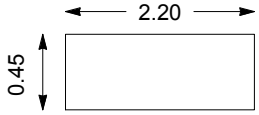
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP6**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**28.08.21**	**17.72**	**E:543416.0 N:260636.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20	1	ES				MADE GROUND: Harvested crop remains over dark brown sandy silty CLAY with traces of subangular to subrounded fine to coarse flint. Occasional subangular fine to medium brick clasts.	(0.35)	
							0.35	
0.50	2	ES				Firm to stiff orangey-brown slightly gravelly silty sandy CLAY. Sand is predominantly fine to medium. Gravel is subangular to subrounded fine to coarse flint and chert. (GAULT FORMATION)		
0.50	3	D						
0.50		V	c_u=49				(0.65)	
							1.00	
1.00	4	D				Firm to stiff grey slightly sandy silty CLAY. Sand is predominantly fine to medium. Occasional subangular fine to medium clasts of claystone. Rare decomposing rootlets noted to 2.0m depth (<1mm diameter). (GAULT FORMATION)		
1.00		V	c_u=59					
2.00		V	c_u=64			...@ 2.0m Becoming stiff	(2.20)	
2.50		V	c_u=83					
3.00		V	c_u=81					
							3.20	

Plan (Not to Scale)



General Remarks

1. Trial pit dry and stable
2. CBR at 0.2m: 2%
3. CBR at 0.5m: 4%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP6 (i)**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**29.08.12**	**12.89**	**E:544120.0 N:260938.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20	1	ES				MADE GROUND: Dark brown silty sandy slightly gravelly CLAY. Sand is fine to coarse (predominantly fine to medium). Gravel is subangular fine to medium flint. Rare subangular fragments of fine to medium brick and ceramics. Fine roots and rootlets throughout. (MADE GROUND)	(0.35)	
							0.35	
0.40		V	c_u=46			Firm orangey-brown gravelly sandy CLAY. Sand is fine to coarse (predominantly fine to medium). Gravel is subangular to subrounded fine to coarse flint. Occasional subangular cobbles of flint. (RIVER TERRACE DEPOSITS)		
0.50	2	ES						
0.50	3	D				...@ 0.5 to 0.7m Horizon of gravelly very sandy CLAY / gravelly very clayey SAND	(0.75)	
1.00		V	c_u=68			...@ 1.0m Reduction in sand and gravel content	1.10	

Plan (Not to Scale)

General Remarks

1. Trial pit remained dry and stable
2. Trial pit backfilled with 20mm shingle to 0.10m bgl for stability prior to subsequent infiltration testing

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

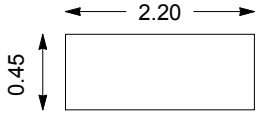
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP7**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**30.08.12**	**19.05**	**E:543650.0 N:260409.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20-0.30	1	ES				TOPSOIL: Harvested crop remains over dark brown slightly gravelly sandy CLAY. Sand is fine to coarse (predominantly fine to medium). Gravel is subangular to subrounded fine to coarse flint. Humic-rich soils noted to 0.2m bgl. Roots and rootlets throughout. (TOPSOIL)	(0.50)	
0.50		V	c_u=69				0.50	
0.70	2	ES				Firm orangey-brown sandy CLAY with traces of fine to medium subangular to subrounded flint and chert. Occasional fine roots throughout. (RIVER TERRACE DEPOSITS)	(0.50)	
0.70	3	D					1.00	
1.00		V	c_u=99			Firm to stiff sandy very gravelly CLAY. Sand is fine to coarse (predominantly medium to coarse). Gravel is subangular to subrounded medium to coarse flint. Occasional subrounded cobbles of flint. Rare inclusions of chalk, predominantly as fine to medium gravel-sized putty chalk. (RIVER TERRACE DEPOSITS)	(0.30)	
1.20	4	D					1.30	
						Orangey-brown sandy clayey GRAVEL. Sand is predominantly medium to coarse. Gravel is subangular to subrounded fine to coarse (predominantly medium to coarse) flint and chert. Occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS)	(0.70)	
							2.00	
2.00	5	D				... @ 1.80m to 2.0m Horizon of Off-white/grey calcareous nodules, encountered as predominantly medium to coarse medium density calcareous nodular gravels with clay/silt matrix. Occasional black speckling and orange silty inclusions.		
						Stiff pale grey silty CLAY with occasional orange inclusions of fine sand and silt along fissures. Occasional calcareous inclusions, encountered as linear 1mm in thickness. (GAULT FORMATION)	(1.10)	
3.00	6	D						
3.00		V	c_u=>130				3.10	

Plan (Not to Scale)



General Remarks

1. Trial pit dry and stable
2. CBR at 0.5m: 9%
3. CBR at 0.9m: 9%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

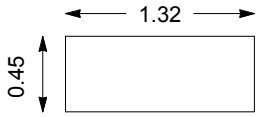
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP7 (i)**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**29.08.12**	**12.54**	**E:543955.0 N:261102.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20	1	ES				TOPSOIL: Harvested crop remains over dark brown slightly sandy silty TOPSOIL. Sand is predominantly fine to medium. Traces of subangular to subrounded fine to medium flint gravel. Occasional woody fragments. Decomposing organic matter and roots throughout. (TOPSOIL)	(0.35)	
0.30	2	D					0.35	
0.50		V	c_u=58			Firm brown, becoming orangey-brown by 0.55m, slightly gravelly sandy CLAY. Sand is fine to coarse (predominantly medium to coarse). Gravel is predominantly subangular fine flint. (GAULT FORMATION)	(0.75)	
1.20		V	c_u=75			Firm pale grey, mottled orangey-brown sandy CLAY. Sand is fine to coarse (GAULT FORMATION). (GAULT FORMATION)	1.10 1.30	

Plan (Not to Scale)



General Remarks

1. Trial pit remained dry and stable
2. Trial pit backfilled with 20mm shingle to 0.25m bgl for stability prior to subsequent infiltration testing

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

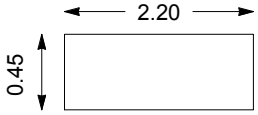
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP8**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**30.08.12**	**19.05**	**E:543650.0 N:260490.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.20	1	ES				TOPSOIL: Harvested crop remains over dark brown slightly gravelly sandy CLAY. Sand is fine to coarse (predominantly fine to medium). Gravel is subangular to subrounded fine to coarse flint. Humic-rich soils noted to 0.2m bgl. Roots and rootlets throughout. (TOPSOIL)	(0.30)	
0.30-0.40	2	D					0.30	
0.50	3	ES				Orangey-brown gravelly very clayey SAND. Gravel is subangular to subrounded fine to coarse flint. Occasional subrounded cobbles of flint. Roots and rootlets throughout. Occasional decomposing organic matter. (RIVER TERRACE DEPOSITS)	0.50	
0.50		V	c_u=55					
0.70	4	D					(0.50)	
						Firm orangey-brown sandy gravelly CLAY. Sand is fine to coarse (predominantly medium to coarse). Gravel is subangular to subrounded fine to coarse flint. Occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS)	1.00	
1.20	5	D				Light brown/orange/yellow very gravelly SAND. Gravel is subangular to subrounded fine to coarse flint. Sand is fine to coarse (predominantly medium to coarse). (RIVER TERRACE DEPOSITS)		
						...@ 1.2m Becoming a very sandy GRAVEL	(1.30)	
2.00	6	D				...@ 1.9m Becoming a gravelly SAND		
							2.30	
2.50	7	D				Firm to stiff orangey-brown/grey very sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse (predominantly fine to medium) flint and subangular fine to medium weak to medium density calcareous nodules. (GAULT FORMATION)		
2.50		V	c_u=72				(0.70)	
							3.00	

Plan (Not to Scale)



General Remarks

1. Trial pit dry and stable
2. CBR at 0.3m: 4%
3. CBR at 0.8m: 6%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP8 (i)**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**29.08.12**	**12.22**	**E:544175.0 N:261116.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10	1	ES				TOPSOIL: Harvested crop remains over dark brown slightly sandy silty TOPSOIL. Sand is predominantly fine to medium. Traces of subangular to subrounded fine to medium flint gravel. Occasional woody fragments. Decomposing organic matter and roots throughout. (TOPSOIL)	0.25	
0.50		V	c_u=57			Firm orangey-brown slightly gravelly sandy CLAY. Sand is fine to coarse (predominantly fine to medium). Gravel is predominantly subangular fine flint. (RIVER TERRACE DEPOSITS)	(0.70)	
0.60	2	ES				...@ 0.65m Increase in sand and gravel constituents	0.95	
1.00	3	D				Orangey-brown slightly clayey very sandy GRAVEL. Sand is fine to coarse (predominantly medium to coarse). Gravel is subangular to subrounded fine to coarse (predominantly fine to medium) flint and chert. (RIVER TERRACE DEPOSITS)	(0.45)	
							1.40	

Plan (Not to Scale)

General Remarks

1. Trial pit remained stable
2. Slow water seepage at base on completion.
3. Trial pit backfilled with 20mm shingle to 0.45m bgl for stability prior to subsequent infiltration testing

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	BLC

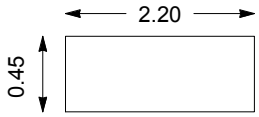
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP9**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**31.08.12**	**18.17**	**E:543730.0 N:260478.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.20	1	ES				TOPSOIL: Harvested crop remains over dark brown sandy slightly gravelly clayey TOPSOIL. Sand is predominantly fine to medium. Gravel is subangular to subrounded fine to medium flint. Roots, rootlets and decomposing organic matter throughout. Rare subangular fine chalk clasts. (TOPSOIL)	0.25	
0.55 0.60	2	V ES	c_u=66			Firm orangey-brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to coarse flint. Roots noted throughout. (RIVER TERRACE DEPOSITS)	(0.55) 0.80	
1.00	4	D				Light brown/orangey-brown gravelly SAND. Gravel is subangular to subrounded fine to coarse flint. Sand is fine to coarse (predominantly medium to coarse). (RIVER TERRACE DEPOSITS)		
1.50	3	ES					(1.80)	
2.00	5	D				...@ 2.0m Increase in gravel content, becoming a SAND and GRAVEL	2.60	
3.00	6	D				Brown/grey/orangey-brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse (predominantly fine to medium). Occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS)	(0.40) 3.00	

Plan (Not to Scale)



General Remarks

1. Trial pit becoming unstable below 2.0m depth
2. Slow water seepage noted at 2.0m depth
3. Water level at 2.7m depth on completion
4. Terminal depth at 3.0 due to instability of excavation

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP9 (i)**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**29.08.12**	**12.28**	**E:544181.0 N:261357.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20	1	ES				TOPSOIL: Harvested crop remains over dark brown sandy silty clayey TOPSOIL with traces of subangular to subrounded fine to medium flint. Humic-rich horizon to 0.1m bgl. Rootlets and inclusions of decomposing organic matter throughout. (TOPSOIL)	(0.37) 0.37	
0.50	3	D				Firm orangey-brown, occasionally mottled with pale grey, sandy gravelly CLAY. Sand is fine to coarse (predominantly fine to medium). Gravel is predominantly subangular fine to medium flint. (RIVER TERRACE DEPOSITS)	(0.33) 0.70	
0.50		V	c_u=65					
0.70	2	ES				Orangey-brown slightly clayey gravelly SAND. Gravel is subangular to subrounded fine to coarse (predominantly fine to medium) flint. Sand is predominantly medium. (RIVER TERRACE DEPOSITS)	(0.45) 1.15	
0.90	4	D						

Plan (Not to Scale)

General Remarks

1. Trial pit remained dry and stable
2. Trial pit backfilled with 20mm shingle to 0.1m bgl for stability prior to subsequent infiltration testing
3. CBR @ 0.2m: 6%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	BLC

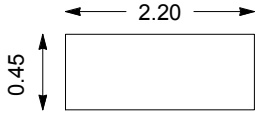
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP10**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**30.08.12**	**18.76**	**E:543519.0 N:260729.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						TOPSOIL: Low-rise shrub vegetation and harvested crop remains over dark brown slightly gravelly sandy clayey TOPSOIL. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium flint. Humic-rich soil noted to 0.1m depth. Roots/rootlets and decomposing organic matter throughout. (TOPSOIL)	0.25 (0.35)	
0.20	1	ES						
0.50	2	ES				Firm orangey-brown slightly gravelly very sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded medium to coarse flint. (RIVER TERRACE DEPOSITS)	0.60	
0.50		V	c_u=51					
						Orange/brown/yellow slightly clayey sandy GRAVEL. Sand is fine to coarse (predominantly medium to coarse). Gravel is subangular to subrounded fine to coarse flint and chert. Occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS)		
1.00	3	D				...@ 1.0m Becoming a very gravelly SAND		
						...@ 1.5m Becoming a SAND and GRAVEL	(1.90)	
2.00	4	D						
2.50	5	D					2.50	

Plan (Not to Scale)



General Remarks

1. Trial pit unstable below 1.8m depth
2. Slow water seepage noted at 1.6m depth, faster seepage at 2.0m depth
3. Water level at 2.2m on completion
4. Terminal depth at 2.5m due to instability of excavation
5. CBR at 0.5m: 10%
6. CBR at 0.8m: 10%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

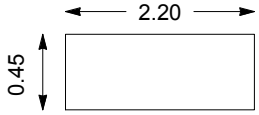
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP11**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**30.08.12**	**18.82**	**E:543585.0 N:260674.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.20	1	ES				MADE GROUND: Low-rise shrub vegetation and harvested crop remains over dark brown silty very sandy CLAY with traces of subangular to subrounded fine to coarse flint, brick and charcoal. Occasional fine to medium fragments of clay tiling (MADE GROUND)	(0.30) 0.30	
0.50-0.60	2	ES				Firm orangey-brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse (predominantly medium to coarse) flint. Occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS)	(0.90) 1.20	
0.75	3	D						
1.00		V	c_u=63					
1.50	4	D				Orangey-brown/light brown clayey gravelly SAND. Gravel is subangular to subrounded fine to coarse flint and chert. (RIVER TERRACE DEPOSITS)	(0.80) 2.00	
2.20	5	D				Yellow/orangey-brown/light brown very gravelly SAND/very sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse (predominantly fine to medium) flint. Occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS) ...@ 2.5m Becoming a sandy GRAVEL. Occasional subrounded cobbles of flint. ...@ 2.6m Slight increase in clay content	(1.00) 3.00	
3.00	6	D				...@ 2.9m Increase in fine to coarse flint gravels		

Plan (Not to Scale)



General Remarks

1. Trial pit unstable below 2.0m depth
2. Water seepage noted from base
3. Terminal depth at 3.0m due to instability of excavation
4. CBR at 0.5m: 6%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

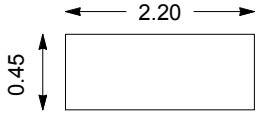
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP12**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**31.08.12**	**18.29**	**E:543723.0 N:260560.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20-0.30	1	ES				TOPSOIL: Harvested crop remains over dark brown silty sandy clayey TOPSOIL with traces of subangular fine to medium flint. Roots/rootlets and decomposing organic matter throughout. (TOPSOIL)	(0.40) 0.40	
0.50		V	c_u=51			Firm light brown/orangey-brown sandy gravelly CLAY. Sand is fine to coarse (predominantly fine to medium). Gravel is subangular to subrounded fine to coarse flint. Occasional subrounded cobbles of flint. Decomposing rootlets noted to 0.7m depth. (RIVER TERRACE DEPOSITS)	(0.90) 1.30	
0.60-0.70	2	ES						
1.00	3	D						
1.00		V	c_u=67					
1.50	4	ES				Firm pale grey slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular fine to medium flint and low density chalk clasts. Occasional black carbonaceous speckling and orange fine sand/silty lenses (possibly reworked chalk). (RIVER TERRACE DEPOSITS)	(0.50) 1.80	
1.50	5	D						
1.50		V	c_u=123					
						Orangey-brown gravelly clayey SAND. Gravel is predominantly fine to medium flint. Sand is predominantly medium to coarse. (RIVER TERRACE DEPOSITS)	(0.40) 2.20	
						Orangey-brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded flint. Occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS)	(0.45) 2.65	
3.00	6	ES				Light brown/orangey-brown slightly clayey SAND and GRAVEL. Sand is predominantly medium to coarse. Gravel is subangular to subrounded predominantly medium to coarse flint. (RIVER TERRACE DEPOSITS)	(0.55) 3.20	

Plan (Not to Scale)



General Remarks

1. Trial pit unstable below 2.6m depth
2. Moderate water seepage noted at 2.5m depth
3. Water level at 3.0m on completion
4. CBR at 0.4m: 6%
5. CBR at 0.8m: 5%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

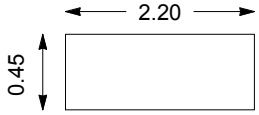
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP13**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**30.08.12**	**18.44**	**E:543663.0 N:260659.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20-0.30	1	ES				TOPSOIL: Low-rise shrub vegetation and harvested crop remains over dark brown slightly gravelly sandy clayey TOPSOIL. Sand is predominantly fine to medium. Gravel is predominantly subangular fine to medium flint. Humic-rich soil noted to 0.2m depth. Roots/rootlets and decomposing organic matter throughout.	(0.45) 0.45	
0.50		V	c_u=49			Firm orangey-brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse (predominantly medium to coarse) flint. Occasional subrounded cobbles of flint.	0.65	
0.70-0.80	2	ES				Orangey-brown slightly clayey very sandy GRAVEL. Sand is predominantly medium to coarse. Gravel is subangular to subrounded fine to coarse (predominantly fine to medium flint). (RIVER TERRACE DEPOSITS) ...@ 1.2m Reduction in sand content. Increase in medium to coarse gravel constituents ...@ 1.6m Increase in clay content	(1.70) 2.35	
2.50 2.50	3	D V	c_u=>130			Firm pale grey slightly sandy slightly gravelly CLAY. Sand is predominantly fine to medium. Gravel is subangular to subrounded fine to medium low density calcareous nodules. (GAULT FORMATION)	(0.65) 3.00	

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable
2. Slow water seepage noted at 2.6m depth
3. CBR at 0.45m: 13%
4. CBR at 0.9m: 10%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

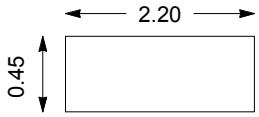
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP14**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**30.08.12**	**17.93**	**E:543655.0 N:260732.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.20 0.10-0.30	1 2	ES D				TOPSOIL: Low-rise shrub vegetation and harvested crop remains over dark brown slightly gravelly sandy clayey TOPSOIL. Sand is predominantly fine to medium. Gravel is predominantly subangular fine to medium flint. Humic-rich soil noted to 0.2m depth. Roots/rootlets and decomposing organic matter throughout. (TOPSOIL)	(0.55) 0.55	
0.60	3	ES				Firm orangey-brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse (predominantly medium to coarse) flint. (RIVER TERRACE DEPOSITS)	(0.45) 1.00	
1.00	4	D				Orangey-brown SAND and GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint. (RIVER TERRACE DEPOSITS) ...@ 1.8m Increase in medium to coarse gravel constituents	(1.80) 2.80	

Plan (Not to Scale)



General Remarks

1. Trial pit unstable below 2.6m depth
2. Fast water seepage noted at 2.6m depth.
3. Water level at 2.45m on completion
4. Terminal depth at 2.8m due to instability of excavation

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

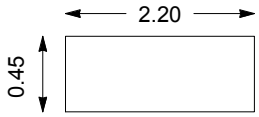
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP15**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**31.08.12**	**17.21**	**E:543755.0 N:260662.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10	1	ES				TOPSOIL: Harvested crop remains over dark brown silty sandy clayey TOPSOIL with traces of subangular fine to medium flint. Roots/rootlets and decomposing organic matter throughout. (TOPSOIL)	(0.30)	
							0.30	
0.50-0.60 0.50	2	ES V	c_u=52			Firm light brown/orangey-brown sandy gravelly CLAY. Sand is fine to coarse (predominantly fine to medium). Gravel is subangular to subrounded fine to coarse flint. Occasional subrounded cobbles of flint.	(0.50)	
						...@ 0.5m Increase in fine to medium sand content	0.80	
1.00 1.00	3	D V	c_u=96			Firm to stiff pale grey slightly gravelly CLAY. Sand is predominantly coarse. Gravel is predominantly subangular fine to medium flint and rare calcareous nodules. (GAULT FORMATION)	(1.30)	
2.00 2.00	4	D V	c_u=>130				2.10	
2.20	5	ES				Firm to stiff fissured slightly sandy silty CLAY. Sand is fine. Occasional fine subangular claystone clasts. Occasional calcareous inclusions. (GAULT FORMATION)	(1.10)	
3.00 3.00	6	D V	c_u=>130				3.20	

Plan (Not to Scale)



General Remarks

1. Trial pit remained dry and stable throughout
2. CBR at 0.3m: 4%
3. CBR at 0.5m: 5%
4. CBR at 0..9m: 13%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

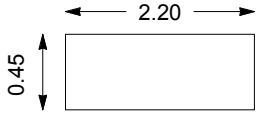
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP16**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**31.08.12**	**17.10**	**E:543801.0 N:260622.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.15-0.25	1	ES				TOPSOIL: Harvested crop remains over dark brown silty sandy clayey TOPSOIL with traces of subangular fine to medium flint. Roots/rootlets and decomposing organic matter throughout. (TOPSOIL)	(0.30) 0.30	
0.50 0.50	2	D V	c_u=57			Firm light brown/orangey-brown sandy gravelly CLAY. Sand is predominantly fine to medium. Gravel is subangular to subrounded fine to medium flint. Occasional coarse gravel and cobbles-sized subrounded flint. (RIVER TERRACE DEPOSITS)	(1.05) 1.35	
1.00 1.00	3	D V	c_u=67			Orangey-brown/grey gravelly SAND. Gravel is predominantly subangular to subrounded fine to medium flint. Sand is medium to coarse. (RIVER TERRACE DEPOSITS)	(0.35) 1.70	
2.00	4	D				Orangey-brown very sandy GRAVEL. Sand is predominantly fine to medium. Gravel is predominantly subangular to subrounded fine to medium flint. Occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS) ...@ 2.1m Increase in sand content to a very gravelly SAND	(0.70) 2.40	

Plan (Not to Scale)



General Remarks

1. Trial pit unstable below 1.6m depth
2. Fast water seepage noted at 1.6m depth
3. Water level at 1.8m on completion
4. Terminal depth at 2.4m due to instability of excavation
5. CBR at 0.5m: 5%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

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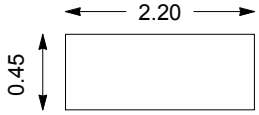
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP17**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**31.08.12**	**17.35**	**E:543856.0 N:260594.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.20	1	ES				TOPSOIL: Low-rise shrub vegetation and harvested crop remains over dark brown sandy gravelly CLAY. Sand is fine to coarse (predominantly fine to medium). Gravel is subangular to subrounded fine to medium flint. Frequent roots/rootlets and decomposing organic matter throughout. (TOPSOIL)	(0.30) 0.30	
0.50		V	c_u=56			Firm light brown/orangey-brown very sandy slightly gravelly CLAY. Sand is predominantly fine to medium. Gravel is subangular to subrounded fine to medium flint. Occasional coarse gravel and cobbles-sized subrounded flint. (RIVER TERRACE DEPOSITS)		
0.60	2	ES					(0.90)	
1.00		V	c_u=69			...@ 0.5m Increase in sand content	1.20	
1.50	3	D				Orangey-brown sandy GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint. Occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS)	(1.10)	
							2.30	
2.50	4	D				Firm to stiff grey slightly sandy slightly silty CLAY. Sand is fine. (GAULT FORMATION)	(0.50)	
2.80		V	c_u=>130				2.80	

Plan (Not to Scale)



General Remarks

1. Trial pit unstable below 1.6m depth
2. Water seepage noted at 1.6m depth
3. Water level at 2.65m on completion
4. Terminal depth at 2.8m due to instability of excavation
5. CBR at 0.4m: 3%
6. CBR at 0.7m: 5%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

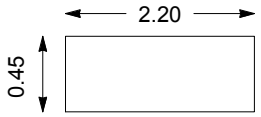
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP18**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**31.08.12**	**17.17**	**E:543920.0 N:260525.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.20 0.15	1 2	D ES				MADE GROUND: Dark brown silty gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse (predominantly fine to medium) flint. Rare fragments of fine subangular brick. Occasional woody fragments. Roots/rootlets and decomposing organic matter throughout. (MADE GROUND)	(0.35) 0.35	
0.50 0.50	3	ES V	c_u=71			Firm orangey-brown slightly sandy gravelly CLAY. Sand is predominantly fine to medium. Gravel is subangular to subrounded fine to coarse flint. (RIVER TERRACE DEPOSITS)	(0.45) 0.80	
						Firm pale grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint and chalk. Occasional calcareous inclusions and occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS)	(0.80)	
1.50 1.50	4	D V	c_u=>130				1.60	
						Orangey-brown clayey sandy GRAVEL. Sand is fine to coarse (predominantly medium to coarse). Gravel is subangular medium to coarse flint. (RIVER TERRACE DEPOSITS)	(0.30) 1.90	
						...@ 1.6m Orangey-brown clayey sandy GRAVEL. Sand is fine to coarse (predominantly medium to coarse). Gravel is subangular medium to coarse flint.	(0.40) 2.30	
						Firm pale grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint and chalk. Occasional calcareous inclusions and occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS)		
2.50 2.50	5	D V	c_u=>130			Firm to stiff pale grey slightly silty slightly sandy CLAY. Sand is fine. Occasional linear calcareous inclusions. (GAULT FORMATION)	(0.70) 3.00	

Plan (Not to Scale)



General Remarks

1. Trial pit remained dry and stable throughout
2. CBR at 0.5m: 4%
3. CBR at 0.8m: 7%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

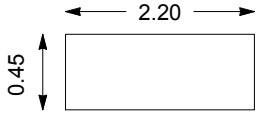
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP19**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**31.08.12**	**17.42**	**E:543697.0 N:260767.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.20	1	ES				MADE GROUND: Harvested crop remains over dark bronw sandy gravelly CLAY. Sand is fine to coarse (predominantly fine to medium). Gravel is predominantly subangular fine to medium flint. Rare subangular fine clasts of brick. Humic-rich soils noted to 0.15m bgl. Roots/rootlets and decomposing organic matter throughout. (TOPSOIL)	(0.45) 0.45	
0.50 0.50 0.60	2 3	D V ES	c_u=57			Firm orangey-brown slightly silty sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse (predominantly fine to medium) flint. (RIVER TERRACE DEPOSITS) ...@ 0.7m Becoming a very clayey SAND and GRAVEL	(0.65) 1.10	
1.00 1.00	4 	D V	c_u=106			Firm to stiff pale grey/brown slightly gravelly sandy CLAY. Sand is predominantly fine to medium. Gravel is subangular to subrounded fine to coarse flint and occasional fine to medium chalk. Occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS) ...@ 1.4m Slight increase in sand and gravel constituents	(0.65) 1.75	
1.50 1.50	5 	D V	c_u=>130					
2.00		V	c_u=>130			Firm to stiff pale greyish blue silty slightly sandy CLAY. Sand is fine. Traces of subangular fine to medium claystone. (GAULT FORMATION) ...@ 2.5m Onset of grey/brown mottling	(1.25) 3.00	
3.00 3.00	6 	D V	c_u=>130					

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throghout
2. Slow water seepage noted at 1.5m depth

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

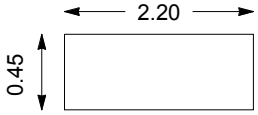
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP20**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**31.08.12**	**16.22**	**E:543707.0 N:260872.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20	1	ES				TOPSOIL: Harvested crop remains over dark brown very sandy very clayey TOPSOIL with traces of subangular fine to coarse flint. Roots/rootlets and decomposing organic matter throughout.	(0.35) 0.35	
0.40		V	c_u=66			Firm orangey-brown slightly gravelly silty sandy CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to coarse flint. Occasional subrounded cobbles of flint. Occasional fine rootlets. (RIVER TERRACE DEPOSITS)		
0.50	2	D						
0.70	3	ES				...@ 0.6m Increase in fine sand and silt content		
1.00		V	c_u=79			...@ 1.0m Becoming pale grey with occasional inclusions of chalk	(1.80)	
2.00	4	ES						
2.00	5	D				...@ 2.0m Becoming a very sandy very gravelly CLAY	2.15	
2.00		V	c_u=>130			Grey/brown clayey SAND & GRAVEL. Sand is fine to coarse (predominantly medium to coarse). Gravel is subangular to subrounded fine to coarse flint. Occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS)	(0.35) 2.50	
3.00	6	ES				Firm pale greyish blue silty slightly sandy CLAY. Sand is fine. Traces of subangular fine to medium claystone. (GAULT FORMATION)	(0.50) 3.00	
3.00	7	D						
3.00		V	c_u=>130					

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout
2. Slow water seepage noted at 1.9m depth
3. CBR at 0.35m: 3%
4. CBR at 0.7m: 5%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

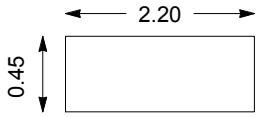
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP21**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**31.08.12**	**15.88**	**E:543763.0 N:260814.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20-0.30	1	ES				TOPSOIL: Low-rise shrub vegetation and harvested crop remains over dark brown silty sandy clayey TOPSOIL with traces of subangular to subrounded fine to medium flint. Roots/rootlets and decomposing organic matter throughout. (TOPSOIL)	(0.35) 0.35	
0.50-0.60 0.50	2 V	ES	c_u=61			Firm slightly gravelly very sandy CLAY. Sand is predominantly medium to coarse. Gravel is subangular to subrounded fine to coarse flint. Fine roots and rootlets noted throughout. (GAULT FORMATION)	(0.55) 0.90	
1.00 1.00	3 V	D	c_u=83			Firm pale grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint and fine to medium calcareous nodules. Occasional fine to medium gravel-sized soft calcareous inclusions. Occasional decomposing rootlets (<1mm diameter) noted. (GAULT FORMATION)		
1.50		V	c_u=>130			...@ 1.2m Reduction in sand and gravel content. Gravel predominantly comprises chalk ...@ 1.6m Increase in calcareous nodules (predominantly fine to medium).	(1.10) 2.00	
2.50 2.50 2.50	4 5	ES D V	c_u=>130			Firm to stiff fissured dark grey slightly sandy slightly silty CLAY. Sand is fine and predominantly encountered as fine gravel-sized lenses. Occasional linear calcareous inclusions. (GAULT FORMATION)	(0.70) 2.70	

Plan (Not to Scale)



General Remarks

1. Trial pit remained dry and stable throughout

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

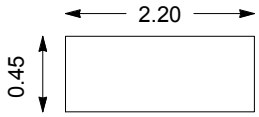
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP22**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**31.08.12**	**16.63**	**E:543817.0 N:260762.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10	1	ES				TOPSOIL: Harvested crop vegetation over dark brown sandy silty clayey TOPSOIL. Sand is predominantly fine to medium. Traces of subangular fine to medium flint. Roots/rootlets and decomposing organic matter throughout (TOPSOIL)	0.20	
0.60		V	c_u=81			Firm brown very sandy CLAY with traces of subangular fine to medium flint. Sand is predominantly fine to medium. Occasional subrounded cobbles of flint. (GAULT FORMATION)	(0.70)	
0.70	2	D					0.90	
1.20		V	c_u=>130			Firm to stiff pale grey sandy gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium flint and calcareous nodules. Occasional coarse gravel and cobbles-sized flint. Occasional calcareous inclusions. (GAULT FORMATION)		
1.50	3	D					(1.30)	
2.00		V	c_u=>130					
2.20	4	ES					2.20	
2.20	5	D				Firm fissured grey silty CLAY. Occasional fine gravel-sized inclusions of orange/light brown fine sand and silt. Occasional linear calcareous inclusions. (GAULT FORMATION)		
3.00		V	c_u=>130				(1.10)	
							3.30	

Plan (Not to Scale)



General Remarks

1. Trial pit remained dry and stable throughout

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

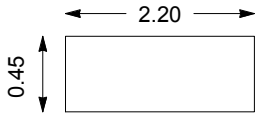
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP23**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**31.08.12**	**14.94**	**E:544025.0 N:260659.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20-0.30	1	ES	Tub+VL+J			TOPSOIL: Dark brown sandy silty clayey TOPSOIL with traces of subangular to subrounded fine to coarse flint (TOPSOIL)	(0.40) 0.40	
0.50	2	D				Firm light brown/orangey-brown sandy CLAY. Sand is predominantly fine to medium. Fine rootlets noted to 0.6m. (RIVER TERRACE DEPOSITS)		
0.50		V	c_u=49					
0.70-0.80	3	ES	Tub+VL+J			... @ 0.6 m to 1.7 m Lense of sandy CLAY.	(0.90) 1.30	
1.00		V	c_u=76					
2.00	4	D				Oragney-brown slightly clayey slightly gravelly SAND. Sand is predominantly medium. Gravel is subangular to subrounded fine to coarse flint. Rare subangular cobbles of flint. (RIVER TERRACE DEPOSITS)		
2.00	5	ES	Tub+VL+J			... @ 2.0 m slight increase in fine to medium subangular flint content.	(1.80) 3.10	

Plan (Not to Scale)



General Remarks

1. Trial pit terminated at 3.1 due to instability of pit
2. Slow water seepage at 2.0 mbgl

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**OPengilly**	BLC

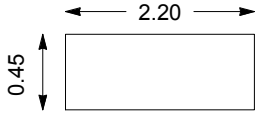
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP24**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**03.09.12**	**13.89**	**E:543843.0 N:260966.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20-0.30	1	ES	Tub+VL+J			MADE GROUND: Harvested vegetation over dark brown sandy silty CLAY. Sand is predominantly fine to medium. Occasional angular to subangular medium to coarse gravels of flint. (MADE GROUND)	(0.60)	
0.45		V	c_u=56					
0.60	2	ES	Tub+VL+J			... @ 0.5 m cobbled sized roof-tiles found	0.60	
						Light orangey-brown gravelly angular fine to coarse predominantly coarse SAND. Gravel is angular to subangular fine to cobbled predominanlty coarse flint with rare to occasional fine to coarse fragments of brick. (RIVER TERRACE DEPOSITS)	(0.80)	
						... @ 1.0 onset of cobbled sized pockets of stiff fractured grey silty clay with gravels of subrounded fine to coarse chalk and angular to subangular gravels of flint and chert within the sand matrix.	1.40	

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout
2. Water seepage at 1.4 m
3. CBR at 0.45 mbgl: 5%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**OPengilly**	BLC

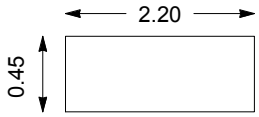
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP25**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**03.09.12**	**13.03**	**E:544100.0 N:260825.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						TOPSOIL: Harvested vegetationon top of dark brown clayey slightly silty sandy TOPSOIL, with occasional angular to subrounded fine to coarse gravels of flint. (TOPSOIL)	0.25	
0.20	1	ES	Tub+VL+J					
0.20	2	D				Firm orangey-brown sandy CLAY. (RIVER TERRACE DEPOSITS)	(0.40)	
0.40		V	c_u=60				0.65	
						Firm orangey-brown gravelly fine SAND with occasional to some coarse to cobbled sized pockets of sandy grey clay. Gravel is fine to coarse angular to subrounded flint. (RIVER TERRACE DEPOSITS)	(0.95)	
1.10	3	D					1.60	
						Firm to stiff grey sandy CLAY. (GAULT FORMATION)	(1.20)	
2.00	4	D						
2.60		V	c_u=91				2.80	

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout
2. Pit remained dry during excavation

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**OPengilly**	BLC

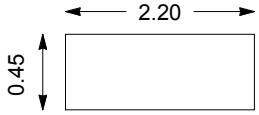
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP26**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**03.09.12**	**13.39**	**E:544048.0 N:260856.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.20	1	ES	VL+J			MADE GROUND: Harvested vegetation over dark brown slightly silty sandy clayey TOPSOIL, with occasional angular to rounded fine to coarse gravels of flint and chert. Sand is fine. (MADE GROUND)	(0.50)	
0.10-0.20	2	D						
0.20-0.30	3	ES	Tub					
0.40		V	c_u=>130			... @ 0.1m onset of orangey dark brown fine to medium sandy very mottled grey CLAY	0.50	
0.60	4	D				... @ 0.3 m rare coarse ash and clinker		
						Orangey brown to grey sandy CLAY with rare angular to subangular fine to medium gravels of flint and with medium pockets of dark organic matter. (RIVER TERRACE DEPOSITS)	(1.00)	
							1.50	
1.50	5	D				Firm grey mottled with orangey-brown CLAY. (RIVER TERRACE DEPOSITS)		
1.50		V	c_u=80					
1.80		V	c_u=80				(1.10)	
							2.60	
						Orangey brown gravelly fine SAND. Gravel is angular to subangular fine to coarse flint and chert (RIVER TERRACE DEPOSITS). (RIVER TERRACE DEPOSITS)	(0.50)	
							3.10	

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout
2. Water seepage noted at 2.7 mbgl
3. CBR at 0.4 mbgl: 7%
4. CBR at 0.7 mbgl: 6%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**OPengilly**	BLC

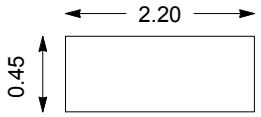
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP27**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**03.09.12**	**13.15**	**E:543916.0 N:261033.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.30	1	ES	Tub+VL+J			TOPSOIL: Harvested vegetation over slightly gravelly clayey sandy TOPSOIL. Gravel is angular to subangular fine to coarse flint. Sand is predominantly fine to medium. (TOPSOIL)	(0.45)	
0.45		V	c_u=59				0.45	
0.50	2	D				Orangey-brown gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint.		
0.60	3	ES	Tub+VL+J				0.65	
0.90		V	c_u=>130			Pale grey-brown very sandy gravelly CLAY with medium to coarse chalk. Sand is predominantly fine to medium. Gravel is fine to coarse flint. (RIVER TERRACE DEPOSITS)		
1.50	4	D				... @ 1.30 to 1.50m Horizon of orangey-grey silty SAND with gravels of flint and chalk and with pockets of orangey brown mottled grey sandy clays.		
1.50		V	c_u=89				(2.05)	
2.70	5	D					2.70	
2.70		V	c_u=>130			Firm pale grey sandy silty CLAY. Sand is predominantly fine. (RIVER TERRACE DEPOSITS)	(0.60)	
						... @ 3.10 Onset of angular cobbles of flint and increased sand content.	3.30	

Plan (Not to Scale)



General Remarks

1. Trial pit became unstable at 3 mblg
2. Water seepage noted at 3.1 mbgl
3. CBR at 0.45 mbgl: 5%
4. CBR at 0.9 mbgl: 21%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**OPengilly**	BLC

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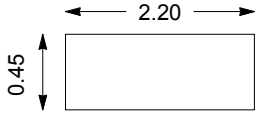
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP28**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**03.09.12**	**12.53**	**E:544039.0 N:261022.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10	1	ES	Tub+VL+J			TOPSOIL: Harvested vegetation over slightly gravelly clayey sandy TOPSOIL. Gravel is angular to subangular fine to coarse flint. Sand is predominantly fine to medium. (TOPSOIL)	(0.35)	
0.10-0.20	2	D					0.35	
0.60		V	c_u=43			Firm orangey-brown sandy CLAY with occasional subrounded medium to coarse flints. (RIVER TERRACE DEPOSITS)		
1.00	3	D				... @ 1.0m Increase in sand content.	(1.35)	
							1.70	
2.00	4	D				Orangey brown medium SAND with subrounded fine to medium gravels of flint. (RIVER TERRACE DEPOSITS) ... @ 2.0m Increase in subangular to subrounded fine to coarse flint gravel	(0.70)	
							2.40	
						Orangey brown to light brown SAND and GRAVEL. Sand is fine to medium. GRavel is angular to subangular fine to cobbled gravels of flint. (RIVER TERRACE DEPOSITS)	2.60	

Plan (Not to Scale)



General Remarks

1. Trial pit unstable at 1.5 mbgl
2. Water seepage noted at 1.7 mbgl
3. Trial pit terminated at 2.6 mbgl due to instability

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**OPengilly**	BLC

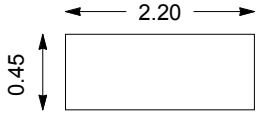
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP29**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**03.09.12**	**12.53**	**E:544161.0 N:260984.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.20	1	ES	Tub+VL+J			TOPSOIL: Harvested vegetation over slightly gravelly clayey sandy TOPSOIL. Gravel is angular to subangular fine to coarse flint. Sand is predominantly fine to medium. (TOPSOIL)	(0.30) 0.30	
0.50	2	D				Firm orangey brown mottled orange and dark brown sandy CLAY with occasional gravels of angular to subangular fine to medium flint. (GAULT FORMATION)	(0.70) 1.00	
1.30		V	c_u=89			Firm to stiff grey/brown slightly sandy slightly silty CLAY with clasts of flint and calcareous nodules. (GAULT FORMATION)	(0.60) 1.60	
1.50	3	D						
2.00	4	ES	J			Firm grey/brown mottled orange slightly sandy silty CLAY with rare fine subangular calcareous nodules. Sand is fine. (GAULT FORMATION)	(1.50) 3.10	
2.00		V	c_u=85					
3.00		V	c_u=62					

Plan (Not to Scale)



General Remarks

1. Trial pit remained dry and stable throughout excavation

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**OPengilly**	

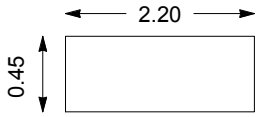
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP30**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**03.09.12**	**12.03**	**E:544023.0 N:261167.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.30	1	ES	Tub+VL+J			TOPSOIL: Harvested vegetation over slightly gravelly clayey very sandy TOPSOIL. Gravel is angular to subangular fine to coarse flint. Sand is predominantly fine to medium.	(0.45)	
0.10-0.30	2	D					0.45	
0.45		V	c_u=60			Firm grey / light orangey brown sandy CLAY with some fine to medium gravels of chalk and with occasional fine to medium gravels of flint. Sand is predominantly fine to medium.	0.65	
						Orangey-brown gravelly SAND with coarse gravel-sized pockets of brown mottled with grey sandy clay. Sand is predominantly fine. Gravels are angular to subangular fine to coarse flint. (RIVER TERRACE DEPOSITS)	(0.55)	
						... @ 0.9 to 1.2 m lense of coarse sands and gravels	1.20	
1.20	3	D				Firm grey CLAY with traces of putty chalk and frequent lenses of sand and gravel. (RIVER TERRACE DEPOSITS)		
1.50		V	c_u=97				(1.00)	
2.00	4	D				... @ 2m Increase in sand content	2.20	
2.20		V	c_u=70			Firm to stiff dark grey silty CLAY with rare to occasional fragments of calcareous nodules. (GAULT FORMATION)	(0.80)	
							3.00	

Plan (Not to Scale)



General Remarks

1. Trial pit unstable at 2 mbgl
2. Water seepage noted at 2 mbgl
3. CBR at 0.45 m: 6%
4. CBR at 0.9 m: 10%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**OPengilly**	

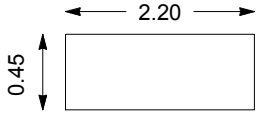
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP31**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**03.09.12**	**12.03**	**E:544091.0 N:261142.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.20	1	ES	Tub+VL+J			TOPSOIL: Harvested vegetation and low shrub vegetation over very sandy very clayey TOPSOIL with traces of subangular fine to medium flint and with frequent rootlets and decomposing organic matter throughout.	(0.30)	
							0.30	
0.50		V	c_u=65			Firm orangey-brown sandy / very sandy CLAY. Sand is predominantly medium. Traces of subangular to subrounded fine to coarse flint. Occasional fine decomposing rootlets. (RIVER TERRACE DEPOSITS)		
0.70-0.80	2	ES	Tub+VL+J				(0.90)	
0.70	3	D				... @ 0.7m Onset of fine to medium subangular chalk clasts. Occasional pale grey mottling.		
0.90		V	c_u=104					
							1.20	
						Orangey-brown slightly clayey SAND and GRAVEL. Sand is predominantly medium. Gravel is subangular to subrounded fine to coarse (predominantly fine to medium) flint. (RIVER TERRACE DEPOSITS)	(0.40)	
1.50	4	D					1.60	
						Orangey brown occasioanlly mottled with pale grey slightly gravelly SAND. Sandy is fine to coarse, predominantly medium. Occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS)		
2.00	5	D				... @ 2.0m slight increase in fine to medium gravel content.	(1.00)	
						... @ 2.2m Increase in clay content		
							2.60	
						... @ 2.5m Becomes a very sandy GRAVEL. Gravel is subangular fine to medium flint.		

Plan (Not to Scale)



General Remarks

1. Trial pit becoming unstable below 1.5m depth
2. Water seepage at 1.5m to 1.6m bgl
3. Trial pit terminated due to instability below 2.4m bgl.
4. CBR at 0.5m: 6%
5. CBR at 0.9m: 5%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	BLC

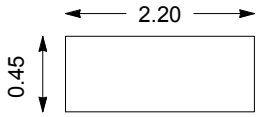
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP32**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**03.09.12**	**12.09**	**E:544055.0 N:261212.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						TOPSOIL: Harvested vegetation over slightly gravelly clayey very sandy TOPSOIL. Gravel is angular to subangular fine to coarse flint. Sand is predominantly fine to medium. (TOPSOIL)	0.25	
0.30	1	ES	Tub+VL+J			Orangey brown sandy CLAY with angular to subangular fine to medium gravels of flint and with occasaional medium gravel sized chalk clasts.	(0.35)	
0.50	2	D					0.60	
0.50		V	c_u=89			Orange and grey sandy CLAY with some pockets of orange very sandy clay. Sand is predominantly fine to medium. Occasional clasts of medium gravel sized chalk. (RIVER TERRACE DEPOSITS)	(0.60)	
1.00		V	c_u=67				1.20	
1.20	3	D				Orangey-brown SAND and GRAVEL. Sand is fine. Gravel is subangular to subrounded fine to medium flint. (RIVER TERRACE DEPOSITS)		
						... @ 1.8 Onset of saturated soils		
2.00	4	D				... @ 2.0m Increase in clay content within the matrix	(1.80)	
							3.00	
3.00	5	D				Stiff gravelly grey CLAY. Gravel is fine to medium calcareous nodules and flint. (GAULT FORMATION)		
3.00	6	ES	Tub+VL+J				3.20	

Plan (Not to Scale)



General Remarks

1. Trial pit became unstable below 2m depth
2. Slow water seepage at 1.5m

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**OPengilly**	

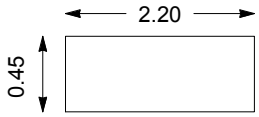
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP33**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**03.09.12**	**12.04**	**E:544183.0 N:261166.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20	1	ES	Tub+VL+J			TOPSOIL: Harvested vegetation over slightly gravelly clayey very sandy TOPSOIL. Gravel is angular to subangular fine to coarse flint. Sand is predominantly fine to medium. (TOPSOIL)	(0.45)	
							0.45	
						Orangey-grey light brown occasionally mottled with orange clayey SAND with frequent pockets of fine chalk.	(0.45)	
0.85	2	D					0.90	
0.90		V	c_u=68			Firm grey mottled brown sandy, slightly silty CLAY with frequent calcareous nodules. (GAULT FORMATION)		
1.60		V	c_u=67				(1.30)	
							2.20	
						Firm grey fissured sandy CLAY. (GAULT FORMATION)		
2.50	3	D					(1.30)	
						... @ 3m Onset of sandier matrix with occasional calcareous inclusions		
3.50	4	ES	Tub+VL+J			... @ 3.4 Transitions to a very clayey SAND.	3.50	

Plan (Not to Scale)



General Remarks

1. Trial pit was unstable below 3m bgl
2. Water seepage was noted at 3m bgl
3. CBR at 0.5m: 5%
4. CBR at 0.9m: 6%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**OPengilly**	

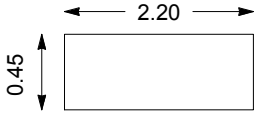
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP34**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**29.08.12**	**12.22**	**E:544116.0 N:261323.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20	1	ES	Tub+VL+J			MADE GROUND: Dark brown silty very sandy CLAY with traces of angular to subrounded flint and rare medium to coarse subangular clasts of pottery / brick. Frequent rootlets throughout and decomposing organic matter. (MADE GROUND)	(0.37) 0.37	
0.40		V	c_u=53			Orangey-brown slightly gravelly very sandy CLAY. Sand is fine to coarse, predominantly medium. Gravel is subangular to subrounded predominantly fine to medium flint. (RIVER TERRACE DEPOSITS)	0.60	
0.60	2	ES	Tub+VL+J					
0.75-1.00	3	D				Orangey-brown clayey gravelly SAND. Gravel is subangular to subrounded fine to coarse flint. Occasional subrounded cobbles of flint. sand is fine to coarse, predominantly medium. (RIVER TERRACE DEPOSITS)	(1.00)	
1.50	4	D				... @ 1.4m increase in fine to medium gravel content.	1.60	
2.00	5	D				Orangey brown / grey SAND and GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint. (RIVER TERRACE DEPOSITS)	(0.80) 2.40	

Plan (Not to Scale)



General Remarks

1. Trial pit was unstable below 1.5m bgl.
2. Slight water seepage noted at 1.6m bgl.
3. Trial pit terminanted at 2.4m bgl due to instability at base.
4. CBR at 0.3m: 5%
5. CBR at 0.6m: 6%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	BLC

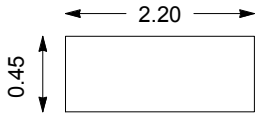
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP35**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**29.08.12**	**12.35**	**E:544262.0 N:261302.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10	1	ES	Tub+VL+J			MADE GROUND: Dark brown sandy slightly gravelly silty CLAY. Sand is predominantly fine to medium. Gravel is subangular to subrounded fine to medium flint. Traces of subangular medium to coarse brick. (MADE GROUND)	(0.45)	
							0.45	
0.50	2	ES	Tub+VL+J			Firm orangey brown sandy slightly gravelly very silty CLAY. Sand is predomniantly fine to medium flint. (RIVER TERRACE DEPOSITS)	0.65	
0.50	3	D				Orangey-brown gravelly SAND. Gravel is subangular to subrounded fine to coarse flint. Occasional subangular cobbles of flint. Sand is fine to coarse. (RIVER TERRACE DEPOSITS)		
1.50	4	D				... @ 1.4m Onset of sandy GRAVEL	(2.20)	
						... @ 1.8m Onset of gravelly SAND		
							2.85	
						Firm to stiff pale grey slightly sandy CLAY. Sand is fine to medium. (GAULT FORMATION)	3.00	

Plan (Not to Scale)



General Remarks

1. Trial pit unstable at 2m bgl.
2. Water seepage noted at 1.7m bgl.

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	BC

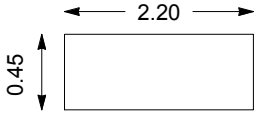
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP36**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**29.08.12**	**12.13**	**E:544150.0 N:261146.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10	1	ES	Tub+VL+J			TOPSOIL: Harvested crop remains over dark brown sandy silty clayey TOPSOIL with traces of subangular to subrounded fine to medium flint. Humic-rich soils noted to 0.1m bgl. Rootelts and inclusions of decomposing organic matter throughout. (TOPSOIL)	0.25	
0.20	2	D						
0.50		V	c_u=59			Firm orangey-brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is predominantly subangular fine flint. (RIVER TERRACE DEPOSITS)	(0.55)	
							0.80	
0.80	3	ES	Tub+VL+J			Grey/brown slightly clayey very gravelly SAND. Sand is fine to coarse predominantly medium to coarse. GRavel is subangular to subrounded fine to coarse predominantly fine to medium flint. Occasional subangular to subrounded cobbles of flint. (RIVER TERRACE DEPOSITS)	(0.80)	
1.00	4	D				... @ 1m Increase in gravel content.		
							1.60	
						Grey brown SAND and GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint. Occasional subangular cobbles of flint. (RIVER TERRACE DEPOSITS)		
2.00	5	D					(0.80)	
							2.40	

Plan (Not to Scale)



General Remarks

1. Trial pit unstable below 1.3m bgl.
2. Trial pit terminated at 2.4m bgl due to instability.
3. Water seepage at 1.3m bgl.
4. CBR at 0.5m: 4%
5. CBR at 1.0m: 15%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	BLC

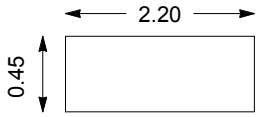
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP37**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**29.08.12**	**12.16**	**E:544248.0 N:261385.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.20	1	ES				TOPSOIL: Harvested crop remains over dark brown sandy silty clayey TOPSOIL with traces of subangular to subrounded fine to medium flint. Humic-rich soils noted to 0.1m bgl. Rootelts and inclusions of decomposing organic matter throughout. (TOPSOIL)	(0.45)	
							0.45	
0.50	2	ES				Firm orangey-brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is predominantly subangular fine flint. (RIVER TERRACE DEPOSITS)	(0.40)	
0.50	3	D						
0.50		V	c_u=52			...@ 0.5m Increase in sand content	0.85	
1.30	4	D				Orangey-brown/yellow slightly clayey very sandy GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse (predominantly fine to medium) flint. Occasional subangular cobbles of flint. (RIVER TERRACE DEPOSITS) ...@ 1.0m Increase in sand content, becoming a very gravelly SAND	(1.55)	
2.00	5	D					2.40	

Plan (Not to Scale)



General Remarks

1. Trial pit becoming unstable below 1.8m depth
2. Water seepages from 1.5m bgl

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

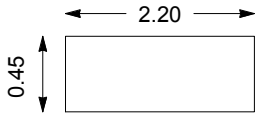
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP38**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**31.08.12**	**17.93**	**E:543794.0 N:260549.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.30	1	ES	Tub+VL+J			MADE GROUND: Dark brown sandy gravelly CLAY. Sandy is fine to coarse. Gravel is subangular to subrounded fine to coarse flint. Occasional fine to medium aubangular brick fragments. (MADE GROUND)	(0.40) 0.40	
0.50		V	c_u=71			Orangey brown sandy gravelly CLAY. Sand is predominantly fine to medium. Gravel is subangular to subrounded predoominantly medium to coarse flint. Occasional specks of decomposing organic matter (including fine rootlets). (RIVER TERRACE DEPOSITS)	(0.70) 1.10	
0.60	2	D						
1.00	3	ES	Tub+VL+J					
1.00		V	c_u=>130					
1.50	4	D				Pale grey sandy slightly gravelly silty CLAY. Sand is predominantly fine to medium. Gravel is predominantly subangular fine to medium flint and chalk. Occasional subrounded coarse flint. (RIVER TERRACE DEPOSITS)	(1.00) 2.10	
2.00		V	c_u=>130					
2.50	5	D				Orangey-brown SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse predominantly fine to medium sabangular to subrounded flint. Occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS)	(0.80) 2.90	

Plan (Not to Scale)



General Remarks

1. Trial pit unstable below 2.4m bgl, terminanted due to instability at 2.9m bgl.
2. Water seepage at 2.4m, water level at 2.8m bgl on completion.
3. CBR at 0.5m: 6%
4. CBR at 1.0m: 19%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	BLC

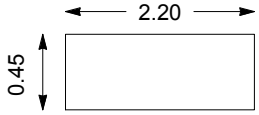
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TP39**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**31.08.12**	**14.95**	**E:543952.0 N:260731.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.20	1	ES	Tub+VL+J			TOPSOIL: Harvested crop vegetation over dark brown sandy silty clayey TOPSOIL. Sand is predominantly fine to medium. Traces of subangular fine to medium flint. Roots/rootlets and decomposing organic matter throughout (TOPSOIL)	0.25	
0.50	2	D				Firm orangey brown slightly gravelly sandy silty CLAY. Sand is predominantly fine to medium. Gravel is predominantly subangular to subrounded fine to medium flint. Occaisonal cobbled flints. (RIVER TERRACE DEPOSITS)	(0.65)	
0.50		V	c_u=63					
0.75		V	c_u=57				0.90	
1.00	3	D				Orangey-brown slightly clayey SAND with traces of sibangular to subrounded fine to medium flint. Sand is predominantly medium. (RIVER TERRACE DEPOSITS)		
1.50	4	D				... @ 1.5m Increase in fine to medium flint gravel		
						... @ 1.7m Increase in coarse sand constituent		
						... @ 2.0m Increase in clay content	(2.40)	
3.00	5	D						
3.00	6	ES	Tub+VL+J				3.30	

Plan (Not to Scale)



General Remarks

1. Trial pit unstable below 2.4m bgl.
2. CBR at 0.3m: 4%
3. CBR at 0.6m: 5%
4. CBR at 0.9m: 5%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	BCC

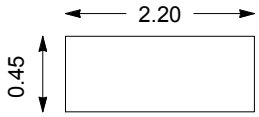
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TPC**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**30.08.12**	**18.33**	**E:543498.0 N:260506.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.05-0.15	1	ES	VLx2+Tub			TOPSOIL: Grass over dark brown sandy slightly gravelly clayey TOPSOIL with frequent rootlets. Sand is predomiantly fine to medium. Occasional fragments of decomposing organic matter. Rare fine subangular brick fragments. (TOPSOIL)	(0.45)	
							0.45	
0.50	2	ES	J			Remnants of clay pipe, possible field drain.		
0.50		V	c_u=110			Firm brown/grey slightly sandy slightly gravelly CLAY. Sand is predominantly fine to medium. Gravel is subrounded to medium to coarse flint. Occasional subrounded cobbles of flint. Occasional fine rootlets to 0.6m bgl. (GAULT FORMATION)		
0.60	3	D						
1.00	4	D						
1.00		V	c_u=81			... @ 0.6m Becoming pale grey. Onset of fine to medium subangular calcareous nodules.		
1.50		V	c_u=>130				(2.05)	
2.00	5	D						
2.00		V	c_u=>130					
							2.50	
2.50	6	D				Stiff blue/grey slightly silty CLAY. Occasional calcareous inclusions. (GAULT FORMATION)	(0.50)	
							3.00	
3.00		V	c_u=>130					

Plan (Not to Scale)



General Remarks

1. Trial pit remained dry and stable during excavation.
2. CBR at 0.4m: 6%
3. CBR at 0.8m: 10%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	

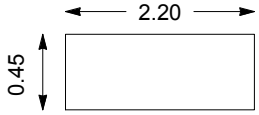
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TPD**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**30.08.12**	**19.03**	**E:543599.0 N:260612.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.20	1	ES	Tub+Vl+J			TOPSOIL: Grass / low rise shrub vegetation over dark brown slightly gravelly sandy clayey TOPSOIL. Sand is predominantly medium to coarse. Gravel is subangular fine to coarse flint. Frequent rootlets throughout. Humic rich horizon to 0.2m bgl. Decomposing organic matter thoughout.	(0.35)	
0.20	2	D					0.35	
0.50	3	ES	Tub+Vl+J			Firm brown sandy gravelly CLAY. Sand is fine to coarse predominantly medium to coarse. Gravel is subangular to subrounded fine to coarse flint. Occasional subrounded cobbles of flint. Occasional rootlets and decomposing organic matter noted.	(0.45)	
0.50		V	c_u=55				0.80	
0.80	4	D				Firm to stiff pale grey slightly gravelly slightly sandy CLAY. Sand is predomiantly fine to medium. Gravel is predominantly subangular to subrounded calcareous inclusions and occasional fine flint. (GAULT FORMATION)		
0.90	5	ES	Tub+Vl					
1.00		V	c_u=61					
1.50	6	D						
1.50		V	c_u=93				(2.20)	
2.50	7	D				... @ 2.0m Reduction in sand and gravel constituents to only rare fine subrounded flint.		
2.50		V	c_u=>130					
3.00		V	c_u=>130				3.00	

Plan (Not to Scale)



General Remarks

1. Trial pit remained dry and stable during excavation.
2. CBR at 0.4m: 7%
3. CBR at 0.8m: 6%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	BLC

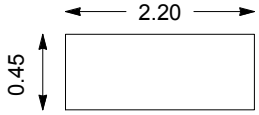
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TPI**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**28.08.12**	**18.46**	**E:543493.0 N:260602.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20	1	ES	Tub+VI+J			MADE GROUND: Harvested vegetation over brown silty slightly gravelly clay. Gravel is angular to subrounded fine to coarse flint. Occaisonal fragments of tiling and ceramics. (MADE GROUND)	(0.40)	
							0.40	
0.60		V	c_u=55			Firm to stiff grey silty CLAY with occasional pockets of orangey-brown fine sand. (GAULT FORMATION)		
0.70	2	ES	Tub+J					
1.00	3	D						
1.00		V	c_u=120					
1.50	4	D						
1.50		V	c_u=114				(2.60)	
						... @ Onset of rare medium sized gravels of siltstone		
2.50	5	D						
							3.00	

Plan (Not to Scale)



General Remarks

1. Trial pit remained dry and stable during excavation.
2. CBR at 0.4m: 3%
3. CBR at 1.0m: 5%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**OPengilly**	BLC

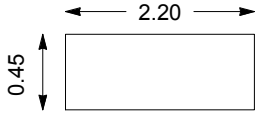
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TPL**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**29.08.12**	**18.83**	**E:543530.0 N:260679.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.30	1	ES	Tub+VI+J			MADE GROUND: Dark brown very sandy gravelly CLAY. Sand is fine to coarse predominantly fine to medium. Gravel is predominantly subangular to subrounded fine to medium flint. Traces of subangular fine to medium brick. Rootles and decomposing orgamic matter throughout. (MADE GROUND)	(0.60)	
							0.60	
0.70	2	ES	Tub+VI+J			Firm brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint. Occasional subrounded cobbles of flint. (RIVER TERRACE DEPOSITS)		
0.75	3	D					(0.70)	
1.00		V	c_u=59					
							1.30	
1.50	4	D				Orangey-brown/yellow/grey slightly clayey sandy GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse predominantly fine to medium flint. (RIVER TERRACE DEPOSITS)		
2.00	5	D				... @ 2.0m Becomes a gravelly SAND.	(1.55)	
							2.85	
3.00	6	D				Pale grey mottled orangey-brown sandy slightly gravelly silty CLAY. Sand is predominantly fine to medium. (GAULT FORMATION)	3.00	

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable during excavation.
2. Water seepage at 2.65m bgl.
3. CBR at 0.3m: 3%
4. CBR at 0.6m: 4%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**OPengilly**	BLC

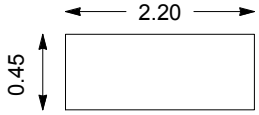
DRAFT
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
NIAB - Phase 1	**BDW Trading Limited**	**TPO**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**28.08.12**	**17.67**	**E:543430.0 N:260673.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.30	1	ES	Tub+VL+J			MADE GROUND: Havested vegetation over dark brown sandy silty CLAY with traces of subangular to Subrounded flint. Occasional ceramics and subangular fine to medium brick. Occasional woody deposits. Frequent decomposing organic matter and fine rootlets. (MADE GROUND)	(0.45)	
0.30	2	D					0.45	
0.50	3	D				Firm orangey-brown, becoming grey by 0.75m slightly sandy silty CLAY. Occasional fine to medium subangular claystone clasts. (GAULT FORMATION)		
0.80	4	ES	Tub+VL+J					
1.00	5	D						
1.00		V	c_u=65					
1.50		V	c_u=69				(2.55)	
						... @ 1.8m Consitency becomes stiff, reduction in sand content.		
2.00	6	D						
2.00		V	c_u=94					
3.00	7	D					3.00	

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable and dry during excavation.
2. CBR at 0.55m: 4%
3. CBR at 0.8m: 4%

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

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**JCB-3CX**	**BCoulston**	BLC

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS1**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**05.09.12**	**20.45**	**E:543436.0 N:260222.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Dark brown silty sandy clay with fine to medium gravels of flint brick and chalk. (MADE GROUND)	0.25	
	0.20-0.30	1	ES	Tub+VL+Jar			Firm brown slightly sandy slightly silty CLAY with subangular fine to coarse gravels of flint and fine to coarse gravels of chalk, and with occasional pockets of fine orangey red sand. Sand is predominantly fine.	(0.45)	
	0.50	2	D					0.70	
	0.70	3	ES	Tub+VL+Jar			Firm slightly silty mottled with orangey-brown CLAY. Some fine to medium gravels of angular flint and subrounded to rounded calcareous nodules. (GAULT FORMATION)		
	1.00-1.45 1.00	1	SPT V	11 c_u=62				(1.80)	
	2.00-2.45 2.00	2	SPT V	12 c_u=>130			... @ 1.9m Coarse (2-3 cm) pockets of red-orange sand with fine subrounded gravels of flint. . . . Rare sulfate bearing crystals noted in matrix.	2.50	
							Stiff finely laminated blue/grey finely mottled with orange silty CLAY with some siltstone and occasional calcareous nodules. (GAULT FORMATION)	(0.50)	
	3.00-3.45	3	SPT	12				3.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole remained dry and stable during excavation.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	BLC

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS2**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**05.09.12**	**19.07**	**E:543656.0 N:260163.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.20	1	ES	Tub+VL+J			TOPSOIL: Dark sandy clayey TOPSOIL. Sand is fine to medium with occasional coarse particles. Occasional fine to medium gravels of flint. (TOPSOIL)	0.20	
							Firm brown slightly sandy slightly silty CLAY with subangular fine to coarse gravels of flint and fine to coarse gravels of chalk. Sand is predominantly fine.	(0.45)	
								0.65	
	1.00-1.45 1.00	1	SPT V	N=11 c_u=110			Firm grey mottled with orangey-brown slightly silty CLAY. Some fine to medium gravels of angular flint and rounded to subrounded chalk/ calcareous nodules. (GAULT FORMATION)		
							... @ 1.3m increase in mottled red-orange sandy clays.	(1.55)	
	2.00-2.45 2.00	2	SPT V	N=15 c_u=>130				2.20	
							Stiff fissured blue/grey finely mottled with orange silty CLAY with some siltstone and occasional calcareous inclusions with occasional pockets of red-orange sandy clay of 2mm to 5mm in diameter. (GAULT FORMATION)	(0.80)	
	3.00-3.45 3.00	3	SPT V	N=14 c_u=120				3.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole remained dry and stable during excavation.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	BLC

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS3**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**06.09.12**	**18.04**	**E:543352.0 N:260480.0**	**1** of **2**

Progress	Samples / Tests				Water	Backfill & Instru-mentation	Description of Strata	Depth (Thick ness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10	1	ES	Tub+VL+J			MADE GROUND: Dark brown slightly silty slightly sandy clay with occasional fine to medium gravels of flint and brick.	0.25	
							(MADE GROUND)		
	0.50	2	D				Firm brown slightly sandy slightly silty CLAY with subangular fine to coarse gravels of flint and occasional to some subangular to subrounded fine to coarse calcitic nodules. Sand is predominantly fine.	(0.45)	
								0.70	
	1.00-1.45 1.00	1	SPT V	N=10 c_u=68			Firm grey mottled with orangey-brown slightly silty CLAY. Some fine to medium gravels of angular flint and rounded to subrounded chalk. (GAULT FORMATION) ... @ 1m decrease in gravel content with depth.	(0.80)	
								1.50	
	1.70		V	c_u=101			Firm to stiff grey mottled with pale orange-yellow silty CLAY. (GAULT FORMATION)		
	2.00-2.45	2	SPT	N=12				(1.20)	
							... @ 2.5m Coarse pocket of sandy, calcareous clay.	2.70	
	2.70		V	c_u=82			Stiff fissured blue/grey finely mottled with orange silty CLAY with some siltstone and calcitic nodules with occasional brown mottling. (GAULT FORMATION)		
	2.90		V	c_u=111					
	3.00-3.45	3	SPT	N=16			... @ 2.9m onset in stiff clays at depth.		
								(2.30)	
	4.00-4.45	4	SPT	N=16					

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole remained dry and stable during excavation.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS3**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**06.09.12**	**18.04**	**E:543352.0 N:260480.0**	**2** of **2**

Progress	Samples / Tests				Water	Backfill & Instru-mentation	Description of Strata	Depth (Thick ness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							Stiff fissured blue/grey finely mottled with orange silty CLAY with some siltstone and calcitic nodules with occasional brown mottling. (GAULT FORMATION) *(stratum text copied from layer at 2.70m depth from previous sheet)*	5.00	
	5.00-5.45	5	SPT	N=30			... @ 4.6m Occasional rounded to subrounded medium gravels of flint. ... @ 4.7m Cluster of crystals, potentially sulfate bearing of approximately 15% of matrix.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS4**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**05.09.12**	**19.45**	**E:543546.0 N:260409.0**	**1** of **2**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.20	1	ES	Tub+VL+J			MADE GROUND: Friable dark brown clayey SAND with fine to medium gravels of flint and occasional fragments of brick.	0.20	
	0.20-0.40	2	D				(MADE GROUND)		
	0.50	3	ES	Tub+VL+J			Firm light brown to grey slightly sandy CLAY with medium clasts of chalk and with occasional pockets of orange clayey sand. Sand is fine.	(0.60)	
								0.80	
	1.00-1.45	1	SPT	N=10			Firm grey mottled yellow brown slightly silty slightly sandy CLAY with Occasional calcitic nodules. (GAULT FORMATION)		
							... @ 0.8 increase in sand content	(1.10)	
	1.80		V	c_u=115			... @ 1.7m mottling becomes less frequent.	1.90	
	2.00-2.45	2	SPT	N=11			Firm to stiff fissured dark grey silty CLAY with frequent pockets of mottled with orange sandy clays. (GAULT FORMATION)		
							... @ 2.3m rare crystals of selenite noted and continue at depth.		
							... @ 2.4m onset of coarse sand to fine gravels of hard and soft nodular calcrete.		
	3.00-3.45	3	SPT	N=13					
	3.00	4	D					(3.10)	
							... @ 3.5m reduction in mottled orange sandy clays. Fine to medium inclusions of siltstone (0.1cm to 1cm).		
	4.00-4.45	4	SPT	N=14					

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole remained dry and stable during excavation.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS4**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**05.09.12**	**19.45**	**E:543546.0 N:260409.0**	**2** of **2**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	4.50-5.00	5	D				Firm to stiff fissured dark grey silty CLAY with frequent pockets of mottled with orange sandy clays. (GAULT FORMATION) *(stratum text copied from layer at 1.90m depth from previous sheet)*	5.00	
	5.00-5.45	5	SPT	N=19					

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	AGS

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS5**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**05.09.12**	**18.42**	**E:543676.0 N:260287.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.05-0.15	1	ES	Tub+VL+J			MADE GROUND: Brown slightly silty slightly sandy clay with some angular gravels of flint and with occasional fragments of brick. (MADE GROUND)	0.15	
							Soft to firm brown slightly sandy CLAY with some angular fine to coarse gravels of flint. Occaisonal fine gravels of chalk.	(0.75)	
								0.90	
	1.00-1.45 1.00 1.00	1 2 3	SPT ES D	N=12 Tub+VL+J			Soft grey slightly silty mottled with orange CLAY with occasional inclusions of chalk. (GAULT FORMATION) ... @ 1.6m Onest of stiff clay.	(1.20)	
	2.00-2.45	2	SPT	N=13				2.10	
							Stiff fissured silty grey slightly mottled with orange CLAY with some siltstone and chalk inclusions. (GAULT FORMATION)	(0.90)	
	3.00-3.45	3	SPT	N=12				3.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole remained dry and stable during excavation.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	BLC

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS6**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**06.09.12**	**18.14**	**E:543448.0 N:260554.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.20	1	ES	Tub+VL+J			MADE GROUND: Brown slightly sandy clay with some angular to subangular fine to medium gravels of flint, brick and fine rounded chalk. (MADE GROUND)	(0.30)	
								0.30	
	0.30-0.40	2	D				Firm brown mottled with red/brown slightly sandy CLAY with fine gravels of subrounded chalk and subangular flint.	(0.40)	
	0.50	3	ES	Tub+VL+J					
	0.60		V	c_u=65				0.70	
	1.00-1.45	1	SPT	N=12			Firm fissured slightly silty mottled with orangey-brown/grey CLAY with some fine to medium gravels of flint and subrounded to rounded calcareous nodules. (GAULT FORMATION)	(2.30)	
	2.00-2.45	2	SPT	N=12					
	2.00		V	c_u=115			... @ 2.5m Yellow brown mottling becomes fainter and contributes to a 5-30% discolouration of the matrix.		
								3.00	
	3.00-3.45	3	SPT	N=12					

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole remained dry and stable during excavation.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS7**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**05.09.12**	**18.42**	**E:543757.0 N:260380.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10	1	ES	Tub+VL+J			TOPSOIL: Dark brown slightly clayey predominantly medium to coarse SAND with some fine to coarse angular to subangular gravels of flint. (TOPSOIL)	(0.35) 0.35	
	0.50 0.50	2 3	ES D	Tub+VL+J			Orange to dark brown clayey medium SAND with occasional to some gravels of angular to subangular medium to coarse flint. (RIVER TERRACE DEPOSITS)	(0.30) 0.65	
	1.00-1.45	1	SPT(c)	N=13			Firm orangey-brown gravelly sandy CLAY. Sand is predominantly medium to coarse. Gravel is predominantly angular flint. (RIVER TERRACE DEPOSITS) ... @ 1m increase in sand and gravel content.	(0.45) 1.10	
	1.20-1.30	4	D				Orangey-brown SAND and GRAVEL. Sand is predominantly fine, occasionally medium to coarse. Gravel is angular to subangular fine to coarse flint. (RIVER TERRACE DEPOSITS)	(0.30) 1.40	
							Stiff slightly silty slightly sandy grey mottled with yellow brown CLAY. (RIVER TERRACE DEPOSITS) ... @ 1.7 and 1.8 lense of sandy clay.	(0.60) 2.00	
	2.00-2.45	2	SPT	N=10			Stiff grey mottled orangey brown, occasionally mottled orange-red slightly silty sandy CLAY with subangular to subrounded fine to coarse gravels of flint and calcareous nodules. (RIVER TERRACE DEPOSITS) ... @ 2.6 Increase in sand content.	(0.80) 2.80	
	3.00-3.45	3	SPT	N=9			Orangey-brown coarse SAND with occasional to some angular to subangular fine to coarse gravel of flint and with occasional pockets of grey silty clay. Stratum is saturated throughout. (RIVER TERRACE DEPOSITS)	(1.20) 4.00	
	4.00-4.45	4	SPT(c)	N=7					

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole becoming unstable below 4m bgl.
2. Water seepage noted at 3m bgl.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS8**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**07.09.12**	**18.43**	**E:543575.0 N:260763.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.30-0.40	1	ES	Tub+VL+J			MADE GROUND: Brown slightly silty sandy clay with fine to medium gravels of angular flint, fine brick clasts and occasional fine chalks. (MADE GROUND)	(0.45) 0.45	
	0.80	2	D				Orangey-brown to red slightly gravelly medium SAND. Gravel is angular fine to coarse flint. (RIVER TERRACE DEPOSITS) ... @ 0.5m Increase in sand content	(1.45)	
							... @ 1.7m Gravel content within the matrix increases to 40%, sands become coarser.	1.90	
							Orangey-brown SAND and GRAVEL. Sand is coarse. Gravel is subangular fine flint. (RIVER TERRACE DEPOSITS)	(0.30) 2.20	
							Stiff fissured grey occasionally mottled pale yellow brown silty CLAY with occasional selenite crystals. (GAULT FORMATION)	(0.80) 3.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole unstable below 2.5m bgl.
2. Water seepage noted at 2.1m bgl.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	AGS

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS9**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**07.09.12**	**18.52**	**E:543683.0 N:260586.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10	1	ES	Tub+VL+J			MADE GROUND: Dark brown sandy CLAY with angular fine to medium gravels of flint and fine to medium brick tiling. (MADE GROUND)	(0.40) 0.40	
	0.70-1.00	2	D				Orangey-brown gravelly SAND. Gravel is angular fine to coarse flint. Sand is predominantly fine to medium.	(0.60) 1.00	
	1.00-1.45	1	SPT(c)	N=29			Medium dense orangey-brown slightly gravelly fine to medium SAND. Gravels are subangular fine to medium predominantly medium flints with occasional coarse flints, and occasional subrounded fine chalks. (RIVER TERRACE DEPOSITS)	(0.50) 1.50	
	1.60	3	ES				Firm orangey-brown to red mottled with orangey-red gravelly very sandy CLAY. Gravels are fine to medium. (RIVER TERRACE DEPOSITS)	(0.60) 2.10	
	2.00-2.45	2	SPT(c)	N=24			Orangey brown to yellow medium to coarse SAND. Occasional angular fine gravels of flint. (RIVER TERRACE DEPOSITS)	(0.70) 2.80	
							... @ 2.60 to 2.80m Lense of orangey-brown and grey SAND and GRAVEL. Sand is coarse. Gravel is subangular fine to medium flint.	3.00	
	3.00-3.45	3	SPT	N=13			Stiff blue/grey thinly laminated mottled pale yellow silty CLAY. (GAULT FORMATION)		

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Trial pit remained stable during excavation.
2. Water seepage noted at 2.6m.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS10**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**10.09.12**	**17.48**	**E:543835.0 N:260462.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.20	1	ES	Tub+VL+J			TOPSOIL: Brown slightly silty slightly clayey fine to medium SAND with occasional fine to medium gravels of angular to subangular flint.	(0.40) 0.40	
	0.80	2	ES	J			Firm dark brown to orange occaisonally mottled with orange brown sandy CLAY with gravels of angular fine to coarse flint and with occasional pockets of decomposing organic matter noted between 0.7m and 0.9m (potentially reworked).	(0.55) 0.95	
	1.00-1.45	1	SPT(c)	N=12			Orangey-brown fine to medium SAND. (RIVER TERRACE DEPOSITS)	1.10	
	1.00	3	D				Firm dark brown to orangey mottled with orangey-brown sandy CLAY with fine to medium gravels of angular to subangular flint. (RIVER TERRACE DEPOSITS)	(0.30) 1.40	
							Orangey-brown SAND and GRAVEL. Sand is coarse. Gravel is subangular fine flint. (RIVER TERRACE DEPOSITS)	(0.30) 1.70	
	2.00-2.45	2	SPT(c)	N=31			Dense Light brown fine SAND with occasional angular fine gravels of flint. (RIVER TERRACE DEPOSITS)	(0.80) 2.50	
	3.00-3.45	3	SPT(c)	N=31			Dense orangey-brown SAND and GRAVEL. Sands are fine to coarse predominantly coarse. Gravels are angular fine to medium flint. (RIVER TERRACE DEPOSITS)	(0.50) 3.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole unstable below 2.8m bgl.
2. Water seepage njoted at approximately 2.2m bgl.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS11**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**07.09.12**	**16.83**	**E:543741.0 N:260740.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							TOPSOIL: Dark brown slightly silty clayey SAND with gravels of angular fine to medium occasionally coarse flints and chert. (TOPSOIL)	(0.50)	
	0.40	1	ES	Tub+VL+J			... @ 0.3m increase in clay content	0.50	
							Firm orangey dark brown mottled with dark grey slightly sandy CLAY with occasional angular fine to coarse gravels of flint. (RIVER TERRACE DEPOSITS)	(0.80)	
	0.90-1.00	2	D						
	1.00-1.45	1	SPT(c)	N=9				1.30	
							Firm pale grey mottled with pale orangey-brown and red-brown silty CLAY with occasional inclusions of fine calcareous nodules. (GAULT FORMATION)	(1.10)	
	1.70-2.00	3	D						
	2.00-2.45	2	SPT	N=15			... @ 1.9m onset of stiff clay.	2.40	
							Stiff fissured dark blue/grey CLAY. (GAULT FORMATION)	(0.60)	
	3.00-3.45	3	SPT	N=12				3.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole remained dry and stable throughout excavation.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS12**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**10.09.12**	**16.12**	**E:543933.0 N:260602.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.20-0.30	1	ES	Tub+VL+J			TOPSOIL: Brown slightly silty clayey SAND with fine to medium gravels of flint. Medium gravel sized decomposing organic matter found at 0.25m. (MADE GROUND)	(0.30) 0.30	
							Firm dark brown to orange sandy CLAY with some fine to medium angular gravels of flint.	0.55	
							... @ 0.3m increase in clay content		
	0.80	2	D				Firm grey mottled with pale orange grey slightly silty CLAY with gravels of subangular fine to medium chalk and angular fine to medium flint. (GAULT FORMATION)	(0.65)	
	1.00-1.45	1	SPT	N=12				1.20	
							Firm fissured grey mottled with pale orange-yellow silty CLAY with frequent calcareous nodules, angular fine gravels of chalk clasts and occasional gravels of subangular to subrounded fine to medium flints. (GAULT FORMATION)	(0.80)	
	2.00-2.45	2	SPT	N=16				2.00	
							Stiff fissured grey silty CLAY. (GAULT FORMATION)		
	2.50	3	D					(1.00)	
	3.00-3.45	3	SPT	N=15				3.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole remained dry and stable throughout excavation.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS13**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**07.09.12**	**15.32**	**E:543830.0 N:260816.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Dark brown slightly silty clayey sand with subangular to subrounded fine to medium gravels of flint and occasional brick.	(0.30)	
	0.30	1	ES	Tub+VL+J				0.30	
							Firm brown slightly sandy slightly silty CLAY with subangular fine to coarse gravels of flint and fine to coarse gravels of chalk. Sand is predominantly fine. (RIVER TERRACE DEPOSITS)	(1.25)	
	1.00-1.45 1.00	1 2	SPT D	N=4					
							... @ 1.40 to 1.55m Lense of orangey brown fine sand with angular coarse gravel of fint.	1.55	
							Firm light grey mottled orangey-brown sandy CLAY with subrounded fine to medium gravels of chalk. (RIVER TERRACE DEPOSITS)	1.80	
							Orangey-brown fine SAND. (RIVER TERRACE DEPOSITS)	(0.30)	
	2.00-2.45	2	SPT	N=4				2.10	
							Orangey-brown clayey fine SAND with occasional coarse sand. (RIVER TERRACE DEPOSITS)		
							... @ 2.8m onset of predominantly coarse sand with pockets of clayey fine sand.	(1.60)	
	3.00-3.45	3	SPT(c)	N=36				3.70	
							Orangey-brown and coarse SAND and GRAVEL. Sand is fine to medium. Gravel is angular fine to medium flint, subrounded chalk and flint clasts. (RIVER TERRACE DEPOSITS)	(0.30)	
	4.00-4.45	4	SPT(c)	N=18				4.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole terminated at 4m bgl due to collapsing gravels
2. Water seepage at approximately 2.6m bgl.
3. Water level noted at 2.5m bgl prior to backfilling.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS14**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**07.09.12**	**14.29**	**E:543929.0 N:260803.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.20	1	ES	Tub+VL+J			MADE GROUND: Dark brown slightly silty sandy clay with fine to medium gravels of flint and rare to occasional fine clasts of brick. (MADE GROUND)	(0.35) 0.35	
	0.40-0.60	2	D				Firm brown slightly sandy slightly silty CLAY with subangular fine to coarse gravels of flint and fine to coarse gravels of chalk. Sand is predominantly fine.	0.55	
	1.00-1.45	1	SPT	N=14			Firm light brown mottled grey slightly silty very sandy CLAY. Sand is predominantly fine. Gravel is angular fine to coarse flint and rounded fine chalk. (RIVER TERRACE DEPOSITS) ... @ 0.9m Increase in gravel content to 15% of matrix consiting of predominantly fine to medium flint. ... @ 1.5m Subrounded cobble of flint gravel.	(1.35)	
	2.00-2.45	2	SPT(c)	N=12			... @ 1.80 to 1.90m Lense of soft orangey-brown clayey SAND.	1.90 (0.30)	
							Orangey brown gravelly SAND. Sand is fine to coarse. Gravels are subangular to rounded fine to coarse flint. (RIVER TERRACE DEPOSITS)	2.20	
	2.40-2.60	3	D				Firm to stiff thinly laminated light grey silty mottled pale yellow-orange CLAY. (GAULT FORMATION)	(0.80)	
	3.00-3.45	3	SPT	N=47			... @ 2.8m onset of sand clay with angular fine to coarse gravels of flint.	3.00	

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole remained stable during excavation.
2. Low water seepage noted at 2m bgl.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS15**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**10.09.12**	**13.50**	**E:544079.0 N:260737.0**	**1** of **2**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.20-0.30	1	ES	Tub+VL+J			MADE GROUND: Brown slightly silty clayey SAND with angular fine to medium gravel of flint. Rare to occasional fine clasts of charcoal and decomposed organic matter noted at 0.25m depth. (TOPSOIL)	(0.30) 0.30	
							Loose orangey-brown slightly clayey fine to medium predominantly fine SAND with occasional fine gravels of subangular flint. (RIVER TERRACE DEPOSITS)	(0.30) 0.60	
	1.00-1.45	1	SPT	N=17			Firm grey mottled orangey-brown sandy CLAY with subrounded fine gravels of chalk and with coarse pockets of fine SAND. (RIVER TERRACE DEPOSITS)	(0.60)	
	1.20	2	D				... @ 1.0m Onset of clayey sand.	1.20	
							Stiff fissured light grey mottled with orangey-brown silty CLAY with rare coarse gravels of angular flint and with occasional fine partings of siltstone. (RIVER TERRACE DEPOSITS)	(0.70) 1.90	
	2.00-2.45	2	SPT(c)	N=15			Orangey-brown gravelly fine to coarse SAND. Gravels are angular fine to coarse flint. (RIVER TERRACE DEPOSITS) . . . Fining upwards.	(0.40) 2.30	
							Firm grey slightly sandy silty CLAY. (RIVER TERRACE DEPOSITS)	(0.30) 2.60	
							Orangey-brown fine SAND with occasional angular gravels of coarse flint. (RIVER TERRACE DEPOSITS)	(0.30) 2.90	
	3.00-3.45	3	SPT	N=17			Firm grey/blue very silty CLAY. (GAULT FORMATION) . . . Coarsening upwards. ... @ 3.0m increase in fine sand content.	(0.60) 3.50	
							... @ 3.5m strata description discontinued.		
	4.00-4.45	4	SPT	N=6					

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole unstable below 2.6m bgl, collapse reported at 3.5m bgl.
2. Stratum descriptions discontinued at 3.5m bgl owing to instability and backfilling, SPT data continued to 5m.
3. Water seepage noted during drilling at approximately 2m bgl.
4. Water Level measured at 1.85m bgl on completion.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	AGS

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS15**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**10.09.12**	**13.50**	**E:544079.0 N:260737.0**	**2** of **2**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	5.00-5.45	5	SPT	N=8					

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	AGS

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS16**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**07.09.12**	**14.99**	**E:543791.0 N:260905.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.20	1	ES	Tub+VL+J			TOPSOIL: Sandy loam occasional fine to medium gravels of flint and chalk. (TOPSOIL)	(0.40) 0.40	
							... @ 0.3m increase in clay content at base of stratum		
	0.50-0.60	2	D				Orangey-brown slightly mottled with red and occasionally dark grey sandy CLAY with some gravels of angular fine to medium flint and occasional chalk (RIVER TERRACE DEPOSITS - COHESIVE). (RIVER TERRACE DEPOSITS)	(0.50) 0.90	
	1.00-1.45	1	SPT	N=12			Orangey-brown fine to coarse predominantly fine to medium SAND with occasional pockets of grey sandy clay. (RIVER TERRACE DEPOSITS)	(0.90)	
							... @ 1.6m Lense of orangey-brown mottled streaky grey sandy clay.	1.80	
	2.00-2.45	2	SPT(c)	N=28			Orangey-brown slightly gravelly SAND. Sand is fine to coarse. Gravels are angular fine to medium, predominantly fine flint. Occasional subrounded coarse gravels of flint. (RIVER TERRACE DEPOSITS)	(0.40) 2.20	
							Orangey-brown SAND and GRAVEL. Sand is coarse. Gravel is subangular to subrounded fine flint. (RIVER TERRACE DEPOSITS)	(0.80) 3.00	
	3.00-3.45	3	SPT(c)	N=28					
	3.00	3	ES	Tub+VL+J					
	3.00	4	D						

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole unstable below 2.4m.
2. Water seepage noted at 2.4m during drilling.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS17**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**10.09.12**	**13.81**	**E:543998.0 N:260818.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.05-0.15	1	ES	Tub+VL+J			TOPSOIL: Harvested vegetation over very dark brown organic rich slightly silty clayey SAND with pockets of decomposed organic matter. (TOPSOIL)	(0.30) 0.30	
							Orangey-brown clayey fine SAND with some fine to coarse gravels of angular flint. (RIVER TERRACE DEPOSITS)	(0.30) 0.60	
	1.00-1.45	1	SPT	N=30			Firm to stiff light grey slightly sandy silty CLAY with frequent fine to coarse gravels of angular flint and fine clasts of chalk and with pockets of orangey-brown sand. Occasional rounded pebbles noted. (RIVER TERRACE DEPOSITS)	(0.60) 1.20	
	1.00-1.20	2	D				... @ 1.10m to 1.20m Lense of orangey-brown fine SAND.		
							Stiff fissured light grey occasionally mottled with orangey-brown slightly sandy very silty CLAY with some lenses of subangular to subrounded fine to coarse gravels of flint. Occasional dark grey to black carbonaceous inclusions. (GAULT FORMATION)	(0.90) 2.10	
	2.00-2.45	2	SPT	N=26			Stiff fissured light grey silty CLAY. (GAULT FORMATION)	(0.90) 3.00	
	3.00-3.45	3	SPT	N=42					

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole remained stable during excavation.
2. Water depth at 2.16m bgl.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS18**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**12.09.12**	**13.16**	**E:544122.0 N:260872.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.20-0.30	1	ES	Tub+VL+J			TOPSOIL: Harvested vegetation over dark brown sandy silty CLAY with traces of subangular fine to medium flint. Frequent roots, fine rootlets and decomposing organic matter throughout. (TOPSOIL)	(0.37) 0.37	
	0.70-0.80 0.75-1.00	2 3	ES D	Tub+VL+J			Firm light brown/orangey-brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium flint. Rare fine rootlets to 0.9m depth. Possibly reworked to 0.8m depth. Occasional decomposing organic matter to 1.0m. (RIVER TERRACE DEPOSITS)	(1.08)	
	1.00-1.45	1	SPT	N=15				1.45	
	1.50-1.70	4	D				Orangey-brown slightly clayey slightly gravelly SAND. Gravel is subangular to subrounded fine to coarse flint and chert. Sand is predominantly medium. (RIVER TERRACE DEPOSITS)		
	2.00-2.45	2	SPT(c)	N=18			... @ 1.8m Increase in medium to coarse flint. Onset of subrounded cobbles of flint.	(1.05)	
	2.80-3.00	5	D					2.50	
	3.00-3.45	3	SPT	N=10			Firm pale grey slightly sandy silty CLAY with traces of subangular fine calcareous nodules. (GAULT FORMATION)	(1.95)	
	4.00-4.45	4	SPT	N=9				4.45	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Sample becoming saturated below 1.6m depth.
2. Hole beginning to collapse after 3.0m run.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**BCoulston**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS19**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**10.09.12**	**13.59**	**E:543901.0 N:260978.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.20	1	ES	Tub+VL+J			TOPSOIL: Harvested vegetation over dark brown slightly clayey slightly silty fine SAND with fine to medium gravels of angular to subangular flint. (TOPSOIL)	(0.30) 0.30	
							Medium dense orangey-brown clayey fine SAND with some angular fine to coarse gravels of flint. (RIVER TERRACE DEPOSITS) ... @ 0.5m Clay content decreases, onset of fine SAND.	(0.90) 1.20	
	1.00-1.45	1	SPT	N=12					
							Medium dense orangey-brown slightly clayey gravelly fine to coarse predominantly fine SAND. Gravels are subangular fine to medium chalk and angular fine to coarse flints. Some dark brown/grey decomposing organic matter. (RIVER TERRACE DEPOSITS) ... @ 1.6m Increase in medium to coarse gravel content of predominantly flint.	(0.60) 1.80	
	2.00-2.45	2	SPT(c)	N=32			Firm light grey mottled with orangey-brown, gravelly sandy CLAY. Gravels are angular fine to medium flints and fine clasts of chalk. (RIVER TERRACE DEPOSITS)	2.00	
							Dense orangey-brown SAND and GRAVEL with pockets of stiff grey gravelly clay. Sand is fine to coarse. Gravel is angular fine flint. (RIVER TERRACE DEPOSITS)	(1.00) 3.00	
	3.00-3.45	3	SPT(c)	N=53					

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole remained stable during excavation.
2. Water seepage noted after 2.0m bgl during drilling.
3. Water level at 2.16 on completion.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS20**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**11.09.12**	**12.80**	**E:544098.0 N:260973.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.20	1	ES	Tub+VL+J			TOPSOIL: Grass and harvested vegetation over dark brown slightly gravelly very sandy clayey TOPSOIL. Sand is predominantly fine to medium. Gravel is subangular to subrounded fine to coarse flint. Frequent roots and decomposing organic matter. (TOPSOIL)	(0.50)	
								0.50	
	0.50-0.70	3	D				... @ 0.35m Becomes light brown with a reduction in sand conent.	(0.45)	
	0.60-0.70	2	ES	Tub+VL+J					
							Firm light brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular medium flint. Fine gravel-sized lenses of decomposing organic matter throughout. Occasional fine rootlets to 0.8m. (RIVER TERRACE DEPOSITS)	0.95	
	1.00-1.45	1	SPT(c)	N=17				(0.40)	
	1.00-1.20	4	D				... @ 0.85m Increase in sand and gravel content.		
							Medium dense orangey-brown clayey SAND and GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint. (RIVER TERRACE DEPOSITS)	1.35	
	1.50-1.70	5	D					(0.45)	
							Firm light brown/orangey-brown gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium flin. (RIVER TERRACE DEPOSITS)	1.80	
	2.00-2.45	2	SPT(c)	N=18			Medium dense slightly clayey slightly gravelly SAND. Gravel is subangular to subrounded fine to medium flint. Sand is predominantly medium. (RIVER TERRACE DEPOSITS)		
	2.00-2.50	6	D						
	2.50	7	ES	Tub+VL+J			... @ 2.65 to 2.85m Horizon of sandy gravelly clay.	(2.10)	
	3.00-3.45	3	SPT(c)	N=15			... @ 3.0m Reduction in clay content to a gravelly SAND.		
								3.90	
	4.00-4.45	4	SPT	N=11			Firm pale grey slightly sandy silty CLAY. Sand is fine. (GAULT FORMATION)	(0.55)	
								4.45	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Sample becoming saturated below 1.6m bgl.
2. Hole unstable and colapsing below 3.0m bgl.
3. Water level at 2.35m bgl on completion.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**BCoulston**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS21**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**12.09.12**	**12.36**	**E:543981.0 N:261141.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.05-0.15	1	ES	Tub+VL+J			TOPSOIL: Low-rise shrub vegetation and harvested crop remains over dark brown sandy silty clayey TOPSOIL with traces of subangular fine to medium flint. Roots/rootlets and decomposing organic matter throughout. (TOPSOIL)	(0.30)	
	0.10-0.25	2	D					0.30	
	0.70-0.80	3	ES	Tub+VL+J			Firm orangey-brown sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium flint. (RIVER TERRACE DEPOSITS)	(0.70)	
	0.80-1.00	4	D					1.00	
	1.00-1.45	1	SPT	N=16			Firm brown/pale grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse predominantly fine to medium flint and chalk. Occasional calcareous inclusions and decomposing organic matter. (RIVER TERRACE DEPOSITS)	(0.65)	
	1.20-1.40	5	D					1.65	
	2.00-2.45	2	SPT(c)	N=17			Medium dense light brown/orangey-brown slightly clayey gravelly SAND. (RIVER TERRACE DEPOSITS)	(0.85)	
	2.50-3.00	6	D					2.50	
	3.00-3.45	3	SPT	N=10			Firm pale grey slightly sandy silty CLAY with traces of subangular fine white flint. Sand is fine. (GAULT FORMATION)	(0.95)	
								3.45	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Sample becoming saturated below 2.2m depth.
2. Borehole remained stable during excavation.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**BCoulston**	AGS

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS22**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**12.09.12**	**12.47**	**E:544165.0 N:261044.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.20-0.30	1	ES	Tub+VL+J			MADE GROUND: Low-rise shrub vegetation and harvested crop remains over dark brown slightly gravelly very sandy CLAY. Sand is predominantly fine to medium. Gravel is subangular to subrounded fine to medium flint. Occasional fragments of charcoal and subangular fine brick/pottery. Rootlets and decomposing organic matter throughout. (MADE GROUND)	(0.40) 0.40	
	0.50-0.60	2	ES	Tub+VL+J				0.65	
	0.70-1.00	3	D				MADE GROUND: Firm light brown slightly gravelly slightly sandy CLAY. Gravel is predominantly subangular fine to medium flint with occasional fragments of charcoal and decomposing organic matter. Rare fragments of ceramics and decomposing wood with rootlets throughout. (MADE GROUND)		
	1.00-1.45	1	SPT(c)	N=14			Orangey-brown slightly clayey very sandy GRAVEL. Sand is fine to coarse. Gravel is predominantly recovered as subangular fine to medium flint. (RIVER TERRACE DEPOSITS)		
	1.50-2.00	4	D				... @ 1.3m Becomes a SAND and GRAVEL.		
							... @ 1.5m Slight increase in clay content.		
	2.00-2.45	2	SPT(c)	N=25				(2.80)	
							... @ 2.2m Reduction in gravel content		
	3.00-3.45	3	SPT(c)	N=36				3.45	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Sample becoming saturated below 1.7m depth.
2. Casing could not be driven below 1.5m depth.
3. Termionated at 3.45 due to density.
4. Water level at 2.2m on completion.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**BCoulston**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS23**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**12.09.12**	**12.03**	**E:544117.0 N:261186.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.20	1	ES	Tub+VL+J			TOPSOIL: Harvested vegetation over dark brown sandy CLAY with traces of subangular fine to medium flint. Roots/rootlets and decomposing organic matter throughout. (TOPSOIL)	0.22	
	0.50-0.60	2	ES	Tub+VL+J			Firm light brown/orangey brown sandy gravelly CLAY. Sand is predominantly medium. Gravel is subangular to subrounded fine to coarse predominantly medium to coarse flint. (RIVER TERRACE DEPOSITS)	(0.88)	
	0.60-0.80	3	D				... @ 0.65m Becomes mottled with pale grey		
	1.00-1.45	1	SPT	N=20			... @ 0.9m Increase in gravel content of predominantly medium to coarse flint.	1.10	
	1.40-1.70	4	D				Medium dense orangey brown slightly clayey slightly gravelly SAND. Gravel is subangular to subrounded fine flint and chert. Sand is predominantly medium to coarse. (RIVER TERRACE DEPOSITS)	(1.75)	
	2.00-2.45	2	SPT(c)	N=15			... @ 1.3m to 1.5m Occasional medium to coarse gravel sized inclusions of pale grey sandy clay.		
	2.20-2.50	5	D				... @ 2.2m Becoming SAND and GRAVEL.	2.85	
	2.85-3.00	6	D				Stiff pale grey very sandy silty CLAY. Sand is fine. (GAULT FORMATION)	(0.35)	
	3.00-3.45	3	SPT	N=17				3.20	
							Brown/grey slightly clayey slightly gravelly SAND. Gravel is subangular fine flint. Sand is fine to coarse, predominantly medium. (Possibly partly backfilled from upper strata at terminal depth).	(0.80)	
	4.00-4.45	4	SPT(c)	N=19				4.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Sample becoming saturated below 1.5m depth.
2. Water level at 2.55m on completion.
3. Terminated at 4m due to instability and backfill - backfill at terminal depth

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**BCoulston**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WS24**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**10.09.12**	**15.63**	**E:543884.0 N:260684.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.20	1	ES	Tub+VL+J			MADE GROUND: Dessicated dark brown slightly silty clayey sand with fine to medium gravels of angular to subangular flint. Occasional clasts of fine brick and charcoal. (MADE GROUND)	(0.30) 0.30	
	0.40-0.50	2	ES	J			Firm dark brown to orange sandy CLAY with some fine to medium angular gravels of flint. Frequent pockets of decomposing organic matter between 0.4m and 0.5m.	(0.35) 0.65	
	0.80	3	D				Firm grey mottled pale orange brown slightly sandy slightly silty CLAY with gravels of subangular fine to medium chalk and angular fine to medium flint. Sand is fine. (RIVER TERRACE DEPOSITS)	(0.65) 1.30	
	0.90		V	c_u=70					
	1.00-1.45	1	SPT	N=12					
	1.70		V	c_u=85			Firm fissured grey mottled with pale orange-yellow silty CLAY. (RIVER TERRACE DEPOSITS) ... @ 1.4m Onset of firm to stiff clays.	(1.40) 2.70	
	2.00-2.45	2	SPT	N=15			... @ 1.9 to 2.0 Lense of medium SAND and medium to coarse GRAVELS within a clay matrix.		
	3.00-3.45	3	SPT	N=15			Stiff pale grey silty CLAY. (GAULT FORMATION)	(0.30) 3.00	

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole remained dry and stable during excavation.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WSB**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**06.09.12**	**19.02**	**E:543603.0 N:260547.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.20	1	ES	Tub+VL+J			MADE GROUND: Organic sandy slightly silty CLAY with fine to coarse gravels of flint and occasional fine brick clasts. (MADE GROUND)	(0.40)	
								0.40	
	0.50	2	ES	J			Brown slightly silty sandy CLAY with frequent angular to subangular gravels of flint. (RIVER TERRACE DEPOSITS)	(0.40)	
								0.80	
	0.90-1.00	3	D				Medium dense reddish to orangey-brown gravelly fine SAND. Gravel is fine to coarse angular clasts of flint and occasional clasts of subangular chert. (RIVER TERRACE DEPOSITS)		
	1.00-1.45	1	SPT(c)	N=29					
								(2.30)	
	2.00-2.45	2	SPT(c)	N=8					
								3.10	
	3.00-3.45	3	SPT	N=12			... @ 3.0 - 3.1m Lense of orangey-brown SAND and GRAVEL. Sand is predominatly coarse. Gravel is angular fine to coarse flint.	(0.50)	
							Soft to firm thinly laminated grey mottled orangey-brown slightly silty sandy CLAY with some fine to medium gravels of flint and chalk. (RIVER TERRACE DEPOSITS)	3.60	
	4.00-4.45	4	SPT	N=11			Stiff fissured dark grey/blue occasionally mottled with pale yellow-brown silty CLAY with some inclusions of fine decomposed rootlets up to 10mm in length and 3mm in thickness. (GAULT FORMATION)	(0.90)	
								4.50	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Drilling to 2.0m observed to be slow. Low CPT N value is associated with backfill, rather than in-situ conditions.
2. Refusal after 4.5m due to hole instability.
3. Water seepage at approximately 3m.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WSE**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**06.09.12**	**18.16**	**E:543469.0 N:260550.0**	**1** of **2**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.20	1	ES	Tub+VL+J			MADE GROUND: Dark brown organic slightly sandy CLAY with fine gravels of brick, flint and chalk. (MADE GROUND)	0.25	
	0.50	2	D				Firm brown mottled with red-brown slightly sandy CLAY with occasional angular to subangular fine to medium gravels of flint and subrounded fine to medium clasts of chalk.	(0.45)	
								0.70	
	1.00-1.45	1	SPT	N=14			Firm to stiff grey mottled with light brown slightly silty slightly sandy CLAY with occasional putty chalk, gravels of angular fine to coarse flint and subrounded chalk. Sand is fine. (GAULT FORMATION)		
	1.00	3	D						
	1.00		V	c_u=49					
							... @ 1.3m Onset of firm clays becoming fissured. Streaky calcareous inclusions and putty chalk noted throughout strata.	(1.70)	
	2.00-2.45	2	SPT	N=12					
	2.00		V	c_u=115					
								2.40	
							Stiff fissured dark grey/blue occasionally mottled with pale yellow to brown silty CLAY with some inclusions of fine decomposed wood fragmets up to 10mm in length and 3mm in thickness. (GAULT FORMATION)		
	3.00-3.45	3	SPT	N=14					
								(2.60)	
	4.00-4.45	4	SPT	N=19			... @ 4.0m Selenite crystals noted and fine gravel sized/coarse sand-sized siltstone and calcareous nodules.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole remained dry and stable during excavation.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WSE**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**06.09.12**	**18.16**	**E:543469.0 N:260550.0**	**2** of **2**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	5.00-5.45	5	SPT	N=32			Stiff fissured dark grey/blue occasionally mottled with pale yellow to brown silty CLAY with some inclusions of fine decomposed wood fragmets up to 10mm in length and 3mm in thickness. (GAULT FORMATION) *(stratum text copied from layer at 2.40m depth from previous sheet)*	5.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WSH**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**06.09.12**	**19.16**	**E:543567.0 N:260638.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill & Instru-mentation	Description of Strata	Depth (Thick ness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.20-0.30	1	ES	Tub+VL+J			TOPSOIL: Grass vegetation over brown to dark brown slightly silty sandy CLAY with gravels of angular to subangular fine to coarse flint, subrounded fine to medium chalk and fine to coarse chert. Frequent rootlets of 1-2mm encountered throughout. (TOPSOIL)	(0.50)	
	0.50-0.60	2	D				Orangey-brown gravelly sandy CLAY. Gravels are angular to subangular fine to coarse flints. Dark grey pockets of decomposing matter noted throughout. (RIVER TERRACE DEPOSITS)	0.50	
	1.00-1.45	1	SPT	N=9			... @ 1.1m Gravels become more rare and are predominantly fine to medium.	(1.50)	
	1.40-1.60	3	D				... @ 1.7m Clasts of hard and soft calcareous nodules found at the base of strata.	2.00	
	2.00-2.45	2	SPT	N=33			... @ 1.80m to 2.0m Lense of orangey-brown gravelly medium SAND. Gravels are predominantly angular fine to medium flint.	(0.50)	
							Orangey-brown SAND and GRAVEL. Gravel is angular fine to coarse flint and fine chalk clasts. Sand is fine to coarse predominantly fine to medium. (RIVER TERRACE DEPOSITS)	2.50	
							Firm orangey-brown/grey mottled with orange-red sandy silty CLAY. Sand is predominantly fine. (GAULT FORMATION)	(0.50)	
	3.00-3.45	3	SPT(c)	N=16			... @ 2.8 Transition into grey mottled pale yellow-grey slightly sandy silty CLAY.	3.00	

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Borehole remained stable during excavation.
2. Soils saturated below 2.5m
3. Water seepage noted at 2.4m bgl.

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

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	

DRAFT
WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
NIAB - Phase 1	**BDW Trading Limited**	**WSM**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
25459	**06.09.12**	**18.75**	**E:543512.0 N:260704.0**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10	1	ES	J			MADE GROUND: Dark brown slightly silty sandy CLAY. Some fine to coarse gravels of subangular flint and occasional fine subangular brick fragments. (MADE GROUND)	0.25	
	0.30-0.40	2	ES	Tub+VL+J			Orange to dark brown slightly clayey gravelly SAND. Gravel is fine to coarse subangular flint and subrounded chalk clasts. Sand is fine.	0.50	
	0.60-0.80	3	D				Medium dense to very dense gravelly SAND. Gravel is angular to subrounded fine to coarse flint and occasional cobbles of flint. Sand is predominanlty medium to coarse.	(0.50)	
	1.00-1.17	1	SPT(c)	N=91*				1.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Refusal at terminal depth due to density of soils

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

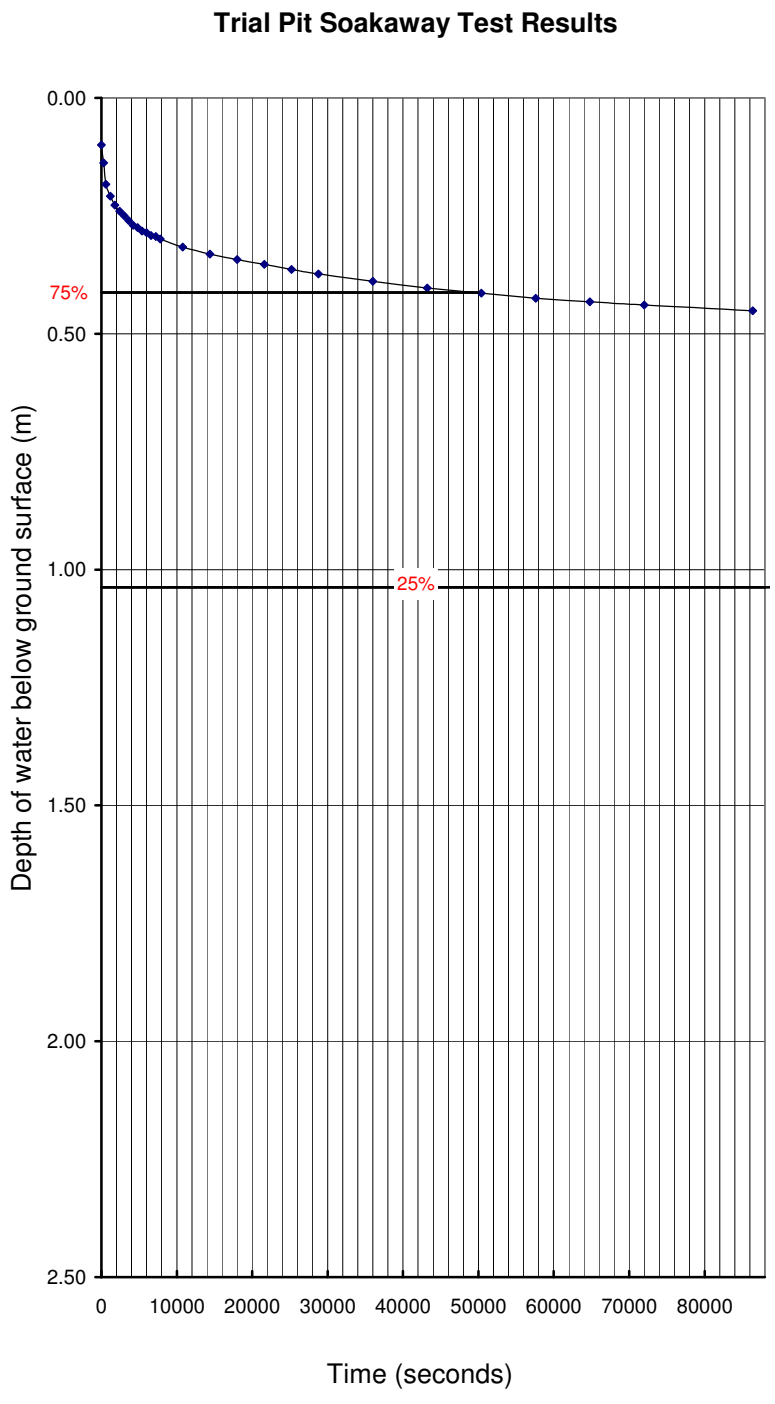
Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**MOS**	**OPengilly**	BLC

H2 – INFILTRATION TEST RESULTS

Trial Pit Soakaway Test to BRE Digest 365

Location	TP1 (i)	**Test No**	Test 1
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.45
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	28.08.12	**Water level at start (mbgl)**	0.1
Operator	MOS / OP	**Depth to Base of Trial Pit (m)**	1.35

Time (Secs)	Water level (mbgl)
0	0.10
300	0.14
600	0.18
1200	0.21
1800	0.23
2400	0.24
3000	0.25
3600	0.26
4200	0.27
4800	0.275
5400	0.282
6000	0.286
6600	0.292
7200	0.294
7800	0.299
10800	0.316
14400	0.331
18000	0.343
21600	0.353
25200	0.364
28800	0.373
36000	0.389
43200	0.403
50400	0.414
57600	0.425
64800	0.43
72000	0.44
86400	0.45



Results

V_{p75-25} (m^3)	-
a_{p50} (m^2)	-
t_{p75} (s)	-
t_{p25} (s)	-
t_{p75-25} (s)	-
Infiltration Rate (m/s)	INVALID

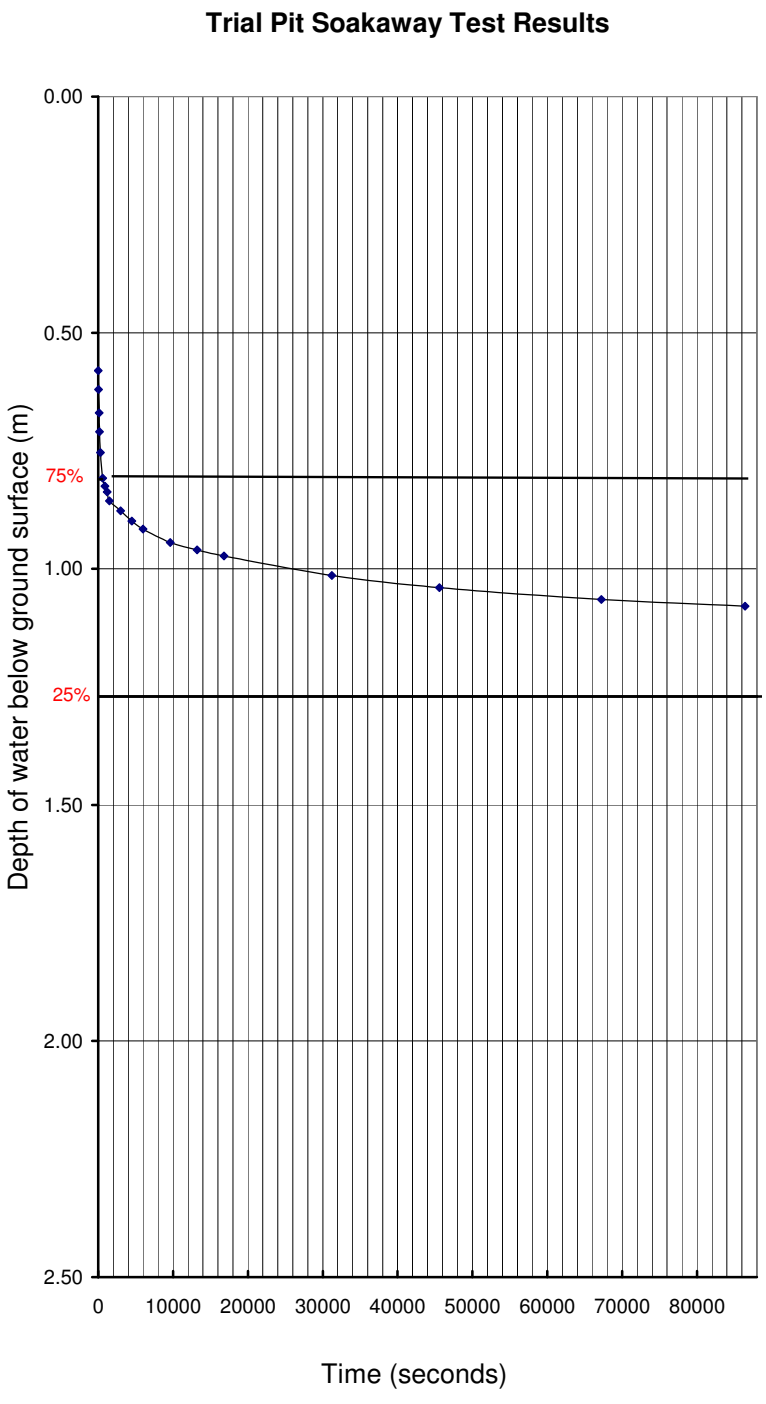
Groundwater did not infiltrate past the 25 and 75 percentiles over a 24 hour period.

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP2(i)	**Test No**	Test 1
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.1
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	28.08.12 - 29.08.12	**Water level at start (mbgl)**	0.58
Operator	MOS / OP	**Depth to Base of Trial Pit (m)**	1.50

Time (Secs)	Water level (mbgl)
0	0.58
60	0.62
120	0.67
180	0.71
300	0.754
600	0.808
900	0.825
1200	0.837
1500	0.856
3000	0.877
4500	0.899
6000	0.916
9600	0.944
13200	0.96
16800	0.973
31200	1.014
45600	1.04
67200	1.065
86400	1.079



Results

V_{p75-25} (m^3)	-
a_{p50} (m^2)	-
t_{p75} (s)	-
t_{p25} (s)	-
t_{p75-25} (s)	-
Infiltration Rate (m/s)	INVALID

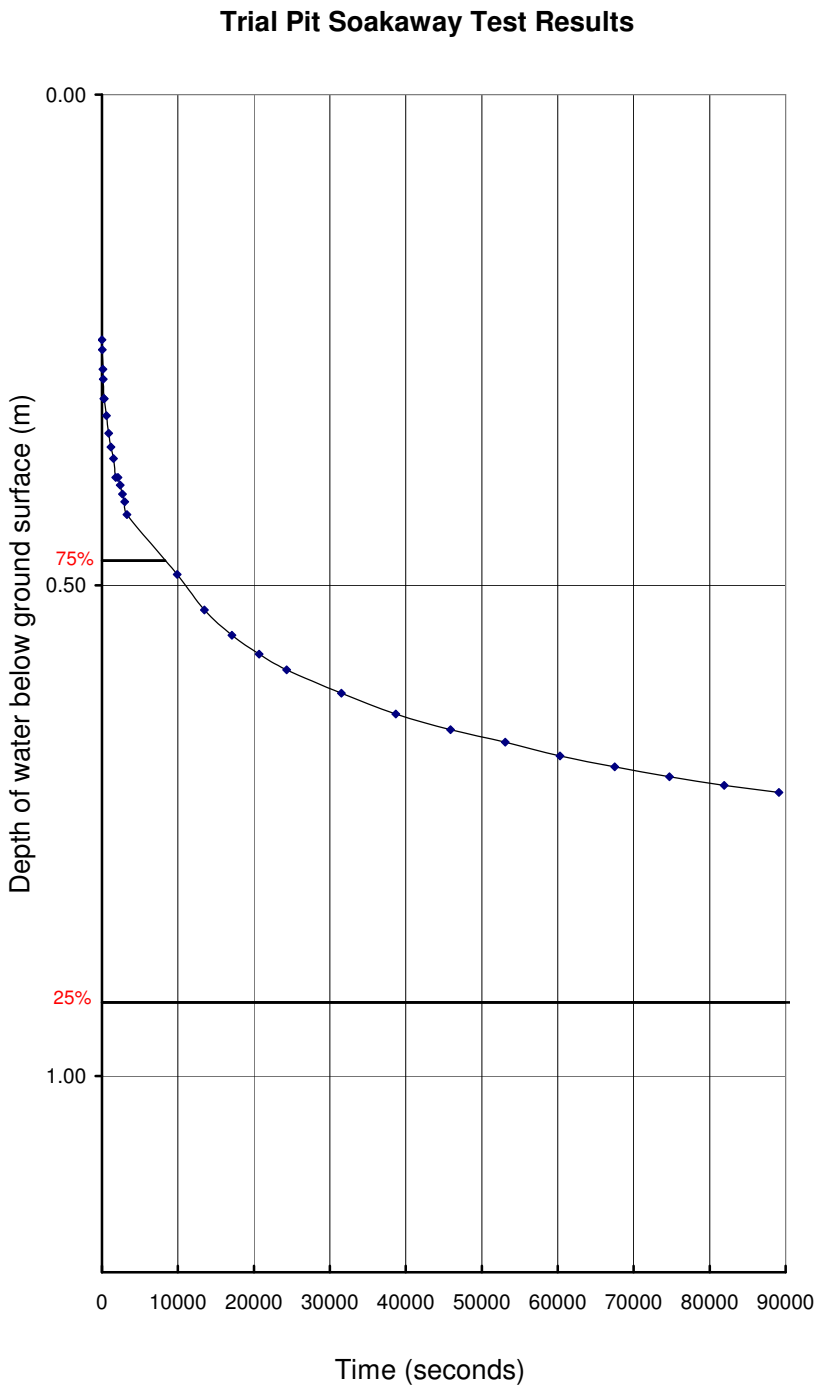
Groundwater did not infiltrate past the 25 and 75 percentiles over a 24 hour period.

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP3 (i)	**Test No**	Test 1
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.55
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	29.08.12 - 30.08.12	**Water level at start (mbgl)**	0.25
Operator	MOS	**Depth to Base of Trial Pit (m)**	1.15

Time (Secs)	Water level (mbgl)
0	0.25
60	0.26
120	0.28
180	0.29
240	0.31
300	0.31
600	0.327
900	0.345
1200	0.359
1500	0.371
1800	0.39
2100	0.39
2400	0.398
2700	0.407
3000	0.415
3300	0.428
9900	0.489
13500	0.525
17100	0.551
20700	0.57
24300	0.586
31500	0.61
38700	0.631
45900	0.647
53100	0.66
60300	0.67
67500	0.69
74700	0.70
81900	0.70
89100	0.711



Results

V_{p75-25} (m^3)	-
a_{p50} (m^2)	-
t_{p75} (s)	-
t_{p25} (s)	-
t_{p75-25} (s)	-
Infiltration Rate (m/s)	INVALID TEST

Groundwater did not infiltrate past the 25 and 75 percentiles over a 24 hour period.

ASSUMED 30% POROSITY OF BACKFILL SHINGLE

Inferred infiltration calculated at <1.86E-07

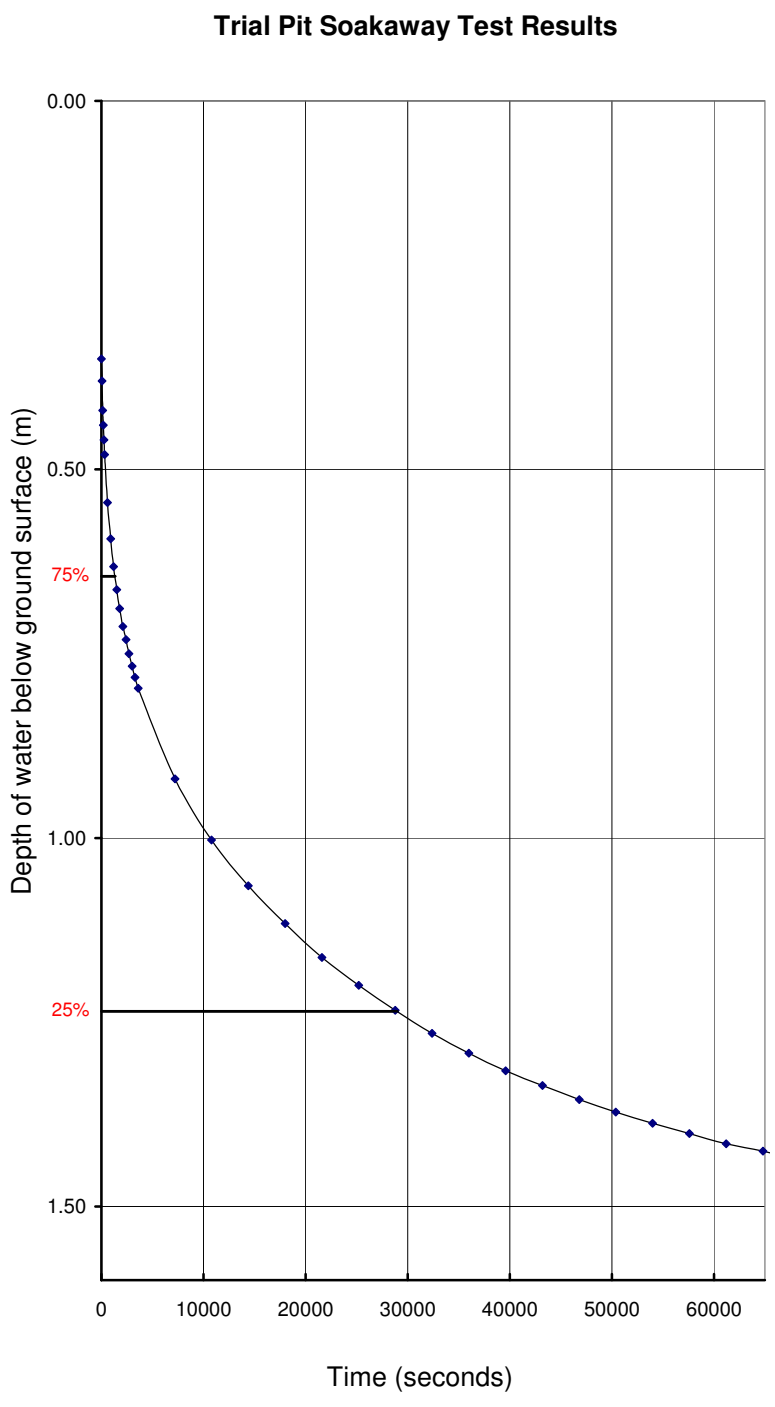
Figure

Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP4 (i)	**Test No**	Test 1
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.29
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	30.08.12 - 31.08.12	**Water level at start (mbgl)**	0.35
Operator	MOS / OP / BC	**Depth to Base of Trial Pit (m)**	1.53

Time (Secs)	Water level (mbgl)
0	0.35
60	0.38
120	0.42
180	0.44
240	0.46
300	0.48
600	0.545
900	0.594
1200	0.632
1500	0.663
1800	0.689
2100	0.713
2400	0.731
2700	0.75
3000	0.767
3300	0.782
3600	0.797
7200	0.92
10800	1.003
14400	1.065
18000	1.116
21600	1.162
25200	1.2
28800	1.234
32400	1.265
36000	1.29
39600	1.32
43200	1.34
46800	1.36
50400	1.372
54000	1.387
57600	1.401
61200	1.415
64800	1.425
68400	1.437
72000	1.448
75600	1.45



Results

V_{p75-25} (m^3)	0.10
a_{p50} (m^2)	2.63
t_{p75} (s)	1350.00
t_{p25} (s)	29000.00
t_{p75-25} (s)	27650.00
Infiltration Rate (m/s)	1.41E-06

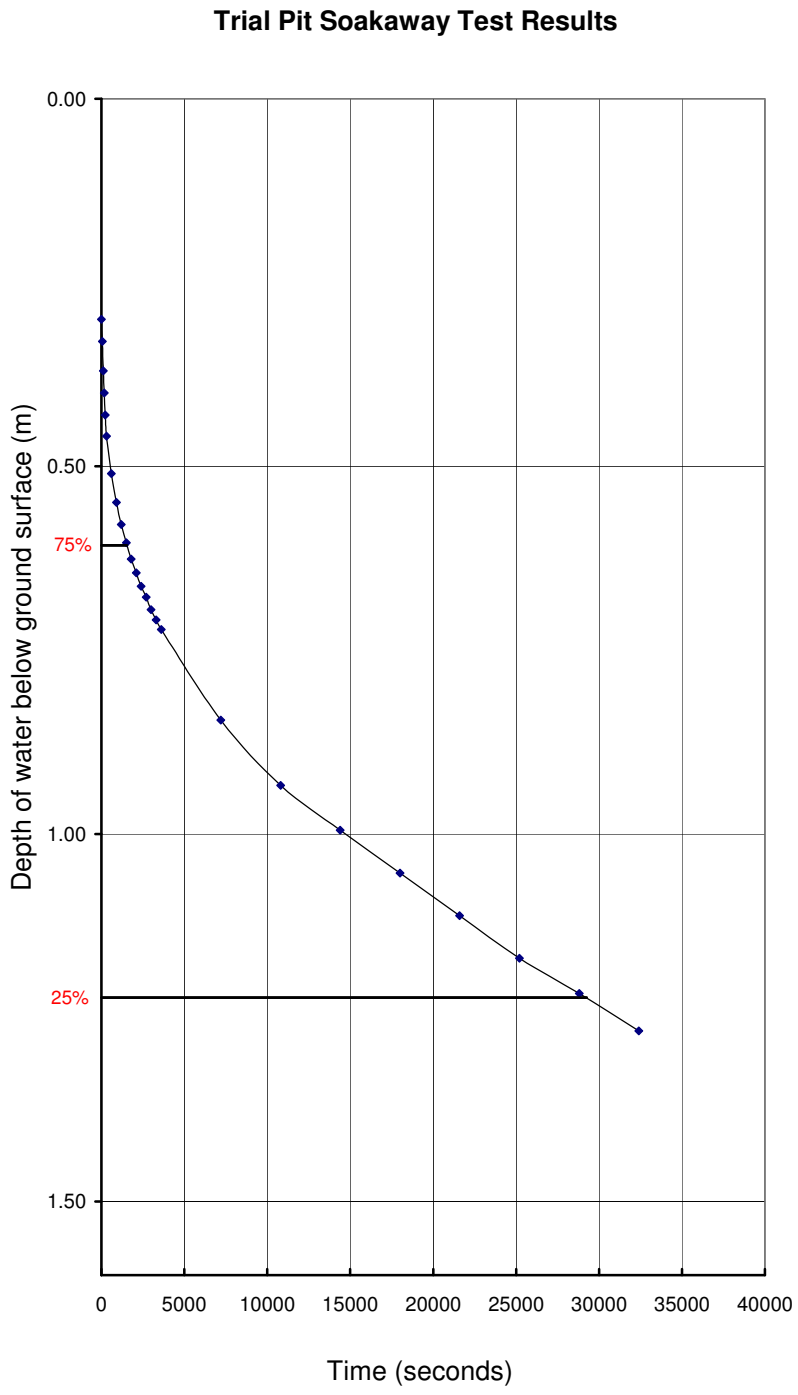
Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP4 (i)	**Test No**	Test 2
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.29
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	31.08.12	**Water level at start (mbgl)**	0.3
Operator	MOS	**Depth to Base of Trial Pit (m)**	1.53

Time (Secs)	Water level (mbgl)
0	0.30
60	0.33
120	0.37
180	0.40
240	0.43
300	0.459
600	0.51
900	0.549
1200	0.579
1500	0.604
1800	0.626
2100	0.645
2400	0.663
2700	0.678
3000	0.695
3300	0.709
3600	0.722
7200	0.845
10800	0.934
14400	0.995
18000	1.053
21600	1.111
25200	1.169
28800	1.217
32400	1.268



Results

V_{p75-25} (m^3)	0.11
a_{p50} (m^2)	2.72
t_{p75} (s)	1550.00
t_{p25} (s)	29250.00
t_{p75-25} (s)	27700.00
Infiltration Rate (m/s)	1.42E-06

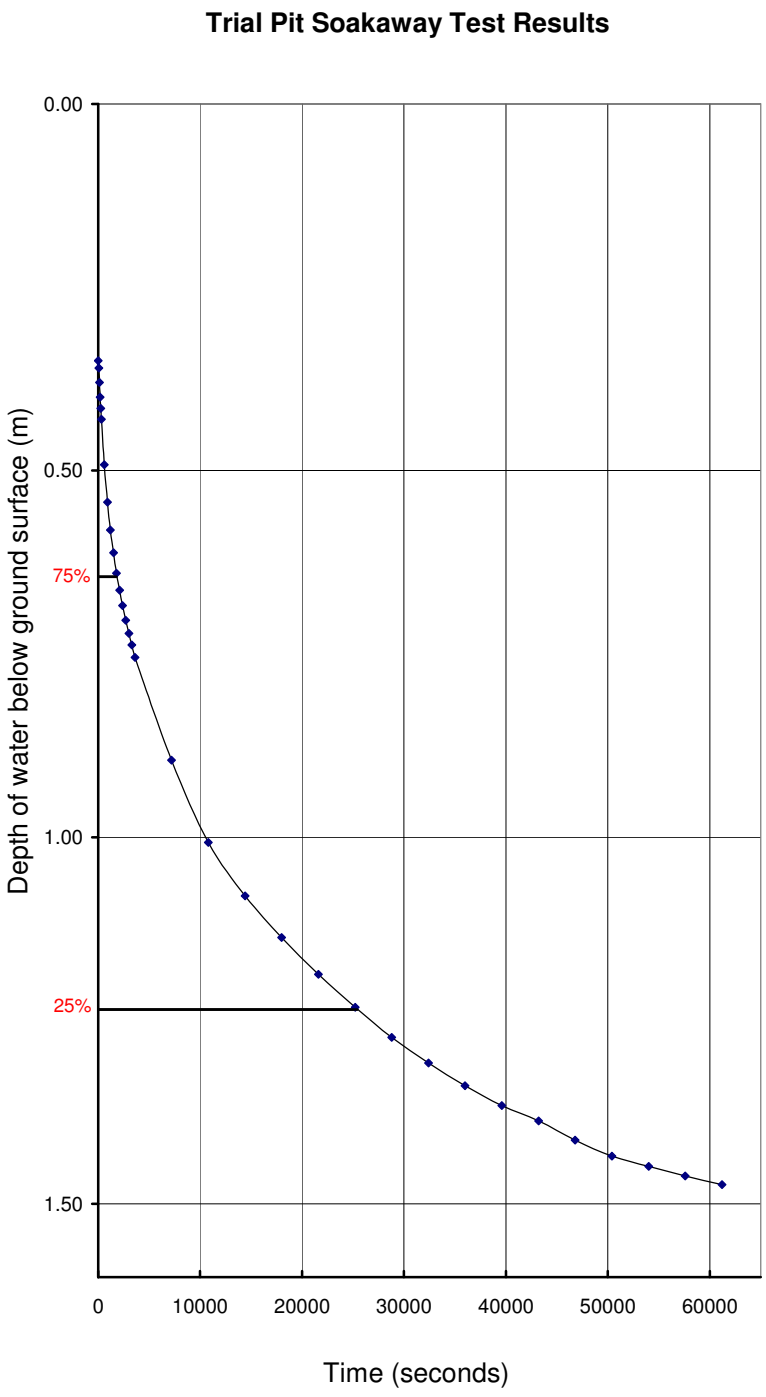
Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP4 (i)	**Test No**	Test 3
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.29
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	03.09.12	**Water level at start (mbgl)**	0.35
Operator	MOS / BC	**Depth to Base of Trial Pit (m)**	1.53

Time (Secs)	Water level (mbgl)
0	0.35
60	0.36
120	0.38
180	0.40
240	0.42
300	0.43
600	0.492
900	0.543
1200	0.581
1500	0.612
1800	0.64
2100	0.663
2400	0.684
2700	0.704
3000	0.722
3300	0.738
3600	0.755
7200	0.895
10800	1.007
14400	1.08
18000	1.137
21600	1.187
25200	1.232
28800	1.273
32400	1.308
36000	1.34
39600	1.37
43200	1.39
46800	1.41
50400	1.435
54000	1.449
57600	1.462
61200	1.474



Results

V_{p75-25} (m^3)	0.10
a_{p50} (m^2)	2.63
t_{p75} (s)	1800.00
t_{p25} (s)	25400.00
t_{p75-25} (s)	23600.00
Infiltration Rate (m/s)	1.65E-06

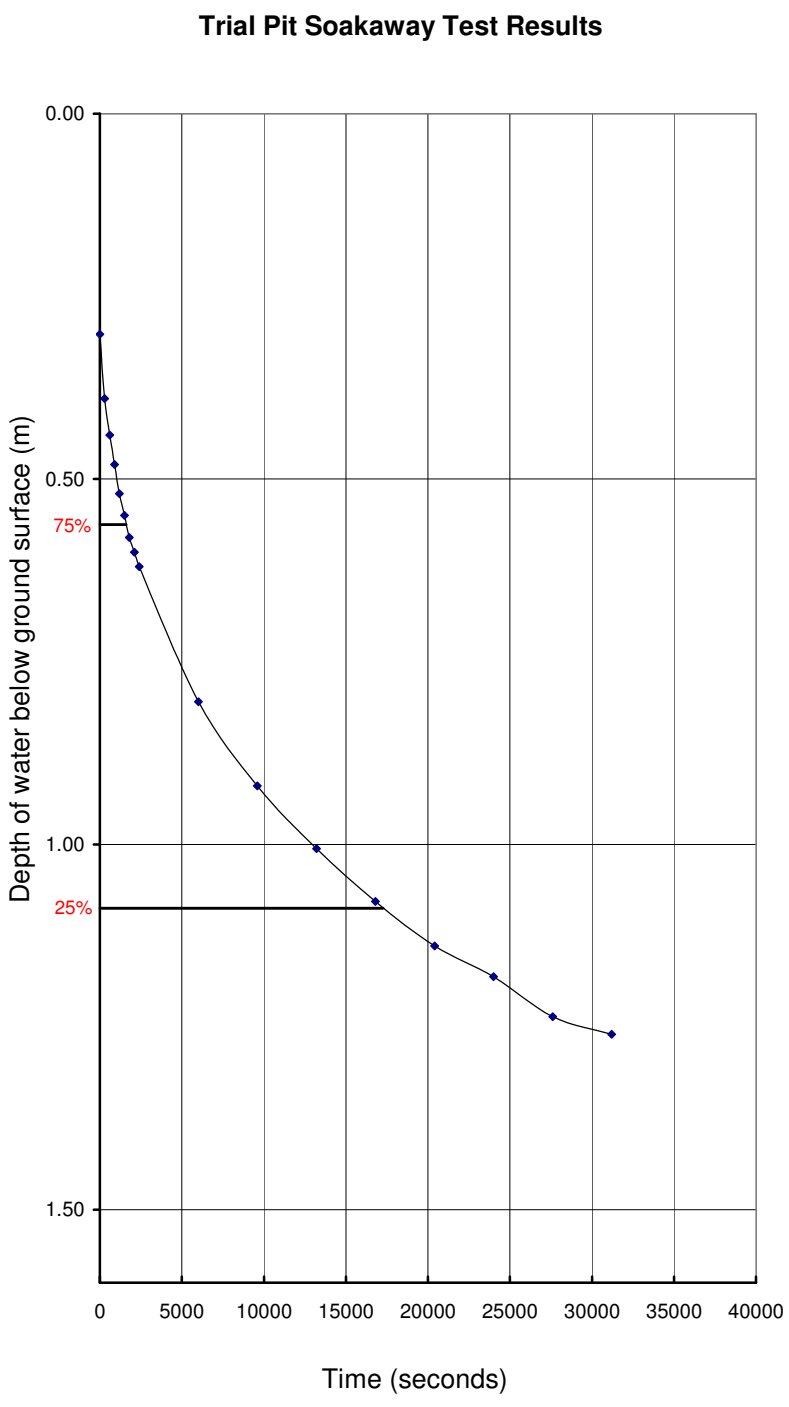
Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP5 (i)	**Test No**	Test 1
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.41
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	29.08.12	**Water level at start (mbgl)**	0.3
Operator	MOS / OP	**Depth to Base of Trial Pit (m)**	1.35

Time (Secs)	Water level (mbgl)
0	0.30
300	0.39
600	0.44
900	0.48
1200	0.52
1500	0.55
1800	0.58
2100	0.6
2400	0.62
6000	0.805
9600	0.92
13200	1.006
16800	1.078
20400	1.139
24000	1.181
27600	1.236
31200	1.26



Results

V_{p75-25} (m^3)	0.10
a_{p50} (m^2)	2.59
t_{p75} (s)	1600.00
t_{p25} (s)	17275.00
t_{p75-25} (s)	15675.00
Infiltration Rate (m/s)	2.46E-06

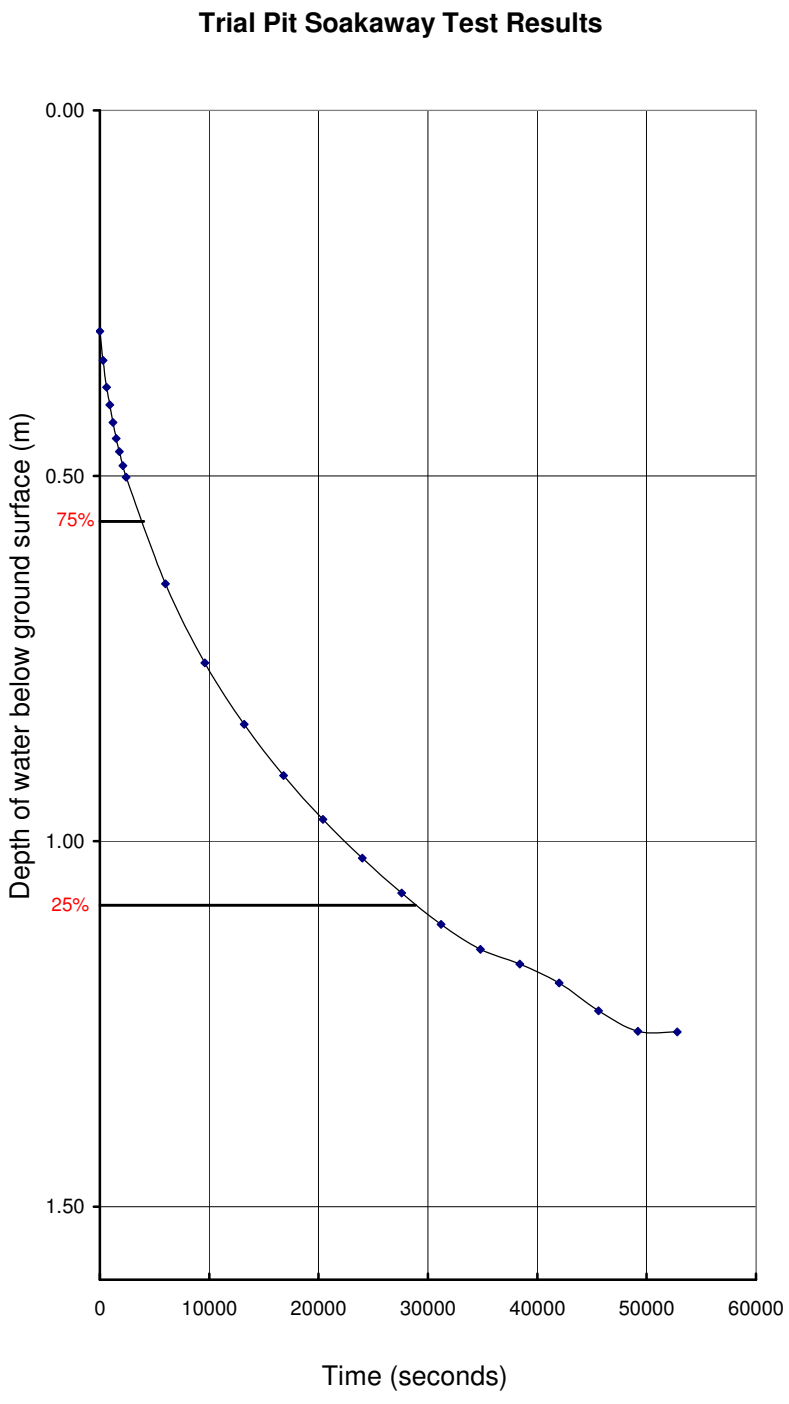
Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP5 (i)	**Test No**	Test 2
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.41
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	30.08.12 - 31.08.12	**Water level at start (mbgl)**	0.3
Operator	MOS / OP	**Depth to Base of Trial Pit (m)**	1.35

Time (Secs)	Water level (mbgl)
0	0.30
300	0.34
600	0.38
900	0.40
1200	0.43
1500	0.449
1800	0.467
2100	0.486
2400	0.502
6000	0.648
9600	0.756
13200	0.84
16800	0.91
20400	0.97
24000	1.023
27600	1.071
31200	1.114
34800	1.148
38400	1.168
42000	1.194
45600	1.232
49200	1.26
52800	1.261



Results

V_{p75-25} (m^3)	0.10
a_{p50} (m^2)	2.59
t_{p75} (s)	4000.00
t_{p25} (s)	28850.00
t_{p75-25} (s)	24850.00
Infiltration Rate (m/s)	1.55E-06

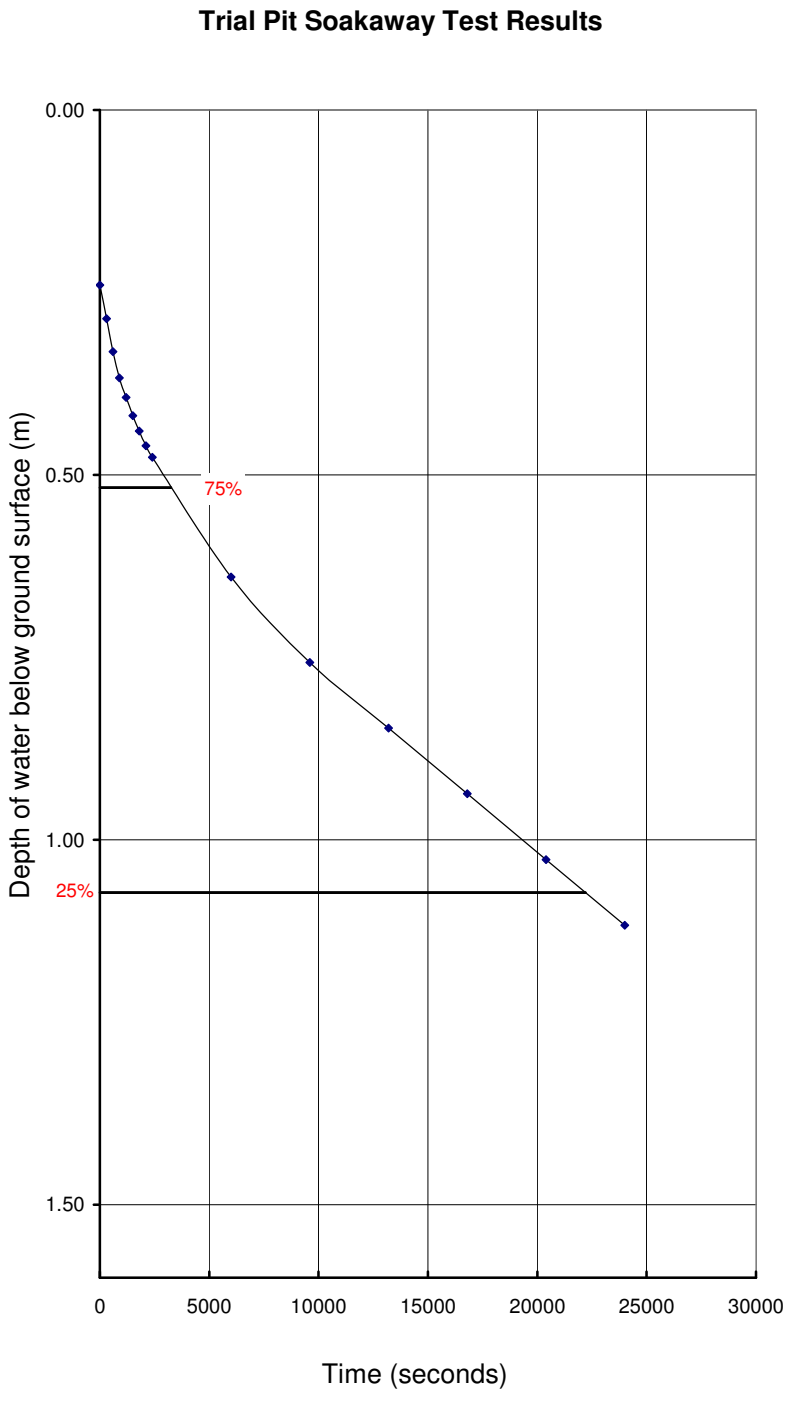
Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP5 (i)	**Test No**	Test 3
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.41
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	31.08.12	**Water level at start (mbgl)**	0.24
Operator	MOS	**Depth to Base of Trial Pit (m)**	1.35

Time (Secs)	Water level (mbgl)
0	0.24
300	0.29
600	0.33
900	0.37
1200	0.39
1500	0.419
1800	0.44
2100	0.46
2400	0.476
6000	0.64
9600	0.757
13200	0.847
16800	0.937
20400	1.027
24000	1.117



Results

V_{p75-25} (m^3)	0.11
a_{p50} (m^2)	2.70
t_{p75} (s)	3250.00
t_{p25} (s)	22200.00
t_{p75-25} (s)	18950.00
Infiltration Rate (m/s)	2.07E-06

Calculations based on 30% pososity of backfill shingle

Red text denotes inferred data

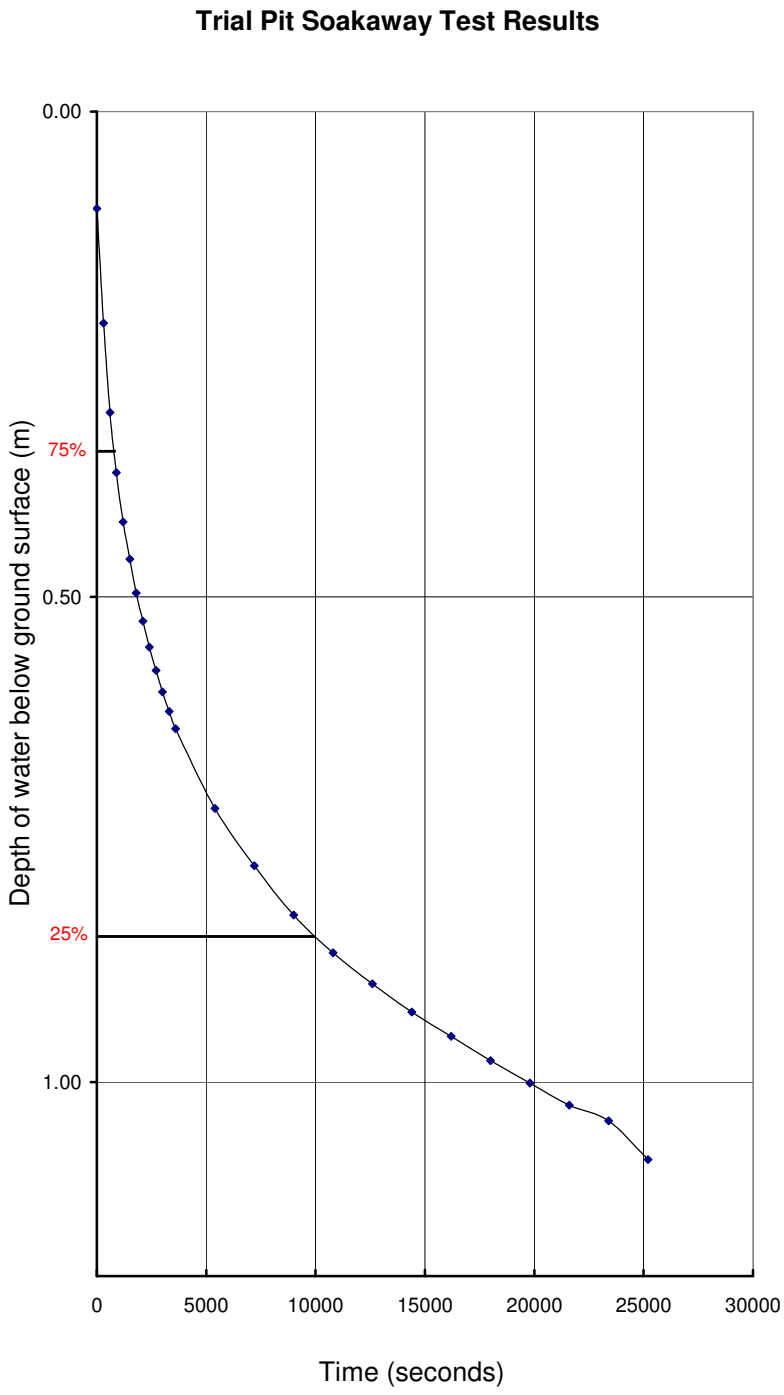
Figure

Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP6 (i)	**Test No**	Test 1
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.35
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	30.08.12	**Water level at start (mbgl)**	0.1
Operator	MOS	**Depth to Base of Trial Pit (m)**	1.10

Time (Secs)	Water level (mbgl)
0	0.10
300	0.22
600	0.31
900	0.37
1200	0.42
1500	0.461
1800	0.496
2100	0.525
2400	0.552
2700	0.576
3000	0.598
3300	0.618
3600	0.636
5400	0.718
7200	0.777
9000	0.828
10800	0.867
12600	0.899
14400	0.928
16200	0.953
18000	0.978
19800	1.001
21600	1.024
23400	1.04
25200	1.08



Results

V_{p75-25} (m^3)	0.09
a_{p50} (m^2)	2.41
t_{p75} (s)	825.00
t_{p25} (s)	9950.00
t_{p75-25} (s)	9125.00
Infiltration Rate (m/s)	4.15E-06

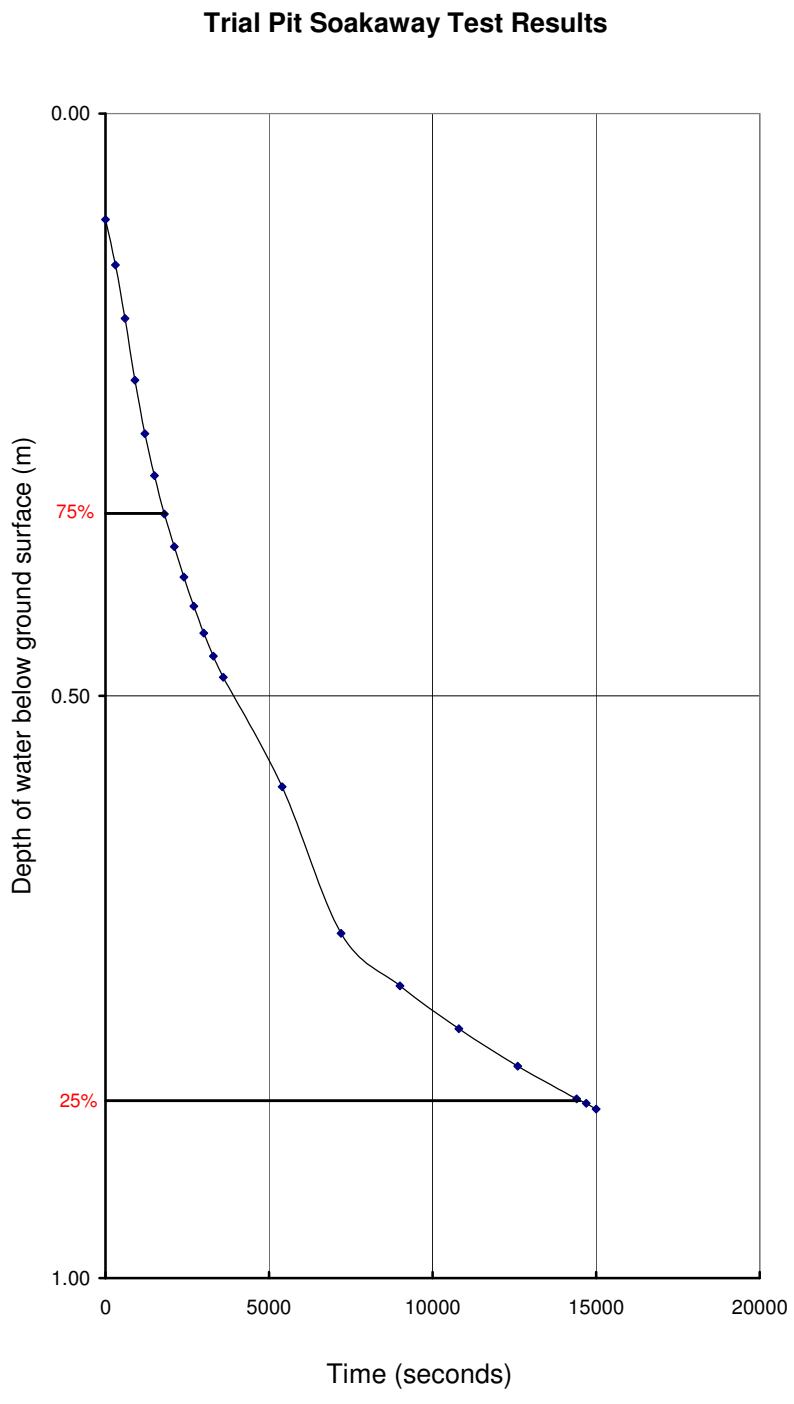
Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP6 (i)	**Test No**	Test 2
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.35
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	31.08.12	**Water level at start (mbgl)**	0.091
Operator	MOS	**Depth to Base of Trial Pit (m)**	1.10

Time (Secs)	Water level (mbgl)
0	0.09
300	0.13
600	0.18
900	0.23
1200	0.28
1500	0.311
1800	0.344
2100	0.372
2400	0.398
2700	0.423
3000	0.446
3300	0.466
3600	0.484
5400	0.578
7200	0.704
9000	0.749
10800	0.786
12600	0.818
14400	0.846
14700	0.85
15000	0.855



Results

V_{p75-25} (m^3)	0.09
a_{p50} (m^2)	2.42
t_{p75} (s)	1850.00
t_{p25} (s)	14500.00
t_{p75-25} (s)	12650.00
Infiltration Rate (m/s)	3.00E-06

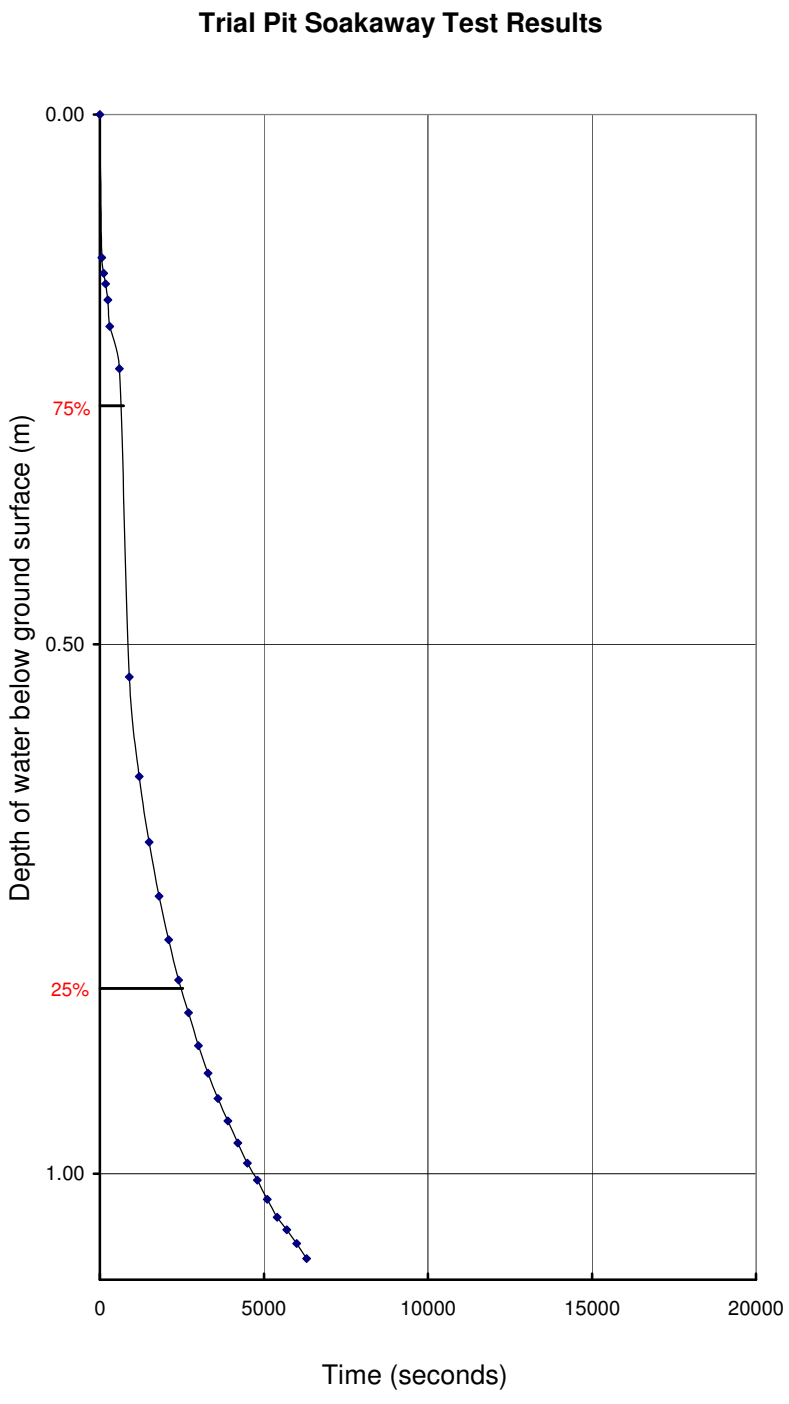
Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP6 (i)	**Test No**	Test 3
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.35
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	03.09.12	**Water level at start (mbgl)**	0
Operator	MOS / BC	**Depth to Base of Trial Pit (m)**	1.10

Time (Secs)	Water level (mbgl)
0	0.00
60	0.14
120	0.15
180	0.16
240	0.18
300	0.2
600	0.24
900	0.531
1200	0.625
1500	0.687
1800	0.738
2100	0.779
2400	0.817
2700	0.848
3000	0.879
3300	0.905
3600	0.929
3900	0.95
4200	0.971
4500	0.99
4800	1.006
5100	1.024
5400	1.041
5700	1.053
6000	1.066
6300	1.08



Results

V_{p75-25} (m^3)	0.10
a_{p50} (m^2)	2.59
t_{p75} (s)	725.00
t_{p25} (s)	2525.00
t_{p75-25} (s)	1800.00
Infiltration Rate (m/s)	2.15E-05

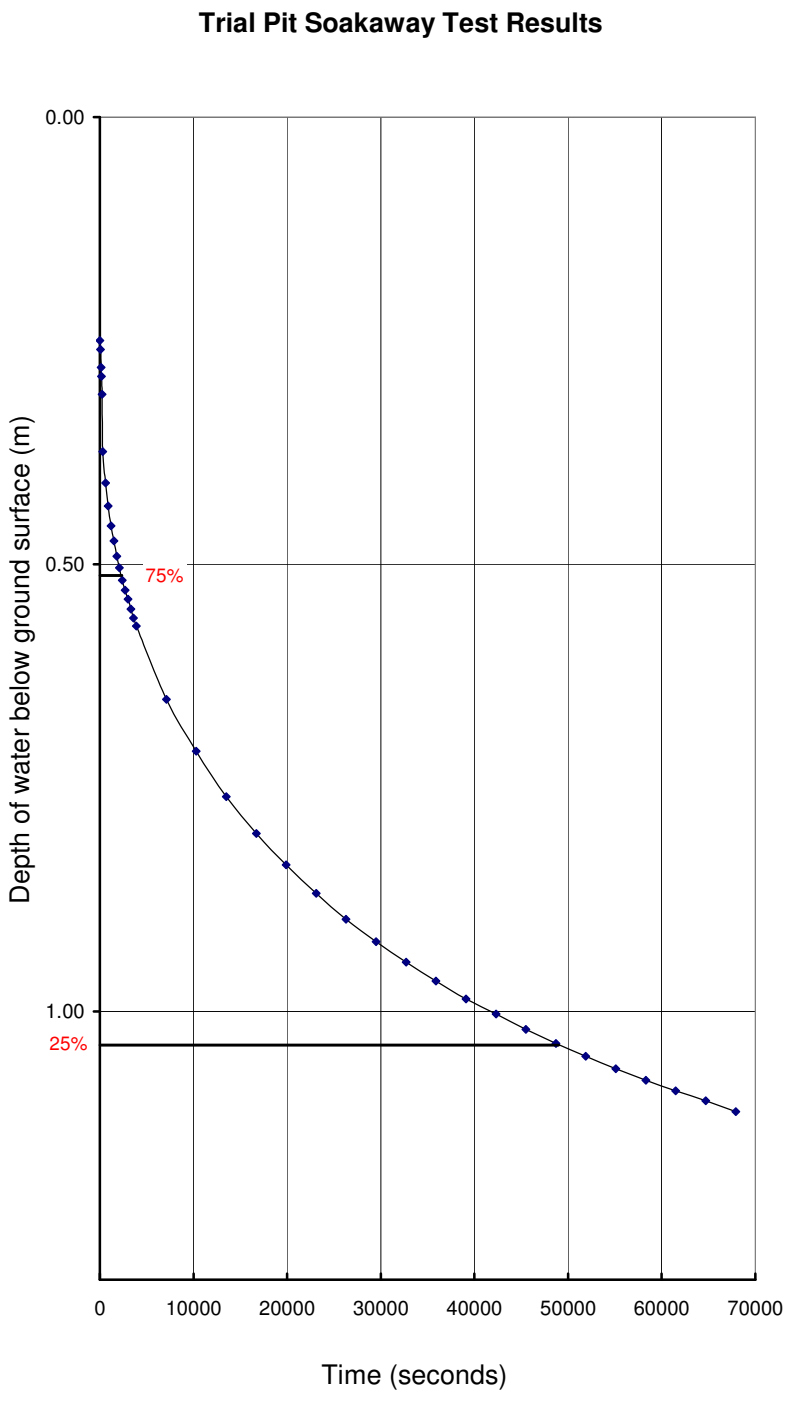
Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP7 (i)	**Test No**	Test 1
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.32
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	03.09.12	**Water level at start (mbgl)**	0.25
Operator	MOS / BC	**Depth to Base of Trial Pit (m)**	1.30

Time (Secs)	Water level (mbgl)
0	0.25
60	0.26
120	0.28
180	0.29
240	0.31
300	0.374
600	0.409
900	0.435
1200	0.457
1500	0.474
1800	0.491
2100	0.504
2400	0.518
2700	0.529
3000	0.539
3300	0.55
3600	0.56
3900	0.569
7100	0.651
10300	0.709
13500	0.76
16700	0.801
19900	0.836
23100	0.868
26300	0.897
29500	0.92
32700	0.95
35900	0.97
39100	0.99
42300	1.003
45500	1.020
48700	1.036
51900	1.050
55100	1.064
58300	1.077
61500	1.089
64700	1.10
67900	1.112



Results

V_{p75-25} (m^3)	0.09
a_{p50} (m^2)	2.45
t_{p75} (s)	2350.00
t_{p25} (s)	49000.00
t_{p75-25} (s)	46650.00
Infiltration Rate (m/s)	8.18E-07

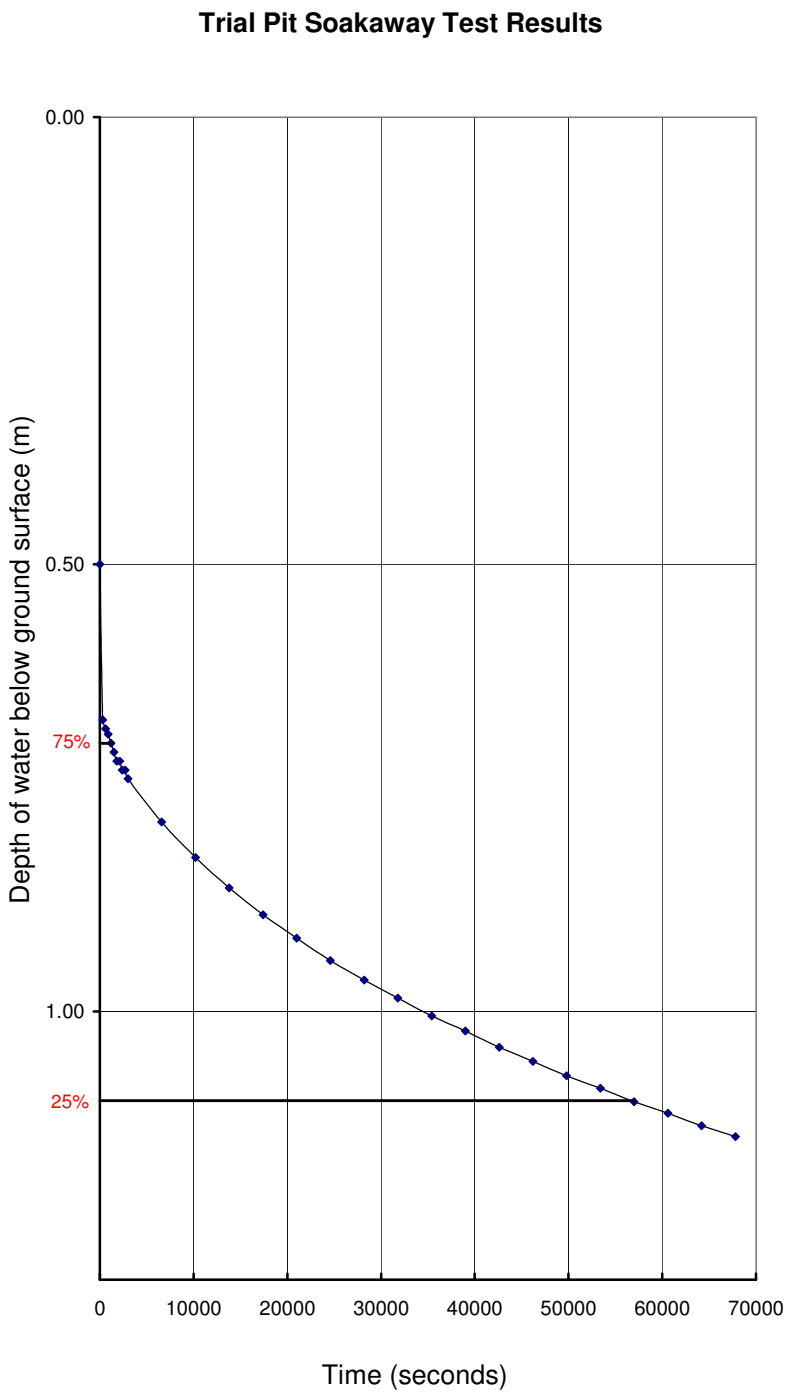
Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP7 (i)	**Test No**	Test 2
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.32
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	04.09.12 - 05.09.12	**Water level at start (mbgl)**	0.5
Operator	MOS / BC	**Depth to Base of Trial Pit (m)**	1.30

Time (Secs)	Water level (mbgl)
0	0.50
300	0.67
600	0.68
900	0.69
1200	0.70
1500	0.71
1800	0.72
2100	0.72
2400	0.73
2700	0.73
3000	0.74
6600	0.788
10200	0.828
13800	0.862
17400	0.892
21000	0.918
24600	0.943
28200	0.965
31800	0.985
35400	1.005
39000	1.022
42600	1.04
46200	1.056
49800	1.072
53400	1.086
57000	1.10
60600	1.11
64200	1.13
67800	1.14



Results

V_{p75-25} (m^3)	0.07
a_{p50} (m^2)	2.01
t_{p75} (s)	1400.00
t_{p25} (s)	56950.00
t_{p75-25} (s)	55550.00
Infiltration Rate (m/s)	6.38E-07

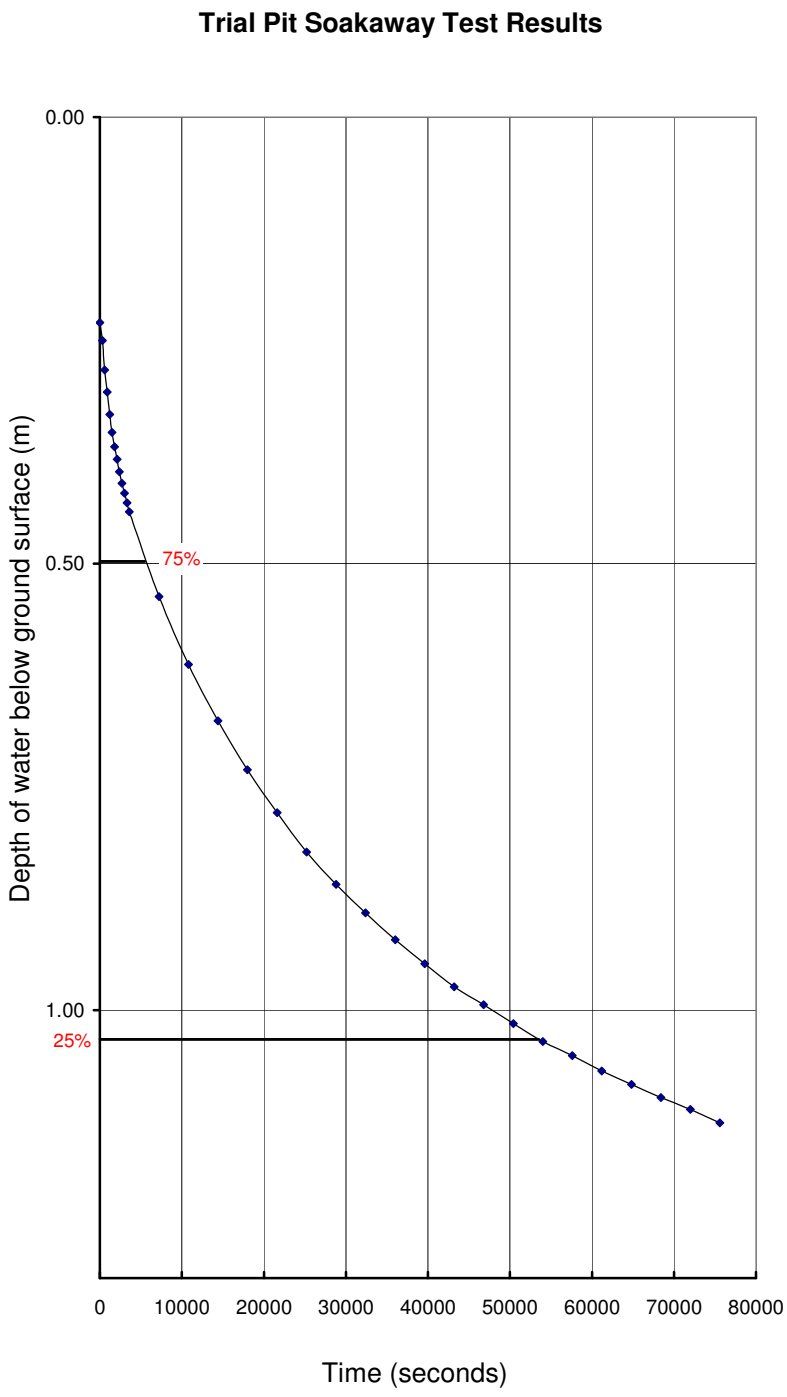
Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP7 (i)	**Test No**	Test 3
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.32
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	05.09.12 - 06.09.12	**Water level at start (mbgl)**	0.23
Operator	MOS	**Depth to Base of Trial Pit (m)**	1.30

Time (Secs)	Water level (mbgl)
0	0.23
300	0.25
600	0.28
900	0.31
1200	0.33
1500	0.353
1800	0.369
2100	0.383
2400	0.397
2700	0.41
3000	0.421
3300	0.432
3600	0.442
7200	0.537
10800	0.613
14400	0.676
18000	0.731
21600	0.779
25200	0.823
28800	0.859
32400	0.891
36000	0.921
39600	0.948
43200	0.974
46800	0.994
50400	1.02
54000	1.04
57600	1.05
61200	1.07
64800	1.083
68400	1.098
72000	1.111
75600	1.126



Results

V_{p75-25} (m^3)	0.10
a_{p50} (m^2)	2.49
t_{p75} (s)	5475.00
t_{p25} (s)	53500.00
t_{p75-25} (s)	48025.00
Infiltration Rate (m/s)	7.98E-07

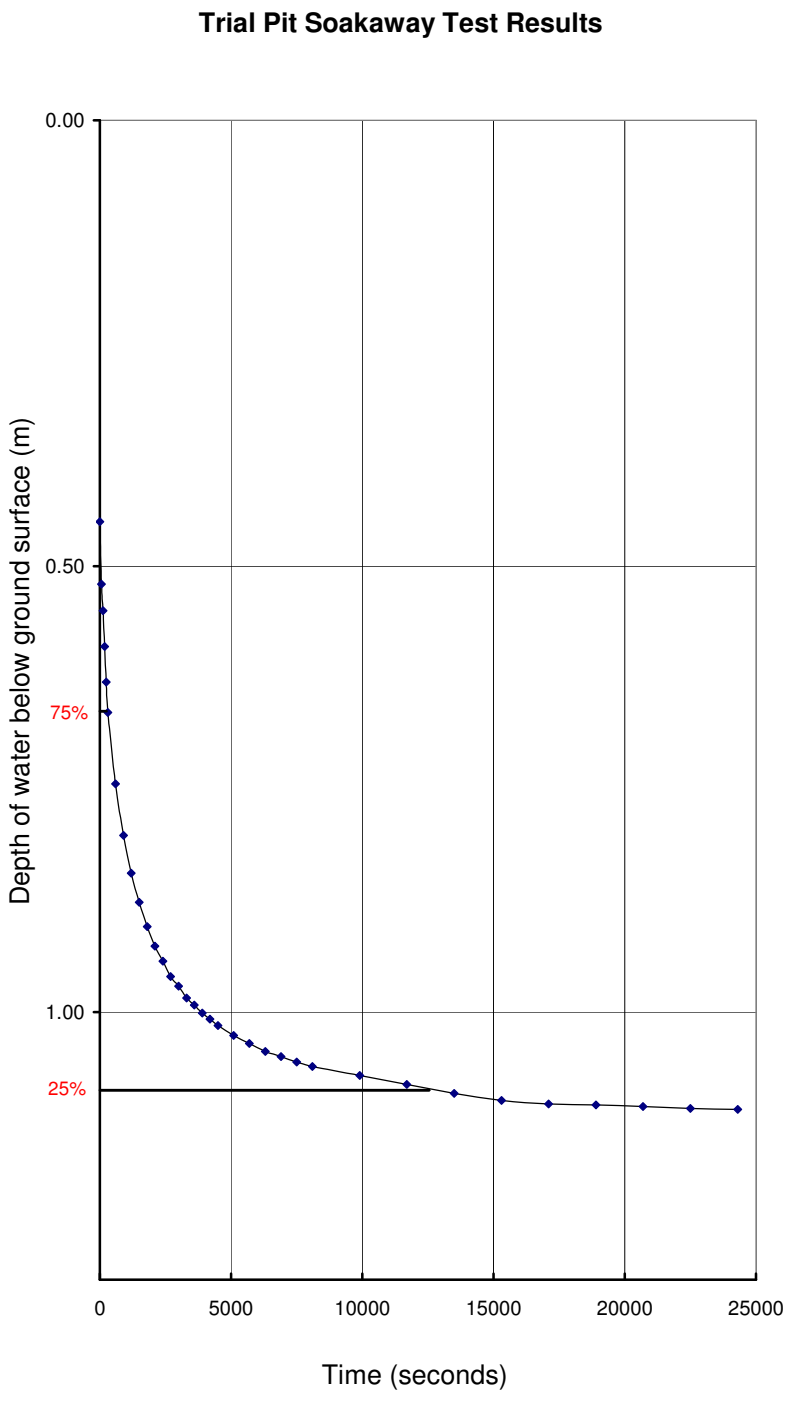
Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP8 (i)	**Test No**	Test 1
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.4
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	03.09.12 - 04.09.12	**Water level at start (mbgl)**	0.45
Operator	MOS / BC	**Depth to Base of Trial Pit (m)**	1.30

Time (Secs)	Water level (mbgl)
0	0.45
60	0.52
120	0.55
180	0.59
240	0.63
300	0.664
600	0.744
900	0.802
1200	0.844
1500	0.877
1800	0.904
2100	0.926
2400	0.943
2700	0.96
3000	0.971
3300	0.984
3600	0.992
3900	1.001
4200	1.008
4500	1.015
5100	1.026
5700	1.035
6300	1.044
6900	1.05
7500	1.056
8100	1.06
9900	1.07
11700	1.08
13500	1.09
15300	1.099
17100	1.103
18900	1.104
20700	1.106
22500	1.108
24300	1.109



Results

V_{p75-25} (m^3)	0.08
a_{p50} (m^2)	2.20
t_{p75} (s)	250.00
t_{p25} (s)	12550.00
t_{p75-25} (s)	12300.00
Infiltration Rate (m/s)	2.97E-06

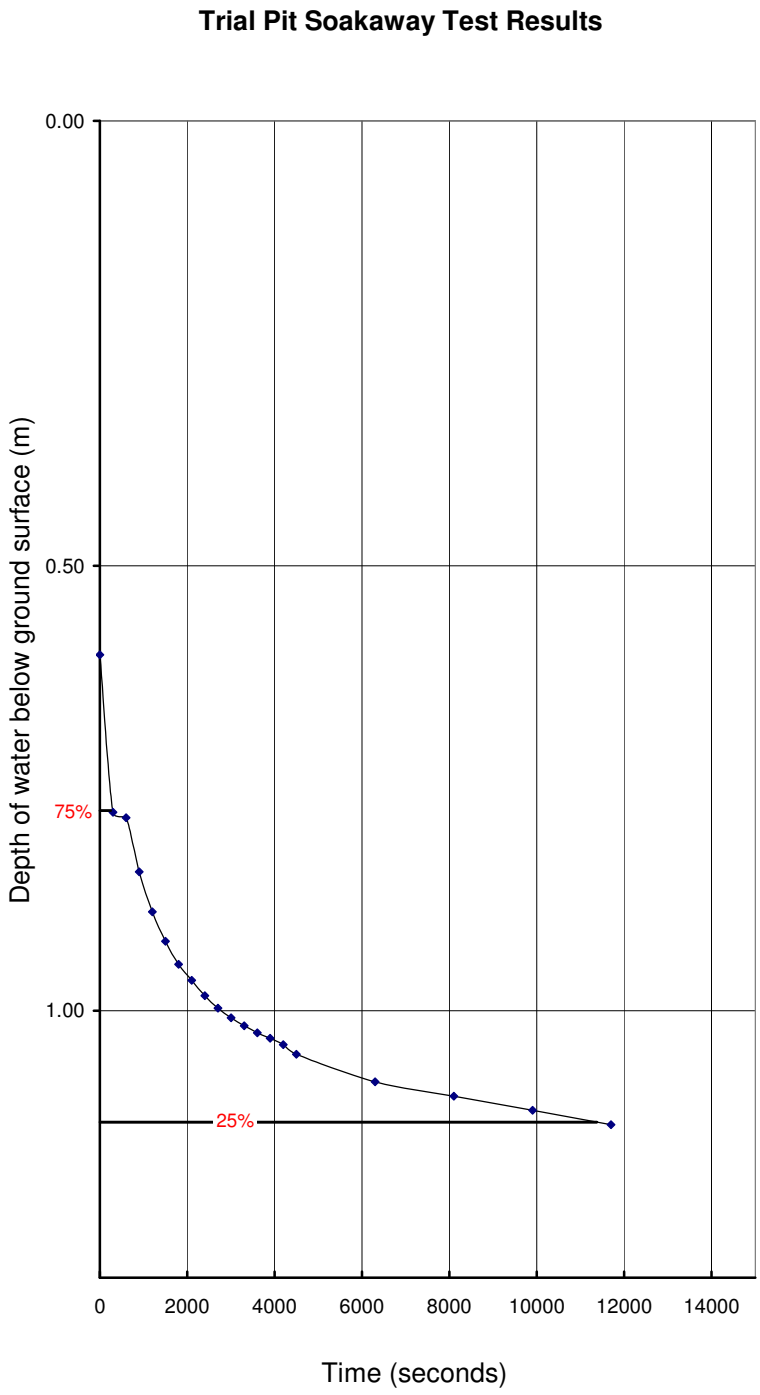
Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP8 (i)	**Test No**	Test 2
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.4
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	04.09.12	**Water level at start (mbgl)**	0.6
Operator	MOS / OP	**Depth to Base of Trial Pit (m)**	1.30

Time (Secs)	Water level (mbgl)
0	0.60
300	0.78
600	0.78
900	0.84
1200	0.89
1500	0.922
1800	0.948
2100	0.966
2400	0.983
2700	0.997
3000	1.008
3300	1.017
3600	1.025
3900	1.031
4200	1.038
4500	1.049
6300	1.08
8100	1.096
9900	1.112
11700	1.128



Results

V_{p75-25} (m^3)	0.07
a_{p50} (m^2)	1.93
t_{p75} (s)	250.00
t_{p25} (s)	11375.00
t_{p75-25} (s)	11125.00
Infiltration Rate (m/s)	3.09E-06

Calculations based on 30% pososity of backfill shingle

Red text denotes inferred data

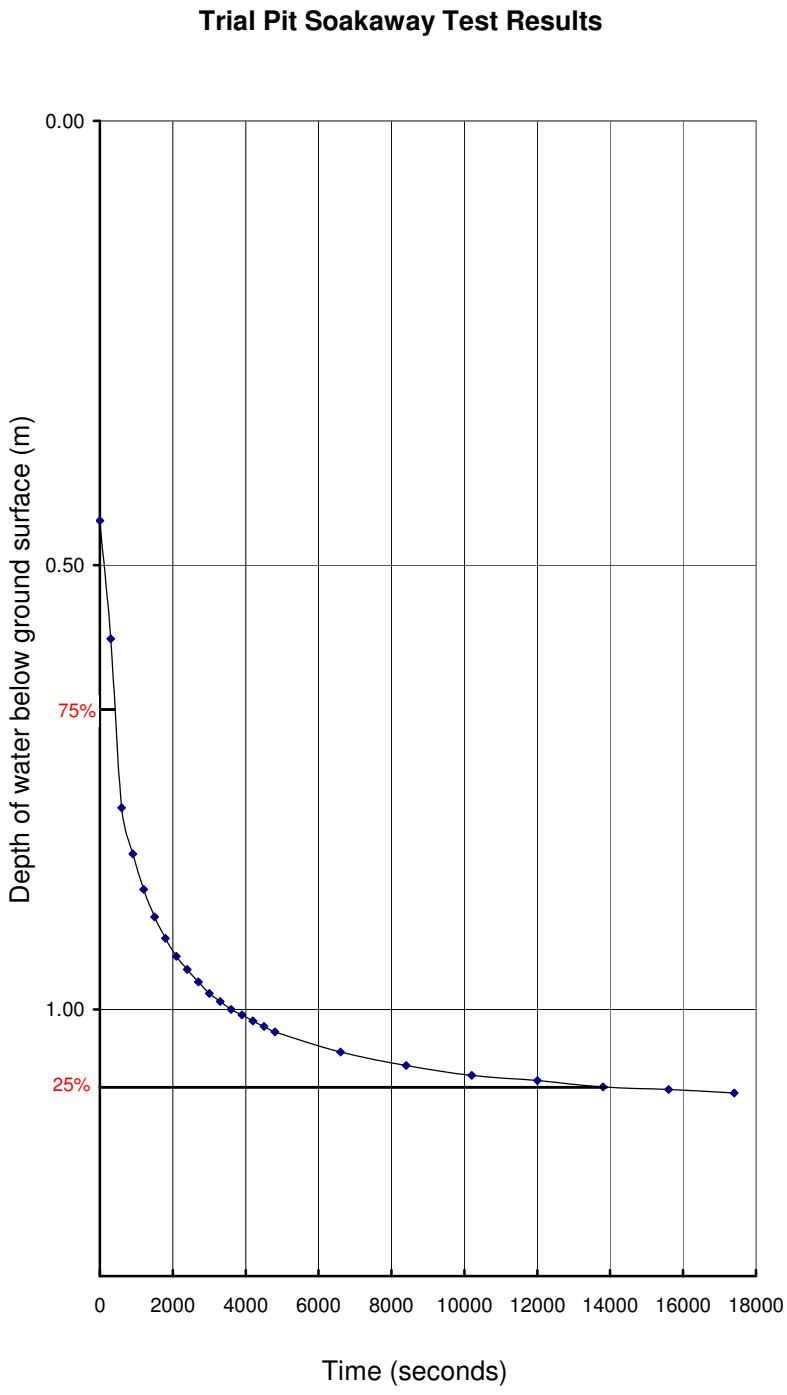
Figure

Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP8 (i)	**Test No**	Test 3
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.4
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	04.09.12 - 05.09.12	**Water level at start (mbgl)**	0.45
Operator	MOS / OP	**Depth to Base of Trial Pit (m)**	1.30

Time (Secs)	Water level (mbgl)
0	0.45
300	0.58
600	0.77
900	0.83
1200	0.87
1500	0.896
1800	0.92
2100	0.94
2400	0.955
2700	0.969
3000	0.982
3300	0.991
3600	1
3900	1.006
4200	1.013
4500	1.019
4800	1.025
6600	1.048
8400	1.063
10200	1.074
12000	1.08
13800	1.087
15600	1.09
17400	1.094



Results

V_{p75-25} (m^3)	0.08
a_{p50} (m^2)	2.20
t_{p75} (s)	400.00
t_{p25} (s)	13900.00
t_{p75-25} (s)	13500.00
Infiltration Rate (m/s)	2.70E-06

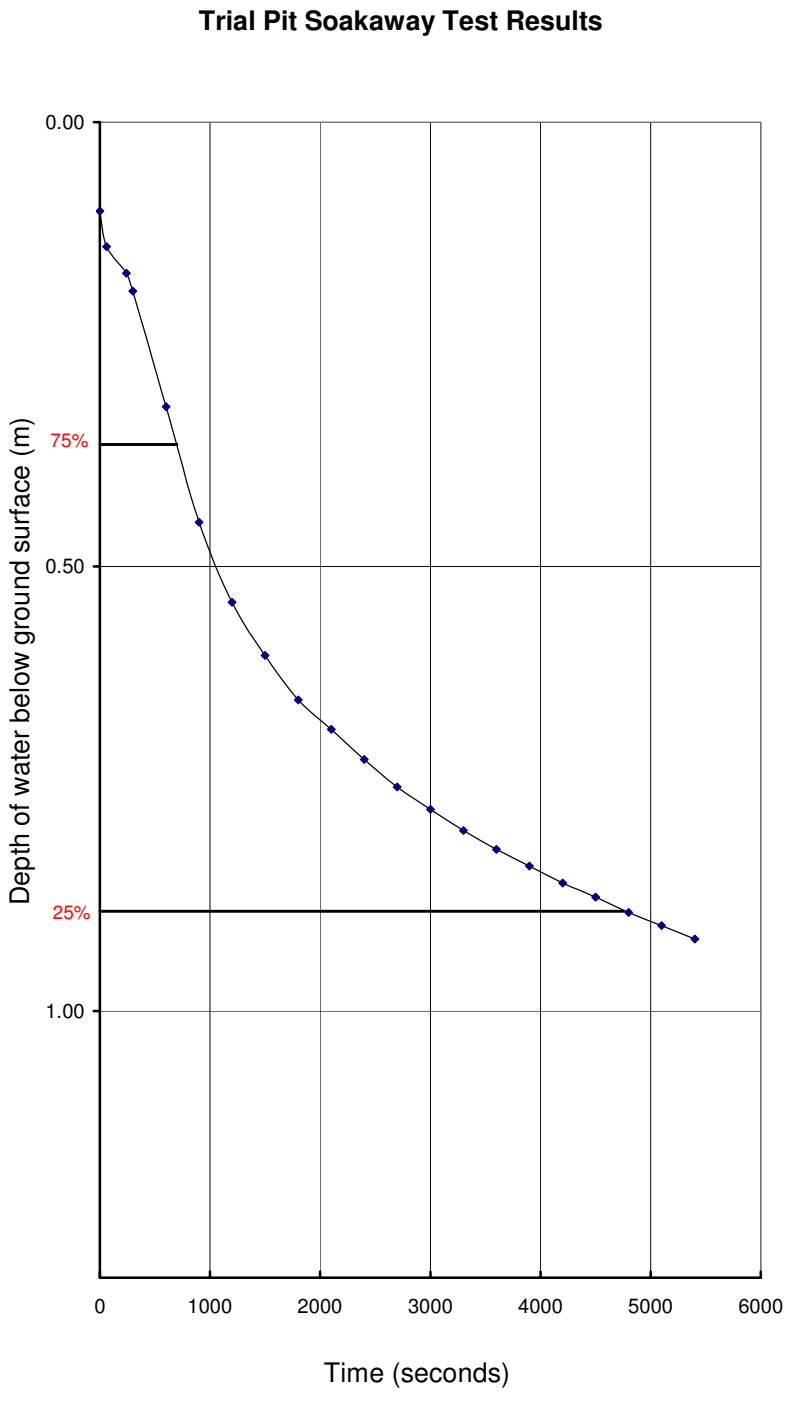
Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP9 (i)	**Test No**	Test 1
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.35
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	04.09.12	**Water level at start (mbgl)**	0.1
Operator	MOS / OP	**Depth to Base of Trial Pit (m)**	1.15

Time (Secs)	Water level (mbgl)
0	0.10
60	0.14
240	0.17
300	0.19
600	0.32
900	0.45
1200	0.54
1500	0.6
1800	0.65
2100	0.683
2400	0.717
2700	0.748
3000	0.773
3300	0.797
3600	0.818
3900	0.837
4200	0.856
4500	0.872
4800	0.889
5100	0.904
5400	0.919



Results

V_{p75-25} (m^3)	0.10
a_{p50} (m^2)	2.50
t_{p75} (s)	700.00
t_{p25} (s)	4750.00
t_{p75-25} (s)	4050.00
Infiltration Rate (m/s)	9.46E-06

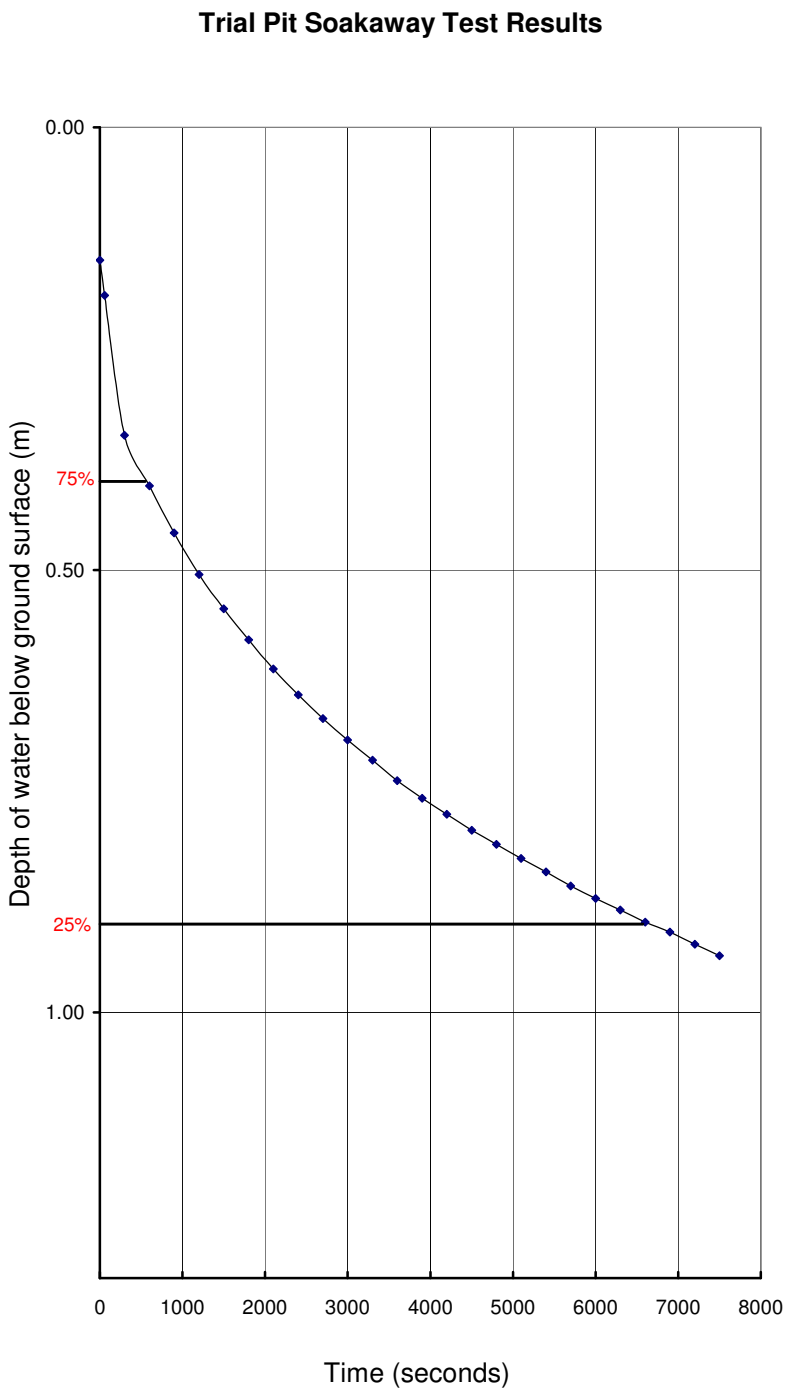
Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP9 (i)	**Test No**	Test 2
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.35
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	04.09.12	**Water level at start (mbgl)**	0.15
Operator	MOS / OP	**Depth to Base of Trial Pit (m)**	1.15

Time (Secs)	Water level (mbgl)
0	0.15
60	0.19
300	0.35
600	0.41
900	0.46
1200	0.505
1500	0.544
1800	0.579
2100	0.612
2400	0.641
2700	0.668
3000	0.692
3300	0.715
3600	0.738
3900	0.758
4200	0.776
4500	0.794
4800	0.81
5100	0.826
5400	0.841
5700	0.857
6000	0.871
6300	0.884
6600	0.898
6900	0.909
7200	0.92
7500	0.94



Results

V_{p75-25} (m^3)	0.09
a_{p50} (m^2)	2.41
t_{p75} (s)	550.00
t_{p25} (s)	6575.00
t_{p75-25} (s)	6025.00
Infiltration Rate (m/s)	6.28E-06

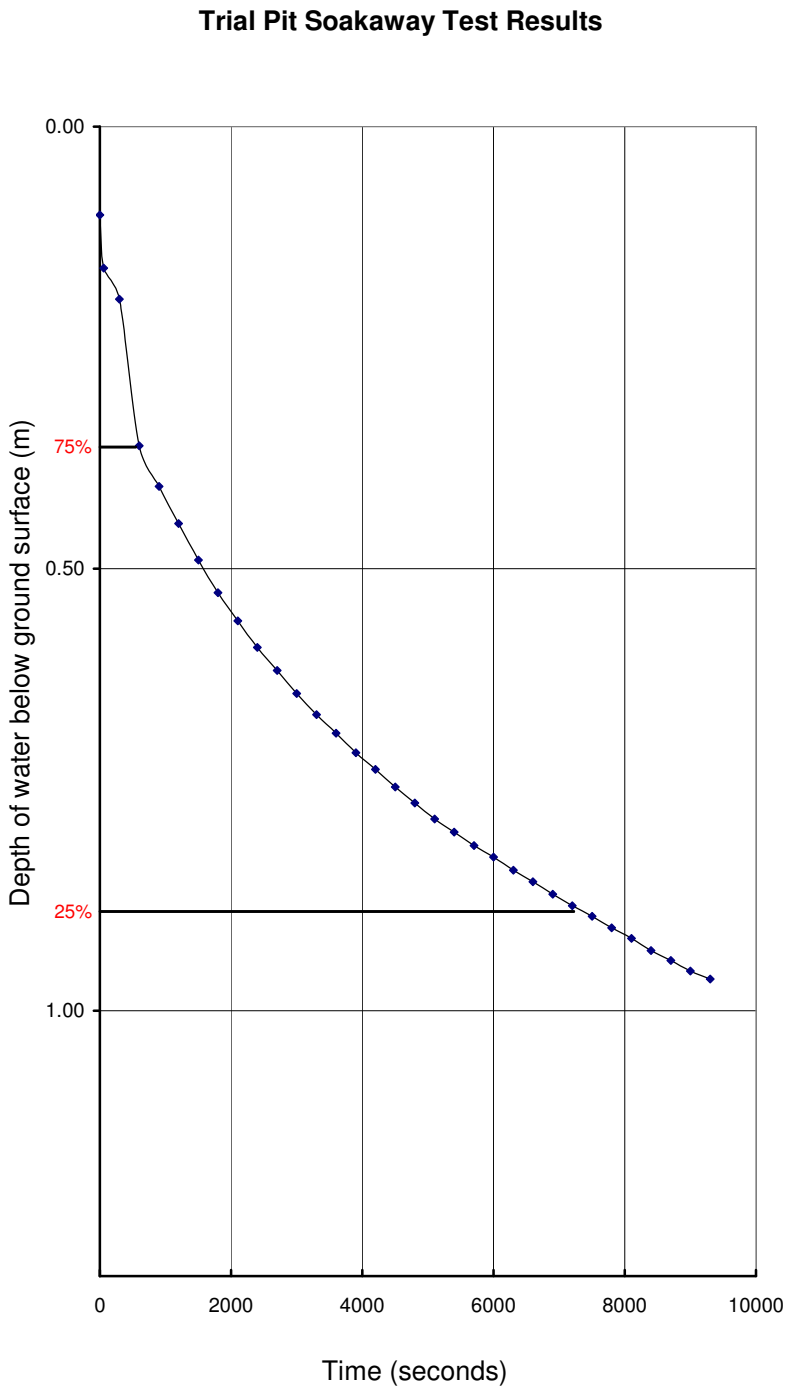
Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

Trial Pit Soakaway Test to BRE Digest 365

Location	TP9 (i)	**Test No**	Test 3
Client	BDW Trading Limited	**Length of Trial Pit (m)**	1.35
Job Number	25459	**Width of Trial Pit (m)**	0.45
Date	04.09.12 - 05.09.12	**Water level at start (mbgl)**	0.1
Operator	MOS / OP / BC	**Depth to Base of Trial Pit (m)**	1.15

Time (Secs)	Water level (mbgl)
0	0.10
60	0.16
300	0.20
600	0.36
900	0.41
1200	0.449
1500	0.49
1800	0.527
2100	0.559
2400	0.589
2700	0.615
3000	0.641
3300	0.665
3600	0.686
3900	0.708
4200	0.727
4500	0.747
4800	0.765
5100	0.783
5400	0.798
5700	0.813
6000	0.826
6300	0.841
6600	0.854
6900	0.868
7200	0.88
7500	0.89
7800	0.91
8100	0.92
8400	0.932
8700	0.943
9000	0.955
9300	0.964



Results

V_{p75-25} (m^3)	0.10
a_{p50} (m^2)	2.50
t_{p75} (s)	550.00
t_{p25} (s)	7225.00
t_{p75-25} (s)	6675.00
Infiltration Rate (m/s)	5.74E-06

Calculations based on 30% pososity of backfill shingle

Figure
Appendix H

APPENDIX I
GROUND GAS / GROUNDWATER MONITORING DATA

IN-SITU GAS MONITORING RESULTS

[Pressures]	Previous	During	Start	End	Equipment Used & Remarks
Round 1	Constant	Constant	1018	1020	Dipmeter + GA2000 + Weather: Clear & Sunny + Ground: Dry + Wind: Strong + Air Temp: 16DegC
Round 2	Rising	Rising	1008	1009	Dipmeter + GA2000 + Weather: Overcast + Ground: Damp + Wind: Medium + Air Temp: 7DegC
Round 3	Falling	Falling	1005	1005	Dipmeter + GFM-40 + Weather: Overcast & Sunny + Ground: Dry + Wind: Medium

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 (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
BH1	1	4.18	19/09/2012	1018	1018	$0.0_{(SS)}$	DRY	0.6	0.1	19.8	-	0.2	0.0	0.0	
BH1	1	---	15 secs	-	-	$0.0_{(SS)}$	-	0.8	0.1	19.1	-	0.2	0.0	0.0	
BH1	1	---	30 secs	-	-	$0.0_{(SS)}$	-	0.6	0.1	19.1	-	0.2	0.0	0.0	
BH1	1	---	60 secs	-	-	$0.0_{(SS)}$	-	0.6	0.1	19.1	-	0.0	0.0	0.0	
BH1	1	---	90 secs	-	-	$0.0_{(SS)}$	-	0.6	0.1	19.4	-	0.0	0.0	0.0	
BH1	1	---	120 secs	-	-	$0.0_{(SS)}$	-	0.6	0.1	19.4	-	0.0	0.0	0.0	
BH1	1	---	180 secs	-	-	$0.0_{(SS)}$	-	0.6	0.1	19.4	-	0.0	0.0	0.0	
BH1	1	---	240 secs	-	-	$0.0_{(SS)}$	-	0.6	0.1	19.4	-	0.0	0.0	0.0	
BH1	1	---	300 secs	-	-	$0.0_{(SS)}$	-	0.6	0.1	19.4	-	0.0	0.0	0.0	
BH1	1	---	360 secs	-	-	$0.0_{(SS)}$	-	0.6	0.1	19.4	-	0.0	0.0	0.0	
BH1	1	---	420 secs	-	-	$0.0_{(SS)}$	-	0.6	0.1	19.4	-	0.0	0.0	0.0	
BH1	2 (2)	4.22	05/10/2012	1004	1008	$0.0_{(SS)}$	DRY	0.0	0.0	20.4	-	0.0	0.0	0.0	
BH1	2 (2)	---	15 secs	-	-	$0.0_{(SS)}$	-	1.1	0.0	18.5	-	0.0	0.0	0.0	
BH1	2 (2)	---	30 secs	-	-	$0.0_{(SS)}$	-	1.1	0.0	18.5	-	0.0	0.0	0.0	
BH1	2 (2)	---	60 secs	-	-	$0.0_{(SS)}$	-	1.1	0.0	18.5	-	0.0	0.0	0.0	
BH1	2 (2)	---	90 secs	-	-	$0.0_{(SS)}$	-	1.1	0.0	18.5	-	0.0	0.0	0.0	
BH1	2 (2)	---	120 secs	-	-	$0.0_{(SS)}$	-	1.1	0.0	18.5	-	0.0	0.0	0.0	
BH1	2 (2)	---	180 secs	-	-	$0.0_{(SS)}$	-	1.1	0.0	18.5	-	0.0	0.0	0.0	

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

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

Compiled By	Date	Checked By	Date	Contract Ref:
	24/10/12			25459

Contract: **NIAB - Phase 1**

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 (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
BH1	2 (2)	---	240 secs	-	-	0.0(SS)	-	1.1	0.0	18.5	-	0.0	0.0	0.0	
BH1	2 (2)	---	300 secs	-	-	0.0(SS)	-	1.1	0.0	18.5	-	0.0	0.0	0.0	
BH1	2 (2)	---	360 secs	-	-	0.0(SS)	-	1.1	0.0	18.5	-	0.0	0.0	0.0	
BH1	2 (2)	---	420 secs	-	-	0.0(SS)	-	1.1	0.0	18.5	-	0.0	0.0	0.0	
BH1	3 (3)	4.25	11/10/2012	1004	1000	0.0(SS)	DRY	0.0	0.0	20.9	0.0	-	-	-	
BH1	3 (3)	---	15 secs	-	-	0.0(SS)	-	1.7	0.0	19.9	0.0	-	-	-	
BH1	3 (3)	---	30 secs	-	-	0.0(SS)	-	1.7	0.0	19.2	0.0	-	-	-	
BH1	3 (3)	---	60 secs	-	-	0.0(SS)	-	1.7	0.0	19.1	0.0	-	-	-	
BH1	3 (3)	---	90 secs	-	-	0.0(SS)	-	1.8	0.0	19.0	0.0	-	-	-	
BH1	3 (3)	---	120 secs	-	-	0.0(SS)	-	1.8	0.0	19.0	0.0	-	-	-	
BH1	3 (3)	---	180 secs	-	-	0.0(SS)	-	1.7	0.0	19.1	0.0	-	-	-	
BH2	1	---	19/09/2012	1018	1018	0.3(SS)	-	0.8	0.0(I)	20.1	0.0(I)	0.3	0.0	0.0	
BH2	1	---	15 secs	1018	1018	0.3(SS)	-	0.8	0.0	20.0	0.0	0.2	0.0	0.0	
BH2	1	---	30 secs	1018	1018	0.3(SS)	-	0.8	0.0	20.0	0.0	0.0	0.0	0.0	
BH2	1	---	60 secs	1018	1018	0.3(SS)	-	0.8	0.0	20.0	0.0	0.0	0.0	0.0	
BH2	1	---	90 secs	1018	1018	0.3(SS)	-	0.8	0.0	20.0	0.0	0.0	0.0	0.0	
BH2	1	---	120 secs	1018	1018	0.3(SS)	-	0.8	0.0	20.0	0.0	0.0	0.0	0.0	
BH2	1	---	180 secs	1018	1018	0.3(SS)	-	0.8	0.0	20.0	0.0	0.0	0.0	0.0	
BH2	1	---	240 secs	1018	1018	0.3(SS)	-	0.8	0.0	20.0	0.0	0.0	0.0	0.0	
BH2	1	---	300 secs	1018	1018	0.3(SS)	-	0.8	0.0	20.0	0.0	0.0	0.0	0.0	
BH2	1	---	360 secs	1018	1018	0.3(SS)	-	0.8	0.0	20.0	0.0	0.0	0.0	0.0	
BH2	1	---	420 secs	1018	1018	0.3(SS)	-	0.8	0.0	20.0	0.0	0.0	0.0	0.0	
BH2	2	---	05/10/2012	1008	1008	0.4(I)	-	0.0	0.0	20.8	0.0	0.0	0.0	0.0	
BH2	2	---	15 secs	1018	1018	0.0(SS)	-	0.5	0.0	19.9	0.0	-	-	-	

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

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

Compiled By	Date	Checked By	Date	Contract Ref:
	24/10/12			25459

Contract: **NIAB - Phase 1**

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 (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
BH2	2	---	30 secs	1018	1018	$0.0_{(SS)}$	-	0.5	0.0	19.9	0.0	-	-	-	
BH2	2	---	60 secs	1018	1018	$0.0_{(SS)}$	-	0.5	0.0	19.9	0.0	-	-	-	
BH2	2	---	90 secs	1018	1018	$0.0_{(SS)}$	-	0.5	0.0	19.8	0.0	-	-	-	
BH2	2	---	120 secs	1018	1018	$0.0_{(SS)}$	-	0.5	0.0	19.9	0.0	-	-	-	
BH2	2	---	180 secs	1018	1018	$0.0_{(SS)}$	-	0.5	0.0	19.9	0.0	-	-	-	
BH2	2	---	240 secs	1018	1018	$0.0_{(SS)}$	-	0.5	0.0	19.9	0.0	-	-	-	
BH2	2	---	300 secs	1018	1018	$0.0_{(SS)}$	-	0.5	0.0	19.9	0.0	-	-	-	
BH2	2	---	360 secs	1018	1018	$0.0_{(SS)}$	-	0.5	0.0	19.9	0.0	-	-	-	
BH2	2	---	420 secs	1018	1018	$0.0_{(SS)}$	-	0.5	0.0	19.9	0.0	-	-	-	
BH2	3	---	11/10/2012	1005	1005	$0.0_{(I)}$	-	0.3	0.0	20.9	0.0	-	-	-	
BH2	3	---	15 secs	1005	1005	$0.0_{(SS)}$	-	$1.7_{(SS)}$	$0.0_{(SS)}$	$20.9_{(SS)}$	$0.0_{(SS)}$	-	-	-	
BH2	3	---	30 secs	1005	1005	$0.0_{(SS)}$	-	1.8	0.0	20.0	0.0	-	-	-	
BH2	3	---	60 secs	1005	1005	$0.0_{(SS)}$	-	1.8	0.0	19.5	0.0	-	-	-	
BH2	3	---	90 secs	1005	1005	$0.0_{(SS)}$	-	1.8	-	19.4	-	-	-	-	
BH2	3	---	120 secs	1005	1005	$0.0_{(SS)}$	-	1.8	-	19.3	-	-	-	-	
BH2	3	---	180 secs	1005	1005	$0.0_{(SS)}$	-	1.7	-	19.3	-	-	-	-	
BH2	3	---	240 secs	1005	1005	$0.0_{(SS)}$	-	1.7	-	19.4	-	-	-	-	
BH2	3	---	300 secs	1005	1005	$0.0_{(SS)}$	-	1.7	-	19.4	-	-	-	-	
BH2	3	---	360 secs	1005	1005	$0.0_{(SS)}$	-	1.7	-	19.4	-	-	-	-	
BH2	3	---	420 secs	1005	1005	$0.0_{(SS)}$	-	1.7	-	19.4	-	-	-	-	
BH3	2 (2)	3.23	05/10/2012	-	1009	$0.0_{(SS)}$	1.44	0.0	0.0	20.6	0.0	0.0	0.0	0.0	
BH3	2 (2)	---	15 secs	-	-	$0.0_{(SS)}$	-	0.7	0.0	19.4	0.0	-	0.0	0.0	
BH3	2 (2)	---	30 secs	-	-	$0.0_{(SS)}$	-	0.7	0.0	19.4	0.0	-	0.0	0.0	
BH3	2 (2)	---	60 secs	-	-	$0.0_{(SS)}$	-	0.7	0.0	19.4	0.0	-	0.0	0.0	

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

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18 Frogmore Road
Hemel Hempstead
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HP3 9RT

Compiled By	Date	Checked By	Date	Contract Ref:
	24/10/12			**25459**

Contract: **NIAB - Phase 1**

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 (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
BH3	2 (2)	---	90 secs	-	-	$0.0_{(SS)}$	-	0.7	0.0	19.4	0.0	-	0.0	0.0	
BH3	2 (2)	---	120 secs	-	-	$0.0_{(SS)}$	-	0.7	0.0	19.3	0.0	-	0.0	0.0	
BH3	2 (2)	---	180 secs	-	-	$0.0_{(SS)}$	-	0.7	0.0	19.4	0.0	-	0.0	0.0	
BH3	2 (2)	---	240 secs	-	-	$0.0_{(SS)}$	-	0.7	0.0	19.3	0.0	-	0.0	0.0	
BH3	2 (2)	---	300 secs	-	-	$0.0_{(SS)}$	-	0.7	0.0	19.3	0.0	-	0.0	0.0	
BH3	2 (2)	---	360 secs	-	-	$0.0_{(SS)}$	-	0.7	0.0	19.3	0.0	-	0.0	0.0	
BH3	2 (2)	---	420 secs	-	-	$0.0_{(SS)}$	-	0.7	0.0	19.3	0.0	-	0.0	0.0	
BH3	3 (3)	3.50	11/10/2012	-	1008	$0.0_{(SS)}$	1.58	0.0	-	20.7	-	-	0.0	-	
BH3	3 (3)	---	15 secs	-	-	$0.0_{(SS)}$	-	1.4	-	19.4	-	-	-	-	
BH3	3 (3)	---	30 secs	-	-	$0.0_{(SS)}$	-	1.5	-	18.2	-	-	-	-	
BH3	3 (3)	---	60 secs	-	-	$0.0_{(SS)}$	-	1.5	-	17.9	-	-	-	-	
BH3	3 (3)	---	90 secs	-	-	$0.0_{(SS)}$	-	1.5	-	17.9	-	-	-	-	
BH3	3 (3)	---	120 secs	-	-	$0.0_{(SS)}$	-	1.5	-	17.9	-	-	-	-	
BH3	3 (3)	---	180 secs	-	-	$0.0_{(SS)}$	-	1.5	-	17.9	-	-	-	-	
BHG	1	4.32	19/09/2012	1018	1018	$-0.1_{(SS)}$	2.12	0.2	0.0	20.2	0.0	0.3	0.0	0.0	
BHG	1	---	15 secs	-	-	$-0.1_{(SS)}$	-	0.2	0.0	20.2	0.0	0.0	0.0	0.0	
BHG	1	---	30 secs	-	-	$-0.1_{(SS)}$	-	0.2	0.0	20.2	0.0	0.0	0.0	0.0	
BHG	1	---	60 secs	-	-	$-0.1_{(SS)}$	-	0.2	0.0	20.3	0.0	0.0	0.0	0.0	
BHG	1	---	90 secs	-	-	$-0.1_{(SS)}$	-	0.2	0.0	20.3	0.0	0.0	0.0	0.0	
BHG	1	---	120 secs	-	-	$-0.1_{(SS)}$	-	0.2	0.0	20.3	0.0	0.0	0.0	0.0	
BHG	1	---	180 secs	-	-	$-0.1_{(SS)}$	-	0.1	0.0	20.3	0.0	0.0	0.0	0.0	
BHG	1	---	240 secs	-	-	$-0.1_{(SS)}$	-	0.2	0.0	20.3	0.0	0.0	0.0	0.0	
BHG	1	---	300 secs	-	-	$-0.1_{(SS)}$	-	0.2	0.0	20.2	0.0	0.0	0.0	0.0	
BHG	1	---	360 secs	-	-	$-0.1_{(SS)}$	-	0.2	0.0	20.2	0.0	0.0	0.0	0.0	

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Compiled By	Date	Checked By	Date	Contract Ref:
	24/10/12			**25459**

Contract: **NIAB - Phase 1**

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 (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
BHG	1	---	420 secs	-	-	$-0.1_{(SS)}$	-	0.2	0.0	20.2	0.0	0.0	0.0	0.0	
BHG	2 (2)	4.31	05/10/2012	1008	1008	$0.0_{(SS)}$	2.15	0.0	0.0	20.8	0.0	0.0	0.0	0.0	
BHG	2 (2)	---	15 secs	-	-	$0.0_{(SS)}$	-	0.3	0.0	19.6	0.0	0.0	0.0	0.0	
BHG	2 (2)	---	30 secs	-	-	$0.0_{(SS)}$	-	0.3	0.0	19.9	0.0	0.0	0.0	0.0	
BHG	2 (2)	---	60 secs	-	-	$0.0_{(SS)}$	-	0.3	0.0	20.0	0.0	0.0	0.0	0.0	
BHG	2 (2)	---	90 secs	-	-	$0.0_{(SS)}$	-	0.3	0.0	20.0	0.0	0.0	0.0	0.0	
BHG	2 (2)	---	120 secs	-	-	$0.0_{(SS)}$	-	0.2	0.0	20.0	0.0	0.0	0.0	0.0	
BHG	2 (2)	---	180 secs	-	-	$0.0_{(SS)}$	-	0.2	0.0	20.1	0.0	0.0	0.0	0.0	
BHG	2 (2)	---	240 secs	-	-	$0.0_{(SS)}$	-	0.2	0.0	20.1	0.0	0.0	0.0	0.0	
BHG	2 (2)	---	300 secs	-	-	$0.0_{(SS)}$	-	0.1	0.0	20.1	0.0	0.0	0.0	0.0	
BHG	2 (2)	---	360 secs	-	-	$0.0_{(SS)}$	-	0.1	0.0	20.1	0.0	0.0	0.0	0.0	
BHG	2 (2)	---	420 secs	-	-	$0.0_{(SS)}$	-	0.1	0.0	20.2	0.0	0.0	0.0	0.0	
BHG	3 (3)	4.58	11/10/2012	1003	1003	$0.0_{(SS)}$	2.40	0.3	0.0	20.9	0.0	-	-	-	
BHG	3 (3)	---	15 secs	-	-	$0.0_{(SS)}$	-	1.7	0.0	20.0	0.0	-	-	-	
BHG	3 (3)	---	30 secs	-	-	$0.0_{(SS)}$	-	1.8	0.0	19.5	0.0	-	-	-	
BHG	3 (3)	---	60 secs	-	-	$0.0_{(SS)}$	-	1.8	0.0	19.4	0.0	-	-	-	
BHG	3 (3)	---	90 secs	-	-	$0.0_{(SS)}$	-	1.8	0.0	19.3	0.0	-	-	-	
BHG	3 (3)	---	120 secs	-	-	$0.0_{(SS)}$	-	1.8	0.0	19.3	0.0	-	-	-	
BHG	3 (3)	---	180 secs	-	-	$0.0_{(SS)}$	-	1.7	0.0	19.4	0.0	-	-	-	
BHG	3 (3)	---	240 secs	-	-	$0.0_{(SS)}$	-	1.7	0.0	19.4	0.0	-	-	-	
BHG	3 (3)	---	300 secs	-	-	$0.0_{(SS)}$	-	1.7	0.0	19.4	0.0	-	-	-	
BHG	3 (3)	---	360 secs	-	-	$0.0_{(SS)}$	-	1.7	0.0	19.4	0.0	-	-	-	
BHG	3 (3)	---	420 secs	-	-	$0.0_{(SS)}$	-	1.7	0.0	19.4	0.0	-	-	-	
BHK	1	4.05	19/09/2012	1018	1018	$0.0_{(SS)}$	1.97	1.3	0.1	19.8	1.0	0.0	0.0	0.0	

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Compiled By	Date	Checked By	Date	Contract Ref:
	24/10/12			**25459**

Contract: **NIAB - Phase 1**

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 (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
BHK	1	---	15 secs	-	-	$0.0_{(SS)}$	-	1.3	0.1	19.5	1.0	0.0	0.0	0.0	
BHK	1	---	30 secs	-	-	$0.0_{(SS)}$	-	1.4	0.1	19.5	1.0	0.0	0.0	0.0	
BHK	1	---	60 secs	-	-	$0.0_{(SS)}$	-	1.3	0.1	19.5	1.0	0.0	0.0	0.0	
BHK	1	---	90 secs	-	-	$0.0_{(SS)}$	-	1.3	0.1	19.5	1.0	0.0	0.0	0.0	
BHK	1	---	120 secs	-	-	$0.0_{(SS)}$	-	1.4	0.1	19.5	1.0	0.0	0.0	0.0	
BHK	1	---	180 secs	-	-	$0.0_{(SS)}$	-	1.5	0.1	19.5	1.0	0.0	0.0	0.0	
BHK	1	---	240 secs	-	-	$0.0_{(SS)}$	-	1.7	0.1	19.4	1.0	0.0	0.0	0.0	
BHK	1	---	300 secs	-	-	$0.0_{(SS)}$	-	1.8	0.1	19.3	1.0	0.0	0.0	0.0	
BHK	1	---	360 secs	-	-	$0.0_{(SS)}$	-	1.8	0.1	19.3	1.0	0.0	0.0	0.0	
BHK	1	---	420 secs	-	-	$0.0_{(SS)}$	-	1.8	0.1	19.3	1.0	0.0	0.0	0.0	
BHK	2 (2)	4.04	05/10/2012	1009	1008	$0.2_{(SS)}$	2.06	0.2	0.0	20.8	-	0.0	0.0	0.0	
BHK	2 (2)	---	15 secs	-	-	$0.2_{(SS)}$	-	0.7	0.0	19.8	-	0.0	0.0	0.0	
BHK	2 (2)	---	30 secs	-	-	$0.2_{(SS)}$	-	1.3	0.0	19.1	-	0.0	0.0	0.0	
BHK	2 (2)	---	60 secs	-	-	$0.2_{(SS)}$	-	1.3	0.0	19.1	-	0.0	0.0	0.0	
BHK	2 (2)	---	90 secs	-	-	$0.2_{(SS)}$	-	1.3	0.0	19.1	-	0.0	0.0	0.0	
BHK	2 (2)	---	120 secs	-	-	$0.2_{(SS)}$	-	1.2	0.0	19.1	-	0.0	0.0	0.0	
BHK	2 (2)	---	180 secs	-	-	$0.2_{(SS)}$	-	1.3	0.0	19.1	-	0.0	0.0	0.0	
BHK	2 (2)	---	240 secs	-	-	$0.2_{(SS)}$	-	1.2	0.0	19.1	-	0.0	0.0	0.0	
BHK	2 (2)	---	300 secs	-	-	$0.2_{(SS)}$	-	1.2	0.0	19.1	-	0.0	0.0	0.0	
BHK	2 (2)	---	360 secs	-	-	$0.2_{(SS)}$	-	1.2	0.0	19.1	-	0.0	0.0	0.0	
BHK	2 (2)	---	420 secs	-	-	$0.2_{(SS)}$	-	1.2	0.0	19.1	-	0.0	0.0	0.0	
BHK	3 (3)	4.30	11/10/2012	-	1006	$-0.1_{(SS)}$	2.38	0.1	0.0	20.7	0.0	-	-	-	
BHK	3 (3)	---	15 secs	-	-	$-0.1_{(SS)}$	-	3.2	0.0	19.2	0.0	-	-	-	
BHK	3 (3)	---	30 secs	-	-	$-0.1_{(SS)}$	-	3.3	0.0	18.4	0.0	-	-	-	
BHK	3 (3)	---	60 secs	-	-	$-0.1_{(SS)}$	-	3.3	0.0	18.2	0.0	-	-	-	

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Compiled By	Date	Checked By	Date	Contract Ref:
	24/10/12			**25459**

Contract: **NIAB - Phase 1**

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 (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
BHK	3 (3)	---	90 secs	-	-	$-0.1_{(SS)}$	-	3.4	0.0	18.1	0.0	-	-	-	
BHK	3 (3)	---	120 secs	-	-	$-0.1_{(SS)}$	-	3.4	0.0	18.1	0.0	-	-	-	
BHK	3 (3)	---	180 secs	-	-	$-0.1_{(SS)}$	-	3.5	0.0	18.0	0.0	-	-	-	
BHK	3 (3)	---	240 secs	-	-	$-0.1_{(SS)}$	-	3.5	0.0	18.0	0.0	-	-	-	
BHK	3 (3)	---	300 secs	-	-	$-0.1_{(SS)}$	-	3.5	0.0	18.0	0.0	-	-	-	
WS3	1	3.21	19/09/2012	1018	1018	$0.2_{(SS)}$	DRY	0.0	0.1	20.3	0.0	0.0	0.0	0.0	
WS3	1	---	15 secs	-	-	$0.2_{(SS)}$	-	0.6	0.1	20.2	1.0	0.0	0.0	0.0	
WS3	1	---	30 secs	-	-	$0.2_{(SS)}$	-	0.7	0.1	20.2	1.0	0.0	0.0	0.0	
WS3	1	---	60 secs	-	-	$0.2_{(SS)}$	-	0.8	0.1	20.2	1.0	0.0	0.0	0.0	
WS3	1	---	90 secs	-	-	$0.2_{(SS)}$	-	0.7	0.1	20.2	1.0	0.0	0.0	0.0	
WS3	1	---	120 secs	-	-	$0.2_{(SS)}$	-	0.7	0.1	20.2	1.0	0.0	0.0	0.0	
WS3	1	---	180 secs	-	-	$0.2_{(SS)}$	-	0.6	0.1	20.3	1.0	0.0	0.0	0.0	
WS3	1	---	240 secs	-	-	$0.2_{(SS)}$	-	0.6	0.1	20.3	1.0	0.0	0.0	0.0	
WS3	1	---	300 secs	-	-	$0.2_{(SS)}$	-	0.5	0.1	20.4	1.0	0.0	0.0	0.0	
WS3	1	---	360 secs	-	-	$0.2_{(SS)}$	-	0.4	0.1	20.5	1.0	0.0	0.0	0.0	
WS3	1	---	420 secs	-	-	$0.2_{(SS)}$	-	0.4	0.1	20.5	1.0	0.0	0.0	0.0	
WS3	2 (2)	3.18	05/10/2012	1004	1008	$0.3_{(SS)}$	2.92	1.1	0.0	19.6	-	-	-	-	
WS3	2 (2)	---	15 secs	-	-	$0.3_{(SS)}$	-	1.1	0.0	19.6	-	-	-	-	
WS3	2 (2)	---	30 secs	-	-	$0.3_{(SS)}$	-	1.1	0.0	19.5	-	-	-	-	
WS3	2 (2)	---	60 secs	-	-	$0.3_{(SS)}$	-	1.2	0.0	19.5	-	-	-	-	
WS3	2 (2)	---	90 secs	-	-	$0.3_{(SS)}$	-	1.2	0.0	19.5	-	-	-	-	
WS3	2 (2)	---	120 secs	-	-	$0.3_{(SS)}$	-	1.1	0.0	19.4	-	-	-	-	
WS3	2 (2)	---	180 secs	-	-	$0.3_{(SS)}$	-	1.0	0.0	19.5	-	-	-	-	
WS3	2 (2)	---	240 secs	-	-	$0.3_{(SS)}$	-	0.9	0.0	19.5	-	-	-	-	

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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 (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
WS3	2 (2)	---	300 secs	-	-	$0.3_{(SS)}$	-	0.9	0.0	19.6	-	-	-	-	
WS3	2 (2)	---	360 secs	-	-	$0.3_{(SS)}$	-	0.8	0.0	19.6	-	-	-	-	
WS3	2 (2)	---	420 secs	-	-	$0.3_{(SS)}$	-	0.8	0.0	19.6	-	-	-	-	
WS3	3 (3)	5.44	11/10/2012	-	1006	$0.0_{(SS)}$	2.87	0.3	0.0	20.7	0.0	-	-	-	
WS3	3 (3)	---	15 secs	-	-	$0.0_{(SS)}$	-	2.1	0.0	19.9	0.0	-	-	-	
WS3	3 (3)	---	30 secs	-	-	$0.0_{(SS)}$	-	2.2	0.0	19.3	0.0	-	-	-	
WS3	3 (3)	---	60 secs	-	-	$0.0_{(SS)}$	-	2.2	0.0	19.3	0.0	-	-	-	
WS3	3 (3)	---	90 secs	-	-	$0.0_{(SS)}$	-	2.2	0.0	19.3	0.0	-	-	-	
WS3	3 (3)	---	120 secs	-	-	$0.0_{(SS)}$	-	2.2	0.0	19.3	0.0	-	-	-	
WS3	3 (3)	---	180 secs	-	-	$0.0_{(SS)}$	-	2.2	0.0	19.3	0.0	-	-	-	
WS3	3 (3)	---	240 secs	-	-	$0.0_{(SS)}$	-	2.2	0.0	19.3	0.0	-	-	-	
WS3	3 (3)	---	300 secs	-	-	$0.0_{(SS)}$	-	2.2	0.0	19.3	0.0	-	-	-	
WS3	3 (3)	---	360 secs	-	-	$0.0_{(SS)}$	-	2.2	0.0	19.3	0.0	-	-	-	
WS3	3 (3)	---	420 secs	-	-	$0.0_{(SS)}$	-	2.2	0.0	19.3	0.0	-	-	-	
WS17	1	2.95	19/09/2012	1020	1020	$0.1_{(SS)}$	DRY	1.7	0.0	19.5	0.0	-	-	-	
WS17	1	---	15 secs	-	-	$0.1_{(SS)}$	-	1.7	0.0	19.5	0.0	-	-	-	
WS17	1	---	30 secs	-	-	$0.1_{(SS)}$	-	1.8	0.0	19.2	0.0	-	-	-	
WS17	1	---	60 secs	-	-	$0.1_{(SS)}$	-	2.0	0.0	19.1	0.0	-	-	-	
WS17	1	---	90 secs	-	-	$0.1_{(SS)}$	-	2.1	0.1	19.0	1.0	-	-	-	
WS17	1	---	120 secs	-	-	$0.1_{(SS)}$	-	2.4	0.1	18.8	2.0	-	-	-	
WS17	1	---	180 secs	-	-	$0.1_{(SS)}$	-	2.7	0.1	18.7	2.0	-	-	-	
WS17	1	---	240 secs	-	-	$0.1_{(SS)}$	-	2.9	0.1	18.6	2.0	-	-	-	
WS17	1	---	300 secs	-	-	$0.1_{(SS)}$	-	2.9	0.1	18.6	2.0	-	-	-	
WS17	1	---	360 secs	-	-	$0.1_{(SS)}$	-	2.9	0.1	18.6	2.0	-	-	-	

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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 (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
WS17	1	---	420 secs	-	-	$0.1_{(SS)}$	-	2.9	0.1	18.6	2.0	-	-	-	
WS17	2 (2)	2.95	05/10/2012	1383	1009	$0.0_{(SS)}$	1.88	0.1	0.0	20.2	0.0	0.0	0.0	0.0	
WS17	2 (2)	---	15 secs	-	-	$0.0_{(SS)}$	-	0.3	0.0	20.2	0.0	-	0.0	0.0	
WS17	2 (2)	---	30 secs	-	-	$0.0_{(SS)}$	-	0.4	0.0	20.2	0.0	-	0.0	0.0	
WS17	2 (2)	---	60 secs	-	-	$0.0_{(SS)}$	-	0.8	0.0	19.7	0.0	-	0.0	0.0	
WS17	2 (2)	---	90 secs	-	-	$0.0_{(SS)}$	-	0.9	0.0	19.6	0.0	-	0.0	0.0	
WS17	2 (2)	---	120 secs	-	-	$0.0_{(SS)}$	-	1.3	0.0	19.2	0.0	-	0.0	0.0	
WS17	2 (2)	---	180 secs	-	-	$0.0_{(SS)}$	-	1.4	0.0	18.9	0.0	-	0.0	0.0	
WS17	2 (2)	---	240 secs	-	-	$0.0_{(SS)}$	-	1.5	0.0	18.8	0.0	-	0.0	0.0	
WS17	2 (2)	---	300 secs	-	-	$0.0_{(SS)}$	-	1.5	0.0	18.8	0.0	-	0.0	0.0	
WS17	2 (2)	---	360 secs	-	-	$0.0_{(SS)}$	-	1.4	0.0	18.9	0.0	-	0.0	0.0	
WS17	2 (2)	---	420 secs	-	-	$0.0_{(SS)}$	-	1.3	0.0	18.9	0.0	-	0.0	0.0	
WS17	3 (3)	2.90	11/10/2012	-	1005	$0.0_{(SS)}$	1.85	0.2	-	21.3	-	-	-	-	
WS17	3 (3)	---	15 secs	-	-	$0.0_{(SS)}$	-	0.6	-	20.6	-	-	-	-	
WS17	3 (3)	---	30 secs	-	-	$0.0_{(SS)}$	-	0.6	-	20.5	-	-	-	-	
WS17	3 (3)	---	60 secs	-	-	$0.0_{(SS)}$	-	0.7	-	20.4	-	-	-	-	
WS17	3 (3)	---	90 secs	-	-	$0.0_{(SS)}$	-	0.9	-	20.2	-	-	-	-	
WS17	3 (3)	---	120 secs	-	-	$0.0_{(SS)}$	-	1.1	-	20.0	-	-	-	-	
WS17	3 (3)	---	180 secs	-	-	$0.0_{(SS)}$	-	1.4	-	19.6	-	-	-	-	
WS17	3 (3)	---	240 secs	-	-	$0.0_{(SS)}$	-	1.6	-	19.6	-	-	-	-	
WS17	3 (3)	---	300 secs	-	-	$0.0_{(SS)}$	-	1.7	-	19.3	-	-	-	-	
WS17	3 (3)	---	360 secs	-	-	$0.0_{(SS)}$	-	1.7	-	19.3	-	-	-	-	
WSH	1	2.33	19/09/2012	1018	1018	$0.0_{(SS)}$	DRY	2.7	0.1	19.1	1.0	0.7	0.0	0.0	
WSH	1	---	15 secs	-	-	$0.0_{(SS)}$	-	2.8	0.1	19.0	1.0	0.0	0.0	0.0	

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Contract: **NIAB - Phase 1**

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 (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
WSH	1	---	30 secs	-	-	$0.0_{(SS)}$	-	3.1	0.1	18.8	1.0	0.0	0.0	0.0	
WSH	1	---	60 secs	-	-	$0.0_{(SS)}$	-	3.4	0.1	18.8	1.0	0.0	0.0	0.0	
WSH	1	---	90 secs	-	-	$0.0_{(SS)}$	-	3.5	0.1	18.8	1.0	0.0	0.0	0.0	
WSH	1	---	120 secs	-	-	$0.0_{(SS)}$	-	3.6	0.1	18.7	1.0	0.0	0.0	0.0	
WSH	1	---	180 secs	-	-	$0.0_{(SS)}$	-	3.6	0.1	18.8	1.0	0.0	0.0	0.0	
WSH	1	---	240 secs	-	-	$0.0_{(SS)}$	-	3.5	0.1	18.9	1.0	0.0	0.0	0.0	
WSH	1	---	300 secs	-	-	$0.0_{(SS)}$	-	3.3	0.1	18.9	1.0	0.0	0.0	0.0	
WSH	1	---	360 secs	-	-	$0.0_{(SS)}$	-	3.3	0.1	19.0	1.0	0.0	0.0	0.0	
WSH	1	---	420 secs	-	-	$0.0_{(SS)}$	-	3.2	0.1	19.0	1.0	0.0	0.0	0.0	
WSH	2 (2)	2.39	05/10/2012	-	1008	$0.0_{(SS)}$	DRY	0.0	0.0	19.9	-	0.0	0.0	0.0	
WSH	2 (2)	---	15 secs	-	-	$0.0_{(SS)}$	-	1.3	0.0	19.1	-	-	0.0	0.0	
WSH	2 (2)	---	30 secs	-	-	$0.0_{(SS)}$	-	2.9	0.0	18.7	-	-	0.0	0.0	
WSH	2 (2)	---	60 secs	-	-	$0.0_{(SS)}$	-	3.3	0.0	18.4	-	-	0.0	0.0	
WSH	2 (2)	---	90 secs	-	-	$0.0_{(SS)}$	-	3.4	0.0	18.4	-	-	0.0	0.0	
WSH	2 (2)	---	120 secs	-	-	$0.0_{(SS)}$	-	3.4	0.0	18.4	-	-	0.0	0.0	
WSH	2 (2)	---	180 secs	-	-	$0.0_{(SS)}$	-	3.4	0.0	18.4	-	-	0.0	0.0	
WSH	2 (2)	---	240 secs	-	-	$0.0_{(SS)}$	-	3.3	0.0	18.4	-	-	0.0	0.0	
WSH	2 (2)	---	300 secs	-	-	$0.0_{(SS)}$	-	3.4	0.0	18.4	-	-	0.0	0.0	
WSH	2 (2)	---	360 secs	-	-	$0.0_{(SS)}$	-	3.3	0.0	18.4	-	-	0.0	0.0	
WSH	2 (2)	---	420 secs	-	-	$0.0_{(SS)}$	-	3.3	0.0	18.4	-	-	0.0	0.0	
WSH	3 (3)	2.70	11/10/2012	1004	1005	$0.0_{(SS)}$	DRY	0.1	0.0	20.8	0.0	-	-	-	
WSH	3 (3)	---	15 secs	-	-	$0.0_{(SS)}$	-	3.5	0.0	19.2	0.0	-	-	-	
WSH	3 (3)	---	30 secs	-	-	$0.0_{(SS)}$	-	3.5	0.0	18.6	0.0	-	-	-	
WSH	3 (3)	---	60 secs	-	-	$0.0_{(SS)}$	-	3.7	0.0	18.4	0.0	-	-	-	
WSH	3 (3)	---	90 secs	-	-	$0.0_{(SS)}$	-	4.0	0.0	18.2	0.0	-	-	-	

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

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

Compiled By	Date	Checked By	Date	Contract Ref:
	24/10/12			**25459**

Contract: **NIAB - Phase 1**

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 (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
WSH	3 (3)	---	120 secs	-	-	$0.0_{(SS)}$	-	4.1	0.0	18.1	0.0	-	-	-	
WSH	3 (3)	---	180 secs	-	-	$0.0_{(SS)}$	-	4.2	0.0	18.0	0.0	-	-	-	
WSH	3 (3)	---	240 secs	-	-	$0.0_{(SS)}$	-	4.2	0.0	18.0	0.0	-	-	-	

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

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

Compiled By	Date	Checked By	Date	Contract Ref:
	24/10/12			**25459**

Contract: **NIAB - Phase 1**

APPENDIX J
LABORATORY CERTIFICATES FOR SOIL ANALYSIS

Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 12/03975
Issue Number: 1 **Date:** 17 September, 2012

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

Project Manager: Nigel Austin / Ben Coulston
Project Name: NIAB Phase 1
Project Ref: 25459
Order No: Not specified
Date Samples Received: 03/09/12
Date Instructions Received: 04/09/12
Date Analysis Completed: 17/09/12

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Iain Haslock
Analytical Consultant

Notes - Soil analysis
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 inert 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
Subscript "A" indicates analysis performed on the sample as received, "D" indicates analysis performed on dried & crushed sample.
All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts. Superscript "M" indicates method accredited to MCERTS. Results in italics are associated with a control limit flag.
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.
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 MCERTS accreditation.
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.
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.

Envirolab Job Number: 12/03975

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03975/1	12/03975/2	12/03975/3	12/03975/4	12/03975/5	12/03975/6	12/03975/7	12/03975/8	Units	Method ref
Client Sample No										
Client Sample ID	TP1	TP2	TP3	TP4	TP5	TP6	TP7	TP8		
Depth to Top	0.10	0.20	0.10	0.20	0.10	0.20	0.20	0.10		
Depth To Bottom	0.20	0.30			0.30		0.30	0.20		
Date Sampled	30-Aug-12	30-Aug-12	28-Aug-12	28-Aug-12	30-Aug-12	28-Aug-12	30-Aug-12	30-Aug-12		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	6AE	6AE	6AE	6AE	6E	5	6AE	4E		
Asbestos in soil$_A^{\#}$	NAD	-	NAD	-	-	-	NAD	-		A-T-045
Organic matter$_D^{M\#}$	-	-	-	-	-	1.0	-	-	% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	7	6	5	5	8	4	9	9	mg/kg	A-T-024
Cadmium$_D^{M\#}$	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	mg/kg	A-T-024
Copper$_D^{M\#}$	32	23	19	23	31	9	16	13	mg/kg	A-T-024
Chromium$_D^{\#}$	43	45	40	47	44	37	31	22	mg/kg	A-T-024
Lead$_D^{M\#}$	154	51	37	41	92	15	41	23	mg/kg	A-T-024
Mercury$_D$	0.49	0.38	0.29	0.39	0.52	<0.17	<0.17	<0.17	mg/kg	A-T-024
Nickel$_D^{M\#}$	37	34	31	35	39	24	28	20	mg/kg	A-T-024
Selenium$_D^{M\#}$	3	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-024
Zinc$_D^{M\#}$	121	86	57	66	79	55	57	45	mg/kg	A-T-024

Envirolab Job Number: 12/03975

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03975/1	12/03975/2	12/03975/3	12/03975/4	12/03975/5	12/03975/6	12/03975/7	12/03975/8	Units	Method ref
Client Sample No										
Client Sample ID	TP1	TP2	TP3	TP4	TP5	TP6	TP7	TP8		
Depth to Top	0.10	0.20	0.10	0.20	0.10	0.20	0.20	0.10		
Depth To Bottom	0.20	0.30			0.30		0.30	0.20		
Date Sampled	30-Aug-12	30-Aug-12	28-Aug-12	28-Aug-12	30-Aug-12	28-Aug-12	30-Aug-12	30-Aug-12		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	6AE	6AE	6AE	6AE	6E	5	6AE	4E		
PAH 16										
Acenaphthylene$_A^{\#}$	-	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	A-T-019s
Anthracene$_A^{\#}$	-	<0.01	<0.01	-	-	<0.01	-	0.04	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	0.06	0.02	-	-	<0.01	-	0.12	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	0.07	0.01	-	-	<0.01	-	0.08	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A$	-	0.16	0.04	-	-	<0.01	-	0.18	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	0.09	0.01	-	-	<0.01	-	0.09	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A$	-	0.05	<0.01	-	-	<0.01	-	0.04	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	-	0.08	0.02	-	-	<0.01	-	0.14	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A$	-	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	-	0.08	<0.01	-	-	<0.01	-	0.29	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	-	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{\#}$	-	0.06	<0.01	-	-	<0.01	-	0.06	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	-	<0.01	<0.01	-	-	<0.01	-	<0.01	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	-	<0.01	<0.01	-	-	<0.01	-	0.17	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	-	0.07	0.01	-	-	<0.01	-	0.22	mg/kg	A-T-019s
Total PAH$_A$	-	0.72	0.12	-	-	<0.01	-	1.43	mg/kg	A-T-019s

Envirolab Job Number: 12/03975

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03975/9	12/03975/10	12/03975/11	12/03975/12	12/03975/13	12/03975/14	12/03975/15	12/03975/16	Units	Method ref
Client Sample No										
Client Sample ID	TP10	TP11	TP13	TP14	TP34	TP35	TP36	TP37		
Depth to Top	0.20	0.10	0.20	0.10	0.20	0.10	0.10	0.10		
Depth To Bottom		0.20	0.30	0.20				0.20		
Date Sampled	30-Aug-12	30-Aug-12	30-Aug-12	30-Aug-12	29-Aug-12	29-Aug-12	29-Aug-12	29-Aug-12		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	5A	6AE	6AE	4A	6AE	6A	6AE	6AE		
Asbestos in soil$_A^{\#}$	NAD	-	NAD	NAD	-	-	-	NAD		A-T-045
Organic matter$_D^{M\#}$	2.2	-	-	-	3.2	-	-	-	% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	10	9	10	9	8	10	9	9	mg/kg	A-T-024
Cadmium$_D^{M\#}$	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	mg/kg	A-T-024
Copper$_D^{M\#}$	18	16	14	15	24	33	19	22	mg/kg	A-T-024
Chromium$_D^{\#}$	24	22	18	20	26	29	34	28	mg/kg	A-T-024
Lead$_D^{M\#}$	34	35	30	46	46	62	33	40	mg/kg	A-T-024
Mercury$_D$	<0.17	<0.17	<0.17	<0.17	0.56	0.27	<0.17	0.21	mg/kg	A-T-024
Nickel$_D^{M\#}$	21	21	19	18	19	20	23	18	mg/kg	A-T-024
Selenium$_D^{M\#}$	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-024
Zinc$_D^{M\#}$	59	54	45	45	49	62	52	46	mg/kg	A-T-024
Triazine Herbicides (x11)	-	-	-	Appended	-	-	-	Appended		Subcon
Pyrethroid (Pyrethrin) Insecticides (x6)	-	-	-	Appended	-	-	-	Appended		Subcon

Envirolab Job Number: 12/03975

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03975/9	12/03975/10	12/03975/11	12/03975/12	12/03975/13	12/03975/14	12/03975/15	12/03975/16	Units	Method ref
Client Sample No										
Client Sample ID	TP10	TP11	TP13	TP14	TP34	TP35	TP36	TP37		
Depth to Top	0.20	0.10	0.20	0.10	0.20	0.10	0.10	0.10		
Depth To Bottom		0.20	0.30	0.20				0.20		
Date Sampled	30-Aug-12	30-Aug-12	30-Aug-12	30-Aug-12	29-Aug-12	29-Aug-12	29-Aug-12	29-Aug-12		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	5A	6AE	6AE	4A	6AE	6A	6AE	6AE		
Pest-c										
Mevinphos	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Dichlorvos	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
alpha-Hexachlorocyclohexane (HCH)	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Diazinon	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
gamma-Hexachlorocyclohexane (HCH / Lindane)	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Heptachlor	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Aldrin	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
beta-Hexachlorocyclohexane (HCH)	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Methyl Parathion	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Malathion	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Fenitrothion	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Heptachlor Epoxide	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Parathion	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
p,p-DDE	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
p,p-DDT	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
p,p-Methoxychlor	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
p,p-TDE (DDD)	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
o,p-DDE	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
o,p-DDT	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
o,p-Methoxychlor	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
o,p-TDE (DDD)	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Endosulphan I	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Endosulphan II	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Endosulphan Sulphate	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Endrin	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Ethion	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Dieldrin	-	-	-	<50	-	-	-	<50	µg/kg	Subcon
Azinphos-methyl	-	-	-	<50	-	-	-	<50	µg/kg	Subcon

Envirolab Job Number: 12/03975

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03975/9	12/03975/10	12/03975/11	12/03975/12	12/03975/13	12/03975/14	12/03975/15	12/03975/16	Units	Method ref
Client Sample No										
Client Sample ID	TP10	TP11	TP13	TP14	TP34	TP35	TP36	TP37		
Depth to Top	0.20	0.10	0.20	0.10	0.20	0.10	0.10	0.10		
Depth To Bottom		0.20	0.30	0.20				0.20		
Date Sampled	30-Aug-12	30-Aug-12	30-Aug-12	30-Aug-12	29-Aug-12	29-Aug-12	29-Aug-12	29-Aug-12		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	5A	6AE	6AE	4A	6AE	6A	6AE	6AE		
PAH 16										
Acenaphthylene$_A^{\#}$	-	<0.01	-	<0.01	-	0.02	-	0.01	mg/kg	A-T-019s
Anthracene$_A^{\#}$	-	<0.01	-	<0.01	-	0.02	-	<0.01	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	0.03	-	0.03	-	0.28	-	0.18	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	0.03	-	0.02	-	0.27	-	0.18	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A$	-	0.08	-	0.06	-	0.53	-	0.39	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	0.03	-	0.02	-	0.35	-	0.22	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A$	-	0.02	-	<0.01	-	0.15	-	0.11	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	-	0.05	-	0.03	-	0.42	-	0.26	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A$	-	<0.01	-	<0.01	-	0.03	-	0.02	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	-	0.04	-	0.02	-	0.64	-	0.38	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	-	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{\#}$	-	0.02	-	<0.01	-	0.15	-	0.14	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	-	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	-	<0.01	-	<0.01	-	0.26	-	0.12	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	-	0.04	-	0.03	-	0.55	-	0.33	mg/kg	A-T-019s
Total PAH$_A$	-	0.34	-	0.20	-	3.68	-	2.34	mg/kg	A-T-019s

Envirolab Job Number: 12/03975

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03975/17	12/03975/18	12/03975/19	12/03975/20	12/03975/21	12/03975/22	12/03975/23	12/03975/24	Units	Method ref
Client Sample No										
Client Sample ID	TPD	TPI	TPL	TPO	TP1 (I)	TP2 (I)	TP3 (I)	TP4 (I)		
Depth to Top	0.10	0.20	0.30	0.30	0.10	0.20	0.20	0.10		
Depth To Bottom	0.20									
Date Sampled	30-Aug-12	28-Aug-12	29-Aug-12	28-Aug-12	28-Aug-12	28-Aug-12	28-Aug-12	29-Aug-12		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	6AE	6AE	6AE	6A	6E	6AE	6AE	6E		
Asbestos in soil$_A^{\#}$	-	-	NAD	-	-	-	-	NAD		A-T-045
Organic matter$_D^{M\#}$	-	-	-	-	6.6	-	-	2.5	% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	8	8	8	7	8	7	6	7	mg/kg	A-T-024
Cadmium$_D^{M\#}$	<0.5	1.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	A-T-024
Copper$_D^{M\#}$	18	20	24	20	33	23	22	13	mg/kg	A-T-024
Chromium$_D^{\#}$	24	29	31	29	42	34	34	26	mg/kg	A-T-024
Lead$_D^{M\#}$	40	46	44	59	67	55	51	25	mg/kg	A-T-024
Mercury$_D$	0.25	0.27	0.36	0.51	0.47	0.34	0.58	0.28	mg/kg	A-T-024
Nickel$_D^{M\#}$	22	26	29	24	40	29	27	20	mg/kg	A-T-024
Selenium$_D^{M\#}$	<1	<1	<1	<1	1	<1	<1	<1	mg/kg	A-T-024
Zinc$_D^{M\#}$	49	59	214	62	80	65	63	50	mg/kg	A-T-024
Triazine Herbicides (x11)	-	-	-	-	-	-	Appended	-		Subcon
Pyrethroid (Pyrethrin) Insecticides (x6)	-	-	-	-	-	-	Appended	-		Subcon

Envirolab Job Number: 12/03975

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03975/17	12/03975/18	12/03975/19	12/03975/20	12/03975/21	12/03975/22	12/03975/23	12/03975/24	Units	Method ref
Client Sample No										
Client Sample ID	TPD	TPI	TPL	TPO	TP1 (I)	TP2 (I)	TP3 (I)	TP4 (I)		
Depth to Top	0.10	0.20	0.30	0.30	0.10	0.20	0.20	0.10		
Depth To Bottom	0.20									
Date Sampled	30-Aug-12	28-Aug-12	29-Aug-12	28-Aug-12	28-Aug-12	28-Aug-12	28-Aug-12	29-Aug-12		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	6AE	6AE	6AE	6A	6E	6AE	6AE	6E		
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	-	-	-	-	-	-	<50	-	µg/kg	Subcon
p,p-DDE	-	-	-	-	-	-	<50	-	µg/kg	Subcon
p,p-DDT	-	-	-	-	-	-	<50	-	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: 12/03975

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03975/17	12/03975/18	12/03975/19	12/03975/20	12/03975/21	12/03975/22	12/03975/23	12/03975/24	Units	Method ref
Client Sample No										
Client Sample ID	TPD	TPI	TPL	TPO	TP1 (I)	TP2 (I)	TP3 (I)	TP4 (I)		
Depth to Top	0.10	0.20	0.30	0.30	0.10	0.20	0.20	0.10		
Depth To Bottom	0.20									
Date Sampled	30-Aug-12	28-Aug-12	29-Aug-12	28-Aug-12	28-Aug-12	28-Aug-12	28-Aug-12	29-Aug-12		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	6AE	6AE	6AE	6A	6E	6AE	6AE	6E		
PAH 16										
Acenaphthylene$_A^{\#}$	<0.01	-	<0.01	<0.01	<0.01	-	-	-	mg/kg	A-T-019s
Anthracene$_A^{\#}$	<0.01	-	<0.01	<0.01	<0.01	-	-	-	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.02	-	0.04	0.04	0.03	-	-	-	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.02	-	0.06	0.03	0.03	-	-	-	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A$	0.05	-	0.12	0.07	0.06	-	-	-	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.01	-	0.07	0.03	0.03	-	-	-	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A$	0.01	-	0.03	0.02	0.01	-	-	-	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	0.03	-	0.07	0.07	0.04	-	-	-	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A$	<0.01	-	<0.01	<0.01	<0.01	-	-	-	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	0.01	-	0.06	0.08	0.03	-	-	-	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	-	<0.01	<0.01	<0.01	-	-	-	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{\#}$	0.01	-	0.02	<0.01	<0.01	-	-	-	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.01	-	<0.01	<0.01	<0.01	-	-	-	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	<0.01	-	<0.01	0.03	<0.01	-	-	-	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	0.02	-	0.06	0.07	0.03	-	-	-	mg/kg	A-T-019s
Total PAH$_A$	0.19	-	0.52	0.44	0.24	-	-	-	mg/kg	A-T-019s

Envirolab Job Number: 12/03975

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03975/25	12/03975/26	12/03975/27	12/03975/28	12/03975/29				Units	Method ref
Client Sample No										
Client Sample ID	TP5 (I)	TP6 (I)	TP7 (I)	TP8 (I)	TP9 (I)					
Depth to Top	0.20	0.20	0.20	0.10	0.20					
Depth To Bottom										
Date Sampled	29-Aug-12	29-Aug-12	29-Aug-12	29-Aug-12	30-Aug-12					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6E	6AE	6A	6EA					
Asbestos in soil$_A^{\#}$	-	-	-	-	NAD					A-T-045
Organic matter$_D^{M\#}$	-	-	-	-	3.4				% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	9	14	7	7	9				mg/kg	A-T-024
Cadmium$_D^{M\#}$	<0.5	0.5	<0.5	<0.5	<0.5				mg/kg	A-T-024
Copper$_D^{M\#}$	14	19	21	21	23				mg/kg	A-T-024
Chromium$_D^{\#}$	26	33	34	31	32				mg/kg	A-T-024
Lead$_D^{M\#}$	24	43	34	30	47				mg/kg	A-T-024
Mercury$_D$	<0.17	0.38	0.22	0.30	0.36				mg/kg	A-T-024
Nickel$_D^{M\#}$	21	24	20	21	20				mg/kg	A-T-024
Selenium$_D^{M\#}$	<1	1	<1	<1	<1				mg/kg	A-T-024
Zinc$_D^{M\#}$	48	57	51	47	52				mg/kg	A-T-024

Envirolab Job Number: 12/03975

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03975/25	12/03975/26	12/03975/27	12/03975/28	12/03975/29				Units	Method ref
Client Sample No										
Client Sample ID	TP5 (I)	TP6 (I)	TP7 (I)	TP8 (I)	TP9 (I)					
Depth to Top	0.20	0.20	0.20	0.10	0.20					
Depth To Bottom										
Date Sampled	29-Aug-12	29-Aug-12	29-Aug-12	29-Aug-12	30-Aug-12					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6E	6AE	6A	6EA					
PAH 16										
Acenaphthylene$_A^{\#}$	<0.01	-	-	-	<0.01				mg/kg	A-T-019s
Anthracene$_A^{\#}$	<0.01	-	-	-	<0.01				mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.02	-	-	-	0.18				mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.01	-	-	-	0.18				mg/kg	A-T-019s
Benzo(b)fluoranthene$_A$	0.04	-	-	-	0.36				mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.01	-	-	-	0.19				mg/kg	A-T-019s
Benzo(k)fluoranthene$_A$	0.01	-	-	-	0.09				mg/kg	A-T-019s
Chrysene$_A^{M\#}$	0.03	-	-	-	0.27				mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A$	<0.01	-	-	-	0.01				mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	0.03	-	-	-	0.40				mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	-	-	-	<0.01				mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{\#}$	<0.01	-	-	-	0.13				mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.01	-	-	-	<0.01				mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	<0.01	-	-	-	0.15				mg/kg	A-T-019s
Pyrene$_A^{M\#}$	0.03	-	-	-	0.34				mg/kg	A-T-019s
Total PAH$_A$	0.20	-	-	-	2.31				mg/kg	A-T-019s

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 12/03993
Issue Number: 2 **Date:** 25 September, 2012

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

Project Manager: Nigel Austin / Ben Coulston / Oliver Pengilly
Project Name: NIAB Phase 1
Project Ref: 25459
Order No: Not specified
Date Samples Received: 05/09/12
Date Instructions Received: 05/09/12
Date Analysis Completed: 25/09/12

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Iain Haslock
Analytical Consultant

Notes - Soil analysis
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 inert 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
Subscript "A" indicates analysis performed on the sample as received, "D" indicates analysis performed on dried & crushed sample.
All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts. Superscript "M" indicates method accredited to MCERTS. Results in italics are associated with a control limit flag.
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.
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 MCERTS accreditation.
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.
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.

MCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 12/03993

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03993/1	12/03993/2	12/03993/3	12/03993/4	12/03993/5	12/03993/6	12/03993/7	12/03993/8	Units	Method ref
Client Sample No										
Client Sample ID	TP9	TP12	TP15	TP16	TP17	TP18	TP19	TP20		
Depth to Top	0.10	0.20	0.10	0.15	0.10	0.15	0.10	0.20		
Depth To Bottom	0.20	0.30		0.25	0.20		0.20			
Date Sampled	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Matrix Code	4AE	4AE	4AE	4AE	4AE	4AE	4AE	4AE		
Asbestos in soil$_A^{\#}$	NAD	-	-	-	-	NAD	NAD	-		A-T-045
pH$_D^{M\#}$	-	-	-	-	-	-	8.04	-	pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	-	-	-	-	-	-	<0.01	-	g/l	A-T-026s
Organic matter$_D^{M\#}$	-	-	-	-	-	2.8	-	-	% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	10	10	11	8	9	10	12	8	mg/kg	A-T-024
Cadmium$_D^{M\#}$	1.5	1.3	1.5	1.3	1.2	1.3	1.6	1.2	mg/kg	A-T-024
Copper$_D^{M\#}$	20	14	19	16	15	19	19	12	mg/kg	A-T-024
Chromium$_D^{\#}$	24	24	24	25	25	29	27	24	mg/kg	A-T-024
Lead$_D^{M\#}$	38	31	42	35	31	40	40	24	mg/kg	A-T-024
Mercury$_D$	<0.17	<0.17	0.20	0.21	0.19	0.21	0.33	0.47	mg/kg	A-T-024
Nickel$_D^{M\#}$	24	19	21	19	19	23	24	20	mg/kg	A-T-024
Selenium$_D^{M\#}$	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-024
Zinc$_D^{M\#}$	57	46	58	52	48	59	65	48	mg/kg	A-T-024

Envirolab Job Number: 12/03993

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03993/1	12/03993/2	12/03993/3	12/03993/4	12/03993/5	12/03993/6	12/03993/7	12/03993/8	Units	Method ref
Client Sample No										
Client Sample ID	TP9	TP12	TP15	TP16	TP17	TP18	TP19	TP20		
Depth to Top	0.10	0.20	0.10	0.15	0.10	0.15	0.10	0.20		
Depth To Bottom	0.20	0.30		0.25	0.20		0.20			
Date Sampled	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Matrix Code	4AE	4AE	4AE	4AE	4AE	4AE	4AE	4AE		
PAH 16										
Acenaphthene$_A^{M\#}$	-	<0.01	<0.01	-	-	0.13	<0.01	-	mg/kg	A-T-019s
Acenaphthylene$_A^{\#}$	-	<0.01	<0.01	-	-	<0.01	<0.01	-	mg/kg	A-T-019s
Anthracene$_A^{\#}$	-	<0.01	<0.01	-	-	0.05	<0.01	-	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	0.07	0.02	-	-	0.04	0.02	-	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	0.03	0.02	-	-	0.02	0.01	-	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A$	-	0.08	0.07	-	-	0.08	0.07	-	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	0.03	0.04	-	-	0.04	0.03	-	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A$	-	0.02	0.02	-	-	0.01	0.02	-	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	-	0.08	0.04	-	-	0.08	0.05	-	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A$	-	<0.01	<0.01	-	-	<0.01	<0.01	-	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	-	0.12	0.07	-	-	0.15	0.07	-	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	-	<0.01	<0.01	-	-	0.07	<0.01	-	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{\#}$	-	0.02	0.02	-	-	0.01	0.01	-	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	-	<0.01	0.13	-	-	0.04	<0.01	-	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	-	0.02	0.03	-	-	0.21	0.03	-	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	-	0.09	0.06	-	-	0.12	0.06	-	mg/kg	A-T-019s
Total PAH$_A$	-	0.57	0.53	-	-	1.05	0.37	-	mg/kg	A-T-019s

Envirolab Job Number: 12/03993

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03993/9	12/03993/10	12/03993/11	12/03993/12	12/03993/13	12/03993/14	12/03993/15	12/03993/16	Units	Method ref
Client Sample No										
Client Sample ID	TP21	TP22	TP23	TP24	TP25	TP26	TP27	TP28		
Depth to Top	0.20	0.10	0.20	0.20	0.20	0.10	0.30	0.10		
Depth To Bottom	0.30		0.30	0.30		0.20				
Date Sampled	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Matrix Code	4ABE	6AE	6E	6AE	4E	4E	4AE	4AE		
Asbestos in soil$_A^{\#}$	NAD	-	NAD	NAD	-	-	-	NAD		A-T-045
pH$_D^{M\#}$	-	-	-	-	-	-	-	-	pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	-	-	-	-	-	-	-	-	g/l	A-T-026s
Organic matter$_D^{M\#}$	3.2	-	-	-	2.5	-	-	-	% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	8	8	8	10	12	12	10	7	mg/kg	A-T-024
Cadmium$_D^{M\#}$	1.3	1.4	1.4	1.1	1.4	1.2	1.1	1.2	mg/kg	A-T-024
Copper$_D^{M\#}$	14	15	18	13	16	16	15	19	mg/kg	A-T-024
Chromium$_D^{\#}$	26	28	31	26	30	27	26	24	mg/kg	A-T-024
Lead$_D^{M\#}$	25	28	41	29	41	45	37	31	mg/kg	A-T-024
Mercury$_D$	0.24	0.26	0.37	<0.17	0.26	0.27	0.22	0.17	mg/kg	A-T-024
Nickel$_D^{M\#}$	21	23	24	17	21	17	16	17	mg/kg	A-T-024
Selenium$_D^{M\#}$	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-024
Zinc$_D^{M\#}$	53	52	58	39	50	42	38	38	mg/kg	A-T-024
Triazine Herbicides (x11)	-	-	-	Appended	-	-	-	-		Subcon
Pyrethroid (Pyrethrin) Insecticides (x6)	-	-	-	Appended	-	-	-	-		Subcon

Envirolab Job Number: 12/03993

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03993/9	12/03993/10	12/03993/11	12/03993/12	12/03993/13	12/03993/14	12/03993/15	12/03993/16	Units	Method ref
Client Sample No										
Client Sample ID	TP21	TP22	TP23	TP24	TP25	TP26	TP27	TP28		
Depth to Top	0.20	0.10	0.20	0.20	0.20	0.10	0.30	0.10		
Depth To Bottom	0.30		0.30	0.30		0.20				
Date Sampled	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Matrix Code	4ABE	6AE	6E	6AE	4E	4E	4AE	4AE		
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	-	-	-	<50	-	-	-	-	µg/kg	Subcon
p,p-DDT	-	-	-	<50	-	-	-	-	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: 12/03993

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03993/9	12/03993/10	12/03993/11	12/03993/12	12/03993/13	12/03993/14	12/03993/15	12/03993/16	Units	Method ref
Client Sample No										
Client Sample ID	TP21	TP22	TP23	TP24	TP25	TP26	TP27	TP28		
Depth to Top	0.20	0.10	0.20	0.20	0.20	0.10	0.30	0.10		
Depth To Bottom	0.30		0.30	0.30		0.20				
Date Sampled	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Matrix Code	4ABE	6AE	6E	6AE	4E	4E	4AE	4AE		
PAH 16										
Acenaphthene$_A^{M\#}$	-	<0.01	-	<0.01	-	<0.01	-	1.14	mg/kg	A-T-019s
Acenaphthylene$_A^{\#}$	-	<0.01	-	<0.01	-	<0.01	-	<0.01	mg/kg	A-T-019s
Anthracene$_A^{\#}$	-	<0.01	-	<0.01	-	<0.01	-	4.75	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	0.01	-	<0.01	-	<0.01	-	4.23	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	<0.01	-	<0.01	-	<0.01	-	2.38	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A$	-	0.02	-	<0.01	-	0.03	-	3.87	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	0.01	-	<0.01	-	<0.01	-	1.37	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A$	-	<0.01	-	<0.01	-	<0.01	-	1.35	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	-	<0.01	-	<0.01	-	0.01	-	4.60	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A$	-	<0.01	-	<0.01	-	<0.01	-	0.21	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	-	0.03	-	0.02	-	0.06	-	12.4	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	-	<0.01	-	<0.01	-	<0.01	-	1.94	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{\#}$	-	<0.01	-	<0.01	-	<0.01	-	1.06	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	-	<0.01	-	<0.01	-	<0.01	-	0.31	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	-	<0.01	-	<0.01	-	0.03	-	17.1	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	-	0.02	-	0.02	-	0.05	-	9.48	mg/kg	A-T-019s
Total PAH$_A$	-	0.10	-	0.03	-	0.18	-	66.2	mg/kg	A-T-019s

Envirolab Job Number: 12/03993

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03993/17	12/03993/18	12/03993/19	12/03993/20	12/03993/21	12/03993/22	12/03993/23	12/03993/24	Units	Method ref
Client Sample No										
Client Sample ID	TP29	TP30	TP31	TP32	TP33	TP38	TP39	TP9		
Depth to Top	0.10	0.10	0.10	0.30	0.20	0.30	0.10	1.50		
Depth To Bottom	0.20	0.30	0.20				0.20			
Date Sampled	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Matrix Code	4AE	6E	6AE	4E	6E	4E	6AE	4A		
Asbestos in soil$_A^{\#}$	-	-	NAD	-	-	NAD	-	-		A-T-045
pH$_D^{M\#}$	-	-	-	-	-	8.31	-	8.95	pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	-	-	-	-	-	<0.01	-	<0.01	g/l	A-T-026s
Organic matter$_D^{M\#}$	-	-	-	-	3.8	-	2.8	-	% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	12	5	6	7	7	7	9	-	mg/kg	A-T-024
Cadmium$_D^{M\#}$	1.6	1.2	1.4	1.5	1.5	1.4	1.3	-	mg/kg	A-T-024
Copper$_D^{M\#}$	25	20	21	18	23	14	14	-	mg/kg	A-T-024
Chromium$_D^{\#}$	25	28	29	32	35	24	26	-	mg/kg	A-T-024
Lead$_D^{M\#}$	33	24	28	26	34	22	28	-	mg/kg	A-T-024
Mercury$_D$	0.22	0.29	0.29	0.21	0.29	0.29	0.24	-	mg/kg	A-T-024
Nickel$_D^{M\#}$	21	19	22	24	24	22	21	-	mg/kg	A-T-024
Selenium$_D^{M\#}$	<1	<1	<1	1	1	<1	<1	-	mg/kg	A-T-024
Zinc$_D^{M\#}$	42	40	42	39	50	37	47	-	mg/kg	A-T-024
Triazine Herbicides (x11)	-	-	-	Appended	-	-	Appended	-		Subcon
Pyrethroid (Pyrethrin) Insecticides (x6)	-	-	-	Appended	-	-	Appended	-		Subcon

Envirolab Job Number: 12/03993

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03993/17	12/03993/18	12/03993/19	12/03993/20	12/03993/21	12/03993/22	12/03993/23	12/03993/24	Units	Method ref
Client Sample No										
Client Sample ID	TP29	TP30	TP31	TP32	TP33	TP38	TP39	TP9		
Depth to Top	0.10	0.10	0.10	0.30	0.20	0.30	0.10	1.50		
Depth To Bottom	0.20	0.30	0.20				0.20			
Date Sampled	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Matrix Code	4AE	6E	6AE	4E	6E	4E	6AE	4A		
Pest-c										
Mevinphos	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Dichlorvos	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
alpha-Hexachlorocyclohexane (HCH)	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Diazinon	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
gamma-Hexachlorocyclohexane (HCH / Lindane)	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Heptachlor	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Aldrin	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
beta-Hexachlorocyclohexane (HCH)	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Methyl Parathion	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Malathion	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Fenitrothion	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Heptachlor Epoxide	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Parathion (Ethyl Parathion)	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
p,p-DDE	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
p,p-DDT	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
p,p-Methoxychlor	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
p,p-TDE (DDD)	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
o,p-DDE	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
o,p-DDT	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
o,p-Methoxychlor	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
o,p-TDE (DDD)	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Endosulphan I	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Endosulphan II	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Endosulphan Sulphate	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Endrin	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Ethion	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Dieldrin	-	-	-	<50	-	-	<50	-	µg/kg	Subcon
Azinphos-methyl	-	-	-	<50	-	-	<50	-	µg/kg	Subcon

Envirolab Job Number: 12/03993 **Client Project Name: NIAB Phase 1**

Client Project Ref: 25459

Lab Sample ID	12/03993/17	12/03993/18	12/03993/19	12/03993/20	12/03993/21	12/03993/22	12/03993/23	12/03993/24	Units	Method ref
Client Sample No										
Client Sample ID	TP29	TP30	TP31	TP32	TP33	TP38	TP39	TP9		
Depth to Top	0.10	0.10	0.10	0.30	0.20	0.30	0.10	1.50		
Depth To Bottom	0.20	0.30	0.20				0.20			
Date Sampled	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12	31-Aug-12		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Matrix Code	4AE	6E	6AE	4E	6E	4E	6AE	4A		
PAH 16										
Acenaphthene$_A^{M\#}$	<0.01	-	<0.01	-	<0.01	<0.01	-	-	mg/kg	A-T-019s
Acenaphthylene$_A^{\#}$	<0.01	-	<0.01	-	<0.01	<0.01	-	-	mg/kg	A-T-019s
Anthracene$_A^{\#}$	0.01	-	<0.01	-	<0.01	<0.01	-	-	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.08	-	0.04	-	0.05	<0.01	-	-	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.11	-	0.04	-	0.04	<0.01	-	-	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A$	0.22	-	0.10	-	0.10	<0.01	-	-	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.14	-	0.07	-	0.06	<0.01	-	-	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A$	0.07	-	0.02	-	0.02	<0.01	-	-	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	0.14	-	0.07	-	0.06	<0.01	-	-	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A$	<0.01	-	<0.01	-	<0.01	<0.01	-	-	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	0.17	-	0.11	-	0.11	<0.01	-	-	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	-	<0.01	-	<0.01	<0.01	-	-	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{\#}$	0.09	-	0.03	-	0.04	<0.01	-	-	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.01	-	0.02	-	<0.01	<0.01	-	-	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	0.07	-	0.06	-	0.02	<0.01	-	-	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	0.15	-	0.10	-	0.10	<0.01	-	-	mg/kg	A-T-019s
Total PAH$_A$	1.25	-	0.67	-	0.58	<0.01	-	-	mg/kg	A-T-019s

Envirolab Job Number: 12/03993

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03993/33	12/03993/52							Units	Method ref
Client Sample No										
Client Sample ID	TP33	TP28								
Depth to Top	3.50									
Depth To Bottom		0.10								
Date Sampled	31-Aug-12	03-Sep-12								
Sample Type	Soil	Soil								
Sample Matrix Code	5	4AE								
pH_D M#	8.14	-							pH	A-T-031s
Sulphate (water sol 2:1)$_D$ M#	0.12	-							g/l	A-T-026s

Envirolab Job Number: 12/03993

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03993/33	12/03993/52							Units	Method ref
Client Sample No										
Client Sample ID	TP33	TP28 repeat								
Depth to Top	3.50									
Depth To Bottom		0.10								
Date Sampled	31-Aug-12	03-Sep-12								
Sample Type	Soil	Soil								
Sample Matrix Code	5	4AE								
PAH 16										
Acenaphthene$_A^{M\#}$	-	0.06							mg/kg	A-T-019s
Acenaphthylene$_A^{\#}$	-	<0.01							mg/kg	A-T-019s
Anthracene$_A^{\#}$	-	0.07							mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	*0.15*							mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	*0.07*							mg/kg	A-T-019s
Benzo(b)fluoranthene$_A$	-	0.15							mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	0.06							mg/kg	A-T-019s
Benzo(k)fluoranthene$_A$	-	0.04							mg/kg	A-T-019s
Chrysene$_A^{M\#}$	-	0.17							mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A$	-	<0.01							mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	-	0.36							mg/kg	A-T-019s
Fluorene$_A^{M\#}$	-	0.06							mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{\#}$	-	0.08							mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	-	0.01							mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	-	0.29							mg/kg	A-T-019s
Pyrene$_A^{M\#}$	-	0.26							mg/kg	A-T-019s
Total PAH$_A$	-	1.84							mg/kg	A-T-019s

Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 12/04076
Issue Number: 1 **Date:** 21 September, 2012

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

Project Manager: Nigel Austin / Ben Coulston / Oliver Pengilly
Project Name: NIAB Phase 1
Project Ref: 25459
Order No: Not specified
Date Samples Received: 10/09/12
Date Instructions Received: 10/09/12
Date Analysis Completed: 21/09/12

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Liz Oliver
Project Coordinator

Notes - Soil analysis
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 inert 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
Subscript "A" indicates analysis performed on the sample as received, "D" indicates analysis performed on dried & crushed sample.
All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts. Superscript "M" indicates method accredited to MCERTS. Results in italics are associated with a control limit flag.
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.
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 MCERTS accreditation.
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.
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.

Envirolab Job Number: 12/04076

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/04076/1	12/04076/2	12/04076/3	12/04076/4	12/04076/5	12/04076/6	12/04076/7	12/04076/8	Units	Method ref
Client Sample No										
Client Sample ID	WSB	WSE	WSH	WS1	WS2	WS3	WS4	WS5		
Depth to Top	0.10	0.10	0.20	0.20	0.20	0.10	0.10	0.05		
Depth To Bottom	0.20	0.20	0.30	0.30			0.20	0.15		
Date Sampled	06-Sep-12	06-Sep-12	06-Sep-12	05-Sep-12	05-Sep-12	06-Sep-12	05-Sep-12	05-Sep-12		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Matrix Code	5AE	6AE	5AE	6AE	6E	6AE	6E	5AE		
Asbestos in soil$_A^{\#}$	NAD	NAD	-	NAD	-	NAD	NAD	NAD		A-T-045
pH$_D^{M\#}$	6.92	-	7.34	-	-	-	7.34	-	pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	0.10	-	<0.01	-	-	-	0.02	-	g/l	A-T-026s
Organic matter$_D^{M\#}$	2.0	-	-	3.5	-	3.1	-	-	% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	9	7	12	7	9	10	27	5	mg/kg	A-T-024
Cadmium$_D^{M\#}$	0.6	0.6	0.7	0.6	0.6	0.7	0.9	0.7	mg/kg	A-T-024
Copper$_D^{M\#}$	21	17	20	25	18	21	28	20	mg/kg	A-T-024
Chromium$_D^{\#}$	26	37	25	42	42	37	48	45	mg/kg	A-T-024
Lead$_D^{M\#}$	52	46	52	80	39	73	55	36	mg/kg	A-T-024
Mercury$_D$	0.19	0.26	<0.17	0.36	0.37	0.21	0.45	0.24	mg/kg	A-T-024
Nickel$_D^{M\#}$	20	28	24	35	36	29	45	34	mg/kg	A-T-024
Selenium$_D^{M\#}$	<1	<1	<1	<1	1	2	2	<1	mg/kg	A-T-024
Zinc$_D^{M\#}$	64	60	55	71	59	62	70	60	mg/kg	A-T-024

Envirolab Job Number: 12/04076

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/04076/1	12/04076/2	12/04076/3	12/04076/4	12/04076/5	12/04076/6	12/04076/7	12/04076/8	Units	Method ref
Client Sample No										
Client Sample ID	WSB	WSE	WSH	WS1	WS2	WS3	WS4	WS5		
Depth to Top	0.10	0.10	0.20	0.20	0.20	0.10	0.10	0.05		
Depth To Bottom	0.20	0.20	0.30	0.30			0.20	0.15		
Date Sampled	06-Sep-12	06-Sep-12	06-Sep-12	05-Sep-12	05-Sep-12	06-Sep-12	05-Sep-12	05-Sep-12		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Matrix Code	5AE	6AE	5AE	6AE	6E	6AE	6E	5AE		
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	-	<50	-	-	-	-	-	-	µg/kg	Subcon
p,p-DDE	-	<50	-	-	-	-	-	-	µg/kg	Subcon
p,p-DDT	-	<50	-	-	-	-	-	-	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: 12/04076

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/04076/1	12/04076/2	12/04076/3	12/04076/4	12/04076/5	12/04076/6	12/04076/7	12/04076/8	Units	Method ref
Client Sample No										
Client Sample ID	WSB	WSE	WSH	WS1	WS2	WS3	WS4	WS5		
Depth to Top	0.10	0.10	0.20	0.20	0.20	0.10	0.10	0.05		
Depth To Bottom	0.20	0.20	0.30	0.30			0.20	0.15		
Date Sampled	06-Sep-12	06-Sep-12	06-Sep-12	05-Sep-12	05-Sep-12	06-Sep-12	05-Sep-12	05-Sep-12		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Matrix Code	5AE	6AE	5AE	6AE	6E	6AE	6E	5AE		
PAH 16										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	-	<0.01	-	-	<0.01	-	mg/kg	A-T-019s
Acenaphthylene$_A^{\#}$	<0.01	<0.01	-	<0.01	-	-	<0.01	-	mg/kg	A-T-019s
Anthracene$_A^{\#}$	<0.01	<0.01	-	<0.01	-	-	<0.01	-	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.07	0.04	-	0.03	-	-	0.15	-	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.07	0.07	-	0.04	-	-	0.15	-	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A$	0.13	0.09	-	0.03	-	-	0.15	-	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.06	0.04	-	0.02	-	-	0.08	-	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A$	0.03	0.01	-	0.01	-	-	0.05	-	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	0.08	0.05	-	0.02	-	-	0.14	-	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A$	0.02	0.01	-	<0.01	-	-	0.02	-	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	0.09	0.06	-	0.02	-	-	0.23	-	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	-	<0.01	-	-	<0.01	-	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{\#}$	0.06	0.04	-	0.01	-	-	0.08	-	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.01	<0.01	-	<0.01	-	-	<0.01	-	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	<0.01	<0.01	-	<0.01	-	-	0.08	-	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	0.08	0.05	-	0.02	-	-	0.20	-	mg/kg	A-T-019s
Total PAH$_A$	0.71	0.48	-	0.22	-	-	1.34	-	mg/kg	A-T-019s
Pyrethroids										
Cyfluthrin	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Cyhalothrin	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Cypermethrin	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Deltamethrin	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Fenvalerate	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Permethrin	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon

Envirolab Job Number: 12/04076

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/04076/1	12/04076/2	12/04076/3	12/04076/4	12/04076/5	12/04076/6	12/04076/7	12/04076/8	Units	Method ref
Client Sample No										
Client Sample ID	WSB	WSE	WSH	WS1	WS2	WS3	WS4	WS5		
Depth to Top	0.10	0.10	0.20	0.20	0.20	0.10	0.10	0.05		
Depth To Bottom	0.20	0.20	0.30	0.30			0.20	0.15		
Date Sampled	06-Sep-12	06-Sep-12	06-Sep-12	05-Sep-12	05-Sep-12	06-Sep-12	05-Sep-12	05-Sep-12		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Matrix Code	5AE	6AE	5AE	6AE	6E	6AE	6E	5AE		
Triazines (x11)										
Ametryn	-	<0.2	-	-	-	-	-	-	mg/kg	Subcon
Atraton	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Atrazine	-	<0.02	-	-	-	-	-	-	mg/kg	Subcon
Cyanazine	-	<0.02	-	-	-	-	-	-	mg/kg	Subcon
Prometon	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Prometryn	-	<0.02	-	-	-	-	-	-	mg/kg	Subcon
Propazine	-	<0.02	-	-	-	-	-	-	mg/kg	Subcon
Simazine	-	<0.02	-	-	-	-	-	-	mg/kg	Subcon
Simetryn	-	<0.1	-	-	-	-	-	-	mg/kg	Subcon
Terbuthylazine	-	<0.02	-	-	-	-	-	-	mg/kg	Subcon
Terbutryn	-	<0.02	-	-	-	-	-	-	mg/kg	Subcon

Envirolab Job Number: 12/04076

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/04076/9	12/04076/10							Units	Method ref
Client Sample No										
Client Sample ID	WS6	WS7								
Depth to Top	0.10	0.10								
Depth To Bottom	0.20									
Date Sampled	06-Sep-12	05-Sep-12								
Sample Type	Soil	Soil								
Sample Matrix Code	6E	4AE								
Asbestos in soil$_A^{\#}$	NAD	-								A-T-045
Organic matter$_D^{M\#}$	2.8	-							% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	7	9							mg/kg	A-T-024
Cadmium$_D^{M\#}$	0.8	0.8							mg/kg	A-T-024
Copper$_D^{M\#}$	19	16							mg/kg	A-T-024
Chromium$_D^{\#}$	43	27							mg/kg	A-T-024
Lead$_D^{M\#}$	44	33							mg/kg	A-T-024
Mercury$_D$	0.37	0.43							mg/kg	A-T-024
Nickel$_D^{M\#}$	32	22							mg/kg	A-T-024
Selenium$_D^{M\#}$	2	2							mg/kg	A-T-024
Zinc$_D^{M\#}$	61	54							mg/kg	A-T-024

Envirolab Job Number: 12/04076

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/04076/9	12/04076/10							Units	Method ref
Client Sample No										
Client Sample ID	WS6	WS7								
Depth to Top	0.10	0.10								
Depth To Bottom	0.20									
Date Sampled	06-Sep-12	05-Sep-12								
Sample Type	Soil	Soil								
Sample Matrix Code	6E	4AE								
PAH 16										
Acenaphthene$_A^{M\#}$	<0.01	-							mg/kg	A-T-019s
Acenaphthylene$_A^{\#}$	<0.01	-							mg/kg	A-T-019s
Anthracene$_A^{\#}$	0.02	-							mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.07	-							mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.07	-							mg/kg	A-T-019s
Benzo(b)fluoranthene$_A$	0.09	-							mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.06	-							mg/kg	A-T-019s
Benzo(k)fluoranthene$_A$	0.05	-							mg/kg	A-T-019s
Chrysene$_A^{M\#}$	0.07	-							mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A$	0.05	-							mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	0.07	-							mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	-							mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{\#}$	0.07	-							mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.01	-							mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	<0.01	-							mg/kg	A-T-019s
Pyrene$_A^{M\#}$	0.06	-							mg/kg	A-T-019s
Total PAH$_A$	0.70	-							mg/kg	A-T-019s

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 12/04180
Issue Number: 1 **Date:** 27 September, 2012

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

Project Manager: Nigel Austin / Ben Coulston / Oliver Pengilly
Project Name: NIAB Phase 1
Project Ref: 25459
Order No: Not specified
Date Samples Received: 14/09/12
Date Instructions Received: 14/09/12
Date Analysis Completed: 27/09/12

Prepared by: **Approved by:**

Melanie Marshall
Laboratory Coordinator

Liz Oliver
Project Coordinator

Notes - Soil analysis
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 inert 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
Subscript "A" indicates analysis performed on the sample as received, "D" indicates analysis performed on dried & crushed sample.
All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts. Superscript "M" indicates method accredited to MCERTS. Results in italics are associated with a control limit flag.
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.
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 MCERTS accreditation.
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.
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.

MCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 12/04180

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/04180/1	12/04180/2	12/04180/3	12/04180/4	12/04180/5	12/04180/6	12/04180/7	12/04180/8	Units	Method ref
Client Sample No										
Client Sample ID	WS8	WS9	WS10	WS11	WS12	WS13	WS14	WS15		
Depth to Top	0.30	0.10	0.20	0.40	0.20	0.30	0.10	0.20		
Depth To Bottom	0.40				0.30		0.20	0.30		
Date Sampled	07-Sep-12	07-Sep-12	10-Sep-12	07-Sep-12	10-Sep-12	07-Sep-12	07-Sep-12	10-Sep-12		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	6A	4A	6A	6A	6A	6	6A	6AE		
Asbestos in soil$_A^{\#}$	NAD	NAD	-	-	NAD	NAD	NAD	NAD		A-T-045
Organic matter$_D^{M\#}$	1.6	-	-	2.2	-	2.4	-	-	% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	9	9	7	8	6	8	7	6	mg/kg	A-T-024
Cadmium$_D^{M\#}$	1.3	1.6	1.3	1.3	1.4	1.5	1.5	1.3	mg/kg	A-T-024
Copper$_D^{M\#}$	14	19	14	14	13	14	14	12	mg/kg	A-T-024
Chromium$_D^{\#}$	20	21	20	20	23	23	22	22	mg/kg	A-T-024
Lead$_D^{M\#}$	29	44	25	33	24	29	23	20	mg/kg	A-T-024
Mercury$_D$	<0.17	<0.17	<0.17	<0.17	0.20	<0.17	0.19	<0.17	mg/kg	A-T-024
Nickel$_D^{M\#}$	18	19	18	17	20	18	19	18	mg/kg	A-T-024
Selenium$_D^{M\#}$	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-024
Zinc$_D^{M\#}$	47	57	46	45	41	55	46	42	mg/kg	A-T-024

Envirolab Job Number: 12/04180

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/04180/1	12/04180/2	12/04180/3	12/04180/4	12/04180/5	12/04180/6	12/04180/7	12/04180/8	Units	Method ref
Client Sample No										
Client Sample ID	WS8	WS9	WS10	WS11	WS12	WS13	WS14	WS15		
Depth to Top	0.30	0.10	0.20	0.40	0.20	0.30	0.10	0.20		
Depth To Bottom	0.40				0.30		0.20	0.30		
Date Sampled	07-Sep-12	07-Sep-12	10-Sep-12	07-Sep-12	10-Sep-12	07-Sep-12	07-Sep-12	10-Sep-12		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	6A	4A	6A	6A	6A	6	6A	6AE		
PAH 16										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	-	-	0.04	-	<0.01	<0.01	mg/kg	A-T-019s
Acenaphthylene$_A^{\#}$	<0.01	<0.01	-	-	<0.01	-	<0.01	<0.01	mg/kg	A-T-019s
Anthracene$_A^{\#}$	<0.01	<0.01	-	-	<0.01	-	<0.01	<0.01	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.01	0.03	-	-	<0.01	-	<0.01	<0.01	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.01	0.03	-	-	<0.01	-	<0.01	<0.01	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A$	0.03	0.10	-	-	<0.01	-	<0.01	<0.01	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.01	0.04	-	-	<0.01	-	<0.01	<0.01	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	<0.01	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	<0.01	0.06	-	-	<0.01	-	<0.01	<0.01	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A$	<0.01	<0.01	-	-	<0.01	-	<0.01	<0.01	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	0.03	0.07	-	-	0.02	-	0.02	<0.01	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	-	-	<0.01	-	<0.01	<0.01	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{\#}$	<0.01	<0.01	-	-	<0.01	-	<0.01	<0.01	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	0.02	<0.01	-	-	0.01	-	<0.01	0.02	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	<0.01	0.03	-	-	0.02	-	<0.01	<0.01	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	0.02	0.06	-	-	0.02	-	0.01	<0.01	mg/kg	A-T-019s
Total PAH$_A$	0.12	0.44	-	-	0.12	-	0.03	0.02	mg/kg	A-T-019s

Envirolab Job Number: 12/04180

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/04180/9	12/04180/10	12/04180/11	12/04180/12	12/04180/13	12/04180/14	12/04180/15	12/04180/16	Units	Method ref
Client Sample No										
Client Sample ID	WS16	WS17	WS18	WS19	WS20	WS21	WS22	WS23		
Depth to Top	0.10	0.05	0.20	0.10	0.60	0.05	0.20	0.50		
Depth To Bottom	0.20	0.15	0.30	0.20	0.70	0.15	0.30	0.60		
Date Sampled	07-Sep-12	12-Sep-12	12-Sep-12	10-Sep-12	12-Sep-12	12-Sep-12	12-Sep-12	12-Sep-12		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	6A	6E	6AB	6	5A	6AB	6AB	5A		
Asbestos in soil$_A^{\#}$	-	-	NAD	-	-	-	NAD	-		A-T-045
Organic matter$_D^{M\#}$	1.4	-	-	-	0.3	-	2.6	0.5	% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	8	17	14	15	9	5	8	6	mg/kg	A-T-024
Cadmium$_D^{M\#}$	1.3	1.7	1.7	1.6	1.3	1.3	1.4	1.2	mg/kg	A-T-024
Copper$_D^{M\#}$	11	56	23	20	7	18	27	9	mg/kg	A-T-024
Chromium$_D^{\#}$	17	31	35	31	11	28	24	19	mg/kg	A-T-024
Lead$_D^{M\#}$	23	76	48	49	6	24	31	7	mg/kg	A-T-024
Mercury$_D$	<0.17	0.22	<0.17	<0.17	0.22	0.18	<0.17	<0.17	mg/kg	A-T-024
Nickel$_D^{M\#}$	17	30	20	20	14	17	18	18	mg/kg	A-T-024
Selenium$_D^{M\#}$	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-024
Zinc$_D^{M\#}$	39	82	55	54	17	44	42	22	mg/kg	A-T-024

Envirolab Job Number: 12/04180

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/04180/9	12/04180/10	12/04180/11	12/04180/12	12/04180/13	12/04180/14	12/04180/15	12/04180/16	Units	Method ref
Client Sample No										
Client Sample ID	WS16	WS17	WS18	WS19	WS20	WS21	WS22	WS23		
Depth to Top	0.10	0.05	0.20	0.10	0.60	0.05	0.20	0.50		
Depth To Bottom	0.20	0.15	0.30	0.20	0.70	0.15	0.30	0.60		
Date Sampled	07-Sep-12	12-Sep-12	12-Sep-12	10-Sep-12	12-Sep-12	12-Sep-12	12-Sep-12	12-Sep-12		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	6A	6E	6AB	6	5A	6AB	6AB	5A		
PAH 16										
Acenaphthene$_A^{M\#}$	-	-	-	-	-	-	<0.01	-	mg/kg	A-T-019s
Acenaphthylene$_A^{\#}$	-	-	-	-	-	-	<0.01	-	mg/kg	A-T-019s
Anthracene$_A^{\#}$	-	-	-	-	-	-	<0.01	-	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	-	-	-	-	-	<0.01	-	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	-	-	-	-	-	0.02	-	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A$	-	-	-	-	-	-	0.05	-	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	-	-	-	-	-	0.03	-	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A$	-	-	-	-	-	-	<0.01	-	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	-	-	-	-	-	-	0.03	-	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A$	-	-	-	-	-	-	<0.01	-	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	-	-	-	-	-	-	0.05	-	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	-	-	-	-	-	-	<0.01	-	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{\#}$	-	-	-	-	-	-	<0.01	-	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	-	-	-	-	-	-	0.01	-	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	-	-	-	-	-	-	0.02	-	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	-	-	-	-	-	-	0.04	-	mg/kg	A-T-019s
Total PAH$_A$	-	-	-	-	-	-	0.26	-	mg/kg	A-T-019s

Envirolab Job Number: 12/04180

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/04180/17	12/04180/18	12/04180/19	12/04180/20	12/04180/21	12/04180/22	12/04180/23		Units	Method ref
Client Sample No										
Client Sample ID	WS24	WS24	WS10	WSM	BHK	BHG	WSM			
Depth to Top	0.40	0.10	0.80	0.10	0.00	0.00	0.30			
Depth To Bottom	0.50	0.20			0.50	0.50	0.40			
Date Sampled	10-Sep-12	10-Sep-12	10-Sep-12	06-Sep-12	28-Aug-12	28-Aug-12	06-Sep-12			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5A	6	5	6ABE	6AE	4AE	4ABE			
Asbestos in soil$_A^{\#}$	-	-	-	NAD	-	-	-			A-T-045
Organic matter$_D^{M\#}$	-	-	-	-	-	-	0.9		% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	10	6	8	11	7	9	9		mg/kg	A-T-024
Cadmium$_D^{M\#}$	1.7	1.5	1.9	1.6	1.7	1.5	1.7		mg/kg	A-T-024
Copper$_D^{M\#}$	12	15	14	23	20	18	14		mg/kg	A-T-024
Chromium$_D^{\#}$	28	28	37	26	28	24	26		mg/kg	A-T-024
Lead$_D^{M\#}$	11	25	13	42	32	42	18		mg/kg	A-T-024
Mercury$_D$	0.20	0.29	0.29	<0.17	0.25	<0.17	<0.17		mg/kg	A-T-024
Nickel$_D^{M\#}$	31	22	39	24	25	23	24		mg/kg	A-T-024
Selenium$_D^{M\#}$	<1	<1	<1	<1	<1	<1	<1		mg/kg	A-T-024
Zinc$_D^{M\#}$	40	54	42	88	77	54	54		mg/kg	A-T-024

Envirolab Job Number: 12/04180

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/04180/17	12/04180/18	12/04180/19	12/04180/20	12/04180/21	12/04180/22	12/04180/23		Units	Method ref
Client Sample No										
Client Sample ID	WS24	WS24	WS10	WSM	BHK	BHG	WSM			
Depth to Top	0.40	0.10	0.80	0.10	0.00	0.00	0.30			
Depth To Bottom	0.50	0.20			0.50	0.50	0.40			
Date Sampled	10-Sep-12	10-Sep-12	10-Sep-12	06-Sep-12	28-Aug-12	28-Aug-12	06-Sep-12			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5A	6	5	6ABE	6AE	4AE	4ABE			
PAH 16										
Acenaphthene$_A^{M\#}$	-	0.61	-	<0.01	-	-	-		mg/kg	A-T-019s
Acenaphthylene$_A^{\#}$	-	0.02	-	<0.01	-	-	-		mg/kg	A-T-019s
Anthracene$_A^{\#}$	-	0.07	-	<0.01	-	-	-		mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	0.03	-	0.04	-	-	-		mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	0.02	-	0.06	-	-	-		mg/kg	A-T-019s
Benzo(b)fluoranthene$_A$	-	0.07	-	0.11	-	-	-		mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	0.01	-	0.07	-	-	-		mg/kg	A-T-019s
Benzo(k)fluoranthene$_A$	-	0.02	-	0.02	-	-	-		mg/kg	A-T-019s
Chrysene$_A^{M\#}$	-	0.07	-	0.07	-	-	-		mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A$	-	<0.01	-	<0.01	-	-	-		mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	-	0.15	-	0.08	-	-	-		mg/kg	A-T-019s
Fluorene$_A^{M\#}$	-	0.28	-	<0.01	-	-	-		mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{\#}$	-	<0.01	-	0.03	-	-	-		mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	-	0.03	-	<0.01	-	-	-		mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	-	0.30	-	0.03	-	-	-		mg/kg	A-T-019s
Pyrene$_A^{M\#}$	-	0.10	-	0.09	-	-	-		mg/kg	A-T-019s
Total PAH$_A$	-	1.79	-	0.61	-	-	-		mg/kg	A-T-019s

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Analytical Report

Envirolab Limited
7 & 8 Sandpits Business Park
Mottram Road
Hyde
Cheshire, SK14 3AR

Report No:	12-28634/1
Date Received:	06/09/2012
Date Tested:	07/09/2012 to 12/09/2012
Date Issued:	12/09/2012
Page:	1 of 1

For the attention of: Iain Haslock

By email

3 soil samples received from Envirolab Limited (O/N: 727895; Project: 12/03993) in 100ml amber glass jars were analysed as shown below. Analytical methods employed are available on request. Results are reported on an as received basis unless otherwise specified.

Laboratory reference			213294 12/03993/12 TP24 0.2-0.3m	213295 12/03993/20 TP32 0.3m 31/08	213296 12/03993/23 TP39 0.1-0.2m
cyfluthrin	*[68359-37-5]*	mg/kg	< 0.10	< 0.10	< 0.10
cyhalothrin	*[91465-08-6]*	mg/kg	< 0.10	< 0.10	< 0.10
cypermethrin	*[52315-07-8]*	mg/kg	< 0.10	< 0.10	< 0.10
deltamethrin	*[52918-63-5]*	mg/kg	< 0.10	< 0.10	< 0.10
fenvalerate	*[51630-58-1]*	mg/kg	< 0.10	< 0.10	< 0.10
permethrin	*[52645-53-1]*	mg/kg	< 0.10	< 0.10	< 0.10
atrazine	*[1912-24-9]*	mg/kg	< 0.02	< 0.02	< 0.02
cyanazine	*[21725-46-2]*	mg/kg	< 0.02	< 0.02	< 0.02
prometryn	*[7287-19-6]*	mg/kg	< 0.02	< 0.02	< 0.02
propazine	*[139-40-2]*	mg/kg	< 0.02	< 0.02	< 0.02
simazine	*[122-34-9]*	mg/kg	< 0.02	< 0.02	< 0.02
terbuthylazine	*[5915-41-3]*	mg/kg	< 0.02	< 0.02	< 0.02
terbutryn	*[886-50-0]*	mg/kg	< 0.02	< 0.02	< 0.02
ametryne	*[834-12-8]*	mg/kg	< 0.20	< 0.20	< 0.20
atraton	*[1610-17-9]*	mg/kg	< 0.10	< 0.10	< 0.10
prometon	*[1610-18-0]*	mg/kg	< 0.10	< 0.10	< 0.10
simetryn	*[1014-70-6]*	mg/kg	< 0.10	< 0.10	< 0.10

Marco Lattughi
Senior Operations Manager

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Analytical Report

Envirolab Limited
7 & 8 Sandpits Business Park
Mottram Road
Hyde
Cheshire, SK14 3AR

Report No:	12-28618/1
Date Received:	05/09/2012
Date Tested:	06/09/2012 to 12/09/2012
Date Issued:	12/09/2012
Page:	1 of 1

For the attention of: Iain Haslock

By email

3 soil samples received from Envirolab Limited (O/N: 727889; Project: 12/03975) in 100ml amber glass jars were analysed as shown below. Analytical methods employed are available on request. Results are reported on an as received basis unless otherwise specified.

Laboratory reference			213236 12/03975/12 TP14 0.1-0.2m	213237 12/03975/16 TP37 0.1-0.2m	213238 12/03975/23 TP3 0.2m 28/08
cyfluthrin	*[68359-37-5]*	mg/kg	< 0.10	< 0.10	< 0.10
cyhalothrin	*[91465-08-6]*	mg/kg	< 0.10	< 0.10	< 0.10
cypermethrin	*[52315-07-8]*	mg/kg	< 0.10	< 0.10	< 0.10
deltamethrin	*[52918-63-5]*	mg/kg	< 0.10	< 0.10	< 0.10
fenvalerate	*[51630-58-1]*	mg/kg	< 0.10	< 0.10	< 0.10
permethrin	*[52645-53-1]*	mg/kg	< 0.10	< 0.10	< 0.10
atrazine	*[1912-24-9]*	mg/kg	< 0.02	< 0.02	< 0.02
cyanazine	*[21725-46-2]*	mg/kg	< 0.02	< 0.02	< 0.02
prometryn	*[7287-19-6]*	mg/kg	< 0.02	< 0.02	< 0.02
propazine	*[139-40-2]*	mg/kg	< 0.02	< 0.02	< 0.02
simazine	*[122-34-9]*	mg/kg	< 0.02	< 0.02	< 0.02
terbuthylazine	*[5915-41-3]*	mg/kg	< 0.02	< 0.02	< 0.02
terbutryn	*[886-50-0]*	mg/kg	< 0.02	< 0.02	< 0.02
ametryne	*[834-12-8]*	mg/kg	< 0.20	< 0.20	< 0.20
atraton	*[1610-17-9]*	mg/kg	< 0.10	< 0.10	< 0.10
prometon	*[1610-18-0]*	mg/kg	< 0.10	< 0.10	< 0.10
simetryn	*[1014-70-6]*	mg/kg	< 0.10	< 0.10	< 0.10

Marco Lattughi
Senior Operations Manager

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

COMBINED FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 12/03975, 12/04076, 12/04180
Issue Number: 2 **Date:** 22 October, 2012

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

Project Manager: Nigel Austin / Ben Coulston
Project Name: NIAB Phase 1
Project Ref: 25459
Order No: Not specified
Date Samples Received: 03/09/12
Date Instructions Received: 04/09/12
Date Analysis Completed: 17/09/12

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Iain Haslock
Analytical Consultant

Notes - Soil analysis
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 inert 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
Subscript "A" indicates analysis performed on the sample as received, "D" indicates analysis performed on dried & crushed sample.
All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts. Superscript "M" indicates method accredited to MCERTS. Results in italics are associated with a control limit flag.
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.
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 MCERTS accreditation.
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.
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.

MCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 12/03975, 12/04076, 12/04180 **Client Project Name: NIAB Phase 1**

Client Project Ref: 25459

Lab Sample ID	12/03975/17	12/03975/18	12/03975/19	12/03975/20	12/04076/1	12/04076/2	12/04076/3		Units	Method ref
Client Sample No										
Client Sample ID	TPD	TPI	TPL	TPO	WSB	WSE	WSH			
Depth to Top	0.10	0.20	0.30	0.30	0.10	0.10	0.20			
Depth To Bottom	0.20				0.20	0.20	0.30			
Date Sampled	30-Aug-12	28-Aug-12	29-Aug-12	28-Aug-12	06-Sep-12	06-Sep-12	06-Sep-12			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil	Soil	Soil			
Sample Matrix Code	6AE	6AE	6AE	6A	5AE	6AE	5AE			
Asbestos in soil$_A$$^{\#}$	-	-	NAD	-	NAD	NAD	-			A-T-045
pH$_D$$^{M\#}$					6.92	-	7.34		pH	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$					0.10	-	<0.01		g/l	A-T-026s
Organic matter$_D$$^{M\#}$	-	-	-	-	2.0	-	-		% w/w	A-T-032 OM
Arsenic$_D$$^{M\#}$	8	8	8	7	9	7	12		mg/kg	A-T-024
Cadmium$_D$$^{M\#}$	<0.5	1.5	0.6	<0.5	0.6	0.6	0.7		mg/kg	A-T-024
Copper$_D$$^{M\#}$	18	20	24	20	21	17	20		mg/kg	A-T-024
Chromium$_D$$^{\#}$	24	29	31	29	26	37	25		mg/kg	A-T-024
Lead$_D$$^{M\#}$	40	46	44	59	52	46	52		mg/kg	A-T-024
Mercury$_D$	0.25	0.27	0.36	0.51	0.19	0.26	<0.17		mg/kg	A-T-024
Nickel$_D$$^{M\#}$	22	26	29	24	20	28	24		mg/kg	A-T-024
Selenium$_D$$^{M\#}$	<1	<1	<1	<1	<1	<1	<1		mg/kg	A-T-024
Zinc$_D$$^{M\#}$	49	59	214	62	64	60	55		mg/kg	A-T-024

Envirolab Job Number: 12/03975, 12/04076, 12/04180

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/04180/20	12/04180/21	12/04180/22	12/04180/23					Units	Method ref
Client Sample No										
Client Sample ID	WSM	BHK	BHG	WSM						
Depth to Top	0.10	0.00	0.00	0.30						
Depth To Bottom		0.50	0.50	0.40						
Date Sampled	06-Sep-12	28-Aug-12	28-Aug-12	06-Sep-12						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6ABE	6AE	4AE	4ABE						
Asbestos in soil$_A^{\#}$	NAD	-	-	-						A-T-045
Organic matter$_D^{M\#}$	-	-	-	0.9					% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	11	7	9	9					mg/kg	A-T-024
Cadmium$_D^{M\#}$	1.6	1.7	1.5	1.7					mg/kg	A-T-024
Copper$_D^{M\#}$	23	20	18	14					mg/kg	A-T-024
Chromium$_D^{\#}$	26	28	24	26					mg/kg	A-T-024
Lead$_D^{M\#}$	42	32	42	18					mg/kg	A-T-024
Mercury$_D$	<0.17	0.25	<0.17	<0.17					mg/kg	A-T-024
Nickel$_D^{M\#}$	24	25	23	24					mg/kg	A-T-024
Selenium$_D^{M\#}$	<1	<1	<1	<1					mg/kg	A-T-024
Zinc$_D^{M\#}$	88	77	54	54					mg/kg	A-T-024

Envirolab Job Number: 12/03975, 12/04076, 12/04180

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/03975/17	12/03975/18	12/03975/19	12/03975/20	12/04076/1	12/04076/2	12/04076/3		Units	Method ref
Client Sample No										
Client Sample ID	TPD	TPI	TPL	TPO	WSB	WSE	WSH			
Depth to Top	0.10	0.20	0.30	0.30	0.10	0.10	0.20			
Depth To Bottom	0.20				0.20	0.20	0.30			
Date Sampled	30-Aug-12	28-Aug-12	29-Aug-12	28-Aug-12	06-Sep-12	06-Sep-12	06-Sep-12			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil	Soil	Soil			
Sample Matrix Code	6AE	6AE	6AE	6A	5AE	6AE	5AE			
PAH 16										
Acenaphthene$_A^{M\#}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-		mg/kg	A-T-019s
Acenaphthylene$_A^{\#}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-		mg/kg	A-T-019s
Anthracene$_A^{\#}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-		mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.02	-	0.04	0.04	0.07	0.04	-		mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.02	-	0.06	0.03	0.07	0.07	-		mg/kg	A-T-019s
Benzo(b)fluoranthene$_A$	0.05	-	0.12	0.07	0.13	0.09	-		mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.01	-	0.07	0.03	0.06	0.04	-		mg/kg	A-T-019s
Benzo(k)fluoranthene$_A$	0.01	-	0.03	0.02	0.03	0.01	-		mg/kg	A-T-019s
Chrysene$_A^{M\#}$	0.03	-	0.07	0.07	0.08	0.05	-		mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A$	<0.01	-	<0.01	<0.01	0.02	0.01	-		mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	0.01	-	0.06	0.08	0.09	0.06	-		mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-		mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{\#}$	0.01	-	0.02	<0.01	0.06	0.04	-		mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.01	-	<0.01	<0.01	<0.01	<0.01	-		mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	<0.01	-	<0.01	0.03	<0.01	<0.01	-		mg/kg	A-T-019s
Pyrene$_A^{M\#}$	0.02	-	0.06	0.07	0.08	0.05	-		mg/kg	A-T-019s
Total PAH$_A$	0.19	-	0.52	0.44	0.71	0.48	-		mg/kg	A-T-019s
Pyrethroids										
Cyfluthrin					-	<0.1	-		mg/kg	Subcon
Cyhalothrin					-	<0.1	-		mg/kg	Subcon
Cypermethrin					-	<0.1	-		mg/kg	Subcon
Deltamethrin					-	<0.1	-		mg/kg	Subcon
Fenvalerate					-	<0.1	-		mg/kg	Subcon
Permethrin					-	<0.1	-		mg/kg	Subcon

Envirolab Job Number: 12/03975, 12/04076, 12/04180

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/04180/20	12/04180/21	12/04180/22	12/04180/23					Units	Method ref
Client Sample No										
Client Sample ID	WSM	BHK	BHG	WSM						
Depth to Top	0.10	0.00	0.00	0.30						
Depth To Bottom		0.50	0.50	0.40						
Date Sampled	06-Sep-12	28-Aug-12	28-Aug-12	06-Sep-12						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6ABE	6AE	4AE	4ABE						
PAH 16										
Acenaphthene$_A^{M\#}$	<0.01	-	-	-					mg/kg	A-T-019s
Acenaphthylene$_A^{\#}$	<0.01	-	-	-					mg/kg	A-T-019s
Anthracene$_A^{\#}$	<0.01	-	-	-					mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.04	-	-	-					mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.06	-	-	-					mg/kg	A-T-019s
Benzo(b)fluoranthene$_A$	0.11	-	-	-					mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.07	-	-	-					mg/kg	A-T-019s
Benzo(k)fluoranthene$_A$	0.02	-	-	-					mg/kg	A-T-019s
Chrysene$_A^{M\#}$	0.07	-	-	-					mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A$	<0.01	-	-	-					mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	0.08	-	-	-					mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	-	-	-					mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{\#}$	0.03	-	-	-					mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.01	-	-	-					mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	0.03	-	-	-					mg/kg	A-T-019s
Pyrene$_A^{M\#}$	0.09	-	-	-					mg/kg	A-T-019s
Total PAH$_A$	0.61	-	-	-					mg/kg	A-T-019s

Envirolab Job Number: 12/03975, 12/04076, 12/04180

Client Project Name: NIAB Phase 1

Client Project Ref: 25459

Lab Sample ID	12/04076/1	12/04076/2	12/04076/3						Units	Method ref
Client Sample No										
Client Sample ID	WSB	WSE	WSH							
Depth to Top	0.10	0.10	0.20							
Depth To Bottom	0.20	0.20	0.30							
Date Sampled	06-Sep-12	06-Sep-12	06-Sep-12							
Sample Type	Soil	Soil	Soil							
Sample Matrix Code	5AE	6AE	5AE							
Triazines (x11)										
Ametryn	-	<0.2	-						mg/kg	Subcon
Atraton	-	<0.1	-						mg/kg	Subcon
Atrazine	-	<0.02	-						mg/kg	Subcon
Cyanazine	-	<0.02	-						mg/kg	Subcon
Prometon	-	<0.1	-						mg/kg	Subcon
Prometryn	-	<0.02	-						mg/kg	Subcon
Propazine	-	<0.02	-						mg/kg	Subcon
Simazine	-	<0.02	-						mg/kg	Subcon
Simetryn	-	<0.1	-						mg/kg	Subcon
Terbuthylazine	-	<0.02	-						mg/kg	Subcon
Terbutryn	-	<0.02	-						mg/kg	Subcon

Lab Sample ID	12/04076/1	12/04076/2	12/04076/3						Units	Method ref
Client Sample No										
Client Sample ID	WSB	WSE	WSH							
Depth to Top	0.10	0.10	0.20							
Depth To Bottom	0.20	0.20	0.30							
Date Sampled	06-Sep-12	06-Sep-12	06-Sep-12							
Sample Type	Soil	Soil	Soil							
Sample Matrix Code	5AE	6AE	5AE							
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	-	<50	-						µg/kg	Subcon
p,p-DDE	-	<50	-						µg/kg	Subcon
p,p-DDT	-	<50	-						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

APPENDIX K
HUMAN HEALTH GENERIC ASSESSMENT CRITERIA

K1 – RESIDENTIAL END-USE

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 C_5-C_8 were not modelled since benzene and toluene are being modelled separately. The aromatic C_8-C_9 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 11.85m^3 (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 100m^2 private garden consisting of lawn, flowerbeds and incorporating a 20m^2 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

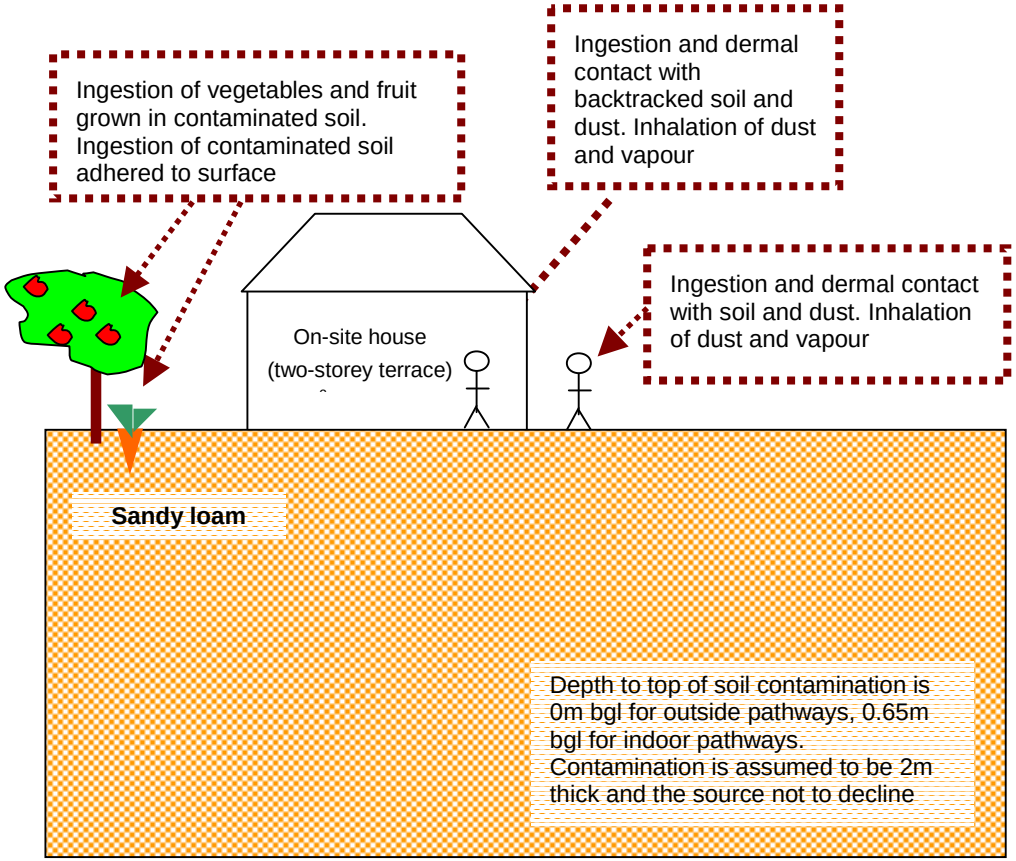

Table 1: Exposure assessment parameters for residential scenario - private gardens – inputs for CLEA model

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 (*m*)	-	3.20E-01	
Bulk density	g cm^{-3}	1.21	
Threshold value of wind speed at 10m	m s^{-1}	7.20	Default value taken from Section 9.2.2, SR3[3]
Empirical function (F_x) for dust model	-	1.22	Value taken from Section 9.2.2, SR3[3]
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	$\mu g\ m^{-3}$	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

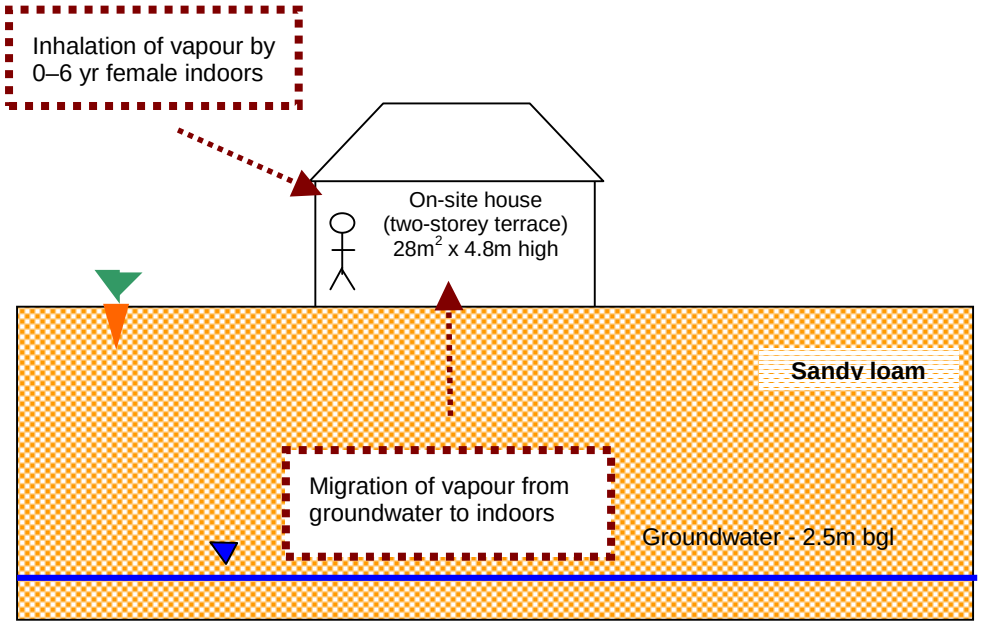

Table 6: Residential with private gardens – RBCA inputs

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	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	
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		-	2.66E+03	1.04E+04	2.33E+03	NR	2.66E+03	1.04E+04	2.33E+03	NR	2.66E+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	1.69E+02	NR	1.81E+02	2.55E+03	1.69E+02	NR	1.81E+02	2.55E+03	1.69E+02	NR
Methyl Mercury (Hg^{4+})	(b)	2.00E+01	1.39E+01	1.59E+01	7.40E+00	7.33E+01	1.39E+01	3.08E+01	9.55E+00	1.42E+02	1.39E+01	6.53E+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		-	2.66E+01	3.97E+00	3.68E+00	NR	2.66E+01	3.97E+00	3.68E+00	NR	2.66E+01	3.97E+00	3.68E+00	NR
Volatile Organic Compounds														
Benzene	(b)	7.20E+00	1.12E-01	2.69E-01	7.92E-02	1.22E+03	2.28E-01	4.99E-01	1.57E-01	2.26E+03	4.89E-01	1.04E+00	3.32E-01	4.71E+03
Toluene	(b)	1.90E+03	1.47E+02	6.26E+02	1.19E+02	8.69E+02	3.35E+02	1.38E+03	2.70E+02	1.92E+03	7.59E+02	3.14E+03	6.11E+02	4.36E+03
Ethylbenzene	(b)	2.60E+02	1.06E+02	1.70E+02	6.52E+01	5.18E+02	2.51E+02	3.98E+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	5.56E+01	4.36E+01	6.25E+02	4.80E+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	5.98E+01	4.52E+01	4.78E+02	4.38E+02	1.40E+02	1.06E+02	1.12E+03	9.96E+02	3.27E+02	2.46E+02	2.62E+03
Xylene - p		8.70E+01	1.91E+02	5.34E+01	4.17E+01	5.76E+02	4.51E+02	1.26E+02	9.82E+01	1.35E+03	1.02E+03	2.94E+02	2.28E+02	3.17E+03
Total xylene		8.40E+01	2.02E+02	5.56E+01	4.36E+01	6.25E+02	4.80E+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	1.66E+04	3.68E+00	2.40E+02	3.67E+00	2.16E+04	7.41E+00	3.70E+02	7.37E+00	3.34E+04
Trichloroethene		1.80E+00	2.83E+00	1.10E-01	1.06E-01	1.54E+03	6.25E+00	2.30E-01	2.22E-01	3.22E+03	1.40E+01	5.11E-01	4.93E-01	7.14E+03
Tetrachloroethene		3.60E+00	1.06E+01	1.03E+00	9.36E-01	4.24E+02	2.44E+01	2.30E+00	2.10E+00	9.51E+02	5.55E+01	5.28E+00	4.82E+00	2.18E+03
1,1,1-Trichloroethane		2.60E+01	3.20E+02	6.33E+00	6.21E+00	1.43E+03	6.97E+02	1.29E+01	1.27E+01	2.92E+03	1.55E+03	2.84E+01	2.79E+01	6.39E+03
1,1,1,2 Tetrachloroethane		1.40E+01	5.19E+00	1.08E+00	8.93E-01	2.60E+03	1.22E+01	2.50E+00	2.08E+00	6.02E+03	2.78E+01	5.83E+00	4.82E+00	1.40E+04
1,1,2,2-Tetrachloroethane		1.40E+01	2.70E+00	2.76E+00	1.37E+00	2.67E+03	5.85E+00	5.65E+00	2.87E+00	5.46E+03	1.30E+01	1.24E+01	6.34E+00	1.20E+04
Carbon Tetrachloride		5.50E-02	1.05E+00	1.81E-02	1.79E-02	1.52E+03	2.41E+00	3.97E-02	3.93E-02	3.32E+03	5.44E+00	8.99E-02	8.92E-02	7.54E+03
1,2-Dichloroethane		3.00E-01	3.06E-02	6.46E-03	5.34E-03	3.41E+03	5.53E-02	9.32E-03	7.98E-03	4.91E+03	1.05E-01	1.60E-02	1.39E-02	8.43E+03
Vinyl Chloride		1.90E-02	3.69E-03	5.43E-04	4.73E-04	1.36E+03	6.64E-03	7.02E-04	6.35E-04	1.76E+03	1.21E-02	1.07E-03	9.86E-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	4.60E-01	4.56E-01	9.47E+01	3.47E+01	1.10E+00	1.09E+00	2.26E+02	7.94E+01	2.59E+00	2.56E+00	5.33E+02
Semi-Volatile Organic Compounds														
Acenaphthene		3.20E+00	2.18E+02	3.46E+03	2.05E+02	5.70E+01	5.08E+02	8.54E+03	4.79E+02	1.41E+02	1.06E+03	2.03E+04	1.01E+03	3.36E+02
Acenaphthylene		4.20E+00	1.78E+02	3.27E+03	1.68E+02	8.61E+01	4.17E+02	8.03E+03	3.97E+02	2.12E+02	8.90E+02	1.91E+04	8.51E+02	5.06E+02
Anthracene		2.10E-02	2.31E+03	1.08E+05	2.26E+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	6.96E+00
Benzo(a)anthracene		3.80E-03	7.00E+00	5.55E+00	3.10E+00	1.71E+00	8.98E+00	9.83E+00	4.69E+00	4.28E+00	1.01E+01	1.41E+01	5.88E+00	1.03E+01
Benzo(b)fluoranthene		2.00E-03	8.06E+00	1.79E+01	5.56E+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)perylene		2.60E-04	6.68E+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	4.68E+01	9.23E-02
Benzo(k)fluoranthene		9.00E-04	1.25E+01	2.66E+01	8.51E+00	6.87E-01	1.44E+01	2.83E+01	9.56E+00	1.72E+00	1.53E+01	2.91E+01	1.00E+01	4.12E+00
Chrysene		2.00E-03	8.76E+00	1.95E+01	6.00E+00	4.40E-01	1.20E+01	2.45E+01	8.04E+00	1.10E+00	1.41E+01	2.72E+01	9.27E+00	2.64E+00
Dibenzo(a,h)anthracene		6.00E-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	1.39E+00	2.56E+00	9.03E-01	2.36E-02
Fluoranthene		2.30E-01	2.59E+02	2.69E+04	2.57E+02	1.89E+01	4.67E+02	6.23E+04	4.63E+02	4.73E+01	6.78E+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	7.65E+01	8.00E+02	2.54E+04	7.76E+02	1.83E+02
Indeno(1,2,3-cd)pyrene		2.00E-04	4.58E+00	1.04E+01	3.18E+00	6.13E-02	5.74E+00	1.17E+01	3.85E+00	1.53E-01	6.37E+00	1.22E+01	4.19E+00	3.68E-01
Phenanthrene		5.30E-01	9.35E+01	5.04E+03	9.18E+01	3.60E+01	2.04E+02	1.23E+04	2.01E+02	8.96E+01	3.81E+02	2.86E+04	3.76E+02	2.14E+02
Pyrene		1.30E-01	5.69E+02	6.18E+04	5.63E+02	2.20E+00	1.05E+03	1.44E+05	1.04E+03	5.49E+00	1.56E+03	2.97E+05	1.56E+03	1.32E+01
Benzo(a)pyrene		3.80E-03	1.21E+00	2.62E+00	8.26E-01	9.11E-01	1.42E+00	2.81E+00	9.43E-01	2.28E+00	1.52E+00	2.90E+00	9.98E-01	5.46E+00
Naphthalene		1.90E+01	2.68E+01	1.64E+00	1.54E+00	7.64E+01	6.36E+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_5-EC_6		1.00E+01	4.79E+03	2.98E+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_6-EC_8		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	6.36E+04	3.72E+02	3.71E+02	7.36E+02
Aliphatic hydrocarbons >EC_8-EC_{10}		2.30E-01	1.46E+03	1.89E+01	1.88E+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_{10}-EC_{12}		3.40E-02	3.52E+03	9.34E+01	9.28E+01	4.75E+01	4.01E+03	2.32E+02	2.29E+02	1.18E+02	4.24E+03	5.57E+02	5.37E+02	2.83E+02
Aliphatic hydrocarbons >EC_{12}-EC_{16}		7.60E-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	4.68E+03	3.03E+03	1.42E+00
Aliphatic hydrocarbons >EC_{16}-EC_{35}	(c)	-	4.51E+04	-	-	8.48E+00	6.38E+04	-	-	2.12E+01	7.61E+04	-	-	5.09E+01
Aliphatic hydrocarbons >EC_{35}-EC_{44}	(c)	-	4.51E+04	-	-	8.48E+00	6.38E+04	-	-	2.12E+01	7.61E+04	-	-	5.09E+01
Aromatic hydrocarbons >EC_8-EC_9 (styrene)		7.40E+00	1.66E+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	3.61E+03
Aromatic hydrocarbons >EC_9-EC_{10}		7.40E+00	5.55E+01	3.33E+01	2.69E+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	7.97E+01	1.82E+02	6.91E+01	3.64E+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_{16}		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	1.18E+04	5.93E+02	1.00E+03
Aromatic hydrocarbons >EC_{16}-EC_{21}	(c)	-	2.47E+02	-	-	5.37E+01	4.82E+02	-	-	1.34E+02	7.66E+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.

For consistency where the theoretical solubility limit within RBCA has been exceeded in production of the GrAC, these cellls 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 >EC16 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.

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH PRIVATE GARDENS

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
Chormium (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^{4+})	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
1,1,1,2Tetrachloroethane	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	0.0080	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	1.9	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(a)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_6	10	30	55	110
Aliphatic hydrocarbons >EC_6-EC_8	5.4	73	160	370
Aliphatic hydrocarbons >EC_8-EC_{10}	0.23	19	46	110
Aliphatic hydrocarbons >EC_{10}-EC_{12}	0.034	93 (48)	230 (118)	540 (283)
Aliphatic hydrocarbons >EC_{12}-EC_{16}	0.00076	744 (24)	1,700 (59)	3,000 (142)
Aliphatic hydrocarbons >EC_{16}-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_8-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_{16}	5.8	140	310	593
Aromatic hydrocarbons >EC_{16}-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:

'-' Generic 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. 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.

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 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.

K2 – COMMERCIAL END-USE

Generic assessment criteria for human health: commercial scenario

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 was also withdrawn in 2010 owing to concerns that it was not suitably protective of human health. The withdrawn SGV was based on a target blood lead concentration 10 μg/dl. In the absence of current guidelines, many consultants have continued to use the withdrawn SGV. However, as this is not considered sufficiently protective of human health RSK has revised its GAC for lead and is currently undertaking a review of recent toxicological developments that will be used to refine this GAC further in the coming months.

Variable	Description of variable	Units	Value in SGV10	Revised value for RSK GAC
T	Health criteria value – reduced owing to concern that 10ug/dl may not be suitably protective of human health	ug/dl	10	5
G	Geometric standard deviation for B typically in range of 1.8 to 2.1	-	2.0	1.8
B	Geometric mean of blood lead concentration in adult women. The value used in SGV10 was based on UK data from 1995 from women in an urban area aged 16–44. Data in the US has shown decreases from between 1.7 and 2.2 to 1ug/dl between the late 1980s/early 1990s and late 1990s/early 2000s for adult females between 17 and 45 years old. Lead concentrations in blood are likely to be decreasing in the UK owing to a ban on lead in internal paint, a ban on lead in fuel and replacement of lead pipes for water supply	ug/dl	2.3	1.0
n	Selected on the basis of the degree of protection needed for a population at risk at the target concentration (T); the default value is 95%	-	1.645	1.645
$AT_{S, D}$	Averaging time assuming exposure over working lifetime. The value has been revised to reflect 49 years in accordance with CLEA commercial scenario outlined in SR3	days	15695	17885
BKSF	Biokinetic slope factor	ug/dl per ug/day	0.4	0.4
IR_S	Soil ingestion rate (including soil-derived indoor dust). This value has been revised to reflect the CLEA commercial scenario outlined in SR3	g/day	0.040	0.050
$AF_{S, D}$	Absorption fraction (same for soil and dust)	-	0.12	0.12
$EF_{S, D}$	Exposure frequency – based on CLEA commercial conceptual model	days/yr	230	230
ED	Exposure duration. This value has been revised to reflect CLEA commercial conceptual model outlined in SR3	years	43	49

The methodology utilised for the adult receptor is the Adult Lead Methodology used in the USA, which is a similar equation to that used in production of the UK SGV outlined in R&D publication SGV10. Parameters within the equation are presented below and have been updated to reflect:

- a revised and more health protective target blood level
- more recent US data pertaining to the geometric blood lead concentration, which indicates decreasing concentrations from 1988 to 2004
- more recent US data regarding the geometric standard deviation (the measure of inter-individual variability in blood lead concentrations within the adult population).

Although the update is based on US data, RSK considers that background blood levels in the UK will also be decreasing owing to lead pipes being replaced, lead no longer being used in fuel and lead paints being banned from internal use. Furthermore, RSK has run the equation with varying inputs to ascertain its sensitivity to certain parameters. Using the parameters outlined above RSK obtains a GAC of **600mg/kg** for an adult in a commercial setting. A similar value is obtained if all input parameters remain equal to those used in production of the former SGV but the soil ingestion rate is increased to reflect 50mg/day reported for the commercial scenario in SR3.

GAC derivation for other metals and organic compounds

Model selection

Soil assessment criteria (SAC) were calculated for compounds where SGV have not been published 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[2–5]. The SAC and GrAC collectively are termed GAC.

Pathway selection

In accordance with EA Science Report SC050221/SR3[3] the commercial scenario considers risks to a female worker who works from the age of 16 to 65 years. It should be noted that this end use is not suitable for a workplace nursery but also may be appropriate for a sport centre or shopping centre where children are present. In accordance with Box 3.5, SR3[3] the pathways considered for production of the SAC in the commercial scenario are:

- direct soil and dust ingestion
- dermal contact with soil both indoor and outdoors
- indoor air inhalation from soil and vapour and outdoor inhalation of soil and vapour.

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 workers 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 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 be impractical in many cases because of the very low solubility/vapour saturation 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 limits 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 saturation or vapour saturation limit (in brackets), and subsequently incorporate this 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 specific chemical 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 TPH, aromatic hydrocarbons C_5–C_8 were not modelled since benzene and toluene are being modelled separately. The aromatic C_8-C_9 hydrocarbon fraction comprises ethylbenzene, xylene and styrene. As ethylbenzene and xylene are being modelled separately, the physical, chemical and toxicological data for this band have 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:

- an adult weighing 70kg and breathing 14.8m^3 air per day in accordance with the UK TOX reports[2] and SR3[3]
- the 50% rule (for petroleum hydrocarbons, trimethylbenzenes and MTBE)[2] where MDI data is not currently available but background exposure is considered important in the overall exposure.

Physical parameters

For the commercial end use, the CLEA default pre-1970s three-storey office building was used. SR3 notes this commercial building type to be the most conservative in terms of protection from vapour intrusion. The building parameters are outlined in Table 3.

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, 2 and 3 and the GrAC using the input parameters in Table 4. The final selected GAC are presented by pathway in Table 5 with the combined GAC in Table 6.

Figure 1: Conceptual model for CLEA commercial scenario

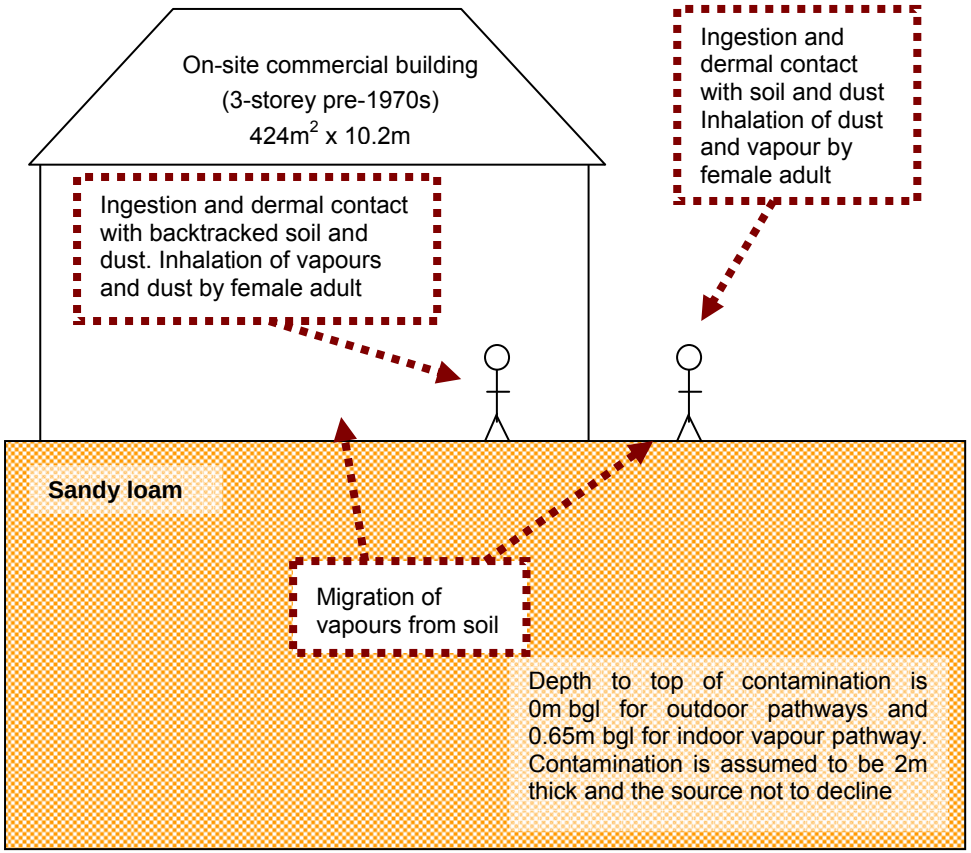

Table 1: Exposure assessment parameters for commercial scenario – inputs for CLEA model

Parameter	Value	Justification
Land use	Commercial	Chosen land use
Receptor	Female worker	Taken as female adult exposed over 49 years from age 16 to 65 years, Box 3.5, SR3[3]
Building	Office (pre-1970)	Key generic assumption given in Box 3.5, SR3[3]. Pre-1970s three-storey office building chosen as it is the most conservative in terms of protection from vapour intrusion (Section 3.4.6, SR3[3])
Soil type	Sandy loam	Most common UK soil type (Section 4.3.1, Table 4.4, SR3[3]). Table 4 presents soil-specific inputs
Start age class (AC)	17	AC corresponding to key generic assumption that the critical receptor is a working female adult exposed over a 49-year period from age 16 to 65 years. Assumption given in Box 3.5, SR3[3]. Data specific to AC exposure is presented in Table 2 and receptor specific in Table 3
End AC	17	
SOM (%)	6	Representative of sandy loam 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: Commercial – receptor inputs for CLEA model

Parameter	Unit	Value	Justification
Exposure frequency (EF) (soil and dust ingestion)	day yr^{-1}	230	From Table 3.9, SR3[3]. The working week is assumed 45 hours including a 1-hour lunch break each day. Indoor and outdoor exposure are weighted by the frequency of time spent indoors and outdoors (8.3 hours a day and 0.7 hours a day respectively)
EF (dermal contact with dust. indoor)	day yr^{-1}	230	
EF (dermal contact with soil, outdoor)	day yr^{-1}	170	
EF (inhalation of dust and vapour, indoor)	day yr^{-1}	230	
EF (inhalation of dust and vapour, outdoor)	day yr^{-1}	170	
Occupancy period (indoor)	hr day^{-1}	8.3	Box 3.6, SR3[3]. Weighted average based on a nine-hour day including one-hour lunch being spent outside 75% of the year
Occupancy period (outdoor)	hr day^{-1}	0.7	
Soil to skin adherence factor (indoor and outdoor)	mg cm^{-2} day^{-1}	0.14	Table 8.1, SR3[3] for age class 17
Soil and dust ingestion rate	g day^{-1}	0.05	Table 6.2, SR3[3] for age class 17
Body weight	kg	70	Table 4.6, SR3[3] for female AC 17
Body height	m	1.6	Table 4.6, SR3[3] for female AC 17
Inhalation rate	m^3 day^{-1}	14.8	Table 4.14, SR3[3] for female AC 17
Max. exposed skin fraction (indoor and outdoors)	m^2 m^{-2}	0.08	Based on adult female assuming face and hands are exposed. Table 4.7, SR3[3]

Table 3: Commercial – soil, air 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	$cm\ s^{-1}$	0.00356	
van Genuchten shape parameter (*m*)	-	0.3201	
Bulk density	$g\ cm^{-3}$	1.21	
Threshold value of wind speed at 10m	$m\ s^{-1}$	7.20	Default value taken from Section 9.2.2, SR3[3]
Empirical function (F_x) for dust model	-	1.22	Value taken from Section 9.2.2, SR3[3]
Ambient soil temperature	K	283	Annual average soil temperature of UK surface soils. Section 4.3.1, SR3[3]
Air dispersion model			
Mean annual wind speed (10m)	$m\ s^{-1}$	5.0	Default value taken from Section 9.2.2, SR3[3]
Air dispersion factor at height of 1.6m	$g\ m^{-2}\ s^{-1}$ per $kg\ m^{-3}$	120	From Table 9.1, SR3. Values for a 2ha site, appropriate to a commercial land use in Newcastle (most representative city for UK, section 9.2.1,SR3[3])
Fraction of site with hard or vegetative cover	$m^2\ m^{-2}$	0.8	Section 3.4.6 and 9.2.2, SR3[3] for average office such as that used in the commercial scenario
Building properties for office (pre-1970) with ground-bearing floor slab			
Building footprint	m^2	424	From Table 3.10, SR3[3]
Living space air exchange rate	hr^{-1}	1.0	
Living space height (above ground)	m	9.6	
Living space height (below ground)	m	0.0	Assumed no basement.
Pressure difference (soil to enclosed space)	Pa	4.4	From Table 3.10, SR3[3]
Foundation thickness	m	0.15	