

APPENDIX E

RISK ASSESSMENT METHODOLOGY

CLR11 outlines the framework to be followed for risk assessment in the UK. The framework is designed to be consistent with UK legislation and policies including planning. Under CLR11, three stages of risk assessment exist: preliminary, generic quantitative and detailed quantitative. An outline conceptual model should be formed at the preliminary risk assessment stage that collates all the existing information pertaining to a site in text, tabular or diagrammatic form. The outline conceptual model identifies potentially complete (termed possible) pollutant linkages (contaminant–pathway–receptor) and is used as the basis for the design of the site investigation. The outline conceptual model is updated as further information becomes available, for example as a result of the site investigation.

Production of a conceptual model requires an assessment of risk to be made. Risk is a combination of the likelihood of an event occurring and the magnitude of its consequences. Therefore, both the likelihood and the consequences of an event must be taken into account when assessing risk. RSK has adopted guidance provided in CIRIA C552 for use in the production of conceptual models.

The likelihood of an event can be classified on a four-point system using the following terms and definitions based on CIRIA C552:

- highly likely: the event appears very likely in the short term and almost inevitable over the long term or there is evidence at the receptor of harm or pollution
- likely: it is probable that an event will occur or circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term
- low likelihood: circumstances are possible under which an event could occur, but it is not certain even in the long term that an event would occur and it is less likely in the short term
- unlikely: circumstances are such that it is improbable the event would occur even in the long term.

The severity can be classified using a similar system also based on CIRIA C552. The terms and definitions relating to severity are:

- severe: short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. Short-term risk to an ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000)
- medium: chronic damage to human health ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000), pollution of sensitive water resources, significant change in an ecosystem or organism forming part of that ecosystem

- mild: pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000). Damage to sensitive buildings, structures or the environment
- minor: harm, not necessarily significant, but that could result in financial loss or expenditure to resolve. Non-permanent human health effects easily prevented by use of personal protective clothing. Easily repairable damage to buildings, structures and services.

Once the probability of an event occurring and its consequences have been classified, a risk category can be assigned according to the table below.

		Consequences			
		Severe	Medium	Mild	Minor
Probability	Highly likely	Very high	High	Moderate	Moderate/low
	Likely	High	Moderate	Moderate/low	Low
	Low likelihood	Moderate	Moderate/low	Low	Very low
	Unlikely	Moderate/low	Low	Very low	Very low

Definitions of these risk categories are as follows together with an assessment of the further work that may be required:

- Very high: there is a high probability that severe harm could occur or there is evidence that severe harm is currently happening. This risk, if realised, could result in substantial liability; urgent investigation and remediation are likely to be required.
- High: harm is likely to occur. Realisation of the risk is likely to present a substantial liability. Urgent investigation is required. Remedial works may be necessary in the short term and are likely over the long term.
- Moderate: it is possible that harm could arise, but it is unlikely that the harm would be severe and it is more likely that the harm would be relatively mild. Investigation is normally required to clarify the risk and determine the liability. Some remedial works may be required in the longer term.
- Low: it is possible that harm could occur, but it is likely that if realised this harm would at worst normally be mild.
- Very low: there is a low possibility that harm could occur and if realised the harm is unlikely to be severe.

APPENDIX F

EXPLORATORY HOLE RECORDS

Bellway Homes South East

Geo-Environmental Site Assessment: 13 Poyle Road, Tongham, Surrey, GU11 1DS

26727-R01

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Borehole: BH1
Contract Ref: 27621	Start: 26.01.15 End: 26.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Depth (m)	Samples & Testing			Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.30-0.40	1	ES				Tarmac	0.09	
0.50-0.80	2	B				MADE GROUND: Light brown slightly clayey very sandy GRAVEL. Gravel is fine to coarse of flint with occasional tarmac and fine to coarse brick fragments with rare half bricks.	0.25	
1.00-1.45	1	SPT(c)	N=9			MADE GROUND: Grey brown sandy gravelly CLAY with occasional concrete and brick cobbles, occasional string, wood and charcoal.	(0.85)	
1.20-1.40	3	D				... Between 0.50m and 0.80m bgl; Possible ACM.	1.10	
1.50		V	c _r =50			Soft brown slightly silty CLAY.		
1.70-2.00	4	D				... Below 1.40m bgl; Soft becoming firm.		
2.00-2.45	2	SPT(c)	N=9			... Below 2.00m bgl; Becoming light brown.		
2.50	5	D				... Below 2.70m bgl; Slight mottling. Rare fine to coarse flint gravel.	(2.90)	
2.50		V	c _r =37			... Between 3.20m and 3.25m bgl; Gravel band.		
3.00-3.45	3	SPT(c)	N=11			... Below 3.30m bgl; Becoming light brown orange.		
3.50		V	c _r =53					
4.00-4.45	4	SPT(c)	N=34			Borehole terminated at 4.00m depth.	4.00	

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						1. No groundwater was encountered 2. Inspection pit hand dug to 1.00m 3. Gas and groundwater monitoring well installed to 4.00m depth	
All dimensions in metres						Scale:	1:50
Method Used:	Trial Pit/trench + Window sampling		Plant Used:	Hand tools + Dando Terrier		Drilled By:	KDS
						Logged By:	AJames
						Checked By:	

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Borehole: BH2
Contract Ref: 27621	Start: 26.01.15 End: 26.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
1.20-1.60	1	ES				MADE GROUND: Grass over light brown silty CLAY.	0.40	
						MADE GROUND: Light grey sandy GRAVEL comprised of flint and concrete.	0.60	
						MADE GROUND: Dark brown to black very sandy CLAY with plastic sacking, plastic fragments, metal wire, mortar, ash, glass and charcoal.	(2.00)	
2.60-2.80	2	ES				MADE GROUND: Dark grey brown silty slightly gravelly CLAY with occasional fine glass and charcoal fragments.	2.60	
						Firm light brown silty CLAY.	3.00	
3.50	3	D					(1.00)	
3.50		V	c _r =40				4.00	
Borehole terminated at 4.00m depth.								

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						1. No groundwater encountered 2. Borehole backfilled with arisings upon completion.	
All dimensions in metres						Scale:	1:50
Method Used: Window sampling		Plant Used: Dando Terrier		Drilled By: KDS	Logged By: AJames	Checked By:	

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Borehole: BH3
Contract Ref: 27621	Start: 26.01.15 End: 26.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.60-1.00	1	ES				MADE GROUND: Grass over light brown slightly gravelly CLAY with occasional fine brick and charcoal fragments. ... At 0.40m bgl; Brick cobble.	(1.30)	
1.50-2.00	2	ES				MADE GROUND: Brick. MADE GROUND: Dark brown to black sandy gravelly CLAY with plastic sacking, plastic, wood, brick, charcoal and ash fragments.	1.30 1.40 (0.70)	
2.20-2.50	3	ES				MADE GROUND: Grey to dark grey slightly sandy CLAY with occasional plastic sacking and charcoal.	2.10 (0.70)	
3.50	4	D				Firm light brown silty CLAY.	2.80 (1.20)	
3.50		V	c _r =50			Borehole terminated at 4.00m depth.	4.00	

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						1. No groundwater was encountered 2. Borehole backfilled with arisings upon completion	
All dimensions in metres						Scale: 1:50	
Method Used: Window sampling		Plant Used: Dando Terrier		Drilled By: KDS	Logged By: AJames	Checked By:	

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Borehole: BH4
Contract Ref: 27621	Start: 26.01.15 End: 26.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.60-0.90	1	ES				MADE GROUND: Grass over brown silty CLAY. (Topsoil)	0.05	
0.60-0.90	6	B				MADE GROUND: Light brown slightly gravelly CLAY with occasional charcoal.	0.50	
						MADE GROUND: Brown slightly sandy gravelly CLAY. Gravel is occasional flint, brick, charcoal, plastic fragments with black plastic sacking.	0.90	
						MADE GROUND: Pinkish brown flint and limestone GRAVEL.	(0.60)	
1.50	2	D				MADE GROUND: Brown grey CLAY with black plastic sacking.	1.50	
							(0.60)	
							2.10	
2.50-3.00	3	ES				MADE GROUND: Black to dark grey brown peaty CLAY with much organic matter and an organic odour. Occasional brick, ash and charcoal.	(0.90)	
2.60-3.00	4	B				... At 2.60m bgl; Possible ACM.	3.00	
						Firm light brown silty CLAY.		
						... At 3.00m bgl; Possible ACM.	(1.00)	
3.50	5	D						
3.50		V	c _r =40				4.00	
Borehole terminated at 4.00m depth.								

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						1. No groundwater was encountered 2. Borehole backfilled with arisings upon completion	
All dimensions in metres						Scale:	1:50
Method Used: Window sampling		Plant Used: Dando Terrier		Drilled By: KDS	Logged By: AJames	Checked By:	AGS

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Borehole: BH5
Contract Ref: 27621	Start: 26.01.15 End: 26.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Depth (m)	Samples & Testing			Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.30-0.40	2	ES				MADE GROUND: Brown silty slightly gravelly CLAY (Topsoil). MADE GROUND: Brown silty gravelly CLAY with occasional black plastic sacking. Stiff becoming soft to firm light brown silty CLAY with ancient fine roots. ... Appears desiccated up to 0.80m bgl.	0.05 0.45	
0.80		V	$c_r=63$					
0.90-1.00	1	D						
1.40-1.60	3	D						
1.50		V	$c_r=32$				(2.85)	
2.40-2.60	4	D						
2.50		V	$c_r=37$					
						Borehole terminated at 3.30m depth.	3.30	

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						1. No groundwater was encountered 2. Gas and groundwater monitoring well was installed to 3.00m depth 3. Ancient roots to 1.10m depth	
All dimensions in metres						Scale:	1:50
Method Used: Window sampling		Plant Used: Dando Terrier		Drilled By: KDS	Logged By: AJames	Checked By:	

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Borehole: BH6
Contract Ref: 27621	Start: 26.01.15 End: 26.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.00-0.10	1	ES				MADE GROUND: Brown silty CLAY with occasional fine charcoal (Topsoil). Firm to stiff brown silty CLAY.	0.10	
0.50		V	c _r =65				(1.60)	
0.90-1.00	2	D						
1.30-1.50	3	D				... Between 1.50m and 1.70m bgl; Becoming gravelly.	1.70	
1.30		V	c _r =73			Firm to stiff light brown yellow very gravelly sandy CLAY. Slightly desiccated.	(0.70)	
2.00-2.30	4	D					2.40	
						Firm to stiff light brown silty CLAY. ... Between 2.40m and 2.50m bgl; Slightly desiccated.	(0.60)	
2.70		V	c _r =72				3.00	
2.80-3.00	5	D				Borehole terminated at 3.00m depth.		

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						1. No groundwater was encountered 2. Fine to coarse roots seen to 3.00m 3. Borehole backfilled with arisings upon completion	
All dimensions in metres						Scale:	1:50
Method Used: Window sampling		Plant Used: Dando Terrier		Drilled By: KDS	Logged By: AJames	Checked By:	

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Borehole: BH7
Contract Ref: 27621	Start: 26.01.15 End: 26.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Depth (m)	Samples & Testing			Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.40-0.60	1	ES	c _r =68			MADE GROUND: Grass over brown silty CLAY with occasional fine brick and charcoal (Topsoil). Firm brown silty CLAY.	0.15	
0.70		V				... Between 1.00m and 1.20m bgl; Desiccated and slightly sandy.	(1.95)	
0.90-1.00	2	D						
1.40-1.60	3	D				Medium dense to dense light grey angular to subangular fine to medium flint GRAVEL.	2.10	
						Borehole terminated at 2.40m depth.	2.40	

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						1. No groundwater was encountered 2. Occasional fine roots present to 2.00m 3. Gas and groundwater monitoring well installed to 2.00m 4. Borehole refused at 2.40m upon hard strata.	
All dimensions in metres						Scale:	1:50
Method Used: Window sampling		Plant Used: Dando Terrier		Drilled By: KDS	Logged By: AJames	Checked By:	

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Borehole: BH8
Contract Ref: 27621	Start: 26.01.15 End: 26.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.30-0.40	1	ES	c _r =52			MADE GROUND: Grass over brown silty CLAY with isolated glass fragments. Firm to stiff light brown silty CLAY.	0.10 (1.10)	
0.80 0.90-1.00	2	V D				Firm to stiff brown very gravelly CLAY.	1.20	
1.50-1.60	3	D					(0.80) 2.00	
2.80-3.00	4	D				Medium dense to dense brown clayey sandy angular to subrounded fine to coarse flint GRAVEL.	(0.60) 2.60	
						Weathered CHALK. Off white to cream very gravelly clayey comminuted chalk.	3.00	
						Borehole terminated at 3.00m depth.		

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						1. No groundwater was encountered 2. Fine to coarse roots seen to 1.20m 3. Borehole backfilled with arisings upon completion.	
All dimensions in metres						Scale:	1:50
Method Used: Window sampling		Plant Used: Dando Terrier		Drilled By: KDS	Logged By: AJames	Checked By:	AGS

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Borehole: BH9
Contract Ref: 27621	Start: 27.01.15 End: 27.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Depth (m)	Samples & Testing			Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.10-0.20	1	ES				MADE GROUND: Light brown silty CLAY with a little glass. Firm light brown slightly silty CLAY.	0.10	
0.70-1.00	2	D					(1.30)	
0.80		V	c _r =55 N=11				1.40	
1.00-1.45	1	SPT(c)						
1.30		V	c _r =47			Firm light brown very gravelly CLAY.	(0.60)	
1.60-1.80	3	D					2.00	
2.00-2.45	2	SPT(c)	N=5			Interbedded light brown gravelly CLAY and clayey flint GRAVEL. ... Below 2.00m bgl; Soils locally damp.	(1.30)	
							3.30	
						Borehole terminated at 3.30m depth.		

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						1. No groundwater was encountered 2. Gas and groundwater monitoring well installed to 3.00m	
Method Used: Window sampling						All dimensions in metres	
Plant Used: Dando Terrier						Scale: 1:50	
Drilled By: KDS			Logged By: AJames			Checked By: AGS	

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Borehole: BH10
Contract Ref: 27621	Start: 27.01.15 End: 27.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.30-0.40	1	ES				MADE GROUND: Grass over dark brown silty slightly gravelly CLAY with occasional plastic sacking.	0.40	
						MADE GROUND: Brown silty slightly gravelly CLAY with occasional glass fragments.	(0.50)	
							0.90	
1.10-1.40	2	ES				MADE GROUND: Dark brown to black slightly silty CLAY with black plastic sacking, wood, glass, string and mortar. Slight organic odour.	(0.80)	
1.50	5	B				... At 1.50m bgl; Possible ACM.	1.70	
						MADE GROUND: Dark grey silty slightly gravelly CLAY with a little charcoal. Moderate organic odour.	2.10	
						Firm light brown silty CLAY.		
2.50-2.80	3	D						
2.80		V	c _r =53				(1.90)	
3.50-3.70	4	D				... Below 3.30m bgl; Slightly sandy and light yellowish brown.		
3.50		V	c _r =55				4.00	
Borehole terminated at 4.00m depth.								

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						1. No groundwater was encountered 2. Borehole backfilled with arisings upon completion	
All dimensions in metres						Scale: 1:50	
Method Used: Window sampling		Plant Used: Dando Terrier		Drilled By: KDS	Logged By: AJames	Checked By:	



Depth (m)	Samples & Testing			Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.30-0.40	1	ES				MADE GROUND: Flint and limestone GRAVEL. MADE GROUND: Grey sandy flint and limestone GRAVEL with tarmac/ charcoal. MADE GROUND: Light brown yellowish gravelly SAND. Dark grey silty CLAY (Possibly made ground) Soft to firm light brown silty CLAY.	0.05 0.25 0.45 0.65	
1.00-1.45	1	SPT(c)	N=6					
1.00-1.20	2	D						
1.20		V	$c_r=52$					
1.60-1.80	3	D						
2.00-2.45	2	SPT(c)	N=10			... Between 2.00m and 2.30m bgl; Gravelly.	(2.65)	
2.40-2.60	4	D						
2.50		V	$c_r=47$					
3.00-3.45	3	SPT(c)	N=0			... Between 3.00m and 3.15m bgl; Becoming very soft.	3.30	
						Borehole terminated at 3.30m depth.		

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Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Borehole: BH12
Contract Ref: 27621	Start: 27.01.15 End: 27.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.20-0.40	1	ES				MADE GROUND: Grass over dark brown silty slightly gravelly CLAY (Topsoil). Gravel is fine flint, slate, brick and charcoal.	0.15	
0.20	2	B				MADE GROUND: Brown silty gravelly CLAY with occasional brick, charcoal and string.	(0.55)	
0.70-1.00	3	D				... At 0.20m bgl; Possible ACM.	0.70	
0.80		V	c _r =40			Firm light brown slightly silty CLAY.		
1.00-1.45	1	SPT(c)	N=7					
1.40-1.60	4	D						
1.50		V	c _r =38					
2.00-2.45	2	SPT(c)	N=11					
2.30		V	c _r =35			... Below 2.40m bgl; Becoming very gravelly.	(3.30)	
2.40-2.70	5	D						
3.00-3.45	3	SPT(c)	N=8					
4.00-4.45	4	SPT(c)	N=15			Borehole terminated at 4.00m depth.	4.00	

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						1. No groundwater was encountered 2. Roots seen to 1.50m 3. Borehole backfilled with arisings upon completion	
All dimensions in metres						Scale:	1:50
Method Used: Window sampling		Plant Used: Dando Terrier		Drilled By: KDS	Logged By: AJames	Checked By:	

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Borehole: BH13
Contract Ref: 27621	Start: 27.01.15 End: 27.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.10-0.30	1	ES				MADE GROUND: Grass over brown silty slightly gravelly CLAY with isolated fine charcoal fragments (Topsoil).	0.10-0.30	
						MADE GROUND: Brown silty slightly gravelly CLAY with a little polystyrene, slate, pottery and brick fragments.		
						Firm becoming soft light brown silty CLAY		
1.00-1.45	1	SPT(c)	N=6					
1.00-1.20	2	D						
1.50		V	c _r =52					
1.70-2.00	3	D						
2.00-2.45	2	SPT(c)	N=5			... Between 2.00m and 3.00m bgl; Locally gravelly.	(2.70)	
2.50		V	c _r =35					
3.00-3.45	3	SPT(c)	N=10			Borehole terminated at 3.00m depth.	3.00	

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						1. Inspection pit hand dug to 1.20m 2. No groundwater was encountered 3. Borehole backfilled with arisings upon completion	
All dimensions in metres						Scale:	1:50
Method Used: Window sampling		Plant Used: Dando Terrier		Drilled By: KDS	Logged By: AJames	Checked By:	

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Borehole: BH14A
Contract Ref: 27621	Start: 27.01.15 End: 27.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.20-0.60	1	ES				MADE GROUND: Grass over brown silty CLAY with occasional fine flint and charcoal (Topsoil).	0.10	
						MADE GROUND: Brown sandy gravelly CLAY with occasional concrete and brick cobbles, charcoal and clinker.	(0.70)	
0.80-0.90	5	ES				MADE GROUND: Dark grey silty CLAY with occasional charcoal and clinker.	0.80	
1.00-1.45	1	SPT(c)	N=10				1.05	
1.10-1.30	2	D				Firm light brown slightly silty CLAY with isolated flint GRAVEL.		
1.50		V	c _r =48					
1.60-1.80	3	D						
2.00-2.45	2	SPT(c)	N=6				(2.25)	
2.40-2.60	4	D						
2.50		V	c _r =43			... Below 2.60m bgl; Becoming light orange brown mottled.		
3.00-3.45	3	SPT(c)	N=7				3.30	
Borehole terminated at 3.30m depth.								

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
							1. Inspection pit hand excavated to 1.20m 2. No groundwater was encountered 3. Gas and groundwater monitoring well installed to 3.00m
All dimensions in metres						Scale:	1:50
Method Used: Window sampling			Plant Used: Dando Terrier		Drilled By: KDS	Logged By: AJames	Checked By:



Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.10-0.30	1	ES				Grass over brown silty CLAY with occasional fine to medium flint gravel (Topsoil).	0.35	
0.50-0.50	2	B				MADE GROUND: Brown sandy gravelly CLAY. Gravel is fine to medium of flint, concrete, charcoal, glass and brick fragments.	(0.55)	
0.60-0.80	3	ES				... At 0.50m bgl; Possible ACM.	0.90	
1.10-1.30	4	D	c _r =55			Firm light brown silty CLAY with rare fine to coarse angular to subangular flint gravel.	(2.10)	
1.50	5	V						
1.70-2.00		D						
2.50		V	c _r =45				3.00	
Borehole terminated at 3.00m depth.								

Boring Progress and Water Observations						General Remarks					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth						
						1. No groundwater was encountered 2. Borehole was backfilled with arisings upon completion					
						All dimensions in metres		Scale:	1:50		
Method Used: Window sampling			Plant Used: Dando Terrier			Drilled By: KDS		Logged By: AJames		Checked By:	



HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA1
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.30-0.40	1	D				Subangular to rounded medium to coarse flint GRAVEL. Hard light brown silty desiccated CLAY. ... Below 0.50m bgl; Becoming darker and less desiccated. ... Below 0.70m bgl; Gravelly.	0.05 (0.95) 1.00	
						Borehole terminated at 1.00m depth.		

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion

All dimensions in metres Scale: **1:25**

Method Used: Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA2
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.40-0.50	1	D				Stiff light brown slightly gravelly desiccated CLAY. Occasional fine to medium chalk gravel.	(1.00)	
						Borehole terminated at 1.00m depth.	1.00	

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion

All dimensions in metres Scale: 1:25

Method Used: Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA3
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Firm to stiff slightly desiccated silty gravelly CLAY.	(0.30)	
						MADE GROUND: Dark brown sandy gravelly CLAY with occasional concrete, mortar and charcoal fragments.	0.30 (0.30) 0.60	
						Stiff light brown slightly gravelly desiccated CLAY. Gravel is of occasional fine to medium chalk.	(0.50) 1.10	
						Borehole terminated at 1.10m depth.		

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion

All dimensions in metres | Scale: **1:25**

Method Used: Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA4
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.40-0.50	1	D				MADE GROUND: Hard light brown silty desiccated CLAY with occasional fine to coarse flint gravel. Isolated plastic sack present.	(0.30)	
						MADE GROUND: Grey and brown silty desiccated CLAY with occasional brick and limestone gravel.	(0.70)	
						Borehole terminated at 1.00m depth.	1.00	

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion

All dimensions in metres

Scale:

1:25

Method Used: Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA5	
Contract Ref: 27621		Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.40-0.60	1	D				Hard becoming firm to stiff light brown silty slightly gravelly desiccated CLAY with isolated glass fragments to 0.50m. (Possible made ground) ... Below 0.60m bgl; Becoming less desiccated.	(1.00)	
						Borehole terminated at 1.00m depth.	1.00	

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion

All dimensions in metres

Scale:

1:25

Method Used: Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA6	
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1	

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.30-0.40	1	D				MADE GROUND: Hard becoming firm to stiff light brown to brown desiccated CLAY. ... Between 0.60m and 1.00m bgl; Occasional charcoal.	(1.00) 1.00	
						Borehole terminated at 1.00m depth.		

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion

All dimensions in metres

Scale:

1:25

Method Used: Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA7
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Hard becoming firm to stiff light brown to brown desiccated CLAY with rare charcoal and occasional glass and polystyrene fragments. ... Between 0.60m and 0.90m bgl; Possible ACM.	(1.00)	
						Borehole terminated at 1.00m depth.	1.00	

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion

All dimensions in metres Scale: 1:25

Method Used: Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA8	
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1	

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.40-0.50	1	D				Subangular to rounded medium to coarse flint GRAVEL. Firm light brown silty CLAY.	0.05 (0.95)	
						Borehole terminated at 1.00m depth.	1.00	

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion

All dimensions in metres

Scale:

1:25

Method Used: Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA9
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.40-0.50	1	D				MADE GROUND: Firm light brown silty CLAY.	(0.30)	
							0.30	
						MADE GROUND: Brown grey slightly sandy gravelly CLAY with occasional charcoal.	(0.30)	
							0.60	
						Firm light brown silty CLAY.	(0.40)	
							1.00	
						Borehole terminated at 1.00m depth.		

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion

All dimensions in metres

Scale:

1:25

Method

Used: **Hand excavation**

Plant

Used: **Hand auger**

Logged

By: **AJames**

Checked

By:



HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA10
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20-0.40	1	D				MADE GROUND: Light brown silty slightly gravelly CLAY with one piece of plastic sacking, isolated fine charcoal.	(0.40)	
						Borehole terminated at 0.40m depth.	0.40	

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion
3. Borehole refused upon flint

All dimensions in metres Scale: 1:25

Method Used: Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA11
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.30-0.40	1	D				Light brown silty CLAY with isolated charcoal. ... Between 0.00m and 0.40m bgl; Slightly desiccated.	(1.00)	
						Borehole terminated at 1.00m depth.	1.00	

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion

All dimensions in metres

Scale:

1:25

Method Used: Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA12
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.30-0.40	1	D				MADE GROUND: Light brown silty CLAY with rare fine flint gravel and isolated charcoal and brick.	(1.00)	
						Borehole terminated at 1.00m depth.	1.00	

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion

All dimensions in metres

Scale:

1:25

Method Used:	Plant Used:	Logged By:	Checked By:	AG
Hand excavation	Hand auger	AJames		



HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA13
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.40-0.50	1	D				MADE GROUND: Light brown silty CLAY with rare fine flint gravel and isolated charcoal and brick.	(1.00)	
						Borehole terminated at 1.00m depth.	1.00	

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion

All dimensions in metres

Scale:

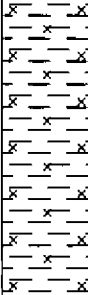
1:25

Method Used: Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA14
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.40-0.50	1	D				Firm light brown silty slightly desiccated CLAY. ... At 0.90m bgl; Occasional coarse flint. Borehole terminated at 1.00m depth.	(1.00) 1.00	

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion

All dimensions in metres

Scale:

1:25

Method Used: Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA15
Contract Ref: 27621	Date: 28.01.15	Ground Level: --	Co-ordinates: --	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						Firm light brown silty slightly desiccated CLAY with occasional rare flint. ... Between 0.00m and 0.30m bgl; Desiccated.	(0.90)	
						Borehole terminated at 0.90m depth.	0.90	

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion
3. Borehole refused upon flint

All dimensions in metres

Scale:

1:25

Method Used: Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA16	
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1	

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.40-0.50	1	D				Firm light brown silty slightly desiccated CLAY with occasional flint gravel.	(1.00)	
						Borehole terminated at 1.00m depth.	1.00	

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion

All dimensions in metres

Scale:

1:25

Method Used: Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA17
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.30-0.40	1	D				MADE GROUND: Hard becoming firm light brown slightly desiccated silty CLAY with occasional fine brick fragments and rare fragments of chalk.	(1.00)	
						Borehole terminated at 1.00m depth.	1.00	

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion

All dimensions in metres

Scale:

1:25

Method Used: Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA18
Contract Ref: 27621	Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Grey brown gravelly CLAY with brick.	0.20	
						MADE GROUND: Light grey SAND.	0.25	
						MADE GROUND: Light orange brown medium to coarse SAND. Borehole terminated at 0.25m depth.		

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion
3. Borehole abandoned due to possibility of service present

All dimensions in metres

Scale:

1:25

Method Used:	Plant Used:	Logged By:	Checked By:	AG
Hand excavation	Hand auger	AJames		



HAND AUGER LOG

Contract: Land at West End Nursery, Angmering		Client: Cala Homes (South Home Counties) Ltd		Position: HA18A	
Contract Ref: 27621		Date: 28.01.15	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.30-0.50	1	D				MADE GROUND: Grey brown gravelly CLAY with brick.	0.10	
						MADE GROUND: Brown sandy gravelly CLAY with brick, charcoal and metal fragments.	(0.40)	
						Borehole terminated at 0.50m depth.	0.50	

General Remarks

1. No groundwater was encountered
2. Borehole backfilled with arisings upon completion
3. Borehole refused at 0.50m upon concrete/flint

All dimensions in metres

Scale:

1:25

Method Used Hand excavation	Plant Used: Hand auger	Logged By: AJames	Checked By:	
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APPENDIX G

LABORATORY CERTIFICATES FOR SOIL ANALYSIS



Envirolab Deviating Samples Report

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

Client: Structural Soils Limited (Hemel Hempstead Lab), 18 Frogmore Road, Hemel Hempstead, UK, HP3 9RT

Project No: 15/00711
Date Instructions Received: 09/02/2015 (am)

Project: West End Nursery
Clients Project No: 27621

NO DEVIATIONS IDENTIFIED

Envirolab Deviating Samples Report

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

Client: Structural Soils Limited (Hemel Hempstead Lab), 18 Frogmore Road, Hemel Hempstead, UK, HP3 9RT

Project No: 15/00714
Date Instructions Received: 09/02/2015 (am)

Project: West End Nursery
Clients Project No: 27621

NO DEVIATIONS IDENTIFIED

Envirolab Deviating Samples Report

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

Client: RSK Environment Ltd Hemel, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, UK, HP3 9RT **Project No:**

15/00505

Date Instructions Received: 02/02/2015 (am)

Project: Land at West End Nursery, Angmering
Clients Project No: 27621

NO DEVIATIONS IDENTIFIED

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 15/00714
Issue Number: 1

Date: 12 February, 2015

Client: Structural Soils Limited (Hemel Hempstead Lab)
18 Frogmore Road
Hemel Hempstead
UK
HP3 9RT

Project Manager: Sharon Cairnes / Paul Carroll / Justin Barrett
Project Name: West End Nursery
Project Ref: 27621
Order No: N/A
Date Samples Received: 09/02/15
Date Instructions Received: 09/02/15
Date Analysis Completed: 11/02/15

Prepared by:



Melanie Marshall
Laboratory Coordinator

Approved by:



Iain Haslock
Analytical Consultant

Envirolab Job Number: 15/00714

Client Project Name: West End Nursery

Client Project Ref: 27621

Lab Sample ID	15/00714/1	15/00714/2	15/00714/3	15/00714/4	15/00714/5	15/00714/6	15/00714/7		Units	Method ref
Client Sample No										
Client Sample ID	BH15	BH15	BH12	BH6	BH8	BH8	BH13			
Depth to Top	1.10	1.70	1.40	1.30	0.90	1.50	1.00			
Depth To Bottom	1.30	2.00	1.60		1.00	1.60	1.20			
Date Sampled	27-Jan-15	26-Jan-15	27-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	27-Jan-15			
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D			
MCERTS Sample Matrix Code	5	5A	5	5AE	5E	4A	5E			
% Stones >10mm _A ²	<0.1	<0.1	<0.1	6.3	<0.1	52.5	<0.1		% w/w	A-T-044
pH BRE ₀ ³⁰	7.51	7.45	8.06	7.53	6.91	7.79	8.04		pH	A-T-031a
Sulphate BRE (water sol 2:1) ₀ ³⁰	139	114	26	52	21	14	13		mg/l	A-T-025a

REPORT NOTES

Notes - Soil chemical analysis

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

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis. For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

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

Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts.

Superscript "M" indicates method accredited to MCERTS.

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

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

TPH analysis of water by method A-T-007

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

Asbestos in soil

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed.

Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER.

Samples with Matrix Code 7 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

FINAL ANALYTICAL TEST REPORT

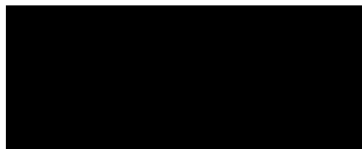
Envirolab Job Number: 15/00711
Issue Number: 1

Date: 11 February, 2015

Client: Structural Soils Limited (Hemel Hempstead Lab)
18 Frogmore Road
Hemel Hempstead
UK
HP3 9RT

Project Manager: Sharon Cairnes / Paul Carroll / Justin Barrett
Project Name: West End Nursery
Project Ref: 27621
Order No: N/A
Date Samples Received: 09/02/15
Date Instructions Received: 09/02/15
Date Analysis Completed: 10/02/15

Prepared by:



Georgia King
Administrative Assistant

Approved by:



Iain Haslock
Analytical Consultant

Envirolab Job Number: 15/00711

Client Project Name: West End Nursery

Client Project Ref: 27621

Lab Sample ID	15/00711/1								Units	Method ref
Client Sample No										
Client Sample ID	BH15									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	26-Jan-15									
Sample Type	Solid - Fragment / Tile									
MCERTS Sample Matrix Code	7									
Bulk Fibre ID (inc. matrix)										
Asbestos Matrix (visual) ₀	Cement									A-T-045
Asbestos ACM - Sullable for Water Absorption Test ₀	YES									Gravimetry
Bulk Fibre Identification ₀	Chrysotile									A-T-045

REPORT NOTES

Notes - Soil chemical analysis

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

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis. For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

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

Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts.

Superscript "M" indicates method accredited to MCERTS.

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

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

TPH analysis of water by method A-T-007

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

Asbestos in soil

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified a being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed.

Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER.

Samples with Matrix Code 7 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 15/00505
Issue Number: 1

Date: 13 February, 2015

Client: RSK Environment Ltd Hemel
18 Frogmore Road
Hemel Hempstead
Hertfordshire
UK
HP3 9RT

Project Manager: Andrew James
Project Name: Land at West End Nursery, Angmering
Project Ref: 27621
Order No: N/A
Date Samples Received: 29/01/15
Date Instructions Received: 02/02/15
Date Analysis Completed: 12/02/15

Prepared by:



Melanie Marshall
Laboratory Coordinator

Approved by:



Iain Haslock
Analytical Consultant

Envirolab Job Number: 15/00505

Client Project Name: Land at West End Nursery, Angmering

Client Project Ref: 27621

Lab Sample ID	15/00505/1	15/00505/2	15/00505/3	15/00505/4	15/00505/5	15/00505/6	15/00505/7	15/00505/8	Units	Method ref
Client Sample No										
Client Sample ID	BH1	BH2	BH3	BH4	BH5	BH6	BH7	BH8		
Depth to Top	0.30	1.20	1.50	0.60	0.30	0.00	0.40	0.30		
Depth To Bottom	0.40	1.60	2.00	0.90	0.40	0.10	0.60	0.40		
Date Sampled	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	6A	6A	5AB	5AB	5AB	5AE	5E	5E		
% Stones >10mm _A [®]	9.2	<0.1	<0.1	3.1	<0.1	2.2	<0.1	<0.1	% w/w	A-T-044
pH _D ^{MF}	8.48	7.87	8.23	8.06	8.68	7.76	7.80	7.43	pH	A-T-031s
Sulphate (water sol 2:1) _D ^{MF}	0.05	0.07	0.02	<0.01	<0.01	<0.01	0.04	0.05	g/l	A-T-026s
Sulphate (acid soluble) _D ^{MF}	610	1200	520	710	870	460	330	270	mg/kg	A-T-028s
Total Organic Carbon _D ^{MF}	-	6.43	-	2.80	-	1.40	-	-	% w/w	A-T-032s
Arsenic _D ^{MF}	4	20	5	9	7	6	4	4	mg/kg	A-T-024s
Cadmium _D ^{MF}	<0.5	1.1	<0.5	1.1	<0.5	<0.5	<0.5	<0.5	mg/kg	A-T-024s
Copper _D ^{MF}	15	67	24	40	46	14	11	11	mg/kg	A-T-024s
Chromium _D ^{MF}	22	28	14	25	21	19	19	23	mg/kg	A-T-024s
Lead _D ^{MF}	50	248	110	293	156	36	17	15	mg/kg	A-T-024s
Mercury _D	<0.17	<0.17	<0.17	0.19	<0.17	<0.17	<0.17	<0.17	mg/kg	A-T-024s
Nickel _D ^{MF}	15	32	18	34	22	13	12	15	mg/kg	A-T-024s
Selenium _D ^{MF}	<1	1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-024s
Zinc _D ^{MF}	69	4430	237	3360	478	58	41	42	mg/kg	A-T-024s

Envirolab Job Number: 15/00505

Client Project Name: Land at West End Nursery, Angmering

Client Project Ref: 27621

Lab Sample ID	15/00505/1	15/00505/2	15/00505/3	15/00505/4	15/00505/5	15/00505/6	15/00505/7	15/00505/8	Units	Method ref
Client Sample No										
Client Sample ID	BH1	BH2	BH3	BH4	BH5	BH6	BH7	BH8		
Depth to Top	0.30	1.20	1.50	0.60	0.30	0.00	0.40	0.30		
Depth To Bottom	0.40	1.60	2.00	0.90	0.40	0.10	0.60	0.40		
Date Sampled	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	6A	6A	5AB	5AB	5AB	5AE	5E	5E		
TPH CWG										
All >C5-C6 _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
All >C6-C8 _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
All >C8-C10 _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
All >C10-C12 _A ^g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
All >C12-C16 _A ^g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
All >C16-C21 _A ^g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
All >C21-C35 _A ^g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
Total Aliphatics _A	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022+23a
Aro >C5-C7 _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
Aro >C7-C8 _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
Aro >C8-C9 _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
Aro >C9-C10 _A ^g	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	mg/kg	A-T-022a
Aro >C10-C12 _A ^g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
Aro >C12-C16 _A ^g	1.0	<0.1	<0.1	1.5	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
Aro >C16-C21 _A ^g	2.3	1.9	0.8	8.6	2.0	<0.1	<0.1	<0.1	mg/kg	A-T-022a
Aro >C21-C35 _A ^g	6.7	6.0	1.3	19.4	4.4	<0.1	<0.1	<0.1	mg/kg	A-T-022a
Total Aromatics _A	9.8	8.1	2.2	29.4	6.4	<0.1	<0.1	<0.1	mg/kg	A-T-022+23a
TPH (All & Aro) _A	9.8	8.1	2.2	29.4	6.4	<0.1	<0.1	<0.1	mg/kg	A-T-022+23a
BTEX - Benzene _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
BTEX - Toluene _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
BTEX - Ethyl Benzene _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
BTEX - m & p Xylene _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
BTEX - o Xylene _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
MTBE _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a

Envirolab Job Number: 15/00505

Client Project Name: Land at West End Nursery, Angmering

Client Project Ref: 27621

Lab Sample ID	15/00505/1	15/00505/2	15/00505/3	15/00505/4	15/00505/5	15/00505/6	15/00505/7	15/00505/8	Units	Method ref
Client Sample No										
Client Sample ID	BH1	BH2	BH3	BH4	BH5	BH6	BH7	BH8		
Depth to Top	0.30	1.20	1.50	0.60	0.30	0.00	0.40	0.30		
Depth To Bottom	0.40	1.60	2.00	0.90	0.40	0.10	0.60	0.40		
Date Sampled	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	6A	6A	5AB	5AB	5AB	5AE	5E	5E		
Acid Herbs (Suite 3+)										
Asbestos in Soil (Inc. matrix)										
Asbestos in soil ⁶	-	Chrysotile	Chrysotile	-	Chrysotile	NAD	NAD	NAD		A-T-045
Asbestos Matrix (microscope) ₀	-	Cement	Loose Insulation	-	Loose Insulation	-	-	-		A-T-045
Asbestos ACM - Suitable for Water Absorption Test ⁷ ₀	-	NO	N/A	-	N/A	N/A	N/A	N/A		Gravimetry

Envirolab Job Number: 15/00505

Client Project Name: Land at West End Nursery, Angmering

Client Project Ref: 27621

Lab Sample ID	15/00505/1	15/00505/2	15/00505/3	15/00505/4	15/00505/5	15/00505/6	15/00505/7	15/00505/8	Units	Method ref
Client Sample No										
Client Sample ID	BH1	BH2	BH3	BH4	BH5	BH6	BH7	BH8		
Depth to Top	0.30	1.20	1.50	0.60	0.30	0.00	0.40	0.30		
Depth To Bottom	0.40	1.60	2.00	0.90	0.40	0.10	0.60	0.40		
Date Sampled	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	6A	6A	5AB	5AB	5AB	5AE	5E	5E		
PAH 16										
Acenaphthene _A ^{MS}	<0.01	0.13	0.06	0.07	0.02	<0.01	<0.01	<0.01	mg/kg	A-T-019a
Acenaphthylene _A ^{MS}	<0.01	0.03	0.02	0.04	0.02	<0.01	<0.01	<0.01	mg/kg	A-T-019a
Anthracene _A ^{MS}	0.02	0.28	0.18	0.18	0.05	<0.02	<0.02	<0.02	mg/kg	A-T-019a
Benzo(a)anthracene _A ^{MS}	0.17	2.11	1.19	1.25	0.44	0.12	<0.04	<0.04	mg/kg	A-T-019a
Benzo(a)pyrene _A ^{MS}	0.24	1.82	1.30	1.28	0.49	0.12	<0.04	<0.04	mg/kg	A-T-019a
Benzo(b)fluoranthene _A ^{MS}	0.25	2.09	1.48	1.53	0.53	0.16	<0.05	<0.05	mg/kg	A-T-019a
Benzo(ghi)perylene _A ^{MS}	0.19	0.87	0.76	0.75	0.33	0.07	<0.05	<0.05	mg/kg	A-T-019a
Benzo(k)fluoranthene _A ^{MS}	0.14	1.07	0.69	0.67	0.28	<0.07	<0.07	<0.07	mg/kg	A-T-019a
Chrysene _A ^{MS}	0.15	1.72	1.19	1.14	0.43	0.12	<0.06	<0.06	mg/kg	A-T-019a
Dibenzo(ah)anthracene _A ^{MS}	<0.04	0.19	0.17	0.16	0.07	<0.04	<0.04	<0.04	mg/kg	A-T-019a
Fluoranthene _A ^{MS}	0.30	4.57	2.20	2.14	0.71	0.23	<0.08	<0.08	mg/kg	A-T-019a
Fluorene _A ^{MS}	<0.01	0.06	0.05	0.05	0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019a
Indeno(123-cd)pyrene _A ^{MS}	0.19	0.99	0.79	0.83	0.36	0.08	<0.03	<0.03	mg/kg	A-T-019a
Naphthalene _A ^{MS}	<0.03	<0.03	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	A-T-019a
Phenanthrene _A ^{MS}	0.11	0.95	0.79	0.74	0.27	0.08	<0.03	<0.03	mg/kg	A-T-019a
Pyrene _A ^{MS}	0.28	4.16	2.14	2.17	0.73	0.21	<0.07	<0.07	mg/kg	A-T-019a
PAH (total 16) _A ^{MS}	2.04	21	13	13	4.76	1.19	<0.08	<0.08	mg/kg	A-T-019a

Envirolab Job Number: 15/00505

Client Project Name: Land at West End Nursery, Angmering

Client Project Ref: 27621

Lab Sample ID	15/00505/9	15/00505/10	15/00505/11	15/00505/12	15/00505/13	15/00505/14	15/00505/15	15/00505/16	Units	Method ref
Client Sample No										
Client Sample ID	BH9	BH10	BH11	BH12	BH13	BH14	BH15	HA1		
Depth to Top	0.10	1.10	0.30	0.20	0.10	0.20	0.10	0.30		
Depth To Bottom	0.20	1.40	0.40	0.40	0.30	0.60	0.30	0.40		
Date Sampled	27-Jan-15	27-Jan-15	27-Jan-15	27-Jan-15	27-Jan-15	27-Jan-15	26-Jan-15	28-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	5E	6AE	1AE	6A	4AE	6AB	6AE	1		
% Stones >10mm _s ¹	<0.1	<0.1	14.2	29.6	<0.1	<0.1	4.1	1.8	% w/w	A-T-044
pH ₀ ^{MS}	-	8.29	8.42	8.71	8.29	-	8.02	7.89	pH	A-T-031s
Sulphate (water sol 2:1) ₀ ^{MS}	-	0.13	<0.01	0.02	0.02	-	<0.01	0.11	g/l	A-T-026s
Sulphate (acid soluble) ₀ ^{MS}	-	1300	340	240	320	-	430	460	mg/kg	A-T-028s
Total Organic Carbon ₀ ^{MS}	0.59	-	-	-	-	-	-	0.43	% w/w	A-T-032s
Arsenic ₀ ^{MS}	-	4	3	2	4	-	6	7	mg/kg	A-T-024s
Cadmium ₀ ^{MS}	-	1.2	<0.5	<0.5	<0.5	-	<0.5	<0.5	mg/kg	A-T-024s
Copper ₀ ^{MS}	-	42	7	7	14	-	30	13	mg/kg	A-T-024s
Chromium ₀ ^{MS}	-	13	14	13	14	-	20	26	mg/kg	A-T-024s
Lead ₀ ^{MS}	-	149	22	16	19	-	71	15	mg/kg	A-T-024s
Mercury ₀	-	<0.17	<0.17	<0.17	<0.17	-	<0.17	<0.17	mg/kg	A-T-024s
Nickel ₀ ^{MS}	-	22	10	8	11	-	14	18	mg/kg	A-T-024s
Selenium ₀ ^{MS}	-	<1	<1	<1	<1	-	<1	<1	mg/kg	A-T-024s
Zinc ₀ ^{MS}	-	734	29	32	112	-	103	49	mg/kg	A-T-024s

Envirolab Job Number: 15/00505

Client Project Name: Land at West End Nursery, Angmering

Client Project Ref: 27621

Lab Sample ID	15/00505/9	15/00505/10	15/00505/11	15/00505/12	15/00505/13	15/00505/14	15/00505/15	15/00505/16	Units	Method ref
Client Sample No										
Client Sample ID	BH9	BH10	BH11	BH12	BH13	BH14	BH15	HA1		
Depth to Top	0.10	1.10	0.30	0.20	0.10	0.20	0.10	0.30		
Depth To Bottom	0.20	1.40	0.40	0.40	0.30	0.60	0.30	0.40		
Date Sampled	27-Jan-15	27-Jan-15	27-Jan-15	27-Jan-15	27-Jan-15	27-Jan-15	26-Jan-15	28-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	5E	6AE	1AE	6A	4AE	6AB	6AE	1		
TPH CWG										
All >C5-C6 _A ^g	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
All >C6-C8 _A ^g	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
All >C8-C10 _A ^g	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
All >C10-C12 _A ^g	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
All >C12-C16 _A ^g	-	<0.1	<0.1	<0.1	<0.1	1.3	<0.1	<0.1	mg/kg	A-T-022a
All >C16-C21 _A ^g	-	<0.1	<0.1	<0.1	<0.1	4.5	<0.1	<0.1	mg/kg	A-T-022a
All >C21-C35 _A ^g	-	<0.1	<0.1	<0.1	<0.1	1.6	<0.1	<0.1	mg/kg	A-T-022a
Total Aliphatics _A	-	<0.1	<0.1	<0.1	<0.1	7.4	<0.1	<0.1	mg/kg	A-T-022+23a
Aro >C5-C7 _A ^g	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
Aro >C7-C8 _A ^g	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
Aro >C8-C9 _A ^g	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
Aro >C9-C10 _A ^g	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
Aro >C10-C12 _A ^g	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
Aro >C12-C16 _A ^g	-	<0.1	<0.1	<0.1	<0.1	1.6	<0.1	<0.1	mg/kg	A-T-022a
Aro >C16-C21 _A ^g	-	1.2	0.7	0.6	<0.1	9.4	<0.1	<0.1	mg/kg	A-T-022a
Aro >C21-C35 _A ^g	-	0.6	1.1	2.8	<0.1	12.3	<0.1	<0.1	mg/kg	A-T-022a
Total Aromatics _A	-	1.8	1.8	3.3	<0.1	23.4	<0.1	<0.1	mg/kg	A-T-022+23a
TPH (All & Aro) _A	-	1.8	1.8	3.3	<0.1	30.8	<0.1	<0.1	mg/kg	A-T-022+23a
BTEX - Benzene _A ^g	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
BTEX - Toluene _A ^g	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
BTEX - Ethyl Benzene _A ^g	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
BTEX - m & p Xylene _A ^g	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
BTEX - o Xylene _A ^g	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
MTBE _A ^g	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a

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Client Project Name: Land at West End Nursery, Angmering

Client Project Ref: 27621

Lab Sample ID	15/00505/9	15/00505/10	15/00505/11	15/00505/12	15/00505/13	15/00505/14	15/00505/15	15/00505/16	Units	Method ref
Client Sample No										
Client Sample ID	BH9	BH10	BH11	BH12	BH13	BH14	BH15	HA1		
Depth to Top	0.10	1.10	0.30	0.20	0.10	0.20	0.10	0.30		
Depth To Bottom	0.20	1.40	0.40	0.40	0.30	0.60	0.30	0.40		
Date Sampled	27-Jan-15	27-Jan-15	27-Jan-15	27-Jan-15	27-Jan-15	27-Jan-15	26-Jan-15	28-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	5E	6AE	1AE	6A	4AE	6AB	6AE	1		
Acid Herbs (Suite 3+)										
Asbestos in Soil (inc. matrix)										
Asbestos in soil ^g	NAD	Chrysotile	NAD	NAD	Amosite	Chrysotile and Amosite	-	NAD		A-T-045
Asbestos Matrix (microscope) _g	-	Cement	-	-	Loose insulation	Loose insulation	-	-		A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _g	N/A	NO	N/A	N/A	N/A	N/A	-	N/A		Gravimetry

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Lab Sample ID	15/00505/9	15/00505/10	15/00505/11	15/00505/12	15/00505/13	15/00505/14	15/00505/15	15/00505/16	Units	Method ref
Client Sample No										
Client Sample ID	BH9	BH10	BH11	BH12	BH13	BH14	BH15	HA1		
Depth to Top	0.10	1.10	0.30	0.20	0.10	0.20	0.10	0.30		
Depth To Bottom	0.20	1.40	0.40	0.40	0.30	0.60	0.30	0.40		
Date Sampled	27-Jan-15	27-Jan-15	27-Jan-15	27-Jan-15	27-Jan-15	27-Jan-15	26-Jan-15	28-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	5E	6AE	1AE	6A	4AE	6AB	6AE	1		
PAH 16										
Acenaphthene _A ^{MS}	-	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	mg/kg	A-T-019a
Acenaphthylene _A ^{MS}	-	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	mg/kg	A-T-019a
Anthracene _A ^{MS}	-	<0.02	0.04	0.05	<0.02	-	0.02	<0.02	mg/kg	A-T-019a
Benzo(a)anthracene _A ^{MS}	-	0.14	0.30	0.79	<0.04	-	0.24	<0.04	mg/kg	A-T-019a
Benzo(a)pyrene _A ^{MS}	-	0.15	0.34	0.90	<0.04	-	0.22	<0.04	mg/kg	A-T-019a
Benzo(b)fluoranthene _A ^{MS}	-	0.15	0.37	0.97	<0.05	-	0.26	<0.05	mg/kg	A-T-019a
Benzo(ghi)perylene _A ^{MS}	-	0.14	0.23	0.61	<0.05	-	0.15	<0.05	mg/kg	A-T-019a
Benzo(k)fluoranthene _A ^{MS}	-	0.10	0.21	0.44	<0.07	-	0.15	<0.07	mg/kg	A-T-019a
Chrysene _A ^{MS}	-	0.12	0.29	0.73	<0.06	-	0.20	<0.06	mg/kg	A-T-019a
Dibenzo(ah)anthracene _A ^{MS}	-	<0.04	0.04	0.13	<0.04	-	<0.04	<0.04	mg/kg	A-T-019a
Fluoranthene _A ^{MS}	-	0.24	0.64	1.11	<0.08	-	0.40	<0.08	mg/kg	A-T-019a
Fluorene _A ^{MS}	-	<0.01	0.01	<0.01	<0.01	-	<0.01	<0.01	mg/kg	A-T-019a
Indeno(123-cd)pyrene _A ^{MS}	-	0.14	0.25	0.66	<0.03	-	0.14	<0.03	mg/kg	A-T-019a
Naphthalene _A ^{MS}	-	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	mg/kg	A-T-019a
Phenanthrene _A ^{MS}	-	0.05	0.26	0.17	<0.03	-	0.12	<0.03	mg/kg	A-T-019a
Pyrene _A ^{MS}	-	0.22	0.56	1.14	<0.07	-	0.38	<0.07	mg/kg	A-T-019a
PAH (total 16) _A ^{MS}	-	1.45	3.55	7.73	<0.08	-	2.29	<0.08	mg/kg	A-T-019a

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Lab Sample ID	15/00505/17	15/00505/18	15/00505/19	15/00505/20	15/00505/21	15/00505/22	15/00505/23	15/00505/24	Units	Method ref
Client Sample No										
Client Sample ID	HA2	HA3	HA4	HA5	HA6	HA7	HA8	HA9		
Depth to Top	0.40	0.30	0.40	0.40	0.30	0.60	0.40	0.40		
Depth To Bottom	0.50	0.50	0.50	0.60	0.40	0.90	0.50	0.50		
Date Sampled	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	4A	5ABE	5A	5	5	5	5	6		
% Stones >10mm _A	<0.1	10.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
pH ₀ ^{MS}	7.69	8.26	7.46	7.84	7.74	7.37	6.95	7.53	pH	A-T-031s
Sulphate (water sol 2:1) ₀ ^{MS}	0.14	0.09	0.11	0.12	0.07	0.08	0.11	0.09	g/l	A-T-026s
Sulphate (acid soluble) ₀ ^{MS}	620	770	460	470	320	390	470	400	mg/kg	A-T-026s
Arsenic ₀ ^{MS}	7	7	6	6	7	6	7	7	mg/kg	A-T-024s
Cadmium ₀ ^{MS}	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	A-T-024s
Copper ₀ ^{MS}	16	19	15	17	20	12	13	17	mg/kg	A-T-024s
Chromium ₀ ^{MS}	25	26	25	25	26	25	26	23	mg/kg	A-T-024s
Lead ₀ ^{MS}	17	147	42	37	47	15	13	24	mg/kg	A-T-024s
Mercury ₀	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	mg/kg	A-T-024s
Nickel ₀ ^{MS}	20	15	17	18	20	18	19	15	mg/kg	A-T-024s
Selenium ₀ ^{MS}	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-024s
Zinc ₀ ^{MS}	48	118	75	70	83	45	45	91	mg/kg	A-T-024s

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Client Project Ref: 27621

Lab Sample ID	15/00505/17	15/00505/18	15/00505/19	15/00505/20	15/00505/21	15/00505/22	15/00505/23	15/00505/24	Units	Method ref
Client Sample No										
Client Sample ID	HA2	HA3	HA4	HA5	HA6	HA7	HA8	HA9		
Depth to Top	0.40	0.30	0.40	0.40	0.30	0.60	0.40	0.40		
Depth To Bottom	0.50	0.50	0.50	0.60	0.40	0.90	0.50	0.50		
Date Sampled	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	4A	5ABE	5A	5	5	5	5	6		
TPH CWG										
All >C5-C6 _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
All >C6-C8 _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
All >C8-C10 _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
All >C10-C12 _A ^g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
All >C12-C16 _A ^g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
All >C16-C21 _A ^g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
All >C21-C35 _A ^g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
Total Aliphatics _A	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022+23a
Aro >C5-C7 _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
Aro >C7-C8 _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
Aro >C8-C9 _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
Aro >C9-C10 _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
Aro >C10-C12 _A ^g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
Aro >C12-C16 _A ^g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
Aro >C16-C21 _A ^g	<0.1	1.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
Aro >C21-C35 _A ^g	<0.1	2.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022a
Total Aromatics _A	<0.1	4.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022+23a
TPH (All & Aro) _A	<0.1	4.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-022+23a
BTEX - Benzene _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
BTEX - Toluene _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
BTEX - Ethyl Benzene _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
BTEX - m & p Xylene _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
BTEX - o Xylene _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a
MTBE _A ^g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022a

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Client Project Ref: 27621

Lab Sample ID	15/00505/17	15/00505/18	15/00505/19	15/00505/20	15/00505/21	15/00505/22	15/00505/23	15/00505/24	Units	Method ref
Client Sample No										
Client Sample ID	HA2	HA3	HA4	HA5	HA6	HA7	HA8	HA9		
Depth to Top	0.40	0.30	0.40	0.40	0.30	0.60	0.40	0.40		
Depth To Bottom	0.50	0.50	0.50	0.60	0.40	0.90	0.50	0.50		
Date Sampled	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	4A	5ABE	5A	5	5	5	5	6		
Acid Herbs (Sulte 3+)										
2,3,6-TBA	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
2,4-D	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
2,4-DB	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
2,4,5-T	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
2,4,5-TP; (Fenoprop); (Silvex)	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
4-CPA	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Benazolin	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Bentazone	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Bromacil	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Bromoxynil	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Clopyralid	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Dicamba	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
2,4-DP; (Dichlorprop)	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Diclofop	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Flamprop	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Flamprop-isopropyl	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Fluroxypyr	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Isoxynil	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
MCPA	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
MCPB	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
MCPP; (Mecoprop)	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
PCP; (Pentachlorophenol)	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Picloram	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Triclopyr	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Asbestos in Soil (inc. matrix)										
Asbestos in soil ⁹	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD		A-T-045
Asbestos ACM - Suitable for Water Absorption Test ¹⁰	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Gravimetry

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Lab Sample ID	15/00505/17	15/00505/18	15/00505/19	15/00505/20	15/00505/21	15/00505/22	15/00505/23	15/00505/24	Units	Method ref
Client Sample No										
Client Sample ID	HA2	HA3	HA4	HA5	HA6	HA7	HA8	HA9		
Depth to Top	0.40	0.30	0.40	0.40	0.30	0.60	0.40	0.40		
Depth To Bottom	0.50	0.50	0.50	0.60	0.40	0.90	0.50	0.50		
Date Sampled	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	4A	5ABE	5A	5	5	5	5	6		
Carb+Urea Herbs Suite1										
Carbetamide	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Chlorbulfam	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Chloroxuron	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Chlorpropham	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Chlortoluron	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Diffubenzuron	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Dimeturon	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Diuron	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Ethiofencarb	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Isoproturon SM	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Linuron	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Methabenzthiazuron	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Metoxuron	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Monolinuron	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Monuron	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Pencycuron	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Phenmedipham	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Pirimicarb	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Propham	-	-	-	-	-	<0.1	-	-	mg/kg	Subcon

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Lab Sample ID	15/00505/17	15/00505/18	15/00505/19	15/00505/20	15/00505/21	15/00505/22	15/00505/23	15/00505/24	Units	Method ref
Client Sample No										
Client Sample ID	HA2	HA3	HA4	HA5	HA6	HA7	HA8	HA9		
Depth to Top	0.40	0.30	0.40	0.40	0.30	0.60	0.40	0.40		
Depth To Bottom	0.50	0.50	0.50	0.60	0.40	0.90	0.50	0.50		
Date Sampled	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	4A	5ABE	5A	5	5	5	5	6		
Pest-c										
Mevinphos	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Dichlorvos	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
alpha-Hexachlorocyclohexane (HCH)	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Diazinon	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
gamma-Hexachlorocyclohexane (HCH / Lindane)	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Heptachlor	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Aldrin	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
beta-Hexachlorocyclohexane (HCH)	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Methyl Parathion	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Malathion	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Fenitrothion	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Heptachlor Epoxide	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Parathion (Ethyl Parathion)	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
p,p-DDE	-	-	<50	1950	-	-	-	236	µg/kg	Subcon
p,p-DDT	-	-	<50	608	-	-	-	90	µg/kg	Subcon
p,p-Methoxychlor	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
p,p-TDE (DDD)	-	-	<50	<50	-	-	-	95	µg/kg	Subcon
o,p-DDE	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
o,p-DDT	-	-	<50	394	-	-	-	<50	µg/kg	Subcon
o,p-Methoxychlor	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
o,p-TDE (DDD)	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Endosulphan I	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Endosulphan II	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Endosulphan Sulphate	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Endrin	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Ethion	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Dieldrin	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon
Azinphos-methyl	-	-	<50	<50	-	-	-	<50	µg/kg	Subcon

Envirolab Job Number: 15/00505

Client Project Name: Land at West End Nursery, Angmering

Client Project Ref: 27621

Lab Sample ID	15/00505/17	15/00505/18	15/00505/19	15/00505/20	15/00505/21	15/00505/22	15/00505/23	15/00505/24	Units	Method ref
Client Sample No										
Client Sample ID	HA2	HA3	HA4	HA5	HA6	HA7	HA8	HA9		
Depth to Top	0.40	0.30	0.40	0.40	0.30	0.60	0.40	0.40		
Depth To Bottom	0.50	0.50	0.50	0.60	0.40	0.90	0.50	0.50		
Date Sampled	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	4A	5ABE	5A	5	5	5	5	6		
PAH 16										
Acenaphthene _A ^{MS}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019a
Acenaphthylene _A ^{MS}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019a
Anthracene _A ^{MS}	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	A-T-019a
Benzo(a)anthracene _A ^{MS}	<0.04	<0.04	0.22	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	A-T-019a
Benzo(a)pyrene _A ^{MS}	<0.04	0.05	0.23	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	A-T-019a
Benzo(b)fluoranthene _A ^{MS}	<0.05	0.06	0.26	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	A-T-019a
Benzo(ghi)perylene _A ^{MS}	<0.05	<0.05	0.15	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	A-T-019a
Benzo(k)fluoranthene _A ^{MS}	<0.07	<0.07	0.13	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	A-T-019a
Chrysene _A ^{MS}	<0.06	<0.06	0.20	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	A-T-019a
Dibenzo(ah)anthracene _A ^{MS}	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	A-T-019a
Fluoranthene _A ^{MS}	<0.08	<0.08	0.44	<0.08	<0.08	<0.08	<0.08	<0.08	mg/kg	A-T-019a
Fluorene _A ^{MS}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019a
Indeno(123-cd)pyrene _A ^{MS}	<0.03	0.04	0.17	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	A-T-019a
Naphthalene _A ^{MS}	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	A-T-019a
Phenanthrene _A ^{MS}	<0.03	<0.03	0.15	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	A-T-019a
Pyrene _A ^{MS}	<0.07	<0.07	0.38	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	A-T-019a
PAH (total 16) _A ^{MS}	<0.08	0.16	2.35	<0.08	<0.08	<0.08	<0.08	<0.08	mg/kg	A-T-019a

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Client Project Ref: 27621

Lab Sample ID	15/00505/17	15/00505/18	15/00505/19	15/00505/20	15/00505/21	15/00505/22	15/00505/23	15/00505/24	Units	Method ref
Client Sample No										
Client Sample ID	HA2	HA3	HA4	HA5	HA6	HA7	HA8	HA9		
Depth to Top	0.40	0.30	0.40	0.40	0.30	0.60	0.40	0.40		
Depth To Bottom	0.50	0.50	0.50	0.60	0.40	0.90	0.50	0.50		
Date Sampled	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	4A	5ABE	5A	5	5	5	5	6		
Nitrogen Pests										
Ametryn	<50	-	-	-	<50	-	-	-	µg/kg	Subcon
Atraton	<50	-	-	-	<50	-	-	-	µg/kg	Subcon
Atrazine	<50	-	-	-	<50	-	-	-	µg/kg	Subcon
Prometon	<50	-	-	-	<50	-	-	-	µg/kg	Subcon
Prometryn	<50	-	-	-	<50	-	-	-	µg/kg	Subcon
Propazine	<50	-	-	-	<50	-	-	-	µg/kg	Subcon
Simazine	<50	-	-	-	<50	-	-	-	µg/kg	Subcon
Simetryn	<50	-	-	-	<50	-	-	-	µg/kg	Subcon
Terbuthylazine	<50	-	-	-	<50	-	-	-	µg/kg	Subcon
Terbutryn	<50	-	-	-	<50	-	-	-	µg/kg	Subcon

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Client Project Name: Land at West End Nursery, Angmering

Client Project Ref: 27621

Lab Sample ID	15/00505/25	15/00505/26	15/00505/27	15/00505/28	15/00505/29	15/00505/30	15/00505/31	15/00505/32	Units	Method ref
Client Sample No										
Client Sample ID	HA10	HA11	HA12	HA13	HA16	HA17	HA18A	BH1		
Depth to Top	0.20	0.30	0.30	0.40	0.40	0.30	0.30	0.50		
Depth To Bottom	0.40	0.40	0.40	0.50	0.50	0.40	0.50	0.80		
Date Sampled	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Solid - Fragment / Tile		
MCERTS Sample Matrix Code	4A	1A	4A	4A	4	4A	6A	7		
% Stones >10mm _A [#]	3.1	10.3	<0.1	<0.1	<0.1	<0.1	3.4	-	% w/w	A-T-044
pH _D ^{##}	7.38	5.82	7.08	6.89	6.54	7.22	-	-	pH	A-T-031a
Sulphate (water sol 2:1) _D ^{##}	0.38	0.13	0.09	0.13	0.05	0.18	-	-	g/l	A-T-028a
Sulphate (acid soluble) _D ^{##}	1100	660	830	490	280	660	-	-	mg/kg	A-T-028a
Arsenic _D ^{##}	5	5	6	5	5	5	-	-	mg/kg	A-T-024a
Cadmium _D ^{##}	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	mg/kg	A-T-024a
Copper _D ^{##}	15	12	15	10	11	15	-	-	mg/kg	A-T-024a
Chromium _D ^{##}	20	24	20	21	26	22	-	-	mg/kg	A-T-024a
Lead _D ^{##}	24	13	26	15	13	27	-	-	mg/kg	A-T-024a
Mercury _D	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	-	-	mg/kg	A-T-024a
Nickel _D ^{##}	14	17	14	15	17	14	-	-	mg/kg	A-T-024a
Selenium _D ^{##}	<1	<1	<1	<1	<1	<1	-	-	mg/kg	A-T-024a
Zinc _D ^{##}	83	46	100	51	47	57	-	-	mg/kg	A-T-024a

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Client Project Ref: 27621

Lab Sample ID	15/00505/17	15/00505/18	15/00505/19	15/00505/20	15/00505/21	15/00505/22	15/00505/23	15/00505/24	Units	Method ref
Client Sample No										
Client Sample ID	HA2	HA3	HA4	HA5	HA6	HA7	HA8	HA9		
Depth to Top	0.40	0.30	0.40	0.40	0.30	0.60	0.40	0.40		
Depth To Bottom	0.50	0.50	0.50	0.60	0.40	0.90	0.50	0.50		
Date Sampled	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
MCERTS Sample Matrix Code	4A	5ABE	5A	5	5	5	5	6		
TPH CWG										
All >C5-C6 _A [†]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	mg/kg	A-T-022a
All >C6-C8 _A [†]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	mg/kg	A-T-022a
All >C8-C10 _A [†]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	mg/kg	A-T-022a
All >C10-C12 _A [†]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	A-T-022a
All >C12-C16 _A [†]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	A-T-022a
All >C16-C21 _A [†]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	A-T-022a
All >C21-C35 _A [†]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	A-T-022a
Total Aliphatics _A	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	A-T-022+23a
Aro >C5-C7 _A [†]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	mg/kg	A-T-022a
Aro >C7-C8 _A [†]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	mg/kg	A-T-022a
Aro >C8-C9 _A [†]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	mg/kg	A-T-022a
Aro >C9-C10 _A [†]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	mg/kg	A-T-022a
Aro >C10-C12 _A [†]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	A-T-022a
Aro >C12-C16 _A [†]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	A-T-022a
Aro >C16-C21 _A [†]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	A-T-022a
Aro >C21-C35 _A [†]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	A-T-022a
Total Aromatics _A	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	A-T-022+23a
TPH (All & Aro) _A	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	mg/kg	A-T-022+23a
BTEX - Benzene _A [†]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	mg/kg	A-T-022a
BTEX - Toluene _A [†]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	mg/kg	A-T-022a
BTEX - Ethyl Benzene _A [†]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	mg/kg	A-T-022a
BTEX - m & p Xylene _A [†]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	mg/kg	A-T-022a
BTEX - o Xylene _A [†]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	mg/kg	A-T-022a
MTBE _A [†]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	mg/kg	A-T-022a

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Lab Sample ID	15/00505/25	15/00505/26	15/00505/27	15/00505/28	15/00505/29	15/00505/30	15/00505/31	15/00505/32	Units	Method ref
Client Sample No										
Client Sample ID	HA10	HA11	HA12	HA13	HA16	HA17	HA18A	8H1		
Depth to Top	0.20	0.30	0.30	0.40	0.40	0.30	0.30	0.50		
Depth To Bottom	0.40	0.40	0.40	0.50	0.50	0.40	0.50	0.80		
Date Sampled	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	26-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Solid - Fragment / Tile		
MCERTS Sample Matrix Code	4A	1A	4A	4A	4	4A	6A	7		
Acid Herbs (Suite 3+)										
2,3,6-TBA	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
2,4-D	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
2,4-DB	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
2,4,5-T	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
2,4,5-TP; (Fenoprop); (Silvex)	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
4-CPA	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
Benazolin	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
Bentazone	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
Bromacil	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
Bromoxynil	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
Clopyralid	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
Dicamba	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
2,4-DP; (Dichlorprop)	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
Dicofop	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
Flamprop	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
Flamprop-isopropyl	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
Fluroxypyr	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
Ioxynil	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
MCPA	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
MCPB	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
MCPP; (Mecoprop)	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
PCP; (Pentachlorophenol)	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
Picloram	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
Triclopyr	-	<0.1	-	-	<0.1	-	-	-	mg/kg	Subcon
Asbestos in Soil (Inc. matrix)										
Asbestos in soil ₀ [†]	NAD	NAD	NAD	NAD	NAD	NAD	-	-		A-T-045
Asbestos Matrix (visual) ₀	-	-	-	-	-	-	-	Cement		A-T-045
Asbestos ACM - Suitable for Water Absorption Test? ₀	N/A	N/A	N/A	N/A	N/A	N/A	-	YES		Gravimetry
Bulk Fibre ID (Inc. matrix)										
Bulk Fibre Identification ₀ [†]	-	-	-	-	-	-	-	Chrysotile		A-T-045

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Lab Sample ID	15/00505/25	15/00505/26	15/00505/27	15/00505/28	15/00505/29	15/00505/30	15/00505/31	15/00505/32	Units	Method ref
Client Sample No										
Client Sample ID	HA10	HA11	HA12	HA13	HA16	HA17	HA18A	8H1		
Depth to Top	0.20	0.30	0.30	0.40	0.40	0.30	0.30	0.50		
Depth To Bottom	0.40	0.40	0.40	0.50	0.50	0.40	0.50	0.80		
Date Sampled	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Solid - Fragment / Tile		
MCERTS Sample Matrix Code	4A	1A	4A	4A	4	4A	6A	7		
Carb+Urea Herbs Suite1										
Carbetamide	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Chlorbutam	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Chloroxuron	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Chlorpropham	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Chlortoluron	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Diflufenzuron	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Dimeturon	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Diuron	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Ethiofencarb	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Isoproturon ^M	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Linuron	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Methabenzthiazuron	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Metoxuron	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Monolinuron	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Monuron	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Pencycuron	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Phenmedipham	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Pirimicarb	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon
Propham	<0.1	-	-	-	-	<0.1	-	-	mg/kg	Subcon

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Client Project Ref: 27621

Lab Sample ID	15/00505/25	15/00505/26	15/00505/27	15/00505/28	15/00505/29	15/00505/30	15/00505/31	15/00505/32	Units	Method ref
Client Sample No										
Client Sample ID	HA10	HA11	HA12	HA13	HA16	HA17	HA18A	BH1		
Depth to Top	0.20	0.30	0.30	0.40	0.40	0.30	0.30	0.50		
Depth To Bottom	0.40	0.40	0.40	0.50	0.50	0.40	0.50	0.80		
Date Sampled	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Solid - Fragment / Tile		
MCERTS Sample Matrix Code	4A	1A	4A	4A	4	4A	6A	7		
Pest-c										
Mevinphos	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Dichlorvos	-	-	-	-	-	<50	-	-	µg/kg	Subcon
alpha-Hexachlorocyclohexane (HCH)	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Diazinon	-	-	-	-	-	<50	-	-	µg/kg	Subcon
gamma-Hexachlorocyclohexane (HCH / Lindane)	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Heptachlor	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Aldrin	-	-	-	-	-	<50	-	-	µg/kg	Subcon
beta-Hexachlorocyclohexane (HCH)	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Methyl Parathion	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Malathion	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Fenitrothion	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Heptachlor Epoxide	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Parathion (Ethyl Parathion)	-	-	-	-	-	<50	-	-	µg/kg	Subcon
p,p'-DDE	-	-	-	-	-	85	-	-	µg/kg	Subcon
p,p'-DDT	-	-	-	-	-	181	-	-	µg/kg	Subcon
p,p'-Methoxychlor	-	-	-	-	-	<50	-	-	µg/kg	Subcon
p,p'-TDE (DDD)	-	-	-	-	-	<50	-	-	µg/kg	Subcon
o,p'-DDE	-	-	-	-	-	<50	-	-	µg/kg	Subcon
o,p'-DDT	-	-	-	-	-	<50	-	-	µg/kg	Subcon
o,p'-Methoxychlor	-	-	-	-	-	<50	-	-	µg/kg	Subcon
o,p'-TDE (DDD)	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Endosulphan I	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Endosulphan II	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Endosulphan Sulphate	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Endrin	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Ethion	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Dieldrin	-	-	-	-	-	<50	-	-	µg/kg	Subcon
Azinphos-methyl	-	-	-	-	-	<50	-	-	µg/kg	Subcon

Envirolab Job Number: 15/00505

Client Project Name: Land at West End Nursery, Angmering

Client Project Ref: 27621

Lab Sample ID	15/00505/25	15/00505/26	15/00505/27	15/00505/28	15/00505/29	15/00505/30	15/00505/31	15/00505/32	Units	Method ref
Client Sample No										
Client Sample ID	HA10	HA11	HA12	HA13	HA16	HA17	HA18A	BH1		
Depth to Top	0.20	0.30	0.30	0.40	0.40	0.30	0.30	0.50		
Depth To Bottom	0.40	0.40	0.40	0.50	0.50	0.40	0.50	0.80		
Date Sampled	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	26-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Solid - Fragment / Tile		
MCERTS Sample Matrix Code	4A	1A	4A	4A	4	4A	6A	7		
PAH 16										
Acenaphthene _A ^{MS}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	mg/kg	A-T-019a
Acenaphthylene _A ^{MS}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	mg/kg	A-T-019a
Anthracene _A ^{MS}	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	-	mg/kg	A-T-019a
Benzo(a)anthracene _A ^{MS}	<0.04	<0.04	<0.04	<0.04	<0.04	0.12	-	-	mg/kg	A-T-019a
Benzo(b)pyrene _A ^{MS}	<0.04	<0.04	<0.04	<0.04	<0.04	0.17	-	-	mg/kg	A-T-019a
Benzo(k)fluoranthene _A ^{MS}	<0.05	<0.05	<0.05	<0.05	<0.05	0.18	-	-	mg/kg	A-T-019a
Benzo(ghi)perylene _A ^{MS}	<0.05	<0.05	<0.05	<0.05	<0.05	0.14	-	-	mg/kg	A-T-019a
Benzo(k)fluoranthene _A ^{MS}	<0.07	<0.07	<0.07	<0.07	<0.07	0.13	-	-	mg/kg	A-T-019a
Chrysene _A ^{MS}	<0.06	<0.06	<0.06	<0.06	<0.06	0.13	-	-	mg/kg	A-T-019a
Dibenzo(ah)anthracene _A ^{MS}	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	mg/kg	A-T-019a
Fluoranthene _A ^{MS}	<0.08	<0.08	<0.08	<0.08	<0.08	0.16	-	-	mg/kg	A-T-019a
Fluorene _A ^{MS}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	mg/kg	A-T-019a
Indeno(123-cd)pyrene _A ^{MS}	<0.03	<0.03	<0.03	<0.03	<0.03	0.15	-	-	mg/kg	A-T-019a
Naphthalene _A ^{MS}	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	mg/kg	A-T-019a
Phenanthrene _A ^{MS}	0.12	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	mg/kg	A-T-019a
Pyrene _A ^{MS}	<0.07	<0.07	<0.07	<0.07	<0.07	0.17	-	-	mg/kg	A-T-019a
PAH (total 16) _A ^{MS}	0.12	<0.08	<0.08	<0.08	<0.08	1.35	-	-	mg/kg	A-T-019a

Envirolab Job Number: 15/00505

Client Project Name: Land at West End Nursery, Angmering

Client Project Ref: 27621

Lab Sample ID	15/00505/25	15/00505/26	15/00505/27	15/00505/28	15/00505/29	15/00505/30	15/00505/31	15/00505/32	Units	Method ref
Client Sample No										
Client Sample ID	HA10	HA11	HA12	HA13	HA16	HA17	HA18A	BH1		
Depth to Top	0.20	0.30	0.30	0.40	0.40	0.30	0.30	0.50		
Depth To Bottom	0.40	0.40	0.40	0.50	0.50	0.40	0.50	0.80		
Date Sampled	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	28-Jan-15	26-Jan-15		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Solid - Fragment / Tile		
MCERTS Sample Matrix Code	4A	1A	4A	4A	4	4A	6A	7	Units	Method ref
Nitrogen Pests										
Ametryn	-	-	<50	-	-	-	-	-		
Atraton	-	-	<50	-	-	-	-	-		
Atrazine	-	-	<50	-	-	-	-	-		
Prometon	-	-	<50	-	-	-	-	-		
Prometryn	-	-	<50	-	-	-	-	-		
Propazine	-	-	<50	-	-	-	-	-		
Simazine	-	-	<50	-	-	-	-	-		
Simetryn	-	-	<50	-	-	-	-	-		
Terbutylazine	-	-	<50	-	-	-	-	-		
Terbutryn	-	-	<50	-	-	-	-	-		

Envirolab Job Number: 15/00505

Client Project Name: Land at West End Nursery, Angmering

Client Project Ref: 27621

Lab Sample ID	15/00505/33	15/00505/34	15/00505/35						Units	Method ref
Client Sample No										
Client Sample ID	BH4	BH4	BH12							
Depth to Top	0.60	2.60	0.20							
Depth To Bottom	0.90	3.00								
Date Sampled	26-Jan-15	26-Jan-15	27-Jan-15							
Sample Type	Solid - Fragment / Tile	Solid - Fragment / Tile	Solid - Fragment / Tile							
MCERTS Sample Matrix Code	7	7	7							
Asbestos in Soil (inc. matrix)										
Asbestos Matrix (visual) ₀	Cement	Cement	Cement							A-T-045
Asbestos ACM - Suitable for Water Absorption Test? ₀	YES	YES	YES							Gravimetry
Bulk Fibre ID (inc. matrix)										
Bulk Fibre Identification ₀	Chrysotile	Chrysotile	Chrysotile							A-T-045

REPORT NOTES

Notes - Soil chemical analysis

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

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis. For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

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

Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts.

Superscript "M" indicates method accredited to MCERTS.

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

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

TPH analysis of water by method A-T-007

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

Asbestos in soil

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed.

Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER.

Samples with Matrix Code 7 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.



APPENDIX H

CERTIFICATES OF GEOTECHNICAL ANALYSIS



STRUCTURAL SOILS LTD

TEST REPORT



Report No. 583039-01 (00)

1774

Date 19-February-2015 Contract West End Nursery, Angmering

Client RSK
Address 18 Frogmore Rd
Apsley
Hemel Hempstead
Hertfordshire
HP3 9RT

For the Attention of Andrew James

Samples submitted by client	05-February-2015	Client Reference	27621
Testing Started	06-February-2015	Client Order No.	n/a
Testing Completed	18-February-2015	Instruction Type	Written

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

UKAS Accredited Tests

1.01	Moisture Content (oven drying method) BS1377:Part 2:1990:clause 3.2
1.03	Liquid Limit (one point method) & Plastic Limit BS1377:Part 2:1990,clause 4.4/5.3
1.10	Particle Size Distribution wet sieve method BS1377:Part 2:1990,clause 9.2

Undertaken by a sub-contractor

Chemical tests

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

Structural Soils Ltd 18 Frogmore Rd Hemel Hempstead HP3 9RT Tel.01442 416661

TESTING VERIFICATION CERTIFICATE



1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with Structural Soils Ltd Laboratory Quality Assurance Manual, Issue 6, January 2010 all results sheets and summaries of results issued by the laboratory are checked by an approved signatory. This check will also involve checking of at least 10% of calculations for each test type to ensure that data has been correctly entered into the computer and calculated. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Assurance Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **19/02/2015 07:46:46.**

Testing reported after this date is not covered by this Verification Certificate.

Approved Signatory
Justin Barrett (Laboratory Manager)



STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Contract:

West End Nursery, Angmering

Job No:

583039



SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index %	% <425um	Description of Sample
BH1		D	1.20	21	37	21	16	77	Dark brown sandy gravelly CLAY
BH1		D	1.70	23	40	18	22	100	Brown slightly sandy CLAY
BH1		D	2.50	25	42	20	22	100	Yellowish brown CLAY
BH5		D	1.40	25	40	20	20	100	Brown CLAY
BH5		D	2.40	26	42	19	23	100	Yellowish brown CLAY
BH7		D	1.40	13	41	20	21	100	Yellowish brown very sandy CLAY
BH9		D	0.70	23	41	19	22	98	Brown slightly gravelly CLAY
BH9		B	1.60	12	44	23	21	25	Brown sandy very clayey GRAVEL



**STRUCTURAL
SOILS LTD**

Contract:

West End Nursery, Angmering

Contract Ref:

583039



In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

[illegible]

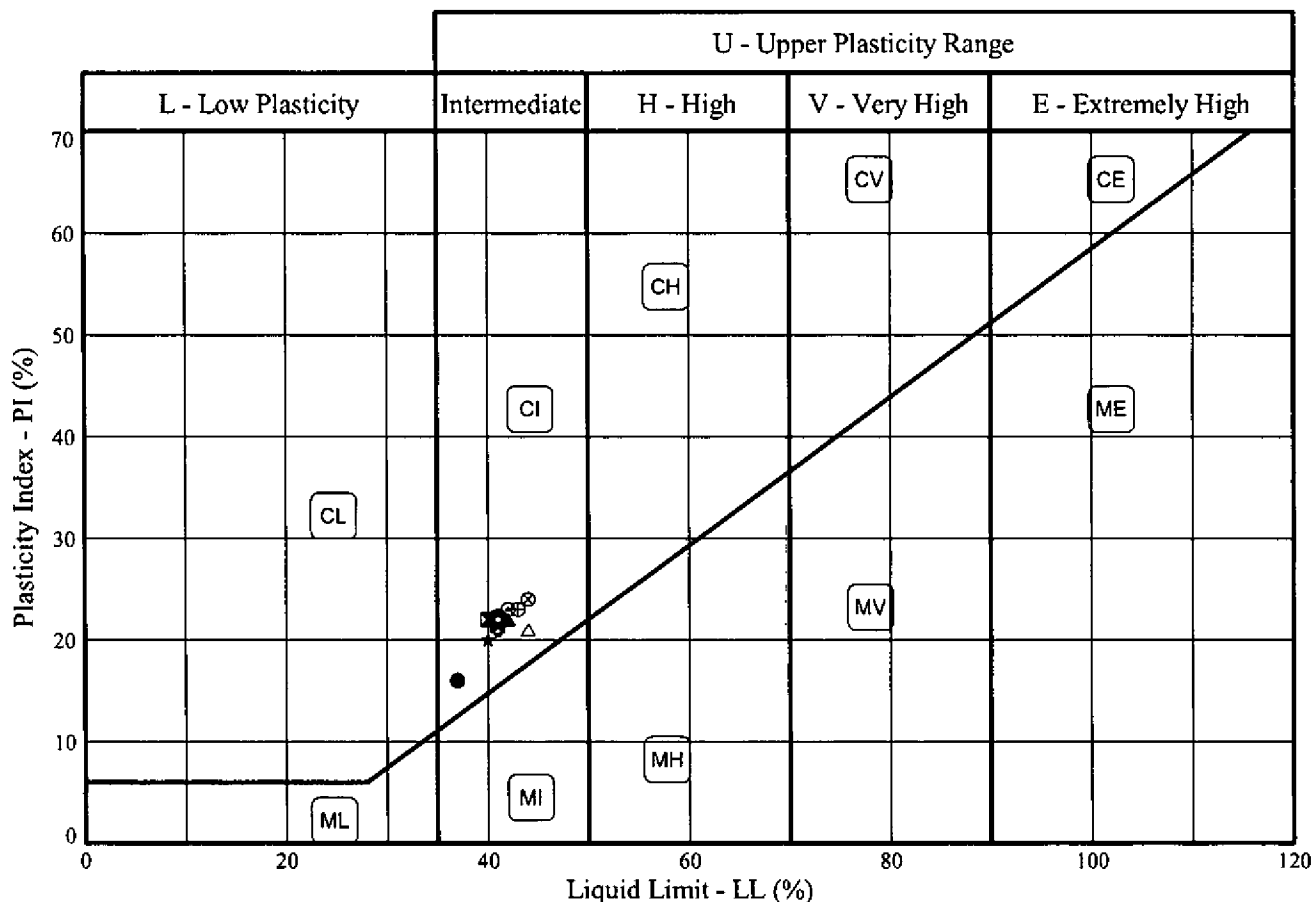
West End Nursery, Angmering

583039



PLASTICITY CHART - PI Vs LL

In accordance with clause 42.3 of BS5930:1999
Testing in accordance with BS1377-2:1990



Sample Identification				BS Test Method #	Preparation Method +	MC %	LL %	PL %	PI %	<425um %
Exploratory Position ID	Sample	Depth (m)								
●	BH1	D	1.20	3.2/4.4/5.3/5.4	4.2.4	21	37	21	16	77
■	BH1	D	1.70	3.2/4.4/5.3/5.4	4.2.3	23	40	18	22	100
▲	BH1	D	2.50	3.2/4.4/5.3/5.4	4.2.3	25	42	20	22	100
★	BH5	D	1.40	3.2/4.4/5.3/5.4	4.2.3	25	40	20	20	100
⊙	BH5	D	2.40	3.2/4.4/5.3/5.4	4.2.3	26	42	19	23	100
⊕	BH7	D	1.40	3.2/4.4/5.3/5.4	4.2.3	13	41	20	21	100
⊗	BH9	D	0.70	3.2/4.4/5.3/5.4	4.2.4	23	41	19	22	98
△	BH9	B	1.60	3.2/4.4/5.3/5.4	4.2.4	12	44	23	21	25
⊗	BH11	D	1.00	3.2/4.4/5.3/5.4	4.2.3	23	44	20	24	100
⊕	BH11	D	1.60	3.2/4.4/5.3/5.4	4.2.3	24	43	20	23	100
□	BH11	D	2.40	3.2/4.4/5.3/5.4	4.2.3	21	41	19	22	99

Tested in accordance with the following clauses of BS1377-2:1990.

- 3.2 - Moisture Content
- 4.3 - Cone Penetrometer Method
- 4.4 - One Point Cone Penetrometer Method
- 4.6 - One Point Casagrande Method
- 5.3 - Plastic Limit Method
- 5.4 - Plasticity Index

+ Tested in accordance with the following clauses of BS1377-2:1990.

- 4.2.3 - Natural State
- 4.2.4 - Wet Sieved

Key: * = Non standard test, NP = Non plastic.

Approved Signatories: J.BARRETT A.FROST S.CAIRNS M.STOKES J.SHEPHERD P.CARROLL



STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By		Date
SHARON CAIRNS		18/02/15
Contract		Contract Ref:
West End Nursery, Angmering		583039



PARTICLE SIZE DISTRIBUTION TEST

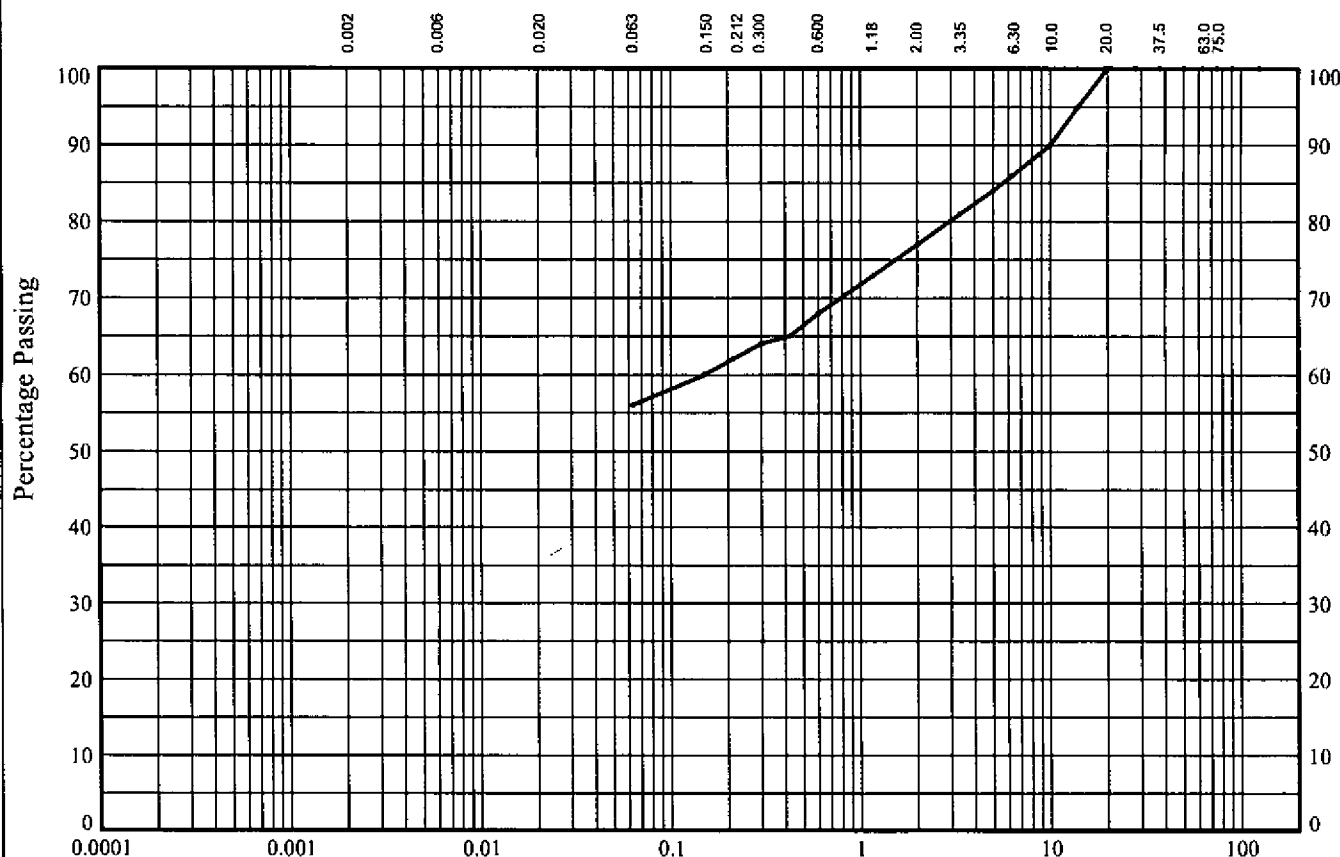
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Borehole : **BH6**

Sample Ref:

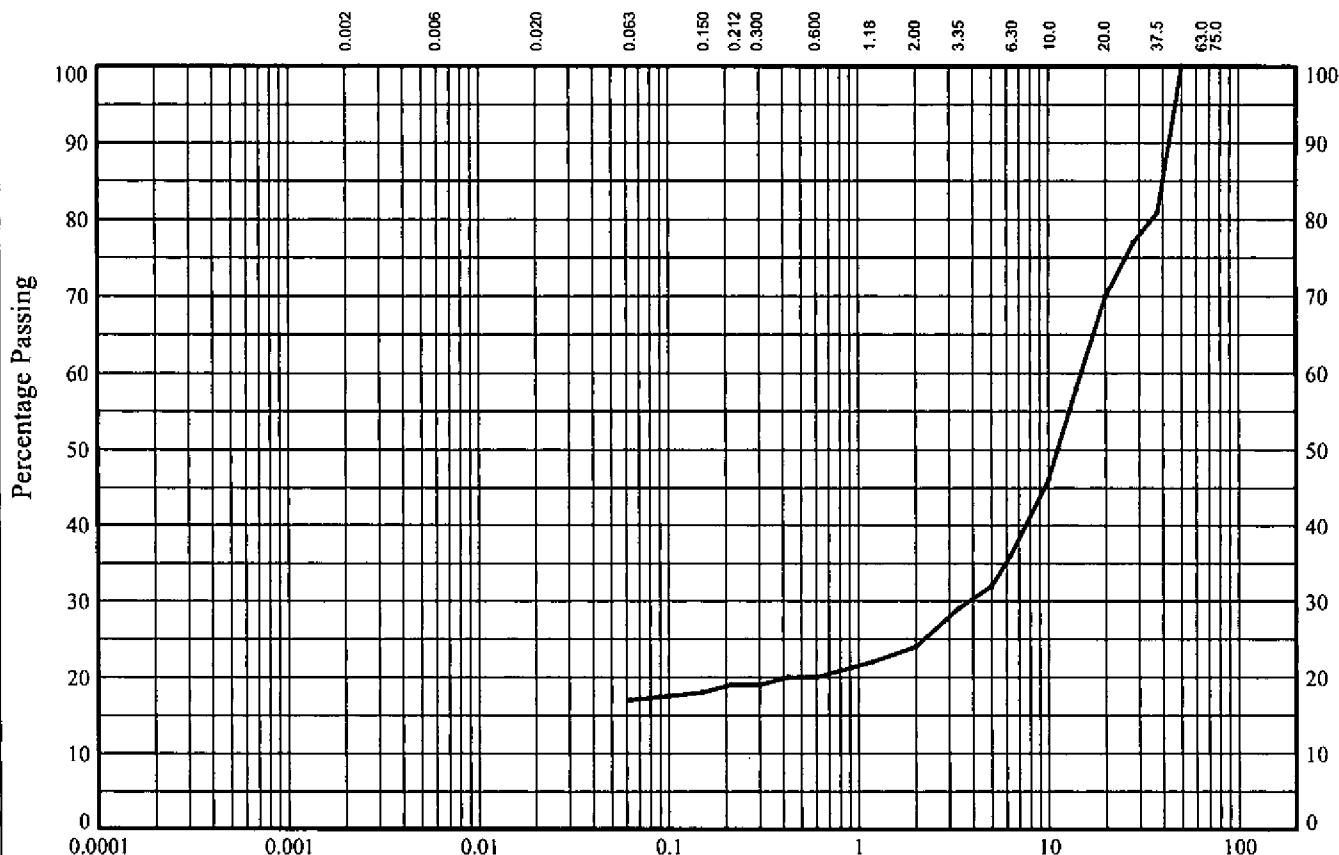
Sample Type: **B**

Depth (m): **2.00**



In accordance with clauses 9.2.9.5 of BS1377:Part 2:1990

Depth (m): 1.60



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

BS Test Sieve (mm)	Percentage Passing
125	100
90	100
75	100
63	100
50	100
37.5	81
28	77
20	70
14	58
10	46
6.3	36
5	32
3.35	29
2	24
1.18	22
0.6	20
0.425	20
0.3	19
0.212	19
0.15	18
0.063	17

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	76
SAND	7
SILT/CLAY	17

Brown sandy very clayey GRAVEL

Approved Signatories: J.BARRETT A.FROST S.CAIRNS M.STOKES J.SHEPHERD P.CARROLL



Compiled By

Date _____

SHARON CAIRNS

18/02/15

Contract

Contract Ref:

West End Nursery, Angmering

583039



FINAL ANALYTICAL TEST REPORT

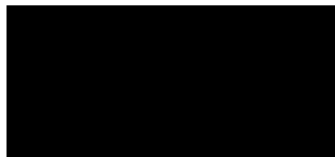
Envirolab Job Number: 15/00711
Issue Number: 1

Date: 11 February, 2015

Client: Structural Soils Limited (Hemel Hempstead Lab)
18 Frogmore Road
Hemel Hempstead
UK
HP3 9RT

Project Manager: Sharon Cairnes / Paul Carroll / Justin Barrett
Project Name: West End Nursery
Project Ref: 27621
Order No: N/A
Date Samples Received: 09/02/15
Date Instructions Received: 09/02/15
Date Analysis Completed: 10/02/15

Prepared by:



Georgia King
Administrative Assistant

Approved by:



Iain Haslock
Analytical Consultant

Envirolab Job Number: 15/00711

Client Project Name: West End Nursery

Client Project Ref: 27621

Lab Sample ID	15/00711/1										
Client Sample No											
Client Sample ID	BH15										
Depth to Top	0.50										
Depth To Bottom											
Date Sampled	26-Jan-15										
Sample Type	Solid - Fragment / Tile										
MCERTS Sample Matrix Code	7									Units	Method ref
Bulk Fibre ID (inc. matrix)											
Asbestos Matrix (visual) ₀	Cement										A-T-045
Asbestos ACM - Suitable for Water Absorption Test? ₀	YES										Gravimetry
Bulk Fibre Identification ₀	Chrysotile										A-T-045

REPORT NOTES

Notes - Soil chemical analysis

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

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis. For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

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

Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts.

Superscript "M" indicates method accredited to MCERTS.

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

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

TPH analysis of water by method A-T-007

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

Asbestos in soil

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed.

Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER.

Samples with Matrix Code 7 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

FINAL ANALYTICAL TEST REPORT

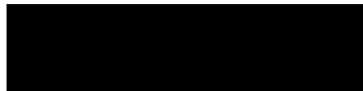
Envirolab Job Number: 15/00714
Issue Number: 1

Date: 12 February, 2015

Client: Structural Soils Limited (Hemel Hempstead Lab)
18 Frogmore Road
Hemel Hempstead
UK
HP3 9RT

Project Manager: Sharon Cairnes / Paul Carroll / Justin Barrett
Project Name: West End Nursery
Project Ref: 27621
Order No: N/A
Date Samples Received: 09/02/15
Date Instructions Received: 09/02/15
Date Analysis Completed: 11/02/15

Prepared by:



Melanie Marshall
Laboratory Coordinator

Approved by:



Iain Haslock
Analytical Consultant

Envirolab Job Number: 15/00714

Client Project Name: West End Nursery

Client Project Ref: 27621

Lab Sample ID	15/00714/1	15/00714/2	15/00714/3	15/00714/4	15/00714/5	15/00714/6	15/00714/7		Units	Method ref
Client Sample No										
Client Sample ID	BH15	BH15	BH12	BH6	BH8	BH8	BH13			
Depth to Top	1.10	1.70	1.40	1.30	0.90	1.50	1.00			
Depth To Bottom	1.30	2.00	1.60		1.00	1.60	1.20			
Date Sampled	27-Jan-15	26-Jan-15	27-Jan-15	26-Jan-15	26-Jan-15	26-Jan-15	27-Jan-15			
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D			
MCERTS Sample Matrix Code	5	5A	5	5AE	5E	4A	5E			
% Stones >10mm _A *	<0.1	<0.1	<0.1	6.3	<0.1	52.5	<0.1		% w/w	A-T-044
pH BRE _D ^{M*}	7.51	7.45	8.06	7.53	6.91	7.79	8.04		pH	A-T-0316
Sulphate BRE (water sol 2:1) _D ^{M*}	139	114	26	52	21	14	13		mg/l	A-T-026a

REPORT NOTES

Notes - Soil chemical analysis

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

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis. For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

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

Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts.

Superscript "M" indicates method accredited to MCERTS.

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

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

TPH analysis of water by method A-T-007

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

Asbestos in soil

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.

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

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER.

Samples with Matrix Code 7 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.



APPENDIX I GAS MONITORING DATA

IN-SITU GAS MONITORING RESULTS

[Pressures]	Previous	During	Start	End	Equipment Used & Remarks
Round 1	-	-	-	-	
Round 2	-	-	-	-	
Round 3	-	-	-	-	

Exploratory Position ID	Monitoring Round	Measured Installation Depth (mbgl)	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	
BH1	1	3.75	30/01/2015	-	982	0.0 _(I)	DRY	0.1	0.1	20.7	1.0	
BH1	1	3.75	15 secs	-	982	0.0 _(SS)	DRY	1.1	0.1	21.1	1.0	
BH1	1	3.75	30 secs	-	982	-	DRY	1.3	0.1	21.3	1.0	
BH1	1	3.75	60 secs	-	982	-	DRY	1.6	0.1	20.0	1.0	
BH1	1	3.75	90 secs	-	982	-	DRY	2.3	0.1	19.7	1.0	
BH1	1	3.75	120 secs	-	982	-	DRY	3.0	0.1	19.5	1.0	
BH1	1	3.75	180 secs	-	982	-	DRY	3.1	0.1	19.3	1.0	
BH1	2	3.75	13/02/2015	-	1002	0.2 _(I)	2.00	0.1	0.0	21.4	0.0	
BH1	2	3.75	30 secs	-	1002	0.1 _(SS)	2.00	10.7	0.1	8.5	1.0	
BH1	2	3.75	60 secs	-	1002	-	2.00	11.2	0.0	7.6	0.0	
BH1	2	3.75	90 secs	-	1002	-	2.00	12.1	0.0	7.0	0.0	
BH1	2	3.75	120 secs	-	1002	-	2.00	12.9	0.0	6.6	0.0	
BH1	2	3.75	180 secs	-	1002	-	2.00	13.4	0.0	6.5	0.0	
BH1	3	3.75	24/02/2015	-	1009	0.1 _(I)	3.40	0.1	0.0	21.2	0.0	
BH1	3	3.75	15 secs	-	1009	0.0 _(SS)	3.40	6.4	0.0	16.2	0.0	
BH1	3	3.75	30 secs	-	1009	-	3.40	7.8	0.0	11.5	0.0	
BH1	3	3.75	60 secs	-	1009	-	3.40	7.8	0.0	11.6	0.0	
BH1	3	3.75	90 secs	-	1009	-	3.40	7.6	0.0	12.2	0.0	

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Monitoring Round	Installation Depth (mbgl)	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	
BH1	3	3.75	120 secs	-	1009	-	3.40	7.3	0.0	13.3	0.0	
BH1	3	3.75	180 secs	-	1009	-	3.40	7.1	0.0	13.9	0.0	
BH5	1	2.93	30/01/2015	-	982	0.0 _(I)	2.80	0.1	0.1	21.1	1.0	
BH5	1	2.93	15 secs	-	982	0.0 _(SS)	2.80	2.6	0.1	20.3	1.0	
BH5	1	2.93	30 secs	-	982	-	2.80	2.8	0.1	19.5	1.0	
BH5	1	2.93	60 secs	-	982	-	2.80	2.8	0.1	19.4	1.0	
BH5	1	2.93	90 secs	-	982	-	2.80	2.8	0.0	19.3	0.0	
BH5	1	2.93	120 secs	-	982	-	2.80	2.8	0.0	19.3	0.0	
BH5	1	2.93	180 secs	-	982	-	2.80	2.8	0.0	19.3	0.0	
BH5	2	2.91	13/02/2015	-	1002	0.0 _(I)	2.91	0.0	0.1	22.0	1.0	
BH5	2	2.91	15 secs	-	1002	0.0 _(SS)	2.91	2.5	0.1	20.7	1.0	
BH5	2	2.91	30 secs	-	1002	-	2.91	2.8	0.1	19.8	1.0	
BH5	2	2.91	60 secs	-	1002	-	2.91	2.8	0.0	19.7	0.0	
BH5	2	2.91	90 secs	-	1002	-	2.91	2.8	0.0	19.6	0.0	
BH5	2	2.91	120 secs	-	1002	-	2.91	2.8	0.0	19.6	0.0	
BH5	3	2.93	24/02/2015	-	1009	0.0 _(I)	1.79	0.1	0.0	20.7	0.0	
BH5	3	2.93	15 secs	-	1009	0.0 _(SS)	1.79	2.7	0.0	19.5	0.0	
BH5	3	2.93	30 secs	-	1009	-	1.79	2.8	0.0	18.9	0.0	
BH5	3	2.93	60 secs	-	1009	-	1.79	2.8	0.0	18.9	0.0	
BH5	3	2.93	90 secs	-	1009	-	1.79	2.8	0.0	18.9	0.0	
BH5	3	2.93	120 secs	-	1009	-	1.79	2.8	0.0	18.8	0.0	
BH7	1	1.90	30/01/2015	-	982	-0.1 _(I)	DRY	0.1	0.1	21.3	1.0	
BH7	1	1.90	15 secs	-	982	-0.1 _(SS)	DRY	1.1	0.1	20.4	1.0	

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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Exploratory Position ID	Monitoring Round	Installation Depth (mbgl)	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	
BH7	1	1.90	30 secs	-	982	-	DRY	1.1	0.1	19.3	1.0	
BH7	1	1.90	60 secs	-	982	-	DRY	1.1	0.1	19.1	1.0	
BH7	1	1.90	90 secs	-	982	-	DRY	1.1	0.1	19.1	1.0	
BH7	1	1.90	120 secs	-	982	-	DRY	1.1	0.1	19.1	1.0	
BH7	1	1.90	180 secs	-	982	-	DRY	1.1	0.1	19.1	1.0	
BH7	3	1.90	24/02/2015	-	1009	0.0 _(I)	DRY	0.1	0.0	21.6	0.0	
BH7	3	1.90	15 secs	-	1009	0.0 _(SS)	DRY	0.7	0.0	21.2	0.0	
BH7	3	1.90	30 secs	-	1009	-	DRY	0.7	0.0	20.8	0.0	
BH7	3	1.90	60 secs	-	1009	-	DRY	0.7	0.0	20.8	0.0	
BH7	3	1.90	90 secs	-	1009	-	DRY	0.8	0.0	20.7	0.0	
BH7	3	1.90	120 secs	-	1009	-	DRY	0.9	0.0	20.7	0.0	
BH7	2	1.90	13/12/2015	-	1002	0.0 _(I)	DRY	0.2	0.0	21.5	0.0	
BH7	2	1.90	15 secs	-	1002	0.0 _(SS)	DRY	1.1	0.0	20.8	0.0	
BH7	2	1.90	30 secs	-	1002	-	DRY	1.2	0.0	20.6	0.0	
BH7	2	1.90	60 secs	-	1002	-	DRY	1.2	0.0	20.6	0.0	
BH7	2	1.90	90 secs	-	1002	-	DRY	1.2	0.0	20.5	0.0	
BH7	2	1.90	120 secs	-	1002	-	DRY	1.3	0.0	20.4	0.0	
BH9	1	2.93	30/01/2015	-	982	0.1 _(I)	DRY	0.1	0.0	21.3	1.0	
BH9	1	2.93	15 secs	-	982	0.1 _(SS)	DRY	0.3	0.1	21.5	1.0	
BH9	1	2.93	30 secs	-	982	-	DRY	0.3	0.1	21.6	1.0	
BH9	1	2.93	60 secs	-	982	-	DRY	0.3	0.1	21.5	1.0	
BH9	1	2.93	90 secs	-	982	-	DRY	0.3	0.1	21.5	1.0	
BH9	1	2.93	120 secs	-	982	-	DRY	0.2	0.1	21.6	1.0	
BH9	1	2.93	180 secs	-	982	-	DRY	0.2	0.1	21.6	1.0	

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Monitoring Round	Installation Depth (mbgl)	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	
BH9	2	2.93	13/02/2015	-	1002	-0.1 _(f)	DRY	0.1	0.0	21.8	0.0	
BH9	2	2.93	15 secs	-	1002	0.0 _(SS)	DRY	0.1	0.0	22.0	0.0	
BH9	2	2.93	30 secs	-	1002	-	DRY	0.1	0.0	22.0	0.0	
BH9	2	2.93	60 secs	-	1002	-	DRY	0.1	0.0	22.0	0.0	
BH9	2	2.93	90 secs	-	1002	-	DRY	0.1	0.0	22.1	0.0	
BH9	2	2.93	120 secs	-	1002	-	DRY	0.1	0.0	22.1	0.0	
BH9	3	2.93	24/02/2015	-	1009	0.0 _(f)	DRY	0.1	0.0	21.9	0.0	
BH9	3	2.93	15 secs	-	1009	0.0 _(SS)	DRY	1.1	0.0	20.8	0.0	
BH9	3	2.93	30 secs	-	1009	-	DRY	1.1	0.0	20.3	0.0	
BH9	3	2.93	60 secs	-	1009	-	DRY	1.1	0.0	20.3	0.0	
BH9	3	2.93	90 secs	-	1009	-	DRY	1.1	0.0	20.2	0.0	
BH9	3	2.93	120 secs	-	1009	-	DRY	1.1	0.0	20.2	0.0	
BH11	1	2.93	30/01/2015	-	982	0.2 _(f)	DRY	0.1	0.0	21.7	0.0	
BH11	1	2.93	15 secs	-	982	0.1 _(SS)	DRY	2.9	0.0	19.7	1.0	
BH11	1	2.93	30 secs	-	982	-	DRY	3.3	0.1	17.5	1.0	
BH11	1	2.93	60 secs	-	982	-	DRY	3.3	0.1	17.1	1.0	
BH11	1	2.93	90 secs	-	982	-	DRY	3.3	0.0	17.1	0.0	
BH11	1	2.93	120 secs	-	982	-	DRY	3.2	0.0	17.2	0.0	
BH11	1	2.93	180 secs	-	982	-	DRY	3.2	0.0	17.3	0.0	
BH11	2	2.93	13/02/2015	-	1002	0.0 _(f)	2.80	0.1	0.0	22.0	0.0	
BH11	2	2.93	15 secs	-	1002	0.0 _(SS)	2.80	1.6	0.0	21.1	0.0	
BH11	2	2.93	30 secs	-	1002	-	2.80	1.6	0.0	20.8	0.0	
BH11	2	2.93	60 secs	-	1002	-	2.80	1.6	0.0	20.9	0.0	
BH11	2	2.93	90 secs	-	1002	-	2.80	1.7	0.0	20.8	0.0	

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Monitoring Round	Installation Depth (mbgl)	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	
BH11	2	2.93	120 secs	-	1002	-	2.80	1.7	0.0	20.7	0.0	
BH11	3	2.93	24/02/2015	-	1009	0.0 _(I)	DRY	0.1	0.0	20.9	0.0	
BH11	3	2.93	15 secs	-	1009	-0.1 _(SS)	DRY	2.8	0.0	19.0	0.0	
BH11	3	2.93	30 secs	-	1009	-	DRY	2.9	0.0	17.5	0.0	
BH11	3	2.93	60 secs	-	1009	-	DRY	2.9	0.0	17.4	0.0	
BH11	3	2.93	90 secs	-	1009	-	DRY	2.9	0.0	17.3	0.0	
BH11	3	2.93	120 secs	-	1009	-	DRY	2.9	0.0	17.3	0.0	
BH14A	1	2.92	30/01/2015	-	982	-0.1 _(I)	DRY	0.1	0.1	21.5	2.0	
BH14A	1	2.92	15 secs	-	982	0.0 _(SS)	DRY	4.3	0.1	18.3	2.0	
BH14A	1	2.92	30 secs	-	982	-	DRY	4.6	0.1	12.2	2.0	
BH14A	1	2.92	60 secs	-	982	-	DRY	4.7	0.1	11.5	2.0	
BH14A	1	2.92	90 secs	-	982	-	DRY	4.6	0.1	11.8	2.0	
BH14A	1	2.92	120 secs	-	982	-	DRY	4.4	0.1	12.3	2.0	
BH14A	1	2.92	180 secs	-	982	-	DRY	4.1	0.1	13.3	2.0	
BH14A	2	2.92	13/02/2015	-	1002	-0.1 _(I)	2.92	0.1	0.1	21.9	1.0	
BH14A	2	2.92	15 secs	-	1002	0.0 _(SS)	2.92	3.1	0.1	19.3	1.0	
BH14A	2	2.92	30 secs	-	1002	-	2.92	3.2	0.0	18.4	0.0	
BH14A	2	2.92	60 secs	-	1002	-	2.92	3.3	0.1	18.2	1.0	
BH14A	2	2.92	90 secs	-	1002	-	2.92	3.3	0.1	18.2	1.0	
BH14A	2	2.92	120 secs	-	1002	-	2.92	3.4	0.1	18.1	1.0	
BH14A	3	2.92	24/02/2015	-	1009	0.1 _(I)	2.12	0.1	0.0	21.8	0.0	
BH14A	3	2.92	15 secs	-	1009	0.1 _(SS)	2.12	0.7	0.0	20.8	0.0	
BH14A	3	2.92	30 secs	-	1009	-	2.12	1.1	0.0	19.6	0.0	
BH14A	3	2.92	60 secs	-	1009	-	2.12	1.2	0.0	19.2	0.0	

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Monitoring Round	Installation Depth (mbgl)	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	
BH14A	3	2.92	90 secs	-	1009	-	2.12	1.3	0.0	19.0	0.0	
BH14A	3	2.92	120 secs	-	1009	-	2.12	1.4	0.0	18.8	0.0	
BH14A	3	2.92	180 secs	-	1009	-	2.12	1.6	0.0	18.4	0.0	

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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APPENDIX J

HUMAN HEALTH GENERIC ASSESSMENT

CRITERIA

Generic assessment criteria for human health: residential scenario – private gardens

The human health generic assessment criteria (GAC) have been developed during a period of regulatory review and updating of the Contaminated Land Exposure Assessment (CLEA) project. Therefore, the Environment Agency (EA) is in the process of publishing updated reports relating to the CLEA project and the GAC presented in this document may change to reflect these updates. This issue was prepared following the publication of soil guideline value (SGV) reports and associated publications⁽¹⁾ for mercury, selenium, benzene, toluene, ethylbenzene and xylene in March 2009, arsenic and nickel in May 2009, cadmium and phenol in June 2009, dioxins, furans and dioxin-like polychlorinated biphenyls (PCBs) in September 2009. It was also produced following publication of GAC by LQM⁽⁶⁾. Where available, the published soil guideline values (SGV)⁽¹⁾ were used as the GAC. The GAC for lead is discussed separately below owing to it not being derived using the same approach as other compounds.

Lead GAC derivation

The Environment Agency SGV and Tox reports for lead were withdrawn in 2009. In addition, the provisional tolerable weekly intake data published in the Netherlands were withdrawn in 2010 owing to concerns that they were not suitably protective of human health. The withdrawn SGVs were based on a target blood lead concentration of 10µg/dl. In the absence of current guidelines many consultants continue to use the withdrawn SGV. However, as this is not considered sufficiently protective of human health, after attendance at the SOBRA summer workshop June 2011, RSK has revised its GAC and is currently undertaking a review of recent toxicological developments that will be used to refine this GAC further in the coming months. In the meantime, RSK has undertaken sensitivity analysis using the Society of Environmental Geochemistry and Health (SEGH) equation and the CLEA model to produce an interim GAC value. The results are summarised below:

- Using CLEA with the former provisional tolerable weekly intake (PTWI) (25 µg/kg bw), assuming 100% lead is bioavailable, produces a GAC of 212 mg/kg
- Using CLEA with the former PTWI, assuming 50% lead is bioavailable, produces a GAC of 478 mg/kg
- Using the SEGH equation amended for a blood target concentration of 5.6 µg/dl (equal to the LOAEL for IQ defects) gives a negative GAC number unless other factors such as child background blood concentration or delta are amended. Without undertaking further research into these numbers, RSK can present sensitivity analysis to demonstrate the sensitivity of these input parameters but cannot justify one parameter over another. The results are:
 - GAC between 39mg/kg and 99mg/kg if the value of delta (the slope or response of blood Pb versus soil and dust Pb relationship) only is amended from 5 to 2µg/dl/1000µg/g. The value of 2 was chosen as it is within the reasonable range quoted in the former SGV report
 - GAC between 244mg/kg and 610mg/kg if the geometric mean of blood lead concentration in young children is reduced from 3.4µg/dl to 2µg/dl. This decrease has been simulated on the basis that blood concentrations are likely to decrease over time across the UK owing to a ban on lead in petrol, lead within paint used internally and water pipe replacement. This decrease is considered reasonable as the site is a new development

so lead-based paints will not be used internally and lead water supply pipelines will be absent.

Therefore, given the results above RSK proposes to use a GAC of **300mg/kg** for a residential end use. This value is broadly in the middle of the range of sensitivity modelling results quoted above when background mean blood lead concentrations in children are reduced to reflect a new development. The value is also broadly in the middle of the range of sensitivity modelling results for a range of bioavailability of lead between 50% and 100%. This number is considered reasonably protective of human health while being practical for use.

GAC derivation for other metals and organic compounds

Model selection

Soil assessment criteria (SAC) were calculated using CLEA v1.06 and the supporting UK guidance⁽¹⁻⁶⁾. Groundwater assessment criteria (GrAC) protective of human health via the inhalation pathway were derived using the RBCA 1.3b model. RSK has updated the inputs within RBCA to reflect the UK guidance⁽¹⁻⁵⁾. The SAC and GrAC collectively are termed GAC.

Conceptual model

In accordance with EA Science Report SC050221/SR3⁽³⁾, the residential with private garden scenario considers risks to a female child between the ages of 0 and 6 years old. In accordance with Box 3.1, SR3⁽³⁾, the pathways considered for production of the SAC in the residential with gardens scenario are:

- direct soil and dust ingestion;
- consumption of home-grown produce;
- consumption of soil attached to home-grown produce;
- dermal contact with soil and indoor dust, and
- inhalation of indoor and outdoor dust and vapours.

Figure 1 is a conceptual model illustrating these linkages.

The pathway considered in production of the GrAC is the volatilisation of compounds from groundwater and subsequent vapour inhalation by residents while indoors. Figure 2 illustrates this linkage. Although the outdoor air inhalation pathway is also valid, this contributes little to the overall risks owing to the dilution in outdoor air. Within RBCA, the solubility limit of the determinant restricts the extent of volatilisation, which in turn drives the indoor air inhalation pathway. While the same restriction is not built into the CLEA model, the CLEA model output cells are flagged red where the soil saturation limit has been exceeded.

An assumption used in the CLEA model is that of simple linear partitioning of a chemical in the soil between the sorbed, dissolved and vapour phase⁽⁴⁾. The upper boundaries of this partitioning are represented by the aqueous solubility and pure saturated vapour concentration of the chemical. The CLEA software uses a traffic light system to identify when individual and/or combined assessment criteria exceed the lower of either the aqueous-based or the vapour based

saturation limits. Where model output cells are flagged red the soil or vapour saturation limit has been exceeded and further consideration of the SAC to be used within the assessment is required. One approach that could be adopted is to use the 'modelled' solubility saturation limit or vapour saturation limit of the compound as the SAC. However, as stated within the CLEA handbook⁽⁴⁾ this is likely to not be practical in many cases because of the very low limits and, in any case, is highly conservative. Unless free-phase product is present, concentrations of the chemical are unlikely to be present at sufficient concentration to result in an exceedance of the health criteria value (HCV).

RSK has adopted an approach for petroleum hydrocarbons in accordance with LQM/CIEH⁽⁶⁾ whereby the concentration modelled for each petroleum hydrocarbon fraction has been tabulated as the SAC with the corresponding solubility or vapour saturation limit given in brackets. Therefore, when using the SAC to screen laboratory analysis the assessor should take note if a given SAC has a corresponding solubility or vapour saturation limit (in brackets), and subsequently incorporate this piece of information within the screening analytical discussion. If further assessment is required following this process then an additional approach can be utilised as detailed within Section 4.12 of the CLEA model handbook⁽⁴⁾, which explains how to calculate an effective assessment criterion manually.

Input selection

Chemical data was obtained from EA Report SC050021/SR7⁽⁵⁾ and the health criteria values (HCV) from the UK TOX⁽¹⁾ reports where available. For SAC for total petroleum hydrocarbons (TPH) and polycyclic aromatic hydrocarbons (PAH), toxicological and chemical specific parameters were obtained from the LQM/CIEH report⁽⁶⁾. Similarly, toxicological and specific chemical parameters for the volatile organic compound 1,2,4-trimethylbenzene were obtained from EIC/AGS/CL:AIRE⁽⁷⁾.

For total petroleum hydrocarbons (TPH), aromatic hydrocarbons C₅-C₈ were not modelled since benzene and toluene are being modelled separately. The aromatic C₈-C₉ hydrocarbon fraction comprises ethylbenzene, xylene and styrene. Since ethylbenzene and xylene are being modelled separately, the physical, chemical and toxicological data for this band has been taken from styrene.

Owing to the lack of UK-specific data, default information in the RBCA model was used to evaluate methyl tertiary butyl ether (MTBE). No published UK data was available for 1,3,5-trimethylbenzene, so information was obtained from the US EPA as in the RBCA model. RBCA uses toxicity data for the inhalation pathway in different units to the CLEA model and cannot consider separately the mean daily intake (MDI), occupancy periods or breathing rates. Therefore, the HCV in RBCA was amended to take account of:

- amendments to the MDI using Table 3.4 of SR2⁽²⁾
- a child weighing 13.3kg (average of 0–6 year old female in accordance with Table 4.6 of SR3⁽³⁾) and breathing 11.85m³ (average daily inhalation rate for a 0–6-year old female in accordance with Table 4.14 of SR3⁽³⁾)

1. The 50% rule (for petroleum hydrocarbons, trimethylbenzenes and MTBE)⁽²⁾ where MDI data is not available but background exposure is considered important in the overall exposure.

Physical parameters

For the residential with private gardens scenario, the CLEA default building is a small two-storey terrace house with concrete ground-bearing slab. The house is assumed to have a 100m² private garden consisting of lawn, flowerbeds and incorporating a 20m² plot for growing fruit and vegetables consumed by the residents. SR3⁽³⁾ notes this residential building type to be the most conservative in terms of protection from vapour intrusion. The building parameters are outlined in Table 5.

The parameters for a sandy loam soil type were used in line with SR3⁽³⁾. This includes a value of 6% for the percentage of soil organic matter (SOM) within the soil. In RSK's experience, this is rather high for many sites. To avoid undertaking site-specific risk assessments for this parameter, RSK has produced an additional set of SAC for an SOM of 1% and 2.5%. For the GrAC, the depth to groundwater was taken as 2.5m based on RSK's experience of assessing the volatilisation pathway from groundwater.

GAC

The SAC were produced using the input parameters in Tables 1 to 5 and the GrAC using input parameters in Table 6. The final selected GAC are presented by pathway in Table 7 and the combined GAC in Table 8.

Figure 1: Conceptual model for CLEA residential scenario – private gardens

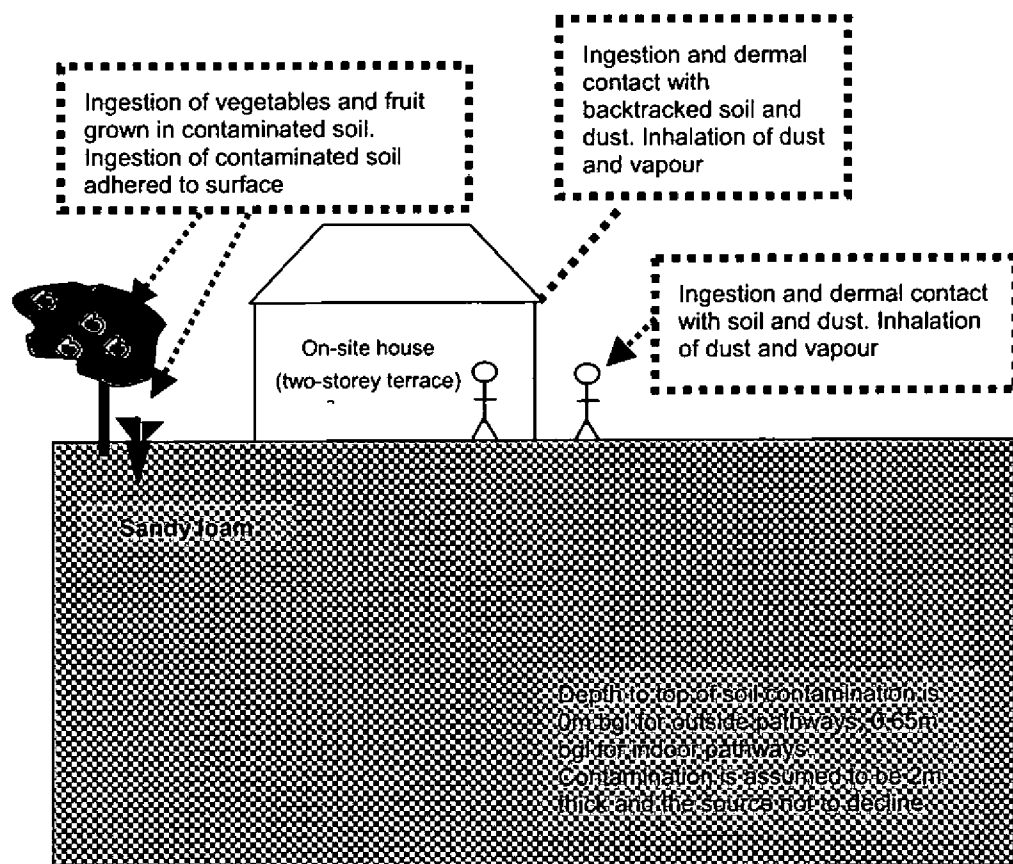


Table 1: Exposure assessment parameters for residential scenario - private gardens – inputs for CLEA model

Parameter	Value	Justification
Land use	Residential with homegrown produce	Chosen land use
Receptor	Female child age 1 to 6	Key generic assumption given in Box 3.1, report SC050021/SR3 ⁽³⁾
Building	Small terraced house	Key generic assumption given in Box 3.1, report SC050021/SR3. Two storey small terraced house chosen as it is the most conservative residential building type in terms of protection from vapor intrusion (Section 3.4.6, report SC050021/SR3) ⁽³⁾
Soil type	Sandy Loam	Most common UK soil type (Section 4.3.1, From Table 3.1, report SC050021/SR3) ⁽³⁾
Start AC (age class)	1	Range of age classes corresponding to key generic assumption that the critical receptor is a young female child aged zero to six. From Box 3.1, report SC050021/SR3 ⁽³⁾
End AC (age class)	6	
SOM (%)	6	Representative of sandy loamy soil according to EA guidance note dated January 2009 entitled 'Changes We Have Made to the CLEA Framework Documents' ⁽⁸⁾
	1	To provide SAC for sites where SOM <6% as often observed by RSK
	2.5	
pH	7	Model default

Table 2: Residential with private gardens –home-grown produce data for CLEA model

Consumption rate (g FW kg ⁻¹ BW day ⁻¹) by age class							Dry weight conversion factor	Home-grown fraction (average)	Home-grown fraction (high end)	Soil loading factor	Preparation correction factor
Name	1	2	3	4	5	6	g DW g ⁻¹ FW	-	-	g g ⁻¹ DW	-
Green vegetables	7.12	6.85	6.85	6.85	3.74	3.74	0.096	0.05	0.33	1.00E-03	2.00E-01
Root vegetables	10.69	3.30	3.30	3.30	1.77	1.77	0.103	0.06	0.4	1.00E-03	1.00E+00
Tuber vegetables	16.03	5.46	5.46	5.46	3.38	3.38	0.21	0.02	0.13	1.00E-03	1.00E+00
Herbaceous fruit	1.83	3.96	3.96	3.96	1.85	1.85	0.058	0.06	0.4	1.00E-03	6.00E-01
Shrub fruit	2.23	0.54	0.54	0.54	0.16	0.16	0.166	0.09	0.6	1.00E-03	6.00E-01
Tree fruit	3.82	11.96	11.96	11.96	4.26	4.26	0.157	0.04	0.27	1.00E-03	6.00E-01
Justification	Table 4.17, SR3 ⁽³⁾						Table 6.3, SR3 ⁽³⁾	Table 4.19, SR3 ⁽³⁾		Table 6.3, SR3 ⁽³⁾	

Table 3: Residential with private gardens – land use data for CLEA model

Parameter	Unit	Age class					
		1	2	3	4	5	6
EF (soil and dust ingestion)	day yr ⁻¹	180	365	365	365	365	365
EF (consumption of home-grown produce)	day yr ⁻¹	180	365	365	365	365	365
EF (skin contact, indoor)	day yr ⁻¹	180	365	365	365	365	365
EF (skin contact, outdoor)	day yr ⁻¹	180	365	365	365	365	365
EF (inhalation of dust and vapour, indoor)	day yr ⁻¹	365	365	365	365	365	365
EF (inhalation of dust and vapour, outdoor)	day yr ⁻¹	365	365	365	365	365	365
Justification		Table 3.1, SR3 ⁽³⁾					
Occupancy period (indoor)	hr day ⁻¹	23	23	23	23	19	19
Occupancy period (outdoor)	hr day ⁻¹	1	1	1	1	1	1
Justification		Table 3.2, SR3 ⁽³⁾					
Soil to skin adherence factor (indoor)	mg cm ⁻² day ⁻¹	6.00E-02	6.00E-02	6.00E-02	6.00E-02	6.00E-02	6.00E-02
Soil to skin adherence factor (outdoor)	mg cm ⁻² day ⁻¹	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
Justification		Table 8.1, SR3 ⁽³⁾					
Soil and dust ingestion rate	g day ⁻¹	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01
Justification		Table 6.2, SR3 ⁽³⁾					

Of note, for cadmium, the exposure assessment for a residential land use is based on estimates representative of lifetime exposure AC1-18. This is because the TDI_{oral} and TDI_{inh} – are based on considerations of the kidney burden accumulated over 50 years. It is therefore reasonable to consider exposure not only in childhood but averaged over a longer time period. See the Environment Agency Science report: SC05002 / TOX 3 ⁽¹⁾ and Science Report SC050021/Cadmium SGV ⁽¹⁾ for more information.

Table 4: Residential with private gardens – receptor data for CLEA model

Parameter	Unit	Age Class						Justification
		1	2	3	4	5	6	
Body weight	kg	5.6	9.8	12.7	15.1	16.9	19.7	Table 4.6, SR3 ⁽³⁾
Body height	m	0.7	0.8	0.9	0.9	1	1.1	
Inhalation rate	m ³ day ⁻¹	8.5	13.3	12.7	12.2	12.2	12.2	Table 4.14, SR3 ⁽³⁾
Max exposed skin fraction (indoor)	m ² m ⁻²	0.32	0.33	0.32	0.35	0.35	0.33	Table 4.8, SR3 ⁽³⁾
Max exposed skin fraction (outdoor)	m ² m ⁻²	0.26	0.26	0.25	0.28	0.28	0.26	

See cadmium note as per Table 3 above.

Table 5: Residential with private gardens – soil and building inputs for CLEA model

Parameter	Unit	Value	Justification
Soil properties for sandy loam			
Porosity, total	cm ³ cm ⁻³	0.53	Default soil type is sandy loam, Section 4.3.1, SR3 ⁽³⁾ Parameters for sandy loam from Table 4.4, SR3 ⁽³⁾
Porosity, air filled	cm ³ cm ⁻³	0.20	
Porosity, water filled	cm ³ cm ⁻³	0.33	
Residual soil water content	cm ³ cm ⁻³	0.12	
Saturated hydraulic conductivity	cm s ⁻¹	3.56E-03	
van Genuchten shape parameter (<i>m</i>)	-	3.20E-01	
Bulk density	g cm ⁻³	1.21	Default value taken from Section 9.2.2, SR3 ⁽³⁾
Threshold value of wind speed at 10m	m s ⁻¹	7.20	
Empirical function (<i>F_x</i>) for dust model	-	1.22	
Ambient soil temperature	K	283	Annual average soil temperature representative of UK surface soils. Section 4.3.1, SR3 ⁽³⁾
Air dispersion model			
Mean annual wind speed (10m)	m s ⁻¹	5.00	Default value taken from Section 9.2.2, SR3 ⁽³⁾
Air dispersion factor at height of 0.8m	g m ⁻² s ⁻¹ per kg m ⁻³	2400	Values for a 0.01 ha site, appropriate to a residential land use in Newcastle (most representative city for UK). (from Table 9.1, SR3 ⁽³⁾) Assumed child of 6 is not tall enough to reach 1.6m
Air dispersion factor at height of 1.6m	g m ⁻² s ⁻¹ per kg m ⁻³	0	
Fraction of site with hard or vegetative cover	m ² m ⁻²	0.75	Section 3.2.6, SR3 ⁽³⁾ based on residential land use

Parameter	Unit	Value	Justification
Building properties for small terrace house with ground-bearing floor slab			
Building footprint	m ²	28	From Table 3.3 and 4.21, SR3 ⁽³⁾
Living space air exchange rate	hr ⁻¹	0.50	
Living space height (above ground)	m	4.8	
Living space height (below ground)	m	0.0	Assumed no basement
Pressure difference (soil to enclosed space)	Pa	3.1	From Table 3.3, SR3 ⁽³⁾
Foundation thickness	m	0.15	
Floor crack area	cm ²	423	
Dust loading factor	µg m ⁻³	50	Default value for a residential site taken from Section 9.3, SR3 ⁽³⁾
Vapour model			
Default soil gas ingress rate	cm ³ s ⁻¹	25	Generic flow rate, Section 10.3, SR3 ⁽³⁾
Depth to top of source (beneath building)	cm	50	Section 3.2.6, SR3 ⁽³⁾ states source is 50cm below building or 65cm below ground surface
Depth to top of source (no building)	cm	0	Section 10.2, SR3 ⁽³⁾ assumes impact from 0m to 1m for outdoor inhalation pathway
Thickness of contaminant layer	cm	200	Model default for indoor air, Section 4.9, SR4 ⁽⁴⁾
Time average period for surface emissions	years	6	Time period of a 0 to 6 year old, Box 3.5, SR3 ⁽³⁾
User-defined effective air permeability	cm ²	3.05E-08	Calculated for sandy loam using equations in Appendix 1, SR3 ⁽³⁾

Figure 2: GrAC conceptual model for RBCA residential with private gardens scenario

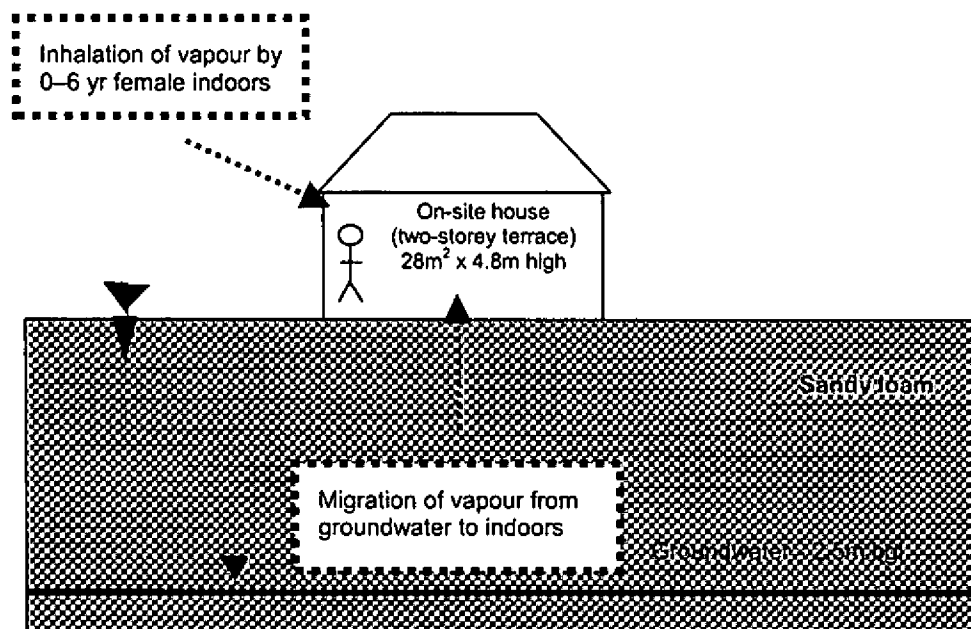


Table 6: Residential with private gardens – RBCA inputs

Parameter	Unit	Value	Justification
Receptor			
Averaging time	Years	6	From Box 3.1, SR3 ⁽³⁾
Receptor weight	kg	13.3	Average of CLEA 0–6 year old female data, Table 4.6, SR3 ⁽³⁾
Exposure duration	Years	6	From Box 3.1, report, SR3 ⁽³⁾
Exposure frequency	Days/yr	350	Weighted using occupancy period of 23 hours per day for 365 days of the year
Soil type – sandy loam			
Total porosity	-	0.53	CLEA value for sandy loam. Parameters for sandy loam from Table 4.4, SR3 ⁽³⁾
Volumetric water content	-	0.33	
Volumetric air content	-	0.20	
Dry bulk density	g cm ⁻³	1.21	
Vertical hydraulic conductivity	cm s ⁻¹	3.56E-3	CLEA value for saturated conductivity of sandy loam, Table 4.4, SR3 ⁽³⁾
Vapour permeability	m ²	3.05E-12	Calculated for sandy loam using equations in Appendix 1, SR3 ⁽³⁾
Capillary zone thickness	m	0.1	Professional judgement

Parameter	Unit	Value	Justification
Fraction organic carbon	%	(i) 0.0348	Representative of sandy loam according to EA guidance note dated January 2009 entitled 'Changes We Have Made to the CLEA Framework Documents' ⁽⁸⁾
		(ii) 0.0058	To provide SAC for sites where SOM < 6% as often observed by RSK
Building			
Building volume/area ratio	m	4.8	Table 3.3, SR3 ⁽³⁾
Foundation area	m ²	28	
Foundation perimeter	m	22	Calculated assuming building measures 7m x 4m to give 28m ² foundation area
Building air exchange rate	d ⁻¹	12	Table 3.3, SR3 ⁽³⁾
Depth to bottom of foundation slab	m	0.15	
Foundation thickness	m	0.15	
Foundation crack fraction	-	0.0151	Calculated from floor crack area of 423 cm ² and building footprint of 28m ² in Table 4.21, SR3 ⁽³⁾
Volumetric water content of cracks	-	0.33	Assumed equal to underlying soil type in assumption that cracks become filled with soil over time. Parameters for sandy loam from Table 4.4, SR3 ⁽³⁾
Volumetric air content of cracks	-	0.2	
Indoor/outdoor differential pressure	Pa	3.1	From Table 3.3, SR3 ⁽³⁾

References

1. Environment Agency (2009), 'Science Report SC050021/benzene SGV, toluene SGV, ethylbenzene SGV, xylene SGV, mercury SGV, selenium SGV, nickel SGV, arsenic SGV, cadmium SGV, phenol SGV, dioxins, furans and dioxin like PCBs SGVs', 'Supplementary information for the derivation of SGV for: benzene, toluene, ethylbenzene, xylene, mercury, selenium, nickel, arsenic, cadmium, phenol, dioxins, furans and dioxin- like PCBs', and 'Contaminants in soil: updated collation of toxicological data and intake values for humans: benzene, toluene, ethylbenzene, xylene, mercury, selenium, nickel, arsenic, cadmium, phenol, dioxins, furans and dioxin- like PCBs', March 2009, May 2009 and September 2009.
2. Environment Agency (2009), *Human health toxicological assessment of contaminants in soil. Science Report – Final SC050021/SR2*, January (Bristol: Environment Agency).
3. Environment Agency (2009), *Science Report – SC050021/SR3. Updated technical background to the CLEA model* (Bristol: Environment Agency).
4. Environment Agency (2009), Contaminated Land Exposure Assessment (CLEA) software, version 1.06.
5. Environment Agency (2008), *Science Report SC050021/SR7. Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values* (Bristol: Environment Agency).
6. Chartered Institute for Environmental Health and Land Quality Management (2009), 'The LQM/CIEH Generic Assessment Criteria for Human Health', second edition.
7. CL:AIRE (2009), *Soil Generic Assessment Criteria for Human Health Risk Assessment* (London: CL:AIRE).
8. Changes made to the CLEA framework documents after the three-month evaluation period in 2008, released January 2009 by the Environment Agency.

Table 7
Human Health Generic Assessment Criteria by Pathway for Residential Scenario - Private Gardens

Compound	Media	GrAC (mg/l)	SAC Appropriate to Pathway SOM 1% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 2.5% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 6% (mg/kg)			Soil Saturation Limit (mg/kg)
			Oral	Inhalation	Combined		Oral	Inhalation	Combined		Oral	Inhalation	Combined	
Metals														
Arsenic	(b)(c)	-	3.24E+01	8.50E+01	-	NR	3.24E+01	8.50E+01	-	NR	3.24E+01	8.50E+01	-	NR
Cadmium	(b)	-	1.12E+01	1.85E+02	1.10E+01	NR	1.12E+01	1.85E+02	1.10E+01	NR	1.12E+01	1.85E+02	1.10E+01	NR
Chromium (III) - oxide	-	-	1.84E+04	3.55E+03	2.98E+03	NR	1.84E+04	3.55E+03	2.98E+03	NR	1.84E+04	3.55E+03	2.98E+03	NR
Chromium (VI) - hexavalent	-	-	1.02E+01	4.25E+00	3.21E+00	NR	1.02E+01	4.25E+00	3.21E+00	NR	1.02E+01	4.25E+00	3.21E+00	NR
Copper	-	-	2.68E+03	1.04E+04	2.33E+03	NR	2.68E+03	1.04E+04	2.33E+03	NR	2.68E+03	1.04E+04	2.33E+03	NR
Lead	(a)	-	3.00E+02	-	-	NR	3.00E+02	-	-	NR	3.00E+02	-	-	NR
Elemental Mercury (Hg ⁰)	(b)(d)	9.40E-03	-	1.70E-01	-	4.31E+00	-	4.24E-01	-	1.07E+01	-	1.02E+00	-	2.58E+01
Inorganic Mercury (Hg ²⁺)	(b)	-	1.81E+02	2.55E+03	1.06E+02	NR	1.81E+02	2.55E+03	1.06E+02	NR	1.81E+02	2.55E+03	1.06E+02	NR
Methyl Mercury (Hg ^{CH3})	(b)	2.00E+01	1.39E+01	1.59E+01	7.40E+00	7.33E+01	1.39E+01	3.08E+01	8.55E+00	1.42E+02	1.39E+01	8.53E+01	1.14E+01	3.04E+02
Nickel	(b)(d)	-	5.31E+02	1.27E+02	-	NR	5.31E+02	1.27E+02	-	NR	5.31E+02	1.27E+02	-	NR
Selenium	(b)(c)	-	3.50E+02	-	-	NR	3.50E+02	NR	-	NR	3.50E+02	-	-	NR
Zinc	(c)	-	3.75E+03	2.55E+07	-	NR	3.75E+03	2.55E+07	-	NR	3.75E+03	2.55E+07	-	NR
Cyanide	-	-	2.68E+01	3.97E+00	3.68E+00	NR	2.68E+01	3.97E+00	3.68E+00	NR	2.68E+01	3.97E+00	3.68E+00	NR
Volatile Organic Compounds														
Benzene	(b)	7.20E+00	1.17E-01	2.89E-01	7.87E-02	1.22E+03	2.29E-01	4.99E-01	1.57E-01	2.26E+03	4.89E-01	1.04E+00	3.37E-01	4.71E+03
Toluene	(b)	1.90E+03	1.47E+02	6.29E+02	1.19E+02	8.69E+02	3.35E+02	1.36E+03	2.70E+02	1.92E+03	7.50E+02	3.14E+03	8.11E+02	4.36E+03
Ethylbenzene	(b)	2.60E+02	1.09E+02	1.70E+02	6.52E-01	5.18E+02	2.51E+02	3.08E+02	1.54E+02	1.22E+03	5.70E+02	9.32E+02	3.54E+02	2.84E+03
Xylene - m	(b)	8.40E+01	2.02E+02	5.58E+01	4.36E+01	6.25E+02	4.89E+02	1.31E+02	1.03E+02	1.47E+03	1.09E+03	3.07E+02	2.40E+02	3.46E+03
Xylene - o		1.00E+02	1.85E+02	5.08E+01	4.52E+01	4.78E+02	4.38E+02	1.40E+02	1.09E+02	1.17E+03	9.08E+02	3.27E+02	2.48E+02	2.62E+03
Xylene - p		8.70E+01	1.91E+02	5.34E+01	4.17E+01	5.70E+02	4.51E+02	1.28E+02	9.82E+01	1.35E+03	1.02E+03	2.84E+02	2.28E+02	3.17E+03
Total xylene	-	8.40E+01	2.02E+02	5.58E+01	4.36E+01	6.25E+02	4.89E+02	1.31E+02	1.03E+02	1.47E+03	1.09E+03	3.07E+02	2.40E+02	3.46E+03
Methyl t-Butyl ether	-	2.20E+03	1.75E+00	1.84E+02	1.75E+00	1.00E+04	3.68E+00	2.40E+02	3.87E+00	2.18E+04	7.41E+00	3.70E+02	7.37E+00	3.34E+04
Trichloroethene	-	1.80E+00	2.83E+00	1.10E-01	1.09E-01	1.54E+03	6.25E+00	2.30E-01	2.27E-01	3.22E+03	1.40E+01	5.11E-01	4.93E-01	7.14E+03
Tetrachloroethene	-	3.00E+00	1.08E+01	1.93E+00	9.38E-01	4.24E+02	2.44E+01	2.30E+00	2.10E+00	9.51E+02	5.55E+01	5.29E+00	4.82E+00	2.18E+03
1,1,1-Trichloroethene	-	2.80E+01	3.29E+02	6.33E+00	6.21E+00	1.43E+03	6.87E+02	1.70E+01	1.27E+01	2.82E+03	1.55E+03	2.84E+01	2.70E+01	6.39E+03
1,1,1,2-Tetrachloroethane	-	1.40E+01	5.10E+00	1.08E+00	8.99E-01	2.90E+03	1.22E+01	2.50E+00	2.09E+00	8.02E+03	2.78E+01	5.63E+00	4.82E+00	1.40E+04
1,1,2,2-Tetrachloroethane	-	1.40E+01	2.70E+00	2.78E+00	1.37E+00	2.67E+03	5.86E+00	5.86E+00	2.87E+00	5.48E+03	1.30E+01	1.24E+01	6.34E+00	1.20E+04
Carbon Tetrachloride	-	5.50E-02	1.06E+00	1.81E-02	1.79E-02	1.52E+03	2.41E+00	3.07E-02	3.63E-02	3.32E+03	5.44E+00	8.89E-02	8.92E-02	7.54E+03
1,2-Dichloroethane	-	3.00E-01	3.09E-02	8.48E-03	5.34E-03	3.41E+03	5.53E-02	9.32E-03	7.08E-03	4.91E+03	1.05E-01	1.80E-02	1.39E-02	8.43E+03
Vinyl Chloride	-	1.90E-02	3.89E-03	5.43E-04	4.73E-04	1.36E+03	6.84E-03	7.02E-04	6.35E-04	1.78E+03	1.21E-02	1.07E-03	8.89E-04	2.69E+03
1,2,4-Trimethylbenzene	-	7.50E-02	-	3.51E-01	-	5.57E+02	-	8.55E-01	-	1.36E+03	-	2.10E+00	-	3.25E+03
1,3,5-Trimethylbenzene	-	4.70E-02	1.45E+01	4.80E-01	4.50E-01	9.47E+01	3.47E+01	1.30E+00	1.00E+00	2.26E+02	7.94E+01	2.50E+00	2.58E+00	5.33E+02
Semi-Volatile Organic Compounds														
Acenaphthene	-	3.20E+00	2.18E+02	3.48E+03	2.05E+02	5.70E+01	5.08E+02	8.54E+03	4.79E+02	1.41E+02	1.00E+03	2.03E+04	1.01E+03	3.36E+02
Acenaphthylene	-	4.20E+00	1.78E+02	3.27E+03	1.88E+02	8.01E+01	4.17E+02	6.03E+03	3.97E+02	2.17E+02	8.90E+02	1.91E+04	8.51E+02	5.08E+02
Anthracene	-	2.10E-02	2.31E+03	1.08E+05	2.28E+03	1.17E+00	5.03E+03	2.65E+05	4.93E+03	2.91E+00	9.33E+03	6.15E+05	9.19E+03	6.90E+00
Benzo(a)anthracene	-	3.00E-03	7.00E+00	5.55E+00	3.10E+00	1.71E+00	8.86E+00	9.83E+00	4.89E+00	4.28E+00	1.01E+01	1.41E+01	5.88E+00	1.03E+01
Benzo(b)fluoranthene	-	2.00E-03	8.05E+00	1.79E+01	5.58E+00	1.22E+00	9.78E+00	1.97E+01	6.53E+00	3.04E+00	1.07E+01	2.05E+01	7.02E+00	7.29E+00
Benzo(g,h,i)pyrene	-	2.00E-04	6.88E+01	1.27E+02	4.38E+01	1.54E+02	7.04E+01	1.32E+02	4.59E+01	3.85E+02	7.19E+01	1.34E+02	4.88E+01	9.23E+02
Benzo(k)fluoranthene	-	8.00E-04	1.25E+01	2.68E+01	8.51E+00	8.87E-01	1.44E+01	2.83E+01	9.58E+00	1.72E+00	1.33E+01	2.91E+01	1.00E+01	4.12E+00
Chrysene	-	2.00E-03	8.78E+00	1.95E+01	6.09E+00	4.40E-01	1.20E+01	2.45E+01	6.44E+00	1.10E+00	1.41E+01	2.72E+01	9.27E+00	2.64E+00
Dibenz(a,h)anthracene	-	8.00E-04	1.19E+00	2.13E+00	7.62E-01	3.93E-03	1.33E+00	2.42E+00	8.58E-01	9.82E-03	1.38E+00	2.58E+00	9.03E-01	2.36E+02
Fluoranthene	-	2.30E-01	2.59E+02	2.69E+04	2.67E+02	1.89E+01	4.87E+02	6.23E+04	4.83E+02	4.73E+01	8.78E+02	1.28E+05	6.74E+02	1.13E+02
Fluorene	-	1.90E+00	1.70E+02	4.35E+03	1.63E+02	3.09E+01	3.91E+02	1.07E+04	3.77E+02	7.85E+01	8.00E+02	2.54E+04	7.78E+02	1.83E+02
Indeno(1,2,3-cd)pyrene	-	2.00E-04	4.58E+00	1.04E+01	3.18E+00	8.13E-02	5.74E+00	1.17E+01	3.85E+00	1.53E-01	8.37E+00	1.22E+01	4.19E+00	3.88E+01
Phenanthrene	-	5.30E-01	9.35E+01	5.04E+03	9.18E+01	3.80E+01	2.04E+02	1.23E+04	2.01E+02	8.80E+01	3.81E+02	2.88E+04	3.78E+02	2.14E+02
Pyrene	-	1.30E+01	5.89E+02	6.18E+04	5.63E+02	2.20E+00	1.05E+03	1.44E+05	1.04E+03	5.49E+00	1.58E+03	2.97E+05	1.58E+03	1.32E+01
Benzo(a)pyrene	-	3.00E-03	1.21E+00	2.62E+00	8.29E-01	9.11E-01	1.42E+00	2.81E+00	9.43E-01	2.28E+00	1.57E+00	2.90E+00	9.98E-01	5.48E+00
Naphthalene	-	1.90E+01	2.88E+01	1.84E+00	1.54E+00	7.64E+01	6.38E+01	3.93E+00	3.70E+00	1.83E+02	1.43E+02	9.27E+00	8.71E+00	4.32E+02
Phenol	(b)	-	4.51E+02	3.11E+02	1.84E+02	4.16E+04	9.38E+02	4.20E+02	2.90E+02	8.15E+04	2.04E+03	5.21E+02	4.15E+02	1.74E+05

Table 7
Human Health Generic Assessment Criteria by Pathway for Residential Scenario - Private Gardens

Compound	Notes	GrAC (mg/l)	SAC Appropriate to Pathway SOM 1% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 2.5% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 6% (mg/kg)			Soil Saturation Limit (mg/kg)
			Oral	Inhalation	Combined		Oral	Inhalation	Combined		Oral	Inhalation	Combined	
Total Petroleum Hydrocarbons														
Aliphatic hydrocarbons <EC ₇ -EC ₉		1.00E+01	4.79E+03	2.08E+01	2.97E+01	3.04E+02	1.08E+04	5.47E+01	5.46E+01	5.58E+02	2.35E+04	1.13E+02	1.13E+02	1.15E+03
Aliphatic hydrocarbons >EC ₉ -EC ₉		5.40E+00	1.43E+04	7.27E+01	7.26E+01	1.44E+02	3.21E+04	1.62E+02	1.62E+02	3.22E+02	6.38E+04	3.72E+02	3.71E+02	7.38E+02
Aliphatic hydrocarbons >EC ₉ -EC ₁₉		2.30E+01	1.48E+03	1.89E+01	1.89E+01	7.77E+01	2.44E+03	4.60E+01	4.58E+01	1.90E+02	3.30E+03	1.09E+02	1.08E+02	4.51E+02
Aliphatic hydrocarbons >EC ₁₉ -EC ₁₂		3.40E+02	3.32E+03	9.34E+01	9.28E+01	4.75E+01	4.01E+03	2.32E+02	2.28E+02	1.18E+02	4.24E+03	5.57E+02	5.37E+02	2.83E+02
Aliphatic hydrocarbons >EC ₁₂ -EC ₁₉		7.00E+04	4.37E+03	7.82E+02	7.44E+02	2.37E+01	4.40E+03	1.95E+03	1.69E+03	5.91E+01	4.41E+03	4.88E+03	3.03E+03	1.42E+00
Aliphatic hydrocarbons >EC ₁₈ -EC ₂₅	(c)	-	4.51E+04	-	-	8.48E+00	6.38E+04	-	-	2.12E+01	7.81E+04	-	-	5.09E+01
Aliphatic hydrocarbons >EC ₂₅ -EC ₄₄	(c)	-	4.51E+04	-	-	8.48E+00	6.38E+04	-	-	2.12E+01	7.81E+04	-	-	5.09E+01
Aromatic hydrocarbons >EC ₇ -EC ₉ (styrene)		7.40E+00	1.06E+02	2.65E+02	1.33E+02	6.20E+02	3.92E+02	6.47E+02	3.16E+02	1.52E+03	8.50E+02	1.54E+03	7.02E+02	3.81E+03
Aromatic hydrocarbons >EC ₉ -EC ₁₀		7.40E+00	5.55E+01	3.33E+01	2.66E+01	6.13E+02	1.31E+02	8.16E+01	6.54E+01	1.50E+03	2.84E+02	1.94E+02	1.51E+02	3.58E+02
Aromatic hydrocarbons >EC ₁₀ -EC ₁₂		2.50E+01	7.07E+01	1.82E+02	6.91E+01	3.04E+02	1.86E+02	4.48E+02	1.62E+02	8.99E+02	3.87E+02	1.07E+03	3.46E+02	2.15E+03
Aromatic hydrocarbons >EC ₁₂ -EC ₁₃		5.80E+00	1.40E+02	2.00E+03	1.38E+02	1.69E+02	3.13E+02	4.96E+03	3.08E+02	4.19E+02	6.01E+02	1.1E+04	5.93E+02	1.00E+03
Aromatic hydrocarbons >EC ₁₈ -EC ₂₁	(c)	-	2.47E+02	-	-	5.37E+01	4.9E+02	-	-	1.34E+02	7.89E+02	-	-	3.21E+02
Aromatic hydrocarbons >EC ₂₁ -EC ₃₅	(c)	-	8.88E+02	-	-	4.83E+00	1.11E+03	-	-	1.21E+01	1.22E+03	-	-	2.90E+01
Aromatic hydrocarbons >EC ₃₅ -EC ₄₄	(c)	-	8.88E+02	-	-	4.83E+00	1.11E+03	-	-	1.21E+01	1.22E+03	-	-	2.90E+01

Notes:

* Generic assessment criteria not calculated owing to low volatility of substance and therefore no pathway, or an absence of toxicological data.

NR - the compound is not volatile and therefore a soil saturation limit not calculated within CLEA

EC - equivalent carbon. GrAC - groundwater assessment criteria. SAC - soil assessment criteria.

The CLEA model output is colour coded depending upon whether the soil saturation limit has been exceeded.

Calculated SAC exceeds soil saturation limit and may significantly effect the interpretation of any exceedances since the contribution of the indoor and outdoor vapour pathway to total exposure is >10%. This shading has also been used for the RBCA output where the theoretical solubility limit has been exceeded. The SAC has been set as the model calculated SAC with the saturation limits shown in brackets.
Calculated SAC exceeds soil saturation limit but will not effect the SSV significantly since the contribution of the indoor and outdoor vapour pathway to total exposure is <10%.
Calculated SAC does not exceed the soil saturation limit.

Calculated SAC exceeds soil saturation limit and may significantly effect the interpretation of any exceedances since the contribution of the indoor and outdoor vapour pathway to total exposure is >10%. This shading has also been used for the RBCA output where the theoretical solubility limit has been exceeded. The SAC has been set as the model calculated SAC with the saturation limits shown in brackets.

Calculated SAC exceeds soil saturation limit but will not effect the SSV significantly since the contribution of the indoor and outdoor vapour pathway to total exposure is <10%.

Calculated SAC does not exceed the soil saturation limit.

For consistency where the theoretical solubility limit within RBCA has been exceeded in production of the GrAC, these cells have also been hatched red.

The SAC for organic compounds are dependant upon soil organic matter (SOM) (%) content. To obtain SOM from total organic carbon (TOC) (%) divide by 0.58. 1% SOM is 0.58% TOC. DL Rowell Soil Science: Methods and Applications, Longmans, 1994.

SAC for TPH fractions, polycyclic aromatic hydrocarbons, MTBE, BTEX and trimethylbenzene compounds were produced using an attenuation factor for the indoor air inhalation pathway of 10 to reduce conservatism associated with the vapour inhalation pathway, section 10.1.1, SR3

(a) Sensitivity analysis undertaken on SEGH equation and CLEA model, considered reasonable in absence of UK specific data

(b) GAC taken from the Environment Agency SGV reports published 2009.

(c) SAC for selenium, aliphatic and aromatic hydrocarbons >EC18 does not include inhalation pathway owing to absence of toxicity data. SAC for arsenic is only based on oral contribution (rather than combined) owing to the relative small contribution from inhalation in accordance with the SGV report. The same approach has been adopted for zinc.

(d) SAC for elemental mercury, chromium VI and nickel is based on the inhalation pathway only owing to an absence of toxicity for elemental mercury, in accordance with the SGV report for nickel and LQM report for chromium VI.

Table 8

Human Health: Generic Assessment Criteria for Residential Scenario - Private Gardens

Compound	GrAC for Groundwater (mg/l)	SAC for Soil SOM 1% (mg/kg)	SAC for Soil SOM 2.5% (mg/kg)	SAC for Soil SOM 6% (mg/kg)
Metals				
Arsenic	-	32	32	32
Cadmium	-	10	10	10
Chromium (III) - oxide	-	3,000	3,000	3,000
Chromium (VI) - hexavalent	-	4.3	4.3	4.3
Copper	-	2,300	2,300	2,300
Lead	-	300	300	300
Elemental Mercury (Hg ⁰)	0.009	0.17	0.42	1.0
Inorganic Mercury (Hg ²⁺)	-	170	170	170
Methyl Mercury (Hg ⁺)	20	7.4	9.6	11
Nickel	-	130	130	130
Selenium	-	350	350	350
Zinc	-	3,800	3,800	3,800
Cyanide	-	3.7	3.7	3.7
Volatile Organic Compounds				
Benzene	7	0.079	0.157	0.33
Toluene	1,900	120	270	610
Ethylbenzene	260	65	154	350
Xylene - m	100	44	103	240
Xylene - o	87	45	106	250
Xylene - p	84	42	98	230
Total xylene	84	44	103	240
Methyl tertiary butyl ether (MTBE)	2,200	1.8	3.7	7.4
Trichloroethene	1.8	0.11	0.2	0.49
Tetrachloroethene	3.6	0.94	2.1	4.8
1,1,1-Trichloroethane	26	6.2	12.7	28
1,1,1,2-Tetrachloroethane	14	0.89	2.1	4.8
1,1,2,2-Tetrachloroethane	14	1.4	2.87	6.3
Carbon Tetrachloride	0.055	0.018	0.039	0.089
1,2-Dichloroethane	0.30	0.0053	0.0090	0.014
Vinyl Chloride	0.019	0.00047	0.0006	0.001
1,2,4-Trimethylbenzene	0.075	0.35	0.85	2.1
1,3,5-Trimethylbenzene	0.047	0.46	1.1	2.6
Semi-Volatile Organic Compounds				
Acenaphthene	3.2	210	480	1,000
Acenaphthylene	4.2	170	400	850
Anthracene	0.021	2,300	4,900	9,200
Benzo(a)anthracene	0.0038	3.1	4.7	5.9
Benzo(b)fluoranthene	0.0020	5.6	6.5	7.0
Benzo(g,h,i)perylene	0.00026	44	46	47
Benzo(k)fluoranthene	0.00080	8.5	9.6	10
Chrysene	0.0020	6.0	8.0	9.3
Dibenzo(a,h)anthracene	0.00060	0.76	0.86	0.90
Fluoranthene	0.23	260	460	670
Fluorene	1.8	160	380	780
Indeno(1,2,3-cd)pyrene	0.0002	3.2	3.8	4.2
Phenanthrene	0.53	92	200	380
Pyrene	0.13	560	1,000	1,600
Benzo(e)pyrene	0.0038	0.83	0.94	1.0
Naphthalene	19	1.5	3.7	8.7
Phenol	-	180	290	420
Total Petroleum Hydrocarbons				
Aliphatic hydrocarbons EC ₅ -EC ₈	10	30	55	110
Aliphatic hydrocarbons >EC ₉ -EC ₈	5.4	73	160	370
Aliphatic hydrocarbons >EC ₉ -EC ₁₀	0.23	19	46	110
Aliphatic hydrocarbons >EC ₁₀ -EC ₁₂	0.034	93 (48)	230 (138)	540 (283)
Aliphatic hydrocarbons >EC ₁₂ -EC ₁₈	0.00076	744 (24)	1,700 (59)	3,000 (142)
Aliphatic hydrocarbons >EC ₁₈ -EC ₃₅	-	45,100 (8.48)	64,000 (21)	76,000
Aliphatic hydrocarbons >EC ₃₅ -EC ₄₄	-	45,100 (8.48)	64,000 (21)	76,000
Aromatic hydrocarbons >EC ₉ -EC ₉ (styrene)	7.4	130	316	700
Aromatic hydrocarbons >EC ₉ -EC ₁₀	7.4	27	65	150
Aromatic hydrocarbons >EC ₁₀ -EC ₁₂	25	69	160	346
Aromatic hydrocarbons >EC ₁₂ -EC ₁₈	5.8	140	310	593
Aromatic hydrocarbons >EC ₁₈ -EC ₂₁	-	250	480	770
Aromatic hydrocarbons >EC ₂₁ -EC ₃₅	-	890	1,100	1,230
Aromatic hydrocarbons >EC ₃₅ -EC ₄₄	-	890	1,100	1,230
Notes: - Omeric assessment criteria not calculated owing to low volatility of substance and therefore no pathway, or an absence of toxicological data. EC - equivalent carbon. GrAC - groundwater assessment criteria. SAC - soil assessment criteria The SAC for organic compounds are dependent on Soil Organic Matter (SOM) (%) content. To obtain SOM from total organic carbon (TOC) (%) divide by 0.58. 1% SOM is 0.58% TOC. Cf. Rowell Soil Science: Methods and Applications, Longmans, 1994 SAC for TPH fractions, polycyclic aromatic hydrocarbons, MTBE, BTEX and trimethylbenzene compounds were produced using an attenuation factor for the indoor air inhalation pathway of 10 to reduce conservatism associated with the vapour inhalation pathway, section 10.1.1, SR3. The SAC has been set as the model calculated SAC with the saturation limit shown in brackets. For consistency where the GrAC exceeds the solubility limit, GrAC has been set at the solubility limit. The GrAC is conservative since concentrations of the chemical are very unlikely to be at sufficient concentration to result in an exceedance of the health criteria value at the point of exposure (i.e. indoor air) provided free-phase product is absent.				

APPENDIX K

GENERIC ASSESSMENT CRITERIA FOR PHYTOTOXIC EFFECTS

Phytotoxic determinants to facilitate healthy plant growth

Copper and zinc can inhibit plant growth but are not normally hazardous to human health. The GAC for this pollutant linkage have been taken from Department of the Environment (1996) publication, *Code of Practice for Agricultural Use of Sewage Sludge*. The GAC for the phytotoxic determinants are presented in Table A1. The table also includes nickel as this is also phytotoxic. Please note that the human health GAC may not be suitably protective of the phytotoxic effects pathway depending on the soil pH.

Table A1: Generic assessment criteria for phytotoxic determinants

Determinant	Generic assessment criteria (mg/kg)			
	pH 5.0 < 5.5	pH 5.5 < 6.0	pH 6.0 < 7.0	pH >7.0
Zinc	200	200	200	300
Copper	80	100	135	200
Nickel	50	60	75	110

APPENDIX L

GENERIC ASSESSMENT CRITERIA FOR POTABLE WATER SUPPLY PIPES

A range of pipe materials is available and careful selection, design and installation is required to ensure that water supply pipes are satisfactorily installed and meet the requirements of the Water Supply (Water Fittings) Regulations 1999 in England and Wales, the Byelaws 2000 in Scotland and the Northern Ireland Water Regulations. The regulations include a requirement to use only suitable materials when laying water pipes and laying water pipes without protection is not permitted at contaminated sites. The water supply company has a statutory duty to enforce the regulations.

Contaminants in the ground can pose a risk to human health by permeating potable water supply pipes. To fulfil their statutory obligation, UK water supply companies require robust evidence from developers to demonstrate either that the ground in which new plastic supply pipes will be laid is free from specific contaminants, or that the proposed remedial strategy will mitigate any existing risk. If these requirements cannot be demonstrated to the satisfaction of the relevant water company, it becomes necessary to specify an alternative pipe material on the whole development or in specific zones.

In 2010, UK Water Industry Research (UKWIR) published *Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites* (Report Ref. No. 10/MM/03/21). This report reviewed previously published industry guidelines and threshold concentrations adopted by individual water supply companies.

The focus of the UKWIR research project was to develop clear and concise procedures, which provide consistency in the pipe selection decision process. It was intended to provide guidance that can be used to ensure compliance with current regulations and to prevent water supply pipe failing prematurely due to the presence of contamination.

The report concluded that in most circumstances only organic contaminants pose a potential risk to plastic pipe materials and Table 3.1 of the report provides threshold concentrations for polyethylene (PE) and polyvinyl chloride (PVC) pipes for the organic contaminants of concern. The report also makes recommendations for the procedures to be adopted in the design of site investigations and sampling strategies, and the assessment of data, to ensure that the ground through which water supply pipes will be laid is adequately characterised.

Risks to water supply pipes have therefore been assessed against the threshold concentrations for PE and PVC pipe specified in Table 3.1 of Report 10/MM/03/21, which have been adopted as the GAC for this linkage and are reproduced in Table A3 below.

Since water supply pipes are typically laid at a minimum depth of 0.75m below finished ground levels, sample results from depths between 0.5m and 1.5m below finished level are generally considered suitable for assessing risks to water supply. Samples outside these depths can be

used, providing the stratum is the same as that in which water supply pipes are likely to be located. The report specifies that sampling should characterise the ground conditions to a minimum of 0.5m below the proposed depth of the pipe.

It should be noted that the assessment provided in this report is a guide and the method of assessment and recommendations should be checked with the relevant water supply company.

Table A3: Generic assessment criteria for water supply pipes

		Pipe material	
		GAC (mg/kg)	
	Parameter group	PE	PVC
1	Extended VOC suite by purge and trap or River Terrace space and GC-MS with TIC (Not including compounds within group 1a)	0.5	0.125
1a	• BTEX + MTBE	0.1	0.03
2	SVOCs TIC by purge and trap or River Terrace space and GC-MS with TIC (aliphatic and aromatic C ₅ -C ₁₀) (Not including compounds within group 2e and 2f)	2	1.4
2e	• Phenols	2	0.4
2f	• Cresols and chlorinated phenols	2	0.04
3	Mineral oil C ₁₁ -C ₂₀	10	Suitable
4	Mineral oil C ₂₁ -C ₄₀	500	Suitable
5	Corrosive (conductivity, redox and pH)	Suitable	Suitable
Specific suite identified as relevant following site investigation			
2a	Ethers	0.5	1
2b	Nitrobenzene	0.5	0.4
2c	Ketones	0.5	0.02
2d	Aldehydes	0.5	0.02
6	Amines	Not suitable	Suitable
Notes: where indicated as 'suitable', the material is considered resistant to permeation or degradation and no threshold concentration has been specified by UKWIR.			



APPENDIX M

HASWASTE ASSESSMENT

HASWASTE v5.3. Envirolab's Contaminated Land Soil Hazardous Waste Assessment Tool.

Envirolab, Sandpits Business Park, Mottram Road, Hyde, Cheshire SK14 3AR.



Site Code and Name	27621, Angmering										
TP/WS/BH	BH1	BH2	BH3	BH4	BH5	BH6	BH7	BH8	BH10	BH11	BH12
Depth (m)	0.30-0.40	1.20-1.60	1.50-2.00	0.60-0.90	0.30-0.40	0.00-0.10	0.40-0.60	0.30-0.40	1.10-1.40	0.30-0.40	0.20-0.40
Envirolab reference	15/00505/1	15/00505/2	15/00505/3	15/00505/4	15/00505/5	15/00505/6	15/00505/7	15/00505/8	15/00505/10	15/00505/11	15/00505/12
% Moisture	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
pH (soil)	8.48	7.87	8.23	8.06	8.68	7.76	7.80	7.43	8.29	8.42	8.71
pH (leachate)											
Arsenic	4	20	5	9	7	6	4	4	4	3	2
Cadmium	0.5	1.1	0.5	1.1	0.5	0.5	0.5	0.5	1.2	0.5	0.5
Copper	15	67	24	40	46	14	11	11	42	7	7
CrVI or Chromium	22	28	14	25	21	19	19	23	13	14	13
Lead	50	248	110	293	156	36	17	15	149	22	16
Mercury	0.17	0.17	0.17	0.19	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Nickel	15	32	18	34	22	13	12	15	22	10	8
Selenium	1	1	1	1	1	1	1	1	1	1	1
Zinc	69	4,430	237	3,360	478	58	41	42	734	29	32
Barium											
Beryllium											
Cobalt											
Manganese											
Molybdenum											
TPH											
Petrol											
Diesel											
Lube Oil											
White Spirit / Kerosene											
Creosote											
Unknown TPH with ID											
Unknown TPHCWG	9.8	8.1	2.2	29.4	6.4	0.1	0.1	0.1	1.8	1.8	3.3
Inseparable TPH Mixtures											
Any											
Any but No Petrol											
White Spirit / Kerosene and Diesel											
Total USEPA 16 PAHs											
Acenaphthene	0.01	0.13	0.06	0.07	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Acenaphthylene	0.01	0.03	0.02	0.04	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Anthracene	0.02	0.28	0.18	0.18	0.05	0.02	0.02	0.02	0.02	0.04	0.06
Benzo(a)anthracene	0.17	2.11	1.19	1.25	0.44	0.12	0.04	0.04	0.14	0.30	0.79
Benzo(a)pyrene	0.24	1.82	1.30	1.28	0.49	0.12	0.04	0.04	0.15	0.34	0.90
Benzo(b)fluoranthene	0.25	2.09	1.48	1.53	0.53	0.16	0.05	0.05	0.15	0.37	0.97
Benzo(ghi)perylene	0.19	0.87	0.76	0.75	0.33	0.07	0.05	0.05	0.14	0.23	0.61
Benzo(k)fluoranthene	0.14	1.07	0.69	0.67	0.28	0.07	0.07	0.07	0.10	0.21	0.44
Chrysene	0.15	1.72	1.19	1.14	0.43	0.12	0.06	0.06	0.12	0.29	0.73
Dibenzo(ah)anthracene	0.04	0.19	0.17	0.18	0.07	0.04	0.04	0.04	0.04	0.04	0.13
Fluoranthene	0.30	4.57	2.20	2.14	0.71	0.23	0.08	0.08	0.24	0.64	1.11
Fluorene	0.01	0.06	0.05	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Indeno(123cd)pyrene	0.19	0.99	0.79	0.83	0.36	0.08	0.03	0.03	0.14	0.25	0.66
Naphthalene	0.03	0.03	0.04	<0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Phenanthrene	0.11	0.95	0.79	0.74	0.27	0.08	0.03	0.03	0.05	0.26	0.17
Pyrene	0.28	4.16	2.14	2.17	0.73	0.21	0.07	0.07	0.22	0.56	1.14
Benzene	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Toluene	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Ethylbenzene	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Xylenes	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Trimethylbenzenes											
Chlorobenzene											
1,2-Dichlorobenzene											
1,3-Dichlorobenzene											
1,4-Dichlorobenzene											
1,2,4-Trichlorobenzene											
2-Chlorotoluene											
4-Chlorotoluene											
Trichloroethene (TCE)											
Total Sulphide											
Total Cyanide											
Free Cyanide											
Thiocyanate											
Elemental/Free Sulphur											
PCBs Total (eg EC7/WHO12)											
Phenols Total by HPLC											
Phenol											
Cresols											
Xylenols											
1-Naphthol											
Resourcinol											
2,3,4,6-Tetrachlorophenol											
2,4,5-Trichlorophenol											
2,4,6-Trichlorophenol											
2,4-Dichlorophenol											
4-Chloro-3-methylphenol											
Pentachlorophenol											
Bis(2-ethylhexyl)phthalate											
Butylbenzylphthalate											
Di-n-butylphthalate											

HASWASTE v5.3. Envirolab's Contaminated Land Soil Hazardous Waste Assessment Tool.

Envirolab, Sandpits Business Park, Mottram Road, Hyde, Cheshire SK14 3AR.



Site Code and Name		27621, Angmering										
TPAWS/BH		BH1	BH2	BH3	BH4	BH5	BH6	BH7	BH8	BH10	BH11	BH12
Depth (m)		0.30-0.40	1.20-1.60	1.50-2.00	0.60-0.90	0.30-0.40	0.00-0.10	0.40-0.60	0.30-0.40	1.10-1.40	0.30-0.40	0.20-0.40
Envirolab reference		15/00505/1	15/00505/2	15/00505/3	15/00505/4	15/00505/5	15/00505/6	15/00505/7	15/00505/8	15/00505/10	15/00505/11	15/00505/12
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		%	%	%	%	%	%	%	%	%	%	%
Asbestos in Soil												
Asbestos detected in Soil (enter Y or N) (If Y: Hazardous Waste H6 and H7)		Y										
Asbestos % Composition in Soil (Matrix Loose Fibres or Microscopic Identifiable Pieces only) (If <0.1%, not Hazardous Waste)		see below										
Asbestos Identifiable Pieces visible with the naked eye detected in the Soil (enter Y or N) (If Y: Hazardous Waste H6 and H7)		Y										
			Y	Y		Y				Y		
				Loose insulation		Loose insulation				Cement		
			Y									
Hazard Codes		Thresholds										
Irritant H4		≥10%										
Irritant H4		≥20%										
Harmful H5		≥25%										
Toxic H6		≥0.1%										
Toxic H6		≥3%										
Carcinogenic H7		≥0.1%										
Carcinogenic H7		≥1%										
Carcinogenic H7 Unknown TPH with ID		≥1,000mg/kg										
Carcinogenic H7 b(p) marker test (Unknown TPH with ID only)		≥0.01%										
Carcinogenic H7 % Asbestos in Soil (Fibres)		≥0.1%										
Corrosive H8 (Irritant H4)		≥5% H4<10%; H8≥10%										
pH Corrosive H8 (Irritant H4) pH (soil or leachate)		H8 ≥11.5										
pH Corrosive H8 (Irritant H4) pH (soil or leachate)		H8 ≤2										
Toxic for Reproduction H10		≥0.5%										
Toxic for Reproduction H10		≥5%										
Mutagenic H11		≥0.1%										
Mutagenic H11 Unknown TPH with ID		≥1,000mg/kg										
Mutagenic H11 b(p) marker test (Unknown TPH with ID only)		≥0.01%										
Mutagenic H11		≥1%										
Produces Toxic Gases H12 Sulphide		≥1,400mg/kg										
Produces Toxic Gases H12 Cyanide		≥1,200mg/kg										
Produces Toxic Gases H12 Thiocyanate		≥2,600mg/kg										
H13 Sensitising		≥1%										
Ecotoxic H14		≥1.0										
Ecotoxic H14 individual substance specific thresholds		≥0.0025%										
Ecotoxic H14 individual substance specific thresholds		≥0.025%										

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.0040	0.0074	0.0040	0.0099	0.0051	0.0027	0.0024	0.0031	0.0046	0.0022	0.0020	0.0020	0.0020
0.0108	0.0403	#VALUE!	#VALUE!	#VALUE!	0.0079	0.0054	0.0059	#VALUE!	0.0053	0.0045	0.0045	0.0045
0.00107	0.00530	0.00134	0.00240	0.00187	0.00160	0.00107	0.00107	0.00107	0.00081	0.00055	0.00055	0.00055
0.00317	0.00661	#VALUE!	0.00701	#VALUE!	0.00277	0.00257	0.00317	#VALUE!	0.00216	0.00176	0.00176	0.00176
0.00728	0.00927	0.00463	0.00828	0.00695	0.00629	0.00629	0.00761	0.00444	0.00463	0.00430	0.00430	0.00430
0.00002	0.00010	0.00008	0.00008	0.00004	0.00001	0.00000	0.00000	0.00001	0.00003	0.00007	0.00007	0.00007
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0.00000	0.00000	#VALUE!	0.00000	#VALUE!	0.00000	0.00000	0.00000	#VALUE!	0.00000	0.00000	0.00000	0.00000
0.00108	0.00528	0.00132	0.00238	0.00185	0.00158	0.00106	0.00106	0.00106	0.00079	0.00053	0.00053	0.00053
8.48	7.87	8.23	8.06	8.68	7.76	7.80	7.43	8.29	8.42	8.71	8.71	8.71
8.48	7.87	8.23	8.06	8.68	7.76	7.80	7.43	8.29	8.42	8.71	8.71	8.71
0.00500	0.02480	0.01100	0.02930	0.01560	0.00360	0.00242	0.00303	0.01490	0.00220	0.00162	0.00162	0.00162
0.00500	0.02480	0.01100	0.02930	0.01560	0.00360	0.00170	0.00150	0.01490	0.00220	0.00160	0.00160	0.00160
0.00098	0.00081	0.00022	0.00294	0.00064	0.00001	0.00001	0.00001	0.00018	0.00018	0.00033	0.00033	0.00033
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0.00303	0.00646	0.00364	0.00687	0.00444	0.00283	0.00242	0.00303	0.00444	0.00202	0.00162	0.00162	0.00162
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.00728	0.00927	0.00463	0.00828	0.00695	0.00629	0.00629	0.00761	0.00444	0.00463	0.00430	0.00430	0.00430
0.10871	2.43757	0.21721	#VALUE!	0.37790	0.09304	0.07241	0.07983	0.48653	0.05838	0.05509	0.05509	0.05509
0.000017	0.000211	0.000119	0.000125	0.000044	0.000012	0.000004	0.000004	0.000014	0.000030	0.000079	0.000079	0.000079
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

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Envirolab, Sandpits Business Park, Mottram Road, Hyde, Cheshire SK14 3AR.

enviroc

Site Code and Name

TP/WS/BH

Depth (m)

Envirolab reference

BH13	BH14	BH15	HA1	HA2	HA3	HA4	HA5	HA6	HA7	HA8
0.10-0.30	0.20-0.60	0.10-0.30	0.30-0.40	0.40-0.50	0.30-0.50	0.40-0.50	0.40-0.60	0.30-0.40	0.60-0.90	0.40-0.50
15/00505/13	15/00505/14	15/00505/15	15/00505/16	15/00505/17	15/00505/18	15/00505/19	15/00505/20	15/00505/21	15/00505/22	15/00505/23
mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg

Asbestos In Soil	Thresholds	%	%	%	%	%	%	%	%	%	%
Asbestos detected in Soil (enter Y or N) (If Y: Hazardous Waste H6 and H7)	Y	Y	Y								
Asbestos % Composition in Soil (Matrix Loose Fibres or Microscopic Identifiable Pieces only) (If <0.1%, not Hazardous Waste)	see below	Loose Insulation	Loose Insulation								
Asbestos Identifiable Pieces visible with the naked eye detected in the Soil (enter Y or N) (If Y: Hazardous Waste H6 and H7)	Y										

Hazard Codes	Thresholds	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Irritant H4	≥10%	0.0022	0.0031	0.0029	#VALUE!	0.0041	0.0035	0.0035	0.0037	0.0041	0.0039
Irritant H4	≥20%	#VALUE!	#VALUE!	0.0134	#VALUE!	0.0076	0.0204	#VALUE!	0.0093	0.0111	0.0066
Harmful H5	≥25%	0.00107	0.00000	0.00160	0.00187	0.00187	0.00187	0.00160	0.00160	0.00187	0.00187
Toxic H6	≥0.1%	#VALUE!	#VALUE!	0.00297	0.00378	0.00418	0.00317	0.00358	0.00378	0.00418	0.00398
Toxic H6	≥3%	0.00463	0.00308	0.00662	0.00861	0.00828	0.00861	0.00828	0.00828	0.00861	0.00861
Carcinogenic H7	≥0.1%	0.00000	0.00000	0.00001	0.00000	0.00000	0.00000	0.00002	0.00000	0.00000	0.00000
Carcinogenic H7	≥1%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carcinogenic H7 Unknown TPH with ID	≥1,000mg/kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carcinogenic H7 b(a)p marker test (Unknown TPH with ID only)	≥0.01%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Carcinogenic H7 % Asbestos in Soil (Fibres)	≥0.1%	#VALUE!	#VALUE!	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Corrosive H8 (Irritant H4)	≥5% H4<10%; H8≥10%	0.00106	0.00000	0.00158	0.00185	0.00185	0.00185	0.00158	0.00158	0.00185	0.00185
pH Corrosive H8 (Irritant H4) pH (soil or leachate)	H8 ≥11.5	8.29	0.00	8.02	7.89	7.69	8.26	7.46	7.84	7.74	6.95
pH Corrosive H8 (Irritant H4) pH (soil or leachate)	H8 ≤2	8.29	0.00	8.02	7.89	7.69	8.26	7.46	7.84	7.74	6.95
Toxic for Reproduction H10	≥0.5%	0.00222	0.00000	0.00710	0.00364	0.00404	0.01470	0.00420	0.00370	0.00470	0.00364
Toxic for Reproduction H10	≥5%	0.00190	0.00308	0.00710	0.00150	0.00170	0.01470	0.00420	0.00370	0.00470	0.00150
Mutagenic H11	≥0.1%	0.00001	0.00308	0.00002	0.00001	0.00001	0.00042	0.00002	0.00001	0.00001	0.00001
Mutagenic H11 Unknown TPH with ID	≥1,000mg/kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mutagenic H11 b(a)p marker test (Unknown TPH with ID only)	≥0.01%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Mutagenic H11	≥1%	0.00222	0.00000	0.00283	0.00364	0.00404	0.00303	0.00343	0.00364	0.00404	0.00364
Produces Toxic Gases H12 Sulphide	≥1,400mg/kg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases H12 Cyanide	≥1,200mg/kg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases H12 Thiocyanate	≥2,600mg/kg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
H13 Sensitising	≥1%	0.00463	0.00000	0.00662	0.00861	0.00828	0.00861	0.00828	0.00828	0.00861	0.00861
Ecotoxic H14	≥1.0	0.10264	0.00123	0.13927	0.09380	0.09575	0.18156	#VALUE!	0.11253	0.12838	0.08897

Ecotoxic H14 individual substance specific thresholds	≥0.0025%	0.000004	0.000000	0.000024	0.000004	0.000004	0.000004	0.000022	0.000004	0.000004	0.000004
Ecotoxic H14 individual substance specific thresholds	≥0.025%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Consider other individual contaminants on a case by case basis.

Table 3.2 of Annex VI of the CLP Regulation including 3rd ATP where applicable (sometimes called ATP3).

Site Code and Name

TP/WS/BH
Depth (m)
Envirolab reference[illegible]

pH (soil)

pH (leachate)

Arsenic
Cadmium
Copper
CrVI or Chromium
Lead
Mercury
Nickel
Selenium
Zinc

Barium
Beryllium
Cobalt
Manganese
Molybdenum

TPH

Petrol	
Diesel	
Lube Oil	

White Spirit / Kerosene
Creosote

Unknown TPH with ID

Unknown TPHCWG

Inseparable TPH Mixtures

Any _____

Any but No Petrol
White Spirit / Kerosene and
Diesel

Total USEPA 16 PAHs

Acenaphthene
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(ghi)perylene
Benzo(k)fluoranthene
Chrysene
Dibenzo(ah)anthracene
Fluoranthene
Fluorene
Indeno(123cd)pyrene
Naphthalene
Phenanthrene
Pyrene

- Benzene
- Toluene
- Ethylbenzene
- Xylenes
- Trimethylbenzenes

Chlorobenzene
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,2,4-Trichlorobenzene
2-Chlorotoluene
4-Chlorotoluene

Trichloroethene (TCE)Total Sulphide

Total Cyanide	
---------------	--

ThiocyanateElemental/Free SulphurPCBs Total (eg EC7/WHO12)Phenols Total by HPLC

- Phenol
- Cresols
- Xylenols
- 1-Naphthol
- Resorcinol

2,3,4,6-Tetrachlorophenol
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,4-Dichlorophenol
4-Chloro-3-methylphenol
Pentachlorophenol

Bis(2-ethylhexyl)phthalate
Butylbenzylphthalate
Di-n-butylphthalate

[illegible]



HASWASTE v5.3. Envirolab's Contaminated Land Soil Hazardous Waste Assessment Tool.

Envirolab, Sandpits Business Park, Mottram Road, Hyde, Cheshire SK14 3AR.



Site Code and Name

TP/WS/BH

Depth (m)

Envirolab reference

HA9	HA10	HA11	HA12	HA13	HA16	HA17	HA18A	BH1	BH4	BH4
0.40-0.50	0.20-0.40	0.30-0.40	0.30-0.40	0.40-0.50	0.40-0.50	0.30-0.40	0.30-0.50	0.50-0.80	0.60-0.80	2.60-3.00
15/00505/24	15/00505/25	15/00505/26	15/00505/27	15/00505/28	15/00505/29	15/00505/30	15/00505/31	15/00505/32	15/00505/33	15/00505/34
mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg

Asbestos In Soil	Thresholds	%	%	%	%	%	%	%	%	%
Asbestos detected in Soil (enter Y or N) (If Y: Hazardous Waste H6 and H7)	Y							Y	Y	Y
Asbestos % Composition in Soil (Matrix Loose Fibres or Microscopic Identifiable Pieces only) (If <0.1%, not Hazardous Waste)	see below									
Asbestos Identifiable Pieces visible with the naked eye detected in the Soil (enter Y or N) (If Y: Hazardous Waste H6 and H7)	Y							Y	Y	Y

Hazard Codes	Thresholds	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Irritant H4	≥10%	0.0031	0.0029	0.0035	0.0028	0.0031	0.0035	0.0028	0.0000	0.0000	0.0000
Irritant H4	≥20%	0.0074	0.0070	0.0062	0.0072	0.0057	0.0061	0.0073	0.0000	0.0000	0.0000
Harmful H5	≥25%	0.00187	0.00134	0.00134	0.00160	0.00134	0.00134	0.00134	0.00000	0.00000	0.00000
Toxic H6	≥0.1%	0.00317	0.00297	0.00358	0.00297	0.00317	0.00358	0.00297	0.00000	0.00000	0.00000
Toxic H6	≥3%	0.00761	0.00662	0.00794	0.00662	0.00695	0.00861	0.00728	0.00001	0.00000	0.00000
Carcinogenic H7	≥0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00002	0.00000	0.00000	0.00000
Carcinogenic H7	≥1%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carcinogenic H7 Unknown TPH with ID	≥1,000mg/kg	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Carcinogenic H7 b(a)p marker test (Unknown TPH with ID only)	≥0.01%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Carcinogenic H7 % Asbestos in Soil (Fibres)	≥0.1%	0.00185	0.00132	0.00132	0.00158	0.00132	0.00132	0.00132	0.00000	0.00000	0.00000
Corrosive H8 (Irritant H4)	≥5% H4 <10%: H8 ≥10%	7.53	7.38	5.82	7.08	6.89	6.54	7.22	0.00	0.00	0.00
pH Corrosive H8 (Irritant H4) pH (soil or leachate)	H8 ≥11.5	7.53	7.38	5.82	7.08	6.89	6.54	7.22	0.00	0.00	0.00
pH Corrosive H8 (Irritant H4) pH (soil or leachate)	H8 ≤2	0.00303	0.00283	0.00343	0.00283	0.00303	0.00343	0.00283	0.00000	0.00000	0.00000
Toxic for Reproduction H10	≥0.5%	0.00240	0.00240	0.00130	0.00260	0.00150	0.00130	0.00270	0.00001	0.00000	0.00000
Toxic for Reproduction H10	≥5%	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00001	0.00000	0.00000
Mutagenic H11	≥0.1%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mutagenic H11 Unknown TPH with ID	≥1,000mg/kg	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Mutagenic H11 b(a)p marker test (Unknown TPH with ID only)	≥0.01%	0.00303	0.00283	0.00343	0.00283	0.00303	0.00343	0.00283	0.00000	0.00000	0.00000
Mutagenic H11	≥1%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases H12 Sulphide	≥1,400mg/kg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases H12 Cyanide	≥1,200mg/kg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases H12 Thiocyanate	≥2,600mg/kg	0.00761	0.00662	0.00794	0.00662	0.00695	0.00861	0.00728	0.00000	0.00000	0.00000
H13 Sensitising	≥1%	0.11381	0.10202	0.08548	0.11237	0.08228	0.08818	0.08316	0.00000	0.00000	0.00000
Ecotoxic H14	≥1.0										

Ecotoxic H14 individual substance specific thresholds	≥0.0025%	0.000004	0.000004	0.000004	0.000004	0.000004	0.000004	0.000012	0.000000	0.000000	0.000000
Ecotoxic H14 individual substance specific thresholds	≥0.025%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000



Site Code and Name		
TP/WS/BH	BH12	BH15
Depth (m)	0.20	0.50
EnviroLab reference	15/00505/35	15/00711/1
	mg/kg	mg/kg
% Moisture		
pH (soil)		
pH (leachate)		
Arsenic		
Cadmium		
Copper		
CrVI or Chromium		
Lead		
Mercury		
Nickel		
Selenium		
Zinc		
Barium		
Beryllium		
Cobalt		
Manganese		
Molybdenum		
TPH		
Petrol		
Diesel		
Lube Oil		
White Spirit / Kerosene		
Creosote		
Unknown TPH with ID		
Unknown TPHCWG		
Inseparable TPH Mixtures		
Any		
Any but No Petrol		
White Spirit / Kerosene and Diesel		
Total USEPA 16 PAHs		
Acenaphthene		
Acenaphthylene		
Anthracene		
Benzo(a)anthracene		
Benzo(a)pyrene		
Benzo(b)fluoranthene		
Benzo(ghi)perylene		
Benzo(k)fluoranthene		
Chrysene		
Dibenzo(ah)anthracene		
Fluoranthene		
Fluorene		
Indeno(123cd)pyrene		
Naphthalene		
Phenanthrene		
Pyrene		
Benzene		
Toluene		
Ethylbenzene		
Xylenes		
Trimethylbenzenes		
Chlorobenzene		
1,2-Dichlorobenzene		
1,3-Dichlorobenzene		
1,4-Dichlorobenzene		
1,2,4-Trichlorobenzene		
2-Chlorotoluene		
4-Chlorotoluene		
Trichloroethene (TCE)		
Total Sulphide		
Total Cyanide		
Free Cyanide		
Thiocyanate		
Elemental/Free Sulphur		
PCBs Total (eg EC7/WHO12)		
Phenols Total by HPLC		
Phenol		
Cresols		
Xylenols		
1-Naphthol		
Resorcinol		
2,3,4,6-Tetrachlorophenol		
2,4,5-Trichlorophenol		
2,4,6-Trichlorophenol		
2,4-Dichlorophenol		
4-Chloro-3-methylphenol		
Pentachlorophenol		
Bis(2-ethylhexyl)phthalate		
Butylbenzylphthalate		
Di-n-butylphthalate		



Site Code and Name

TP/WS/BH
Depth (m)
Envirolab reference

BH12 BH15
0.20 0.50
15/00505/35 15/00711/1
mg/kg mg/kg

Asbestos in Soil	Thresholds	%	%
Asbestos detected in Soil (enter Y or N) (If Y: Hazardous Waste H6 and H7)	Y	Y	Y
Asbestos % Composition in Soil (Matrix Loose Fibres or Microscopic Identifiable Pieces only) (If <0.1%, not Hazardous Waste)	see below		
Asbestos Identifiable Pieces visible with the naked eye detected in the Soil (enter Y or N) (If Y: Hazardous Waste H6 and H7)	Y	Y	Y

Hazard Codes	Thresholds		
Irritant H4	≥10%	0.00000	0.00000
Irritant H4	≥20%	0.0000	0.0000
Harmful H5	≥25%	0.0000	0.0000
Toxic H6	≥0.1%	0.00000	0.00000
Toxic H6	≥3%	0.00000	0.00000
Carcinogenic H7	≥0.1%	0.00000	0.00000
Carcinogenic H7	≥1%	0.00000	0.00000
Carcinogenic H7 Unknown TPH with ID	≥1,000mg/kg	0.00	0.00
Carcinogenic H7 b(a)p marker test (Unknown TPH with ID only)	≥0.01%	#DIV/0!	#DIV/0!
Carcinogenic H7 % Asbestos in Soil (Fibres)	≥0.1%	0.00000	0.00000
Corrosive H8 (Irritant H4)	≥5% H4 <10%; H8 ≥10%	0.00000	0.00000
pH Corrosive H8 (Irritant H4) pH (soil or leachate)	H8 ≥11.5	0.00	0.00
pH Corrosive H8 (Irritant H4) pH (soil or leachate)	H8 ≤2	0.00	0.00
Toxic for Reproduction H10	≥0.5%	0.00000	0.00000
Toxic for Reproduction H10	≥5%	0.00000	0.00000
Mutagenic H11	≥0.1%	0.00000	0.00000
Mutagenic H11 Unknown TPH with ID	≥1,000mg/kg	0.00	0.00
Mutagenic H11 b(a)p marker test (Unknown TPH with ID only)	≥0.01%	#DIV/0!	#DIV/0!
Mutagenic H11	≥1%	0.00000	0.00000
Produces Toxic Gases H12 Sulphide	≥1,400mg/kg	0.0	0.0
Produces Toxic Gases H12 Cyanide	≥1,200mg/kg	0.0	0.0
Produces Toxic Gases H12 Thiocyanate	≥2,600mg/kg	0.0	0.0
H13 Sensitising	≥1%	0.00000	0.00000
Ecotoxic H14	≥1.0	0.00000	0.00000

Ecotoxic H14 individual substance specific thresholds	≥0.0025%	0.000000	0.000000
Ecotoxic H14 individual substance specific thresholds	≥0.025%	0.000000	0.000000