	-	0.50	-	D	Greyish brown slightly mottled brownish grey slightly sandy silty CLAY with rare fine rootlets and fm sub-angular gravel	21	97	37	20	17	
BH105	-	1.00	-	D	Greyish brown slightly mottled brownish grey slightly sandy silty CLAY with occasional fine rootlets and rare fm sub-angular gravel	18					

 2519	Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0	Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com	Checked and Approved Initials J.P. Date: 24/01/2018
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Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results

Job No. 23861	Project Name 40 Acre Farm	Programme	
		Samples received	11/12/2017
Project No. -	Client Wilson Bailey	Schedule received	04/01/2018
		Project started	04/01/2018
		Testing Started	15/01/2018

Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top m	Base m	Type							
BH105	-	1.50	-	D	Light orangish brown slightly sandy silty CLAY with traces of carbonaceous deposits	21	100	45	19	26	
BH106	-	0.50	-	D	Orange brown slightly sandy silty CLAY with rare fine gravel and rootlets	23					
BH106	-	1.00	-	D	Orangish brown slightly sandy silty CLAY with traces of fine rootlets	20	100	47	21	26	
BH106	-	1.50	-	D	Orangish brown slightly sandy silty CLAY with traces of carbonaceous deposits	23					
BH106	-	2.00	-	D	Orange brown slightly mottled bluish grey slightly sandy silty CLAY with traces of carbonaceous deposits	22	100	45	20	25	
BH106	-	2.50	-	D	Light orangish brown slightly gravelly slightly sandy silty CLAY (gravel is fm sub-angular chalk fragments and gravel)	19					
BH107	-	0.50	-	D	Light brown slightly gravelly slightly sandy silty CLAY with traces of fine rootlets (gravel is fmc and sub-angular to sub-rounded)	24					
BH107	-	1.00	-	D	Light brown slightly gravelly slightly sandy silty CLAY with traces of fine rootlets (gravel is fmc and sub-angular to sub-rounded)	26	88	54	22	32	
BH108	-	0.50	-	D	Light orangish brown slightly gravelly slightly sandy silty CLAY (gravel is fmc and angular to sub-angular)	25	75	38	18	20	
BH108	-	1.00	-	D	Light orangish brown slightly gravelly slightly sandy silty CLAY (gravel is fmc and angular to sub-angular)	25	84	49	21	28	
BH108	-	1.50	-	D	Light orangish brown slightly gravelly slightly sandy silty CLAY with traces of chalk deposits (gravel is fm and angular to sub-angular)	24	93	44	20	24	
BH108	-	2.50	-	D	Brown, orangish brown and pale grey mottled slightly sandy slightly gravelly silty CLAY with traces of fine rootlets (gravel is fm and angular to sub-angular)	17	93	31	16	15	

 2519	Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0	Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com	Checked and Approved Initials J.P. Date: 24/01/2018
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Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results

Job No. 23861	Project Name 40 Acre Farm	Programme	
		Samples received	11/12/2017
Project No. -	Client Wilson Bailey	Schedule received	04/01/2018
		Project started	04/01/2018
		Testing Started	15/01/2018

Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top m	Base m	Type							
BH109	-	0.50	-	D	Light orangish brown slightly sandy gravelly silty CLAY (gravel is fmc and angular to sub-angular)	21	66	41	19	22	
BH110	-	0.50	-	D	Light orangish brown slightly sandy gravelly silty CLAY (gravel is fmc and angular to sub-angular)	25	60	36	18	18	
BH110	-	1.00	-	D	Light orangish brown slightly sandy gravelly silty CLAY (gravel is fmc and angular to sub-angular)	19	55	39	18	21	
BH110	-	1.50	-	D	Light orangish brown slightly sandy gravelly silty CLAY (gravel is fmc and angular to sub-angular)	22	60	45	20	25	
BH110	-	2.00	-	D	Light brown slightly fine sandy silty CLAY with rare fine gravel	22	99	39	19	20	
BH110	-	3.00	-	D	Greyish brown slightly gravelly sandy silty CLAY with occasional fine chalk fragments (gravel is fmc and sub-angular to angular)	15	76	35	17	18	

 2519	Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0	Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com	Checked and Approved Initials J.P. Date: 24/01/2018
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Sulphate Content (Gravimetric Method) for 2:1 Soil: Water Extract and pH Value - Summary of Results

Tested in accordance with BS1377 : Part 3 : 1990, clause 5.3 and clause 9

Job No. 23861	Project Name 40 Acre Farm	Programme	
		Samples received	11/12/2017
Project No. -	Client Wilson Bailey	Schedule received	04/01/2018
		Project started	04/01/2018
		Testing Started	12/01/2018

Hole No.	Sample				Soil description	Dry Mass passing 2mm %	SO3 Content g/l	SO4 Content g/l	pH	Remarks
	Ref	Top m	Base m	Type						
BH101	-	2.00	-	D	Orangish brown, brown and grey mottled slightly gravelly slightly sandy silty CLAY (gravel is fine chalk fragments)	97	0.18	0.21	8.06	
BH103	-	1.50	-	D	Light orange brown slightly sandy silty CLAY with rare fine chalk fragments	99	0.24	0.29	8.08	
BH104	-	1.00	-	D	Greyish brown slightly sandy silty CLAY with rare fm sub-angular gravel and traces of fine rootlets	99	0.21	0.26	7.96	
BH105	-	1.00	-	D	Greyish brown slightly mottled brownish grey slightly sandy silty CLAY with occasional fine rootlets and rare fm sub-angular gravel	99	0.20	0.24	7.86	
BH106	-	2.00	-	D	Orange brown slightly mottled bluish grey slightly sandy silty CLAY with traces of carbonaceous deposits	100	0.27	0.32	8.08	
BH108	-	0.50	-	D	Light orangish brown slightly gravelly slightly sandy silty CLAY (gravel is fmc and angular to sub-angular)	89	0.29	0.35	7.91	
BH110	-	1.50	-	D	Light orangish brown slightly sandy gravelly silty CLAY (gravel is fmc and angular to sub-angular)	65	0.32	0.39	8.00	



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