

Photo No. 7	Date: 02/11/20	
Description: Drilling WS7		

Photo No. 8	Date: 02/11/20	
Description: Window sample liners from WS7		

APPENDIX G

EXPLORATORY HOLE RECORDS



WINDOW SAMPLE LOG

Contract: Water Lane		Client: BDW Southern Counties		Window Sample: WS1
Contract Ref: 305145	Start: 02.11.20 End: 02.11.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Progress		Samples / Tests			Water Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results				
	0.10-0.20	1	ES	Tub + VL + J		Grass over brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint. (TOPSOIL.) Soft brown slightly sandy CLAY. Sand is fine to coarse. (HEAD DEPOSITS)	0.20	
	0.50-0.60	2	ES	Tub + VL + J			(1.60)	
	2.20-2.30	3	ES	Tub + VL + J		Brown clayey slightly sandy GRAVEL. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint. (RIVER TERRACE DEPOSITS)	1.80 (1.20)	
						Hole terminated at 3.00mbgl.	3.00	

Drilling Progress and Water Observations						General Remarks		
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation. 2. Inspection pit hand dug to 1.20m depth. 3. No groundwater encountered. 4. 50mm diameter gas/groundwater monitoring well complete with upstanding protective cover installed to 3.00m depth on completion. Response zone 1.00m to 3.00m depth.		
Method Tracked window sampling						All dimensions in metres Scale: 1:25		
Plant Used: Premier Compact 110		Drilled By: P J Drilling		Logged By: EChissell		Checked By:		



WINDOW SAMPLE LOG

Contract: Water Lane		Client: BDW Southern Counties		Window Sample: WS2
Contract Ref: 305145	Start: 02.11.20 End: 02.11.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Progress		Samples / Tests			Water Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results				
	0.10-0.20	1	ES	Tub + VL + J		Grass over brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint. (TOPSOIL.)	(0.50)	
	0.50-0.60	2	ES	Tub + VL + J		Soft orangish brown slightly sandy CLAY. Sand is fine to coarse. (HEAD DEPOSITS)	0.50	
	1.20-1.30	3	ES	Tub + VL + J		Brown gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. (HEAD DEPOSITS)	(1.60)	
							2.10	
							(0.90)	
							3.00	
						Hole terminated at 3.00mbgl.		

Drilling Progress and Water Observations						General Remarks		
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation. 2. Inspection pit hand dug to 1.20m depth. 3. No groundwater encountered. 4. 50mm diameter gas/groundwater monitoring well complete with upstanding protective cover installed to 3.00m depth on completion. Response zone 1.00m to 3.00m depth.		
Method Tracked window sampling		Plant Used: Premier Compact 110		Drilled By: P J Drilling	Logged By: EChissell	Scale: 1:25	Check By:	



WINDOW SAMPLE LOG

Contract: Water Lane		Client: BDW Southern Counties		Window Sample: WS3
Contract Ref: 305145	Start: 02.11.20 End: 02.11.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Progress		Samples / Tests			Water Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results				
	0.10-0.20	1	ES	Tub + VL + J		Grass over dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint. (TOPSOIL.)	(0.50)	
	0.50-0.60	2	ES	Tub + VL + J		Brown gravelly CLAY with low cobble content. Gravel is angular to subrounded fine to coarse flint. Cobbles are angular flint. (HEAD DEPOSITS)	(1.20)	
						Soft brown sandy CLAY. Sand is fine to coarse. (LAMBETH GROUP)	(1.30)	
						Hole terminated at 3.00mbgl.	3.00	

Drilling Progress and Water Observations						General Remarks		
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	- Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation. - Inspection pit hand dug to 1.20m depth. - No groundwater encountered. 50mm diameter gas/groundwater monitoring well complete with upstanding protective cover installed to 3.00m depth on completion. Response zone 1.00m to 3.00m depth.		
						All dimensions in metres		
Method Tracked window sampling		Plant Used: Premier Compact 110		Drilled By: P J Drilling	Logged By: EChissell	Scale: 1:25	Checked By:	



WINDOW SAMPLE LOG

Contract: Water Lane		Client: BDW Southern Counties		Window Sample: WS4
Contract Ref: 305145	Start: 02.11.20 End: 02.11.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Progress	Samples / Tests				Water Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results				
	0.20-0.30	1	ES	Tub + VL + J		Grass over dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint. (TOPSOIL.)	(0.60)	
	0.70-0.80	2	ES	Tub + VL + J		Brown gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. (HEAD DEPOSITS)	(1.50)	
						Brown slightly clayey sandy GRAVEL. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint. (RIVER TERRACE DEPOSITS)	(0.90)	
						Hole terminated at 3.00mbgl.		

Drilling Progress and Water Observations						General Remarks					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	- Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation. - Inspection pit hand dug to 1.20m depth. - No groundwater encountered. 50mm diameter gas/groundwater monitoring well complete with upstanding protective cover installed to 3.00m depth on completion. Response zone 1.00m to 3.00m depth.					
All dimensions in metres						Scale:	1:25				
Method	Tracked window sampling		Plant Used:	Premier Compact 110		Drilled By:	P J Drilling	Logged By:	EChissell	Checked By:	





WINDOW SAMPLE LOG

Contract: Water Lane		Client: BDW Southern Counties		Window Sample: WS5
Contract Ref: 305145	Start: 02.11.20 End: 02.11.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.20-0.30	1	ES	Tub + VL + J			Grass over dark brown slightly sandy CLAY. Sand is fine to coarse. (TOPSOIL)	(0.60)	
	0.80-0.90	1	ES	Tub + VL + J			Brown gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. (HEAD DEPOSITS)	(2.40)	
							Hole terminated at 3.00mbgl.	3.00	

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	- Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation. - Inspection pit hand dug to 1.20m depth. - No groundwater encountered. 50mm diameter gas/groundwater monitoring well complete with upstanding protective cover installed to 3.00m depth on completion. Response zone 1.00m to 3.00m depth.			
Method Tracked window sampling		Plant Used: Premier Compact 110		Drilled By: P J Drilling		Logged By: EChissell		Scale: 1:25	





WINDOW SAMPLE LOG

Contract: Water Lane		Client: BDW Southern Counties		Window Sample: WS6
Contract Ref: 305145	Start: 02.11.20 End: 02.11.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Progress		Samples / Tests			Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.20-0.30	1	ES	Tub + VL + J			Grass over dark brown slightly gravelly clayey SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to medium flint. (TOPSOIL.)	(0.30)	
							Soft brown slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. (HEAD DEPOSITS)	(0.60)	
	0.70-0.80	1	ES	Tub + VL + J				0.90	
							Brown gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. (HEAD DEPOSITS)	(0.40)	
								1.30	
							Brown slightly clayey slightly sandy GRAVEL. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint. (RIVER TERRACE DEPOSITS)	(1.70)	
								3.00	
							Hole terminated at 3.00mbgl.		

Drilling Progress and Water Observations						General Remarks		
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation. 2. Inspection pit hand dug to 1.20m depth. 3. No groundwater encountered. 4. 50mm diameter gas/groundwater monitoring well complete with upstanding protective cover installed to 3.00m depth on completion. Response zone 1.00m to 3.00m depth.		
Method Tracked window sampling		Plant Used: Premier Compact 110		All dimensions in metres		Scale: 1:25	Drilled By: P J Drilling Logged By: EChissell Checked By:	
ARUN DISTRICT COUNCIL		Date: 12/12/20		Scale: 1:25		Checked By:		





WINDOW SAMPLE LOG

Contract: Water Lane		Client: BDW Southern Counties		Window Sample: WS7
Contract Ref: 305145	Start: 02.11.20 End: 02.11.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

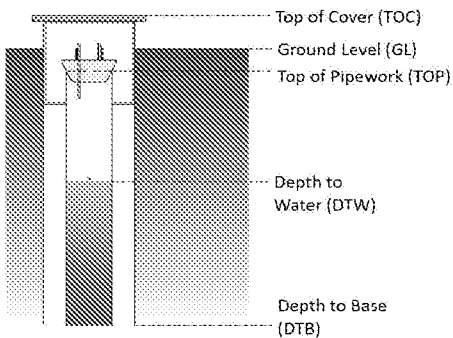
Progress	Samples / Tests				Water Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results				
	0.10-0.20	1	ES	Tub + VL + J		Grass over dark brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint. (TOPSOIL.)	(0.60)	
	0.70-0.80	1	ES	Tub + VL + J		Brown gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. (HEAD DEPOSITS)	(0.50)	
						Brown slightly clayey sandy GRAVEL. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint. (RIVER TERRACE DEPOSITS)	(1.90)	
						Hole terminated at 3.00mbgl.	3.00	

Drilling Progress and Water Observations						General Remarks		
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation. 2. Inspection pit hand dug to 1.20m depth. 3. No groundwater encountered. 4. 50mm diameter gas/groundwater monitoring well complete with upstanding protective cover installed to 3.00m depth on completion. Response zone 1.00m to 3.00m depth.		
Method Tracked window sampling						All dimensions in metres Scale: 1:25		
Plant Used: Premier Compact 110		Drilled By: P J Drilling		Logged By: EChissell		Checked By:		

APPENDIX H

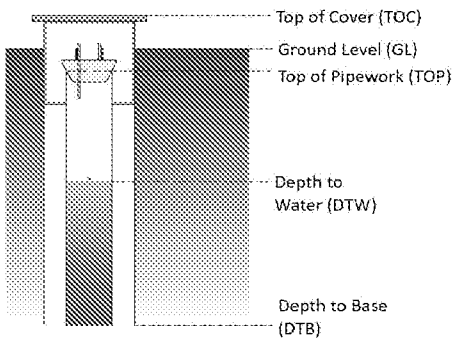
GROUND GAS MONITORING DATA

GAS MONITORING FIELD SHEET

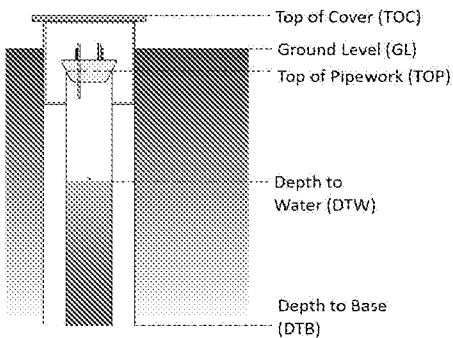
Monitoring Date: 05/11/2020		Measurement datum: TOC / GL / TOP / Other		TOP		Offset to GL (m): 0.45			
Pre-Testing Remarks:				Air Temperature: 5 °C		Device: GA5000			
				Weather: Sunny		Serial Number: GS05800			
				Ground Conditions: Dry		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Rising			
Exploratory Position ID: MBH01		Monitoring Round Number: 1		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm) 50			
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	12:27	12:23	1031		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	0.1	0	<0.1	<0.1	21.0				
10	0.1	15	<0.1	1.7	19.8				
15	0.1	30	<0.1	1.8	19.0				
20	0.1	60	<0.1	1.8	18.9				
25	0.1	90	<0.1	1.8	18.9				
30	0.1	120	<0.1	1.8	18.9				
40		180	<0.1	1.8	18.9				
50		240							
60		300							
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)		10.3	Time:		LNAPL Top (from datum) (m):		n/a	
	Depth (from datum) to well base (DTB): (m)		10.74	Purge Start:		DNAPL Top (from datum) (m):		n/a	
	Hole Purged: Yes / No		No	Purge End:		Water Observations:			
	Purge Volume: (l/s)			Post-Purge (DTW) (m)					
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
		Contract Name:		Water Lane, Angmering		Data Collected By:		EC	
		Project Manager / Engineer:		EC		Checked:		CC	
		Contract Ref:		305145		Page number:			

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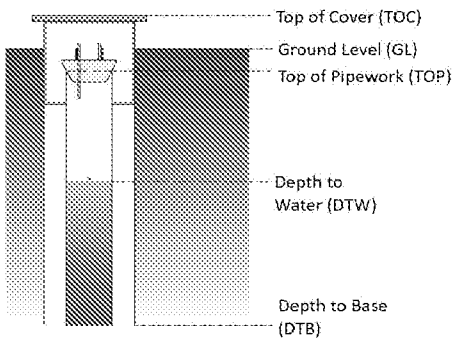
GAS MONITORING FIELD SHEET

Monitoring Date: 05/11/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m):		0.35	
Pre-Testing Remarks:				Air Temperature: 5 °C		Device: GA5000			
				Weather: Sunny		Serial Number: GS05800			
				Ground Conditions: Dry		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Rising			
Exploratory Position ID: WS1		Monitoring Round Number: 1		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm)		50	
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE		Single		
Time Start (hh:mm)	11:48	11:45	1031		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	0.1	0	<0.1	<0.1	20.7				
10	0.1	15	<0.1	1.8	19.3				
15	0.1	30	<0.1	1.8	18.3				
20	0.1	60	<0.1	1.9	18				
25	0.1	90	<0.1	2.0	17.9				
30	0.1	120	<0.1	2.0	17.9				
40		180	<0.1	2.0	17.9				
50		240							
60		300							
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)		n/a	Time:		LNAPL Top (from datum) (m):		n/a	
	Depth (from datum) to well base (DTB): (m)		3.09	Purge Start:		DNAPL Top (from datum) (m):		n/a	
	Hole Purged: Yes / No		No	Purge End:		Water Observations:			
	Purge Volume: (l/s)			Post-Purge (DTW) (m)					
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
		Contract Name:		Water Lane, Angmering		Data Collected By:		EC	
		Project Manager / Engineer:		EC		Checked:		CC	
		Contract Ref:		305145		Page number:			

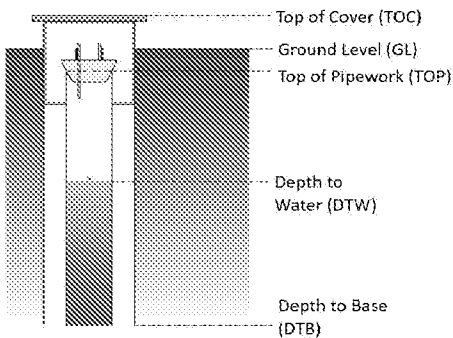
GAS MONITORING FIELD SHEET

Monitoring Date: 05/11/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m):		0.37	
Pre-Testing Remarks:				Air Temperature: 5 °C		Device: GA5000			
				Weather: Sunny		Serial Number: GS05800			
				Ground Conditions: Dry		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Rising			
Exploratory Position ID: WS2		Monitoring Round Number: 1		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm)		50	
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	11:30	11:26	1032		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring:	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	0.1	0	<0.1	<0.1	20.6				
10	0.1	15	<0.1	1.3	19.6				
15	0.1	30	<0.1	1.2	19.5				
20	0.1	60	<0.1	1.2	19.5				
25	0.1	90	<0.1	1.2	19.5				
30	0.1	120	<0.1	1.2	19.5				
40		180	<0.1	1.2	19.5				
50		240							
60		300							
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)	n/a	Time:		LNAPL Top (from datum) (m):	n/a			
	Depth (from datum) to well base (DTB): (m)	3.17	Purge Start:		DNAPL Top (from datum) (m):	n/a			
	Hole Purged: Yes / No	No	Purge End:		Water Observations:				
	Purge Volume: (l/s)		Post-Purge (DTW) (m)						
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
		Contract Name: Water Lane, Angmering		Data Collected By: EC					
		Project Manager / Engineer: EC		Checked: CC					
		Contract Ref: 305145		Page number:					

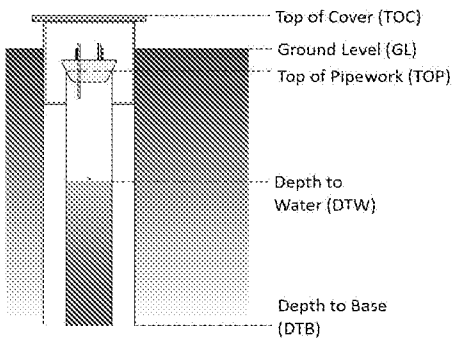
GAS MONITORING FIELD SHEET

Monitoring Date: 05/11/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m):		0.35	
Pre-Testing Remarks:				Air Temperature: 5 °C		Device: GA5000			
				Weather: Sunny		Serial Number: GS05800			
				Ground Conditions: Dry		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Rising			
Exploratory Position ID: WS3		Monitoring Round Number: 1		Test Number:					
Install Type: SINGLE / DOUBLE		single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm)		50	
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	single			
Time Start (hh:mm)	11:03	10:59	1032		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring:	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	0.1	0	<0.1	<0.1	20.7				
10	0.1	15	<0.1	2.0	19.3				
15	0.1	30	<0.1	2.1	19.1				
20	0.1	60	<0.1	2.1	18.9				
25	0.1	90	<0.1	2.1	18.9				
30	0.1	120	<0.1	2.1	18.8				
40		180	<0.1	2.1	18.8				
50		240							
60		300							
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)	2.84	Time:		LNAPL Top (from datum) (m):		n/a		
	Depth (from datum) to well base (DTB): (m)	3.01	Purge Start:		DNAPL Top (from datum) (m):		n/a		
	Hole Purged: Yes / No	No	Purge End:		Water Observations:				
	Purge Volume: (l)		Post-Purge (DTW) (m)						
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
		Contract Name: Water Lane, Angmering		Data Collected By: EC					
		Project Manager / Engineer: EC		Checked: CC					
		Contract Ref: 305145		Page number:					
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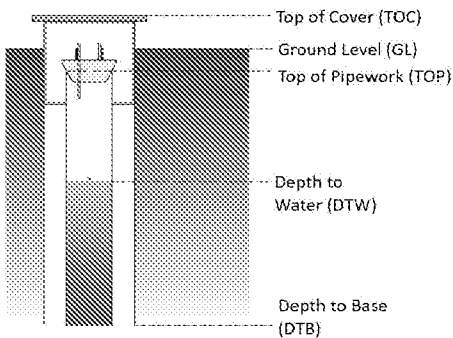
GAS MONITORING FIELD SHEET

Monitoring Date: 05/11/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m): 0.34			
Pre-Testing Remarks:				Air Temperature: 5 °C		Device: GA5000			
				Weather: Sunny		Serial Number: GS05800			
				Ground Conditions: Dry		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Rising			
Exploratory Position ID: WS4		Monitoring Round Number: 2		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm) 50			
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	07:51	07:54	996		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/hr)	Time of gas monitoring (sec)							
5	0.1	0	<0.1	<0.1	20.9				
10	0.1	15	<0.1	2.1	20.0				
15	0.1	30	<0.1	2.1	17.7				
20	0.1	60	<0.1	2.1	17.5				
25	0.1	90	<0.1	2.1	17.5				
30	0.1	120	<0.1	2.1	17.5				
40		180	<0.1	2.1	17.5				
50		240	<0.1	2.1	17.5				
60		300	<0.1	2.1	17.5				
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW) (m)	n/a	Time:		LNAPL Top (from datum) (m):	n/a			
	Depth (from datum) to well base (DTB) (m)	2.92	Purge Start:		DNAPL Top (from datum) (m):	n/a			
	Hole Purged: Yes / No	No	Purge End:		Water Observations:				
	Purge Volume: (l/s)		Post-Purge (DTW) (m)						
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
		Contract Name: Water Lane, Angmering		Data Collected By: EC					
		Project Manager / Engineer: EC		Checked: CC					
		Contract Ref: 305145		Page number:					

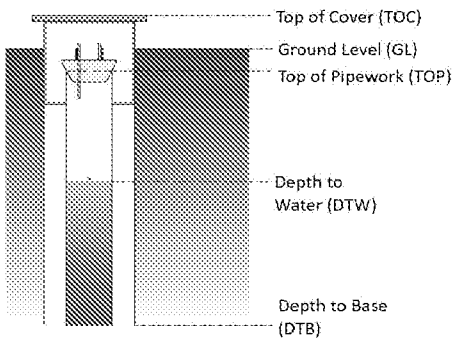
GAS MONITORING FIELD SHEET

Monitoring Date: 05/11/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m):		0.37			
Pre-Testing Remarks:				Air Temperature: °C		Device:					
				Weather:		Serial Number:					
				Ground Conditions:		Daily Check:					
				Wind: NONE / LIGHT / MEDIUM / STRONG							
				Tidal State: (if applicable) High / Low / Rising / Falling							
Exploratory Position ID: WS5		Monitoring Round Number: 1		Test Number:							
Install Type: SINGLE / DOUBLE		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm)		50					
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE						
Time Start (hh:mm)	11:38	11:34	1031		Observations (e.g. on-site activities):						
Time End (hh:mm)											
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring:	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)		
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)									
5	0.1	0	<0.1	<0.1	20.6						
10	0.1	15	<0.1	2.6	17.4						
15	0.1	30	<0.1	2.7	13.8						
20	0.1	60	<0.1	2.7	13.4						
25	0.1	90	<0.1	2.7	13.4						
30	0.1	120	<0.1	2.7	13.4						
40		180	<0.1	2.7	13.4						
50		240									
60		300									
90		360									
120		420									
150		480									
180		540									
		600									
Stage 1 gas flow - Peak (l/h)	0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.								
Stage 1 gas flow - Steady State (l/h)	0.1										
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)		3.05	Time:		LNAPL Top (from datum) (m):					
	Depth (from datum) to well base (DTB): (m)		3.05	Purge Start:		DNAPL Top (from datum) (m):					
	Hole Purged: Yes / No			Purge End:		Water Observations:					
	Purge Volume: (l)			Post-Purge (DTW) (m)							
			Post testing remarks:		Samples Taken: Yes / No						
					Sample Media: Gas/Water						
					Gas Cannister Start (mb)						
					Gas Cannister End (mb)						
					Gas Cannister Duration (mins)						
Depth (from datum)		Sample Ref	Type (EW / G)	Container							
			Contract Name:		Data Collected By:						
			Project Manager / Engineer:		Checked:						
			Contract Ref:		Page number:						

GAS MONITORING FIELD SHEET

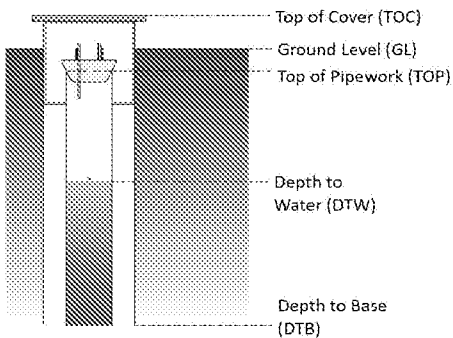
Monitoring Date: 05/11/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m): 0.3			
Pre-Testing Remarks:				Air Temperature: 5 °C		Device: GA5000			
				Weather: Sunny		Serial Number: GS05800			
				Ground Conditions: Dry		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Rising			
Exploratory Position ID: WS6		Monitoring Round Number: 1		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm) 50			
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	12:20	12:16	1031		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/hr)	Time of gas monitoring (sec)							
5	0.1	0	<0.1	<0.1	21.0				
10	0.1	15	<0.1	1.9	18.9				
15	0.1	30	<0.1	1.9	17.1				
20	0.1	60	<0.1	1.9	17.0				
25	0.1	90	<0.1	1.9	17.0				
30	0.1	120	<0.1	1.9	17.0				
40		180	<0.1	1.9	17.0				
50		240							
60		300							
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)		n/a	Time:		LNAPL Top (from datum) (m):		n/a	
	Depth (from datum) to well base (DTB): (m)		3.03	Purge Start:		DNAPL Top (from datum) (m):		n/a	
	Hole Purged: Yes / No		No	Purge End:		Water Observations:			
	Purge Volume: (l)			Post-Purge (DTW) (m)					
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
		Contract Name:		Water Lane, Angmering		Data Collected By:		EC	
		Project Manager / Engineer:		EC		Checked:		CC	
		Contract Ref:		305145		Page number:			

GAS MONITORING FIELD SHEET

Monitoring Date: 05/11/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m):		0.32	
Pre-Testing Remarks:				Air Temperature: 5 °C		Device: GA5000			
				Weather: Sunny		Serial Number: GS05800			
				Ground Conditions: Dry		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Rising			
Exploratory Position ID: WS7		Monitoring Round Number: 1		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm)		50	
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	12:38	12:33	1031		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	0.1	0	<0.1	<0.1	21.0				
10	0.1	15	<0.1	2.6	20.6				
15	0.1	30	<0.1	2.7	17.6				
20	0.1	60	<0.1	2.8	16.9				
25	0.1	90	<0.1	2.9	16.9				
30	0.1	120	<0.1	2.9	16.9				
40		180	<0.1	2.9	16.9				
50		240							
60		300							
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)		n/a	Time:		LNAPL Top (from datum) (m):		n/a	
	Depth (from datum) to well base (DTB): (m)		2.94	Purge Start:		DNAPL Top (from datum) (m):		n/a	
	Hole Purged: Yes / No		No	Purge End:		Water Observations:			
	Purge Volume: (l/s)			Post-Purge (DTW) (m)					
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
		Contract Name:		Water Lane, Angmering		Data Collected By:		EC	
		Project Manager / Engineer:		EC		Checked:		CC	
		Contract Ref:		305145		Page number:			

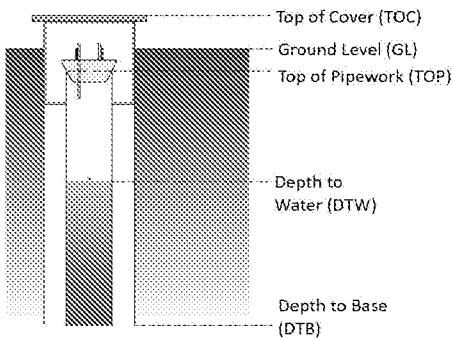
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GAS MONITORING FIELD SHEET

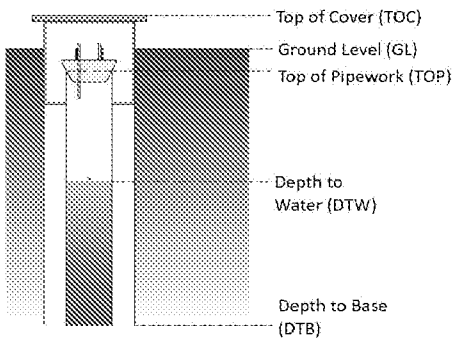
Monitoring Date: 04/12/2020		Measurement datum: TOC / GL / TOP / Other		TOP		Offset to GL (m): 0.47			
Pre-Testing Remarks:				Air Temperature: 3 °C		Device: GA5000			
				Weather: Rainy		Serial Number: G505786			
				Ground Conditions: Wet		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Falling			
Exploratory Position ID: MBH01		Monitoring Round Number: 2		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm) 50			
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	08:58	09:01	994		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	0.1	0	<0.1	<0.1	20.9				
10	0.1	15	<0.1	2.6	19.9				
15	0.1	30	<0.1	2.6	18.7				
20	0.1	60	<0.1	2.6	18.5				
25	0.1	90	<0.1	2.6	18.4				
30	0.1	120	<0.1	2.6	18.4				
40	0.1	180	<0.1	2.6	18.4				
50	0.1	240	<0.1	2.6	18.4				
60	0.1	300	<0.1	2.6	18.4				
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW) (m)		10.54	Time:		LNAPL Top (from datum) (m):		n/a	
	Depth (from datum) to well base (DTB) (m)		10.59	Purge Start:		DNAPL Top (from datum) (m):		n/a	
	Hole Purged: Yes / No		No	Purge End:		Water Observations:			
	Purge Volume: (l/s)			Post-Purge (DTW) (m)					
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
		Contract Name:		Water Lane, Angmering		Data Collected By:		SO	
		Project Manager / Engineer:		EC		Checked:		CC	
		Contract Ref:		305145		Page number:			

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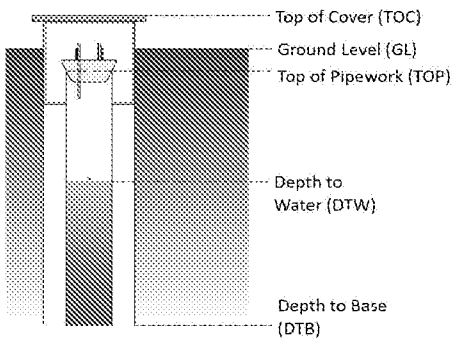
GAS MONITORING FIELD SHEET

Monitoring Date: 04/12/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m):		0.35	
Pre-Testing Remarks:				Air Temperature: °C		3		Device: GA5000	
				Weather:		Rainy		Serial Number: G505786	
				Ground Conditions:		Wet		Daily Check: Yes	
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Falling			
Exploratory Position ID: WS1		Monitoring Round Number: 2		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm)		50	
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	11:48	11:45	995		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/hr)	Time of gas monitoring (sec)							
5	<0.1	0	<0.1	<0.1	20.9				
10	<0.1	15	<0.1	1.8	19.4				
15	<0.1	30	<0.1	1.8	17.6				
20	<0.1	60	<0.1	1.8	17.4				
25	<0.1	90	<0.1	1.8	17.3				
30	<0.1	120	<0.1	1.8	17.3				
40		180	<0.1	1.8	17.3				
50		240	<0.1	1.8	17.3				
60		300	<0.1	1.8	17.3				
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	<0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	<0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)	n/a	Time:		LNAPL Top (from datum) (m):	n/a			
	Depth (from datum) to well base (DTB): (m)	2.91	Purge Start:		DNAPL Top (from datum) (m):	n/a			
	Hole Purged: Yes / No	No	Purge End:		Water Observations:				
	Purge Volume: (lts)		Post-Purge (DTW) (m)						
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
		Contract Name: Water Lane, Angmering		Data Collected By: SO					
		Project Manager / Engineer: EC		Checked: CC					
		Contract Ref: 305145		Page number:					

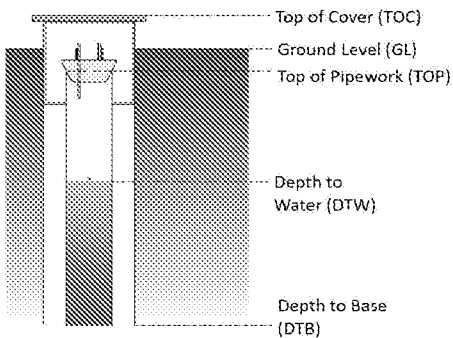
GAS MONITORING FIELD SHEET

Monitoring Date: 04/12/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m): 0.37			
Pre-Testing Remarks:				Air Temperature: 3 °C		Device: GA5000			
				Weather: Rainy		Serial Number: G505786			
				Ground Conditions: Wet		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Falling			
Exploratory Position ID: WS2		Monitoring Round Number: 2		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm) 50			
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	08:05	08:08	996		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	<0.1	0	<0.1	<0.1	20.9				
10	<0.1	15	<0.1	2.4	18.8				
15	<0.1	30	<0.1	2.4	16.2				
20	<0.1	60	<0.1	2.4	15.9				
25	<0.1	90	<0.1	2.4	15.9				
30	<0.1	120	<0.1	2.4	15.9				
40		180	<0.1	2.4	15.9				
50		240	<0.1	2.5	15.9				
60		300	<0.1	2.5	15.9				
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	<0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	<0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW) (m)		2.83	Time:		LNAPL Top (from datum) (m):		n/a	
	Depth (from datum) to well base (DTB) (m)		2.93	Purge Start:		DNAPL Top (from datum) (m):		n/a	
	Hole Purged: Yes / No		No	Purge End:		Water Observations:			
	Purge Volume: (l/s)			Post-Purge (DTW) (m)					
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
			Contract Name: Water Lane, Angmering		Data Collected By: SO				
			Project Manager / Engineer: EC		Checked: CC				
			Contract Ref: 305145		Page number:				

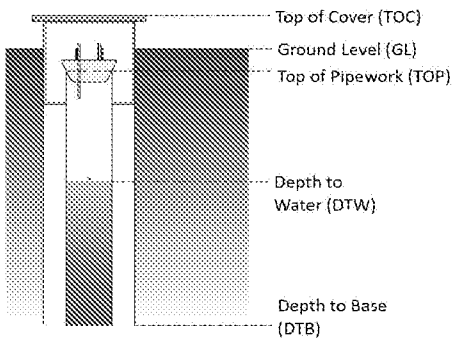
GAS MONITORING FIELD SHEET

Monitoring Date: 04/12/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m): 0.25			
Pre-Testing Remarks:				Air Temperature: 3 °C		Device: GA5000			
				Weather: Rainy		Serial Number: G505786			
				Ground Conditions: Wet		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Falling			
Exploratory Position ID: WS3		Monitoring Round Number: 2		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm) 50			
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	07:37	07:39	996		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	<0.1	0	<0.1	<0.1	20.9				
10	<0.1	15	<0.1	1.5	20.1				
15	<0.1	30	<0.1	1.4	19				
20	<0.1	60	<0.1	1.3	18.8				
25	<0.1	90	<0.1	1.1	19.3				
30	<0.1	120	<0.1	1.1	19.3				
40		180	<0.1	1.2	19.2				
50		240	<0.1	1.1	19.3				
60		300	<0.1	1.2	19.3				
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	<0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	<0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW) (m)	1.05	Time:		LNAPL Top (from datum) (m):	n/a			
	Depth (from datum) to well base (DTB) (m)	2.92	Purge Start:		DNAPL Top (from datum) (m):	n/a			
	Hole Purged: Yes / No	No	Purge End:		Water Observations:				
	Purge Volume: (l)		Post-Purge (DTW) (m)						
			Post testing remarks:	Samples Taken: Yes / No No					
				Sample Media: Gas/Water					
				Gas Cannister Start (mb)					
				Gas Cannister End (mb)					
				Gas Cannister Duration (mins)					
			Depth (from datum)	Sample Ref	Type (EW / G)	Container			
		Contract Name:	Water Lane, Angmering		Data Collected By:	SO			
		Project Manager / Engineer:	EC		Checked:	CC			
		Contract Ref:	305145		Page number:				

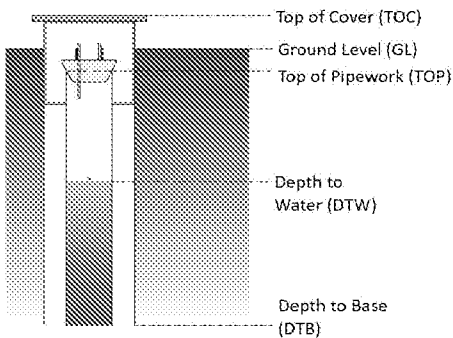
GAS MONITORING FIELD SHEET

Monitoring Date: 04/12/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m):		0.34	
Pre-Testing Remarks:			Air Temperature: °C		Device:				
			Weather:		Serial Number:				
			Ground Conditions:		Daily Check:				
			Wind: NONE / LIGHT / MEDIUM / STRONG						
			Tidal State: (if applicable) High / Low / Rising / Falling						
Exploratory Position ID: WS4		Monitoring Round Number: 2		Test Number:					
Install Type: SINGLE / DOUBLE		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm)		50			
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE				
Time Start (hh:mm)	07:51	07:54	996		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring:	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	<0.1	0	<0.1	<0.1	20.9				
10	<0.1	15	<0.1	2.1	20.0				
15	<0.1	30	<0.1	2.1	17.7				
20	<0.1	60	<0.1	2.1	17.5				
25	<0.1	90	<0.1	2.1	17.5				
30	<0.1	120	<0.1	2.1	17.5				
40		180	<0.1	2.1	17.5				
50		240	<0.1	2.1	17.5				
60		300	<0.1	2.1	17.5				
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	<0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	<0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)		2.92	Time:		LNAPL Top (from datum) (m):			
	Depth (from datum) to well base (DTB): (m)		2.92	Purge Start:		DNAPL Top (from datum) (m):			
	Hole Purged: Yes / No			Purge End:		Water Observations:			
	Purge Volume: (l)			Post-Purge (DTW) (m)					
			Post testing remarks:		Samples Taken: Yes / No				
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
			Contract Name:		Data Collected By:				
			Project Manager / Engineer:		Checked:				
			Contract Ref:		Page number:				

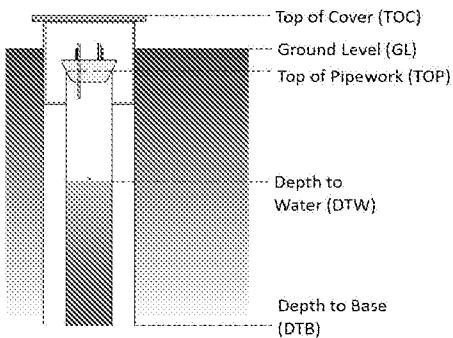
GAS MONITORING FIELD SHEET

Monitoring Date: 04/12/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m): 0.2	
Pre-Testing Remarks:				Air Temperature: °C		Device:	
				Weather:		Serial Number:	
				Ground Conditions:		Daily Check:	
				Wind: NONE / LIGHT / MEDIUM / STRONG			
				Tidal State: (if applicable) High / Low / Rising / Falling			
Exploratory Position ID: WS5		Monitoring Round Number: 2		Test Number:			
Install Type: SINGLE / DOUBLE		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm)		50	
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE		
Time Start (hh:mm)	08:19	08:22	995		Observations (e.g. on-site activities):		
Time End (hh:mm)							
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring:	Methane (%vol)	Carbon Dioxide (%vol)	Oxygen (%vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)
Time of flow monitoring (sec)	Flow Reading (l/hr)	Time of gas monitoring (sec)					LEL (%)
5	0.1	0	0.1	0.1	20.9		PID (ppm)
10	0.1	15	0.1	3.4	18.7		
15	0.1	30	0.1	3.4	15.6		
20	0.1	60	0.1	3.4	15.2		
25	0.1	90	0.1	3.4	15.2		
30	0.1	120	0.1	3.4	15.2		
40		180	0.1	3.4	15.2		
50		240	0.1	3.4	15.2		
60		300	0.1	3.4	15.2		
90		360					
120		420					
150		480					
180		540					
		600					
Stage 1 gas flow - Peak (l/h)	0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.				
Stage 1 gas flow - Steady State (l/h)	0.1						
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)		Time:		LNAPL Top (from datum) (m):		
	Depth (from datum) to well base (DTB): (m)		2.93		Purge Start:		DNAPL Top (from datum) (m):
	Hole Purged: Yes / No		Purge End:		Water Observations:		
	Purge Volume: (l)		Post-Purge (DTW) (m)				
			Post testing remarks:		Samples Taken: Yes / No		
					Sample Media: Gas/Water		
					Gas Cannister Start (mb)		
					Gas Cannister End (mb)		
					Gas Cannister Duration (mins)		
		Depth (from datum)	Sample Ref	Type (EW / G)	Container		
		Contract Name:		Data Collected By:			
		Project Manager / Engineer:		Checked:			
		Contract Ref:		Page number:			

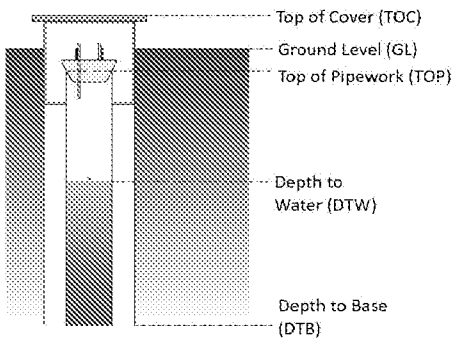
GAS MONITORING FIELD SHEET

Monitoring Date: 04/12/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m):		0.21	
Pre-Testing Remarks:				Air Temperature: °C		3		Device: GA5000	
				Weather:		Rainy		Serial Number: G505786	
				Ground Conditions:		Wet		Daily Check: Yes	
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Falling			
Exploratory Position ID: WS6		Monitoring Round Number: 2		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm)		50	
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE		Single		
Time Start (hh:mm)	09:13	09:16	993		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	<0.1	0	<0.1	<0.1	20.9				
10	<0.1	15	<0.1	2	19.2				
15	<0.1	30	<0.1	2	16.9				
20	<0.1	60	<0.1	2	16.6				
25	<0.1	90	<0.1	2	16.6				
30	<0.1	120	<0.1	2	16.6				
40		180	<0.1	2	16.6				
50		240	<0.1	2	16.6				
60		300	<0.1	2	16.5				
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	<0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	<0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)		n/a	Time:		LNAPL Top (from datum) (m):		n/a	
	Depth (from datum) to well base (DTB): (m)		2.91	Purge Start:		DNAPL Top (from datum) (m):		n/a	
	Hole Purged: Yes / No		No	Purge End:		Water Observations:			
	Purge Volume: (l/s)			Post-Purge (DTW) (m)					
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
			Contract Name: Water Lane, Angmering		Data Collected By: SO				
			Project Manager / Engineer: EC		Checked: CC				
			Contract Ref: 305145		Page number:				

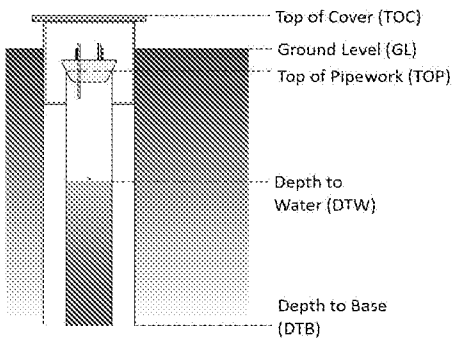
GAS MONITORING FIELD SHEET

Monitoring Date: 04/12/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m):		0.32	
Pre-Testing Remarks:				Air Temperature: °C		3		Device: GA5000	
				Weather:		Rainy		Serial Number: G505786	
				Ground Conditions:		Wet		Daily Check: Yes	
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Falling			
Exploratory Position ID: WS7		Monitoring Round Number: 2		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm)		50	
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE		Single		
Time Start (hh:mm)	09:26	09:27	993		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	<0.1	0	<0.1	<0.1	20.9				
10	<0.1	15	<0.1	3.2	19.1				
15	<0.1	30	<0.1	3.2	16.8				
20	<0.1	60	<0.1	3.2	16.5				
25	<0.1	90	<0.1	3.2	16.4				
30	<0.1	120	<0.1	3.2	16.4				
40		180	<0.1	3.2	16.4				
50		240	<0.1	3.2	16.4				
60		300	<0.1	3.2	16.4				
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	<0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	<0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)		n/a	Time:		LNAPL Top (from datum) (m):		n/a	
	Depth (from datum) to well base (DTB): (m)		2.92	Purge Start:		DNAPL Top (from datum) (m):		n/a	
	Hole Purged: Yes / No		No	Purge End:		Water Observations:			
	Purge Volume: (l)			Post-Purge (DTW) (m)					
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
		Contract Name:		Water Lane, Angmering		Data Collected By:		SO	
		Project Manager / Engineer:		EC		Checked:		CC	
		Contract Ref:		305145		Page number:			

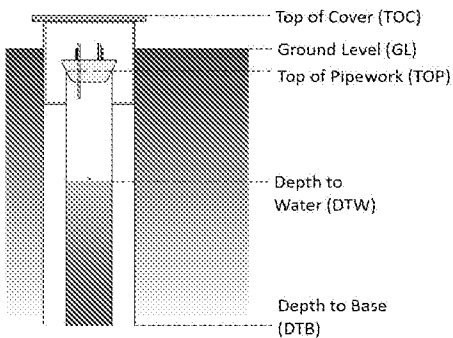
GAS MONITORING FIELD SHEET

Monitoring Date: 15/12/2020		Measurement datum: TOC / GL / TOP / Other		TOP		Offset to GL (m): 0.47			
Pre-Testing Remarks:				Air Temperature: 11 °C		Device: GA5000			
				Weather: Sunny		Serial Number: G505800			
				Ground Conditions: Damp		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Rising			
Exploratory Position ID: MBH01		Monitoring Round Number: 3		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm) 50			
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	13:07	13:09	999		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	0.1	0	<0.1	<0.1	20.6				
10	0.1	15	<0.1	2.6	19.8				
15	0.1	30	<0.1	2.6	18.1				
20	0.1	60	<0.1	2.6	17.8				
25	0.1	90	<0.1	2.6	17.9				
30	0.1	120	<0.1	2.6	17.9				
40	0.1	180	<0.1	2.6	17.9				
50		240							
60		300							
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)		10.45	Time:		LNAPL Top (from datum) (m):		N/A	
	Depth (from datum) to well base (DTB): (m)		10.64	Purge Start:		DNAPL Top (from datum) (m):		N/A	
	Hole Purged: Yes / No		No	Purge End:		Water Observations:			
	Purge Volume: (l)			Post-Purge (DTW) (m)					
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
		Contract Name:		Water Lane, Angmering		Data Collected By:		SO	
		Project Manager / Engineer:		EC		Checked:		CC	
		Contract Ref:		305145		Page number:			

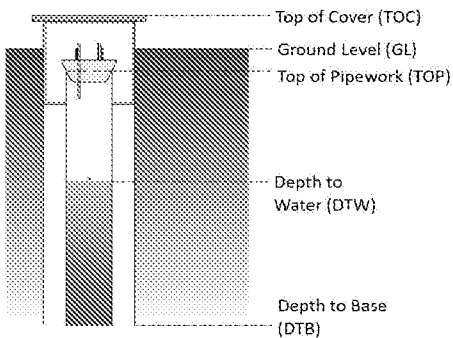
GAS MONITORING FIELD SHEET

Monitoring Date: 15/12/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m):		0.35	
Pre-Testing Remarks:				Air Temperature: 11 °C		Device: GA5800			
				Weather: Sunny		Serial Number:			
				Ground Conditions: Damp		Daily Check:		Yes	
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Rising			
Exploratory Position ID: WS1		Monitoring Round Number: 3		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm)		50	
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	12:45	12:51	998		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring:	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	<0.1	0	<0.1	<0.1	20.4				
10	<0.1	15	<0.1	2.1	19				
15	<0.1	30	<0.1	2.1	16.7				
20	<0.1	60	<0.1	2.1	16.7				
25	<0.1	90	<0.1	2.1	16.6				
30	<0.1	120	<0.1	2.1	16.6				
40	<0.1	180	<0.1	2.1	16.6				
50		240							
60		300							
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	<0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	<0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)		n/a	Time:		LNAPL Top (from datum) (m):		n/a	
	Depth (from datum) to well base (DTB): (m)		3.09	Purge Start:		DNAPL Top (from datum) (m):		n/a	
	Hole Purged: Yes / No		No	Purge End:		Water Observations:			
	Purge Volume: (l)			Post-Purge (DTW) (m)					
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
		Contract Name:		Water Lane, Angmering		Data Collected By:		EC	
		Project Manager / Engineer:		EC		Checked:		CC	
		Contract Ref:		305145		Page number:			

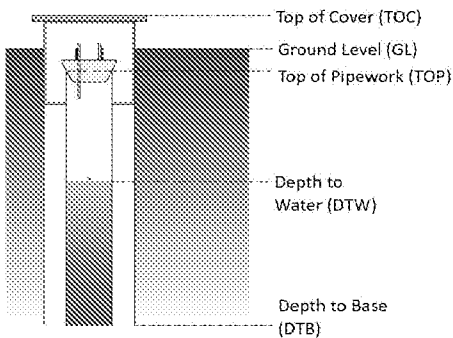
GAS MONITORING FIELD SHEET

Monitoring Date: 15/12/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m): 0.37			
Pre-Testing Remarks:				Air Temperature: 11 °C		Device: GA5000			
				Weather: Sunny		Serial Number: G505800			
				Ground Conditions: Damp		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Rising			
Exploratory Position ID: WS2		Monitoring Round Number: 3		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm) 50			
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	12:32	12:37	998		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	<0.1	0	<0.1	<0.1	20.3				
10	<0.1	15	<0.1	2.5	17.5				
15	<0.1	30	<0.1	2.5	16.4				
20	<0.1	60	<0.1	2.5	16.2				
25	<0.1	90	<0.1	2.5	16.2				
30	<0.1	120	<0.1	2.5	16.2				
40	<0.1	180	<0.1	2.5	16.2				
50		240							
60		300							
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	<0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	<0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW) (m)		2.89	Time:		LNAPL Top (from datum) (m):		n/a	
	Depth (from datum) to well base (DTB) (m)		3.14	Purge Start:		DNAPL Top (from datum) (m):		n/a	
	Hole Purged: Yes / No		No	Purge End:		Water Observations:			
	Purge Volume: (l)			Post-Purge (DTW) (m)					
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
		Contract Name:		Water Lane, Angmering		Data Collected By:		EC	
		Project Manager / Engineer:		EC		Checked:		CC	
		Contract Ref:		305145		Page number:			

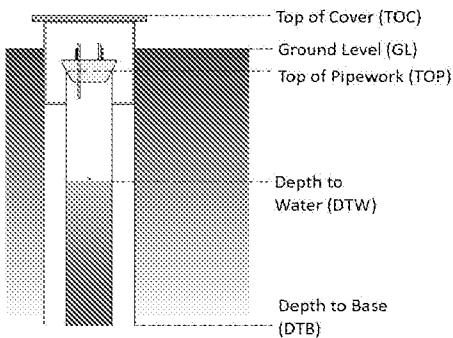
GAS MONITORING FIELD SHEET

Monitoring Date: 15/12/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m):		0.25	
Pre-Testing Remarks:				Air Temperature: 11 °C		Device: GA5000			
				Weather: Sunny		Serial Number: G505800			
				Ground Conditions: Damp		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Rising			
Exploratory Position ID: WS3		Monitoring Round Number: 3		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm)		50	
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	12:11	12:15	998		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring:	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	<0.1	0	<0.1	<0.1	20.9				
10	<0.1	15	<0.1	1.7	19.1				
15	<0.1	30	<0.1	1.7	18.7				
20	<0.1	60	<0.1	1.7	18.6				
25	<0.1	90	<0.1	1.6	18.7				
30	<0.1	120	<0.1	1.5	18.7				
40	<0.1	180	<0.1	1.4	18.8				
50		240							
60		300							
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	<0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	<0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)		0.82	Time:		LNAPL Top (from datum) (m):		n/a	
	Depth (from datum) to well base (DTB): (m)		3	Purge Start:		DNAPL Top (from datum) (m):		n/a	
	Hole Purged: Yes / No		No	Purge End:		Water Observations:			
	Purge Volume: (l)			Post-Purge (DTW) (m)					
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
		Contract Name:		Water Lane, Angmering		Data Collected By:		EC	
		Project Manager / Engineer:		EC		Checked:		CC	
		Contract Ref:		305145		Page number:			

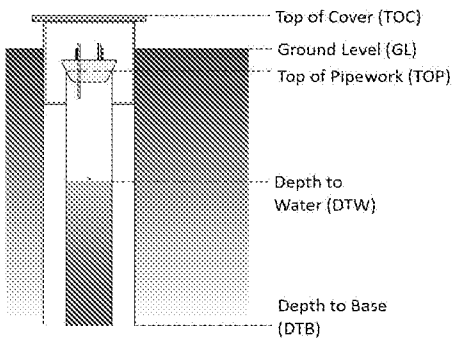
GAS MONITORING FIELD SHEET

Monitoring Date: 15/12/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m): 0.34			
Pre-Testing Remarks:				Air Temperature: 11 °C		Device: GA5000			
				Weather: Sunny		Serial Number: G505800			
				Ground Conditions: Damp		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Rising			
Exploratory Position ID: WS4		Monitoring Round Number: 3		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm) 50			
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	12:23	12:27	998		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	<0.1	0	<0.1	<0.1	20.9				
10	<0.1	15	<0.1	2	18.4				
15	<0.1	30	<0.1	2	18.0				
20	<0.1	60	<0.1	2	17.8				
25	<0.1	90	<0.1	2.1	17.8				
30	<0.1	120	<0.1	2.1	17.8				
40	<0.1	180	<0.1	2.1	17.8				
50		240							
60		300							
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	<0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	<0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)		n/a	Time:		LNAPL Top (from datum) (m):		n/a	
	Depth (from datum) to well base (DTB): (m)		2.92	Purge Start:		DNAPL Top (from datum) (m):		n/a	
	Hole Purged: Yes / No		No	Purge End:		Water Observations:			
	Purge Volume: (l)			Post-Purge (DTW) (m)					
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
		Contract Name:		Water Lane, Angmering		Data Collected By:		EC	
		Project Manager / Engineer:		EC		Checked:		CC	
		Contract Ref:		305145		Page number:			

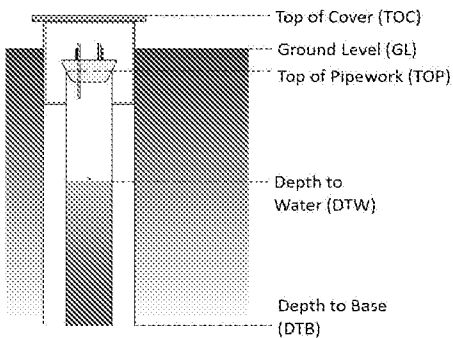
GAS MONITORING FIELD SHEET

Monitoring Date: 15/12/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m): 0.2			
Pre-Testing Remarks:				Air Temperature: 11 °C		Device: GA5000			
				Weather: Sunny		Serial Number: G505800			
				Ground Conditions: Damp		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Rising			
Exploratory Position ID: WS5		Monitoring Round Number: 3		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm) 50			
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	12:39	12:41	998		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	0.1	0	<0.1	<0.1	20				
10	0.1	15	<0.1	3.6	18.1				
15	0.1	30	<0.1	3.6	16.1				
20	0.1	60	<0.1	3.6	15.8				
25	0.1	90	<0.1	3.6	15.8				
30	0.1	120	<0.1	3.6	15.8				
40		180	<0.1	3.6	15.8				
50		240							
60		300							
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW): (m)		N/A	Time:		LNAPL Top (from datum) (m):		N/A	
	Depth (from datum) to well base (DTB): (m)		3.1	Purge Start:		DNAPL Top (from datum) (m):		N/A	
	Hole Purged: Yes / No		No	Purge End:		Water Observations:			
	Purge Volume: (l/s)			Post-Purge (DTW) (m)					
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
Depth (from datum)		Sample Ref	Type (EW / G)	Container					
			Contract Name: Water Lane, Angmering		Data Collected By: EC				
			Project Manager / Engineer: EC		Checked: CC				
			Contract Ref: 305145		Page number:				

GAS MONITORING FIELD SHEET

Monitoring Date: 15/12/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m): 0.21			
Pre-Testing Remarks:				Air Temperature: 11 °C		Device: GA5000			
				Weather: Sunny		Serial Number: G505800			
				Ground Conditions: Damp		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Rising			
Exploratory Position ID: WS6		Monitoring Round Number: 3		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm) 50			
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	13:00	13:02	999		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	<0.1	0	<0.1	<0.1	20.6				
10	<0.1	15	<0.1	2	19.6				
15	<0.1	30	<0.1	2	17.5				
20	<0.1	60	<0.1	2	17.3				
25	<0.1	90	<0.1	2	17.3				
30	<0.1	120	<0.1	2	17.2				
40	<0.1	180	<0.1	2	17.2				
50		240							
60		300							
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	<0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	<0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW) (m)	n/a	Time:		LNAPL Top (from datum) (m):	n/a			
	Depth (from datum) to well base (DTB) (m)	3	Purge Start:		DNAPL Top (from datum) (m):	n/a			
	Hole Purged: Yes / No	No	Purge End:		Water Observations:				
	Purge Volume: (l/s)		Post-Purge (DTW) (m)						
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
		Depth (from datum)	Sample Ref	Type (EW / G)	Container				
		Contract Name: Water Lane, Angmering		Data Collected By: SO					
		Project Manager / Engineer: EC		Checked: CC					
		Contract Ref: 305145		Page number:					

GAS MONITORING FIELD SHEET

Monitoring Date: 15/12/2020		Measurement datum: TOC / GL / TOP / Other		TOC		Offset to GL (m): 0.32			
Pre-Testing Remarks:				Air Temperature: 11 °C		Device: GA5000			
				Weather: Sunny		Serial Number: G505800			
				Ground Conditions: Damp		Daily Check: Yes			
				Wind: NONE / LIGHT / MEDIUM / STRONG		Light			
				Tidal State: (if applicable) High / Low / Rising / Falling		Rising			
Exploratory Position ID: WS7		Monitoring Round Number: 3		Test Number:					
Install Type: SINGLE / DOUBLE		Single		Pipe Ref: 1) Shallow 2) Deep		Pipe Diameter: 19mm / 40mm / 50mm / Other (mm) 50			
Time of Monitoring (hh:mm)	Flow readings	Gas readings	Atmospheric Pressure (mb)	Differential Pressure (mb)	Gas tap: SINGLE / DOUBLE	Single			
Time Start (hh:mm)	13:13	13:16	999		Observations (e.g. on-site activities):				
Time End (hh:mm)									
Stage 1 Flow Readings	Stage 1 Flow Readings	Stage 2 Gas Monitoring	Methane (%/vol)	Carbon Dioxide (%/vol)	Oxygen (%/vol)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	LEL (%)	PID (ppm)
Time of flow monitoring (sec)	Flow Reading (l/h)	Time of gas monitoring (sec)							
5	<0.1	0	<0.1	<0.1	20.7				
10	<0.1	15	<0.1	3.5	17.5				
15	<0.1	30	<0.1	3.5	16.5				
20	<0.1	60	<0.1	3.5	16.3				
25	<0.1	90	<0.1	3.5	16.3				
30	<0.1	120	<0.1	3.5	16.3				
40	<0.1	180	<0.1	3.5	16.3				
50		240							
60		300							
90		360							
120		420							
150		480							
180		540							
		600							
Stage 1 gas flow - Peak (l/h)	<0.1		Note: Flow should be recorded at 5 second intervals up to 30 seconds, 10 second intervals to 2 minutes and 30 second intervals up to 3 minutes or until steady-state readings are obtained. Typically, steady state conditions occur within 30 seconds to a minute. The differential pressure reading (in Pa) should also be recorded during this period.						
Stage 1 gas flow - Steady State (l/h)	<0.1								
STAGE 3 WATER LEVEL OBSERVATION	Depth (from datum) to water (DTW) (m)	n/a	Time:		LNAPL Top (from datum) (m):	n/a			
	Depth (from datum) to well base (DTB) (m)	2.95	Purge Start:		DNAPL Top (from datum) (m):	n/a			
	Hole Purged: Yes / No	No	Purge End:		Water Observations:				
	Purge Volume: (l)		Post-Purge (DTW) (m)						
			Post testing remarks:		Samples Taken: Yes / No		No		
					Sample Media: Gas/Water				
					Gas Cannister Start (mb)				
					Gas Cannister End (mb)				
					Gas Cannister Duration (mins)				
		Depth (from datum)	Sample Ref	Type (EW / G)	Container				
		Contract Name: Water Lane, Angmering		Data Collected By: SO					
		Project Manager / Engineer: EC		Checked: CC					
		Contract Ref: 305145		Page number:					

APPENDIX I

LABORATORY CERTIFICATES FOR SOIL ANALYSIS

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 20/09515
Issue Number: 1

Date: 23 November, 2020

Client: RSK Environment Ltd Southampton
Unit 26
Basepoint Abbey Enterprise Centre
Premier Way
Romsey,
Hampshire
UK
SO51 9AQ

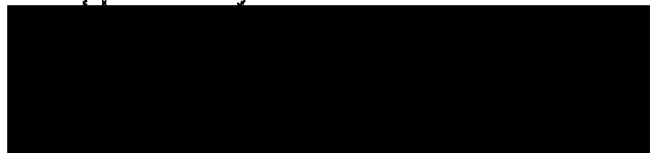
Project Manager: Emily Chissel, All RSK Southampton
Project Name: Water Lane, Angmering
Project Ref: 305145
Order No: N/A
Date Samples Received: 05/11/20
Date Instructions Received: 07/11/20
Date Analysis Completed: 23/11/20

Prepared by:



Melanie Marshall
Laboratory Coordinator

Approved by:



Danielle Brierley
Client Manager

Envirolab Job Number: 20/09515

Client Project Name: Water Lane, Angmering

Client Project Ref: 305145

Lab Sample ID	20/09515/1	20/09515/2	20/09515/3	20/09515/4	20/09515/5	20/09515/6	20/09515/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS1	WS2	WS3	WS4	WS5	WS6	WS7			
Depth to Top	0.10	0.50	0.50	0.20	0.20	0.20	0.10			
Depth To Bottom	0.20	0.60	0.60	0.30	0.30	0.30	0.20			
Date Sampled	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6E	6E	6A	6AE	6AE	6E	6E			
% Stones >10mm _A	1.8	<0.1	46.1	22.4	7.2	<0.1	1.1	% w/w	0.1	A-T-044
pH _D ^{MS}	7.42	7.34	6.95	7.44	6.90	5.97	6.00	pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{MS}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	g/l	0.01	A-T-026s
Sulphate (acid soluble) _D ^{MS}	450	320	<200	380	380	630	620	mg/kg	200	A-T-028s
Total Organic Carbon _D ^{MS}	-	-	-	1.09	-	2.00	-	% w/w	0.03	A-T-032s
Arsenic _D ^{MS}	4	5	4	4	6	7	5	mg/kg	1	A-T-024s
Cadmium _D ^{MS}	<0.5	<0.5	<0.5	0.5	0.6	0.7	0.9	mg/kg	0.5	A-T-024s
Copper _D ^{MS}	10	11	9	12	11	15	16	mg/kg	1	A-T-024s
Chromium _D ^{MS}	25	26	32	20	20	24	25	mg/kg	1	A-T-024s
Lead _D ^{MS}	21	24	9	23	23	36	46	mg/kg	1	A-T-024s
Mercury _D	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	mg/kg	0.17	A-T-024s
Nickel _D ^{MS}	15	16	28	14	13	18	19	mg/kg	1	A-T-024s
Selenium _D ^{MS}	<1	2	1	<1	<1	1	2	mg/kg	1	A-T-024s
Zinc _D ^{MS}	47	53	39	51	48	58	78	mg/kg	5	A-T-024s

Envirolab Job Number: 20/09515

Client Project Name: Water Lane, Angmering

Client Project Ref: 305145

Lab Sample ID	20/09515/1	20/09515/2	20/09515/3	20/09515/4	20/09515/5	20/09515/6	20/09515/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS1	WS2	WS3	WS4	WS5	WS6	WS7			
Depth to Top	0.10	0.50	0.50	0.20	0.20	0.20	0.10			
Depth To Bottom	0.20	0.60	0.60	0.30	0.30	0.30	0.20			
Date Sampled	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6E	6E	6A	6AE	6AE	6E	6E			
Asbestos in Soil (inc. matrix)										
Asbestos in soil*	NAD	-	NAD	-	NAD	NAD	NAD			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	-	N/A	-	N/A	N/A	N/A			A-T-045

Envirolab Job Number: 20/09515

Client Project Name: Water Lane, Angmering

Client Project Ref: 305145

Lab Sample ID	20/09515/1	20/09515/2	20/09515/3	20/09515/4	20/09515/5	20/09515/6	20/09515/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS1	WS2	WS3	WS4	WS5	WS6	WS7			
Depth to Top	0.10	0.50	0.50	0.20	0.20	0.20	0.10			
Depth To Bottom	0.20	0.60	0.60	0.30	0.30	0.30	0.20			
Date Sampled	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6E	6E	6A	6AE	6AE	6E	6E			
PAH-16MS										
Acenaphthene _A ^{MS}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-012e
Acenaphthylene _A ^{MS}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-012e
Anthracene _A ^{MS}	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	0.02	A-T-012e
Benzo(a)anthracene _A ^{MS}	<0.04	<0.04	<0.04	<0.04	<0.04	0.05	<0.04	mg/kg	0.04	A-T-012e
Benzo(a)pyrene _A ^{MS}	<0.04	<0.04	<0.04	<0.04	<0.04	0.06	<0.04	mg/kg	0.04	A-T-012e
Benzo(b)fluoranthene _A ^{MS}	<0.05	<0.05	<0.05	<0.05	<0.05	0.09	0.06	mg/kg	0.05	A-T-012e
Benzo(ghi)perylene _A ^{MS}	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	0.05	A-T-012e
Benzo(k)fluoranthene _A ^{MS}	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	0.07	A-T-012e
Chrysene _A ^{MS}	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	0.06	A-T-012e
Dibenzo(ah)anthracene _A ^{MS}	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-012e
Fluoranthene _A ^{MS}	<0.08	<0.08	<0.08	<0.08	<0.08	0.13	<0.08	mg/kg	0.08	A-T-012e
Fluorene _A ^{MS}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-012e
Indeno(123-cd)pyrene _A ^{MS}	<0.03	<0.03	<0.03	<0.03	<0.03	0.04	<0.03	mg/kg	0.03	A-T-012e
Naphthalene _A ^{MS}	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-012e
Phenanthrene _A ^{MS}	<0.03	<0.03	<0.03	<0.03	<0.03	0.04	<0.03	mg/kg	0.03	A-T-012e
Pyrene _A ^{MS}	<0.07	<0.07	<0.07	<0.07	<0.07	0.11	<0.07	mg/kg	0.07	A-T-012e
Total PAH-16MS _A ^{MS}	<0.08	<0.08	<0.08	<0.08	<0.08	0.52	<0.08	mg/kg	0.01	A-T-012e

Envirolab Job Number: 20/09515

Client Project Name: Water Lane, Angmering

Client Project Ref: 305145

Lab Sample ID	20/09515/1	20/09515/2	20/09515/3	20/09515/4	20/09515/5	20/09515/6	20/09515/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS1	WS2	WS3	WS4	WS5	WS6	WS7			
Depth to Top	0.10	0.50	0.50	0.20	0.20	0.20	0.10			
Depth To Bottom	0.20	0.60	0.60	0.30	0.30	0.30	0.20			
Date Sampled	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20	02-Nov-20			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	6E	6E	6A	6AE	6AE	6E	6E			
TPH CWG										
Ali >C5-C6 _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8 _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10 _A	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C10-C12 _A ^{M#}	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C12-C16 _A ^{M#}	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C16-C21 _A ^{M#}	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C21-C35 _A ^{M#}	<1	<1	<1	2	1	3	2	mg/kg	1	A-T-055s
Total Aliphatics _A	<1	<1	<1	2	1	3	2	mg/kg	1	A-T-055s
Aro >C5-C7 _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8 _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10 _A	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C10-C12 _A	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C12-C16 _A	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C16-C21 _A ^{M#}	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C21-C35 _A ^{M#}	2	2	<1	3	3	5	6	mg/kg	1	A-T-055s
Total Aromatics _A	2	2	<1	3	3	5	6	mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35) _A	2	2	<1	5	5	8	9	mg/kg	1	A-T-055s
BTEX - Benzene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
MTBE _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s

REPORT NOTES

General

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

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

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.

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

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

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

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

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

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

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

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

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

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve.

Please contact us if you need any further information.

Envirolab Deviating Samples Report

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

Client: RSK Environment Ltd Southampton, Unit 26 , Basepoint Abbey Enterprise Centre, Premier Way, Romsey,, Hampshire, UK, SO51 9AQ

Project No: 20/09515

Date Received: 07/11/2020 (am)

Project: Water Lane, Angmering

Cool Box Temperatures (°C): 10.8, 11.2, 12.3

Clients Project No: 305145

Lab Sample ID	20/09515/1	20/09515/2	20/09515/3	20/09515/4	20/09515/5	20/09515/6	20/09515/7
Client Sample No							
Client Sample ID/Depth	WS1 0.10-0.20m	WS2 0.50-0.60m	WS3 0.50-0.60m	WS4 0.20-0.30m	WS5 0.20-0.30m	WS6 0.20-0.30m	WS7 0.10-0.20m
Date Sampled	02/11/20	02/11/20	02/11/20	02/11/20	02/11/20	02/11/20	02/11/20
Deviation Code							
F	✓	✓	✓	✓	✓	✓	✓

Key

F Maximum holding time exceeded between sampling date and analysis for analytes listed below

HOLDING TIME EXCEEDANCES

Lab Sample ID	20/09515/1	20/09515/2	20/09515/3	20/09515/4	20/09515/5	20/09515/6	20/09515/7
Client Sample No							
Client Sample ID/Depth	WS1 0.10-0.20m	WS2 0.50-0.60m	WS3 0.50-0.60m	WS4 0.20-0.30m	WS5 0.20-0.30m	WS6 0.20-0.30m	WS7 0.10-0.20m
Date Sampled	02/11/20	02/11/20	02/11/20	02/11/20	02/11/20	02/11/20	02/11/20
VPHCWG	✓	✓	✓	✓	✓	✓	✓

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

APPENDIX J

GENERIC ASSESSMENT CRITERIA FOR

HUMAN HEALTH

Generic assessment criteria for human health: residential scenario with home-grown produce

Background

RSK's generic assessment criteria (GAC) were initially prepared following the publication by the Environment Agency (EA) of soil guideline value (SGV) and toxicological (TOX) reports, and associated publications in 2009⁽¹⁾. RSK GAC were updated following the publication of GAC by LQM/CIEH in 2009⁽²⁾. RSK GAC are periodically revised when updated information on toxicological, land use or receptor parameters is published.

Updates to the RSK GAC

In 2014, the publication of Category 4 Screening Levels (C4SL)^(3,4), as part of the Defra-funded research project SP1010, included modifications to certain exposure assumptions documented within EA Science Report SC050221/SR3 (herein after referred to as SR3)⁽⁵⁾ used in the generation of SGVs.

C4SL were published for six substances (cadmium, arsenic, benzene, benzo(a)pyrene, chromium VI and lead) for a sandy loam soil type with 6% soil organic matter, based on a low level of toxicological concern (LLTC; see Section 2.3 of research project report SP1010⁽³⁾). Where a C4SL has been published, the RSK GAC duplicates the C4SL published values using all input parameters within the SP1010 final project report⁽³⁾ and associated appendices⁽⁶⁾, and adopts them as GAC for these six substances.

For all other substances the C4SL exposure modifications, with the exception of the "top two" produce type approach taken in the C4SL, have been applied to the current RSK GAC. These include alterations to daily inhalation rates for residential and commercial scenarios, reducing soil adherence factors in children (age classes 1 to 12 only) for residential land use, reducing exposure frequency for dermal contact outdoors for residential land use, and updated produce type consumption rates (90th percentile) based on recent data from the National Diet and Nutrition Survey.

The RSK GAC have also been revised with updated toxicology published by LQM/CIEH in 2015⁽⁷⁾ or by the USEPA⁽¹⁴⁾, where a C4SL has not been published.

RSK GAC derivation for metals and organic compounds

Model selection

Soil assessment criteria (SAC) were calculated using the Contaminated Land Exposure Assessment (CLEA) tool v1.071, supporting EA guidance^(5,8,9) and revised exposure scenarios published for the C4SL⁽³⁾. The SAC are also termed GAC.

Conceptual model

In accordance with SR3⁽⁵⁾, the residential with home-grown produce scenario considers risks to a female child between the ages of 0 and 6 years old as the highest risk scenario. In accordance with Box 3.1 of SR3⁽⁵⁾, the pathways considered for production of the SAC in the residential with home-grown produce 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
- inhalation of indoor and outdoor dust and vapours.

Figure 1 is a conceptual model illustrating these linkages.

In line with guidance in the EA SGV report for cadmium⁽¹⁾, the RSK GAC for cadmium has been derived based on estimates representative of lifetime exposure. Although young children are generally more likely to have higher exposures to soil contaminants, the renal toxicity of cadmium, and the derivation of the TDI_{oral} and TDI_{inh} , are based on considerations of the kidney burden accumulated over 50 years or so. It is therefore reasonable to consider exposure not just in childhood but averaged over a longer period.

With respect to volatilisation, the CLEA model assumes a simple linear partitioning of a chemical in the soil between the sorbed, dissolved and vapour phase⁽⁹⁾. The upper boundaries of this partitioning are represented by the maximum aqueous solubility and pure saturated vapour concentration of the chemical. The CLEA model estimates saturated soil concentrations where these limits are reached⁽⁹⁾. The CLEA software uses a traffic light system to identify when individual and/or combined assessment criteria exceed the lower of either the aqueous- or vapour-based soil saturation limits. Model output cells are flagged red where the saturated soil concentration has been exceeded and the contribution of the indoor and outdoor vapour pathway to total exposure is greater than 10%. In this case, further consideration of the following is required⁽⁹⁾:

- Free phase contamination may be present.
- Exposure from the vapour pathways will be over-predicted by the model, as in reality the vapour phase concentration will not increase at concentrations above saturation limits
- Where the vapour pathway contribution is greater than 90%, it is unlikely the relevant health criteria value (HCV) will be exceeded at soil concentrations at least a factor of ten higher than the relevant HCV.

Where the vapour pathway is the predominant pathway (contributes greater than 90% of exposure) or the only exposure route considered and the cell is highlighted red (SAC exceeds saturation limit), the risk based on the assumed conceptual model is likely to be negligible as the vapour risk is assumed to be tolerable at maximum possible soil concentrations. In such circumstances, the vapour pathway exposure should be considered based on the presence of free phase or non-aqueous phase liquid sources and the measured concentrations of volatile organic compounds (VOC) in the vapour phase. Screening could be considered based on setting the SAC as the modelled soil saturation limits. However, as stated within the CLEA handbook⁽⁹⁾, this is likely to not be practical in many cases because of the very low saturation limits and, in any case, is highly conservative.

It should also be noted that for mixtures of compounds, free phase may be present where soil (or groundwater) concentrations are well below saturation limits for individual compounds.

Where the vapour pathway is only one of the exposure pathways considered, an additional approach can then be utilised as detailed within Section 4.12 of the CLEA model handbook⁽⁹⁾, which explains how to calculate an effective assessment criterion manually.

SR3⁽⁵⁾ states that, as a general rule of thumb, it is recognised that estimating vapour phase concentrations from dissolved and sorbed phase contamination by petroleum hydrocarbons are

at least a factor of ten higher than those likely to be measured on-site. RSK has therefore applied an empirical subsurface to indoor air correction factor of 10 into the CLEA model chemical database for all petroleum hydrocarbon fractions (including BTEX, trimethylbenzenes and the polycyclic aromatic hydrocarbons (PAH) naphthalene, acenaphthene and acenaphthylene) to reduce this conservatism.

Input selection

The most up-to-date published chemical and toxicological data was obtained from EA Report SC050021/SR7⁽¹⁰⁾, the EA TOX⁽¹¹⁾ reports, the C4SL SP1010 project report and associated appendices^(3,6), the 2015 LQM/CIEH report⁽⁷⁾ or the USEPA IRIS database⁽¹⁴⁾. Where a C4SL has been published, the RSK GAC have duplicated the C4SL published values using all input parameters within the SP1010 final project report⁽³⁾ and associated appendices⁽⁶⁾, and has adopted them as GAC for these six substances. Toxicological and specific chemical parameters for 1,2,4-trimethylbenzene, barium and methyl tertiary-butyl ether (MTBE) were obtained from the CL:AIRE Soil Generic Assessment Criteria report⁽¹¹⁾.

For TPH, aromatic hydrocarbons C₅–C₈ were not modelled, as this range comprises benzene (>EC5-EC7) and toluene (>EC7-EC8), which are modelled separately.

Physical parameters

For the residential with home-grown produce scenario, the CLEA default building is a small, two-storey terrace house with a concrete ground-bearing slab. The house is assumed to have a 100m² private garden consisting of lawn and flowerbeds, incorporating a 20m² plot for growing fruit and vegetables consumed by the residents. SR3⁽⁵⁾ notes this residential building type to be the most conservative in terms of potential for vapour intrusion. The building parameters used in the production of the RSK GACs are the default CLEA v1.06 inputs presented in Table 3.3 of SR3⁽³⁾, with a dust loading factor detailed in Section 9.3 of SR3⁽⁵⁾. The parameters for a sandy loam soil type were used in line with Table 4.4 of SR3⁽⁵⁾. 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 SOM, RSK has produced an additional set of GAC for SOM of 1% and 2.5% for all substances using the CLEA tool.

Summary of modifications to the default CLEA SR3⁽⁵⁾ input parameters for residential with home-grown produce land-use scenario

In summary, the RSK GAC were produced using the default input parameters for soil properties, the air dispersion model, building properties and the vapour model detailed in SR3⁽⁵⁾. Modifications to the default SR3⁽⁵⁾ exposure scenarios based on the C4SL exposure scenarios⁽³⁾ are presented in Tables 2 and 3 below.

The final selected GAC are presented by pathway in Table 4 and the combined GAC in Table 5.

Figure 1: Conceptual model for residential scenario with home-grown produce

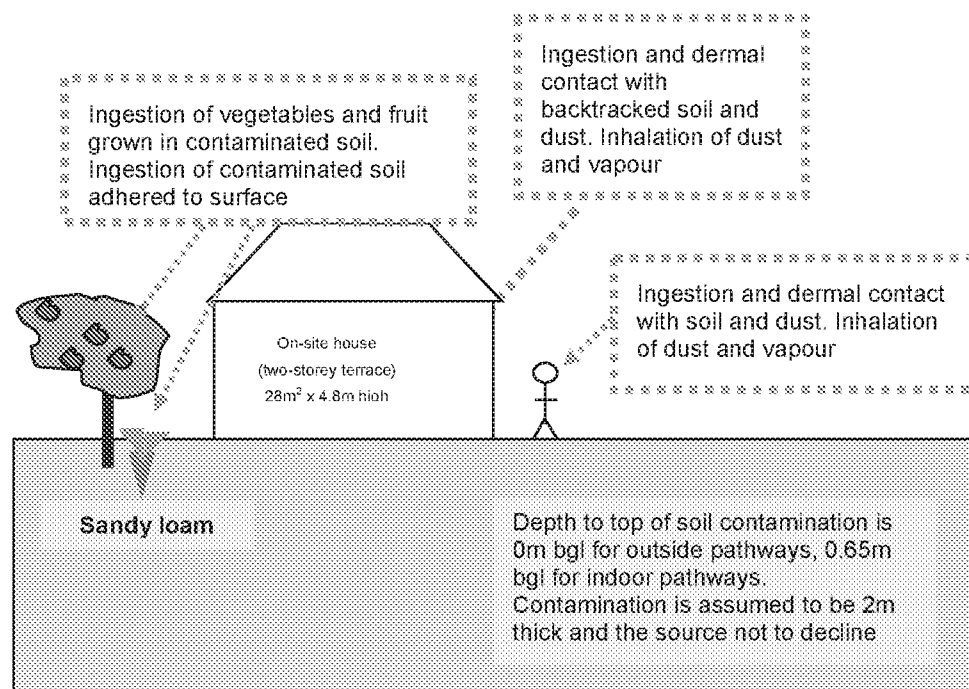


Table 1: Exposure assessment parameters for residential scenario with home-grown produce – inputs for CLEA model

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, SR3 ⁽⁵⁾
Building	Small terraced house	Key generic assumption given in Box 3.1, SR3. Small, two-storey terraced house chosen, as it is the most conservative residential building type in terms of protection from vapor intrusion (Section 3.4.6, SR3) ⁽⁵⁾
Soil type	Sandy Loam	Most common UK soil type (Section 4.3.1, from Table 3.1, SR3) ⁽⁵⁾
Start AC (age class)	1	Range of age classes corresponding to key generic assumption that the critical receptor is a young female child aged 0–6. From Box 3.1, SR3 ⁽⁵⁾
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' ⁽¹³⁾
	1	To provide SAC for sites where SOM <6% as often observed by RSK
	2.5	
pH	7	Model default

Table 2: Residential with home-grown produce – modified home-grown produce data

Name	Consumption rate 90 th percentile (g FW kg ⁻¹ BW day ⁻¹) by age class						Dry weight conversion factor (g DW g ⁻¹ FW)	Home-grown fraction (average)	Home-grown fraction (high end)	Soil loading factor (g g ⁻¹ DW)	Preparation correction factor
	1	2	3	4	5	6					
Green vegetables	7.12	5.87	5.87	5.87	4.53	4.53	0.096	0.05	0.33	1.00E-03	2.00E-01
Root vegetables	10.7	2.83	2.83	2.83	2.14	2.14	0.103	0.06	0.4	1.00E-03	1.00E+00
Tuber vegetables	16	6.6	6.6	6.6	4.95	4.95	0.21	0.02	0.13	1.00E-03	1.00E+00
Herbaceous fruit	1.83	3.39	3.39	3.39	2.24	2.24	0.058	0.06	0.4	1.00E-03	6.00E-01
Shrub fruit	2.23	0.46	0.46	0.46	0.19	0.19	0.166	0.09	0.6	1.00E-03	6.00E-01
Tree fruit	3.82	10.3	10.3	10.3	5.16	5.16	0.157	0.04	0.27	1.00E-03	6.00E-01
Justification	Table 3.4, SP1010 ⁽³⁾						Table 6.3, SR3 ⁽⁵⁾	Table 4.19, SR3 ⁽⁵⁾		Table 6.3, SR3 ⁽⁵⁾	

Table 3: Residential with home-grown produce – modified and use and receptor data

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	170	170	170	170	170	170
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 3.5, SP1010 ⁽³⁾ ; Table 3.1, SR3 ⁽⁵⁾					
Soil to skin adherence factor (outdoor)	mg cm ⁻² day ⁻¹	0.1	0.1	0.1	0.1	0.1	0.1
Justification		Table 3.5, SP1010 ⁽³⁾					
Inhalation rate	m ³ day ⁻¹	5.4	8.0	8.9/f	10.1	10.1	10.1
Justification		Mean value USEPA, 2011 ⁽¹²⁾ ; Table 3.2, SP1010 ⁽³⁾					
Notes: For cadmium , the exposure assessment for a residential land use is based on estimates representative of lifetime exposure AC1-18. This is because the TD _{I_{oral}} and TD _{I_{inh}} are based on considerations of the kidney burden accumulated over 50 years. It is therefore reasonable to consider exposure not just in childhood but averaged over a longer period. See the Environment Agency Science Report SC05002/ TOX 3 ⁽¹⁾ , Science Report SC050021/Cadmium SGV ⁽¹⁾ and the project report SP1010 ⁽³⁾ for more information.							

References

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GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH HOME-GROWN PRODUCE



Table 4

Human Health Generic Assessment Criteria by Pathway for Residential With Home-Grown Produce Scenario

Compound	Notes	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	(a,b)	3.71E+01	3.26E+02	NR	NR	3.71E+01	5.29E+02	NR	NR	3.71E+01	8.39E+02	NR	NR
Barium	(b)	1.34E+02	NR	NR	NR	1.34E+02	NR	NR	NR	1.34E+02	NR	NR	NR
Beryllium		1.13E+02	72E+00	NR	NR	1.13E+02	72E+00	NR	NR	1.13E+02	72E+00	NR	NR
Boron		3.03E+02	5.20E+06	NR	NR	3.03E+02	5.20E+06	NR	NR	3.03E+02	5.20E+06	NR	NR
Cadmium	(a)	2.30E+01	4.89E+02	2.21E+01	NR	2.30E+01	4.89E+02	2.21E+01	NR	2.30E+01	4.89E+02	2.21E+01	NR
Chromium (III) - trivalent	(c)	1.34E+04	3.37E+02	NR	NR	1.34E+04	3.37E+02	NR	NR	1.34E+04	3.37E+02	NR	NR
Chromium (VI) - hexavalent	(a,d)	5.85E+01	2.05E+01	NR	NR	5.85E+01	2.05E+01	NR	NR	5.85E+01	2.05E+01	NR	NR
Copper		3.73E+03	1.31E+04	2.37E+03	NR	2.73E+03	1.31E+04	2.37E+03	NR	2.73E+03	1.31E+04	2.37E+03	NR
Lead	(a)	2.01E+02	NR	NR	NR	2.01E+02	NR	NR	NR	2.01E+02	NR	NR	NR
Elemental Mercury (Hg ⁰)	(d)	NR	2.75E+01	NR	4.31E+00	NR	2.60E+01	NR	1.07E+01	NR	1.22E+01	NR	2.58E+01
Inorganic Mercury (Hg ²⁺)		3.85E+01	3.63E+03	3.91E+01	NR	3.85E+01	3.63E+03	3.91E+01	NR	3.85E+01	3.63E+03	3.91E+01	NR
Methyl Mercury (Hg ⁺)		1.39E+01	1.37E+01	7.82E+00	7.35E+01	1.39E+01	1.37E+01	8.34E+00	1.42E+02	1.39E+01	1.37E+01	8.34E+00	3.04E+02
Nickel	(d)	1.27E+02	3.81E+02	NR	NR	1.27E+02	3.81E+02	NR	NR	1.27E+02	3.81E+02	NR	NR
Selenium	(b)	3.59E+02	NR	NR	NR	2.53E+02	NR	NR	NR	3.59E+02	NR	NR	NR
Vanadium		4.14E+02	1.69E+02	NR	NR	4.14E+02	1.69E+02	NR	NR	4.14E+02	1.69E+02	NR	NR
Zinc	(b)	3.95E+03	3.43E+07	NR	NR	3.95E+03	3.43E+07	NR	NR	3.95E+03	3.43E+07	NR	NR
Cyanide (free)		1.37E+06	1.37E+06	3.0E+05	NR	1.37E+06	1.37E+06	3.0E+05	NR	1.37E+06	1.37E+06	3.0E+05	NR
Volatile Organic Compounds													
Benzene	(a)	2.92E+01	3.61E+01	2.03E+01	1.22E+03	5.39E+01	3.66E+01	4.03E+01	2.26E+03	1.16E+01	3.38E+01	3.72E+01	4.71E+03
Toluene		1.31E+02	9.08E+02	1.91E+02	8.69E+02	3.43E+02	2.00E+03	2.97E+02	1.92E+03	7.99E+02	4.55E+03	6.77E+02	4.36E+03
Ethylbenzene		1.03E+02	8.34E+01	1.74E+01	5.18E+02	3.31E+02	3.66E+02	1.12E+02	1.22E+03	5.99E+02	4.56E+02	2.65E+02	2.84E+03
Xylene - m		2.10E+02	4.35E+01	5.95E+01	6.25E+02	5.31E+02	1.96E+02	1.40E+02	1.47E+03	1.15E+03	4.59E+02	3.27E+02	3.46E+03
Xylene - o		1.82E+02	8.37E+01	5.07E+01	4.78E+02	4.32E+02	2.09E+02	1.42E+02	1.12E+03	1.05E+03	4.69E+02	3.32E+02	2.62E+03
Xylene - p		1.95E+02	7.33E+01	5.85E+01	5.76E+02	4.70E+02	2.66E+02	1.23E+02	1.35E+03	1.09E+03	4.66E+02	3.10E+02	3.17E+03
Total xylene		1.32E+02	7.33E+01	5.69E+01	6.25E+02	4.58E+02	1.96E+02	1.33E+02	1.47E+03	1.09E+03	4.56E+02	3.10E+02	3.46E+03
Methyl tertiary-Butyl ether (MTBE)		1.54E+02	1.41E+02	6.22E+01	2.04E+04	3.37E+02	1.69E+02	1.05E+02	3.91E+04	5.62E+02	3.21E+02	3.10E+02	6.27E+04
1,1,1,2-Tetrachloroethane		5.33E+00	1.34E+00	1.30E+00	2.60E+03	1.27E+01	3.96E+00	3.76E+00	6.02E+03	2.93E+01	5.29E+00	3.45E+00	1.40E+04
1,1,2,2-Tetrachloroethane		2.81E+00	3.52E+00	1.64E+00	2.67E+03	6.13E+00	8.04E+00	3.47E+00	5.45E+03	1.36E+01	1.76E+01	7.87E+00	1.20E+04
1,1,1-Trichloroethane		3.33E+02	8.71E+00	8.72E+00	1.43E+03	7.23E+02	2.91E+01	1.80E+01	2.92E+03	1.62E+03	4.01E+01	3.34E+01	6.39E+03
1,1,2-Trichloroethane		1.95E+00	1.55E+00	7.32E+01	4.03E+03	4.21E+00	2.95E+00	1.55E+00	8.21E+03	3.35E+00	5.32E+00	3.93E+00	1.80E+04
1,1-Dichloroethane		1.93E+01	3.23E+01	3.23E+01	2.23E+03	3.85E+01	1.62E+01	3.74E+01	3.94E+03	8.19E+01	1.17E+01	1.15E+00	7.94E+03
1,2-Dichloroethane		5.17E+02	9.30E+01	7.13E+03	3.41E+03	5.73E+02	1.23E+02	1.32E+02	4.91E+03	1.65E+01	2.28E+02	1.32E+02	8.43E+03
1,2,4-Trimethylbenzene		NR	1.75E+00	NR	4.74E+02	NR	4.29E+00	NR	1.18E+03	NR	3.72E+00	NR	2.76E+03
1,3,5-Trimethylbenzene	(e)	NR	NR	NR	2.30E+02	NR	NR	NR	5.52E+02	NR	NR	NR	1.30E+03
1,2-Dichloropropane		4.29E+00	4.40E+02	3.37E+02	1.19E+03	3.44E+00	3.02E+02	6.98E+02	2.11E+03	1.77E+01	1.31E+01	1.33E+01	4.24E+03
Carbon Tetrachloride (tetrachloromethane)		3.32E+06	2.53E+02	3.37E+02	1.52E+03	3.11E+00	3.09E+02	5.32E+02	3.32E+03	1.62E+01	1.29E+01	1.37E+01	7.54E+03
Chloroethane	NR	1.7E+01	NR	NR	2.61E+03	NR	NR	NR	3.54E+03	NR	2.97E+01	NR	5.71E+03
Chloromethane	NR	1.17E+02	NR	NR	1.91E+03	NR	NR	NR	2.24E+03	NR	1.62E+02	NR	2.99E+03
Cis 1,2-Dichloroethene		1.39E+01	NR	NR	3.94E+03	2.66E+01	NR	NR	6.61E+02	5.19E+01	NR	NR	1.29E+04
Dichloromethane		7.04E+01	3.75E+00	6.24E+01	7.27E+03	1.27E+01	4.66E+00	7.66E+00	9.69E+03	2.23E+00	5.10E+00	1.62E+00	1.53E+04
Tetrachloroethane		4.46E+00	1.29E+01	1.23E+01	4.24E+02	1.24E+01	3.82E+01	2.84E+01	9.51E+02	3.36E+01	3.21E+01	3.34E+01	2.18E+03
Trans 1,2-Dichloroethene		6.45E+00	2.75E+01	NR	3.42E+03	1.39E+01	4.95E+01	NR	6.17E+03	3.79E+01	1.00E+00	NR	1.26E+04
Trichloroethane		2.83E+01	1.73E+02	1.32E+02	1.54E+03	6.28E+01	1.51E+02	3.40E+02	3.23E+03	1.41E+01	7.69E+02	7.33E+02	7.14E+03
Vinyl Chloride (chloroethene)		3.32E+03	7.73E+04	8.43E+04	1.36E+03	6.87E+03	1.02E+02	4.73E+04	1.76E+03	1.35E+03	1.53E+02	1.35E+03	2.69E+03
Semi-Volatile Organic Compounds													
2-Chloronaphthalene		2.75E+02	5.38E+00	3.26E+00	1.14E+02	6.59E+02	33E+01	1.28E+01	2.80E+02	1.45E+03	3.17E+01	3.16E+01	6.69E+02
Acenaphthene		2.37E+02	4.86E+04	2.36E+02	5.70E+01	5.41E+02	1.16E+05	5.38E+02	1.41E+02	1.18E+03	3.86E+05	1.17E+02	3.36E+02
Acenaphthylene		1.85E+02	4.82E+04	1.84E+02	8.61E+01	4.42E+02	1.11E+05	4.40E+02	2.12E+02	9.78E+02	3.53E+05	9.74E+02	5.06E+02
Anthracene		3.43E+03	1.53E+05	2.26E+03	1.17E+00	5.53E+03	3.77E+03	5.45E+03	2.91E+00	1.16E+04	8.76E+03	1.58E+04	6.96E+00

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH HOME-GROWN PRODUCE



Table 4

Human Health Generic Assessment Criteria by Pathway for Residential With Home-Grown Produce Scenario

Compound	Notes	SAC Appropriate to Pathway SOM 1% (mg/kg)				SAC Appropriate to Pathway SOM 2.5% (mg/kg)				SAC Appropriate to Pathway SOM 6% (mg/kg)			
		Oral	Inhalation	Combined	Soil Saturation Limit (mg/kg)	Oral	Inhalation	Combined	Soil Saturation Limit (mg/kg)	Oral	Inhalation	Combined	Soil Saturation Limit (mg/kg)
Benzo(a)anthracene		1.01E+01	2.47E+01	3.18E+00	1.71E+00	1.43E+01	4.37E+01	1.07E+01	4.28E+00	1.09E+01	5.20E+01	1.03E+01	1.03E+01
Benzo(a)pyrene	(a)	4.86E+00	3.51E+01	NR	9.11E-01	4.96E+00	2.77E+01	NR	2.29E+00	4.96E+00	3.89E+01	NR	5.46E+00
Benzo(b)fluoranthene		2.95E+00	1.83E+01	2.56E+00	1.22E+00	3.33E+00	2.13E+01	3.25E+00	3.04E+00	4.43E+00	2.22E+01	3.82E+00	7.29E+00
Benzo(g,h)fluoranthene		3.77E+02	1.87E+03	3.14E+02	1.54E+02	4.09E+02	1.94E+03	3.36E+02	3.85E+02	4.23E+02	1.97E+03	3.48E+02	9.23E+02
Benzo(k)fluoranthene		4.92E+01	5.41E+02	7.66E+01	6.87E-01	1.10E+02	5.76E+02	3.22E+01	1.72E+00	1.21E+02	5.91E+02	1.05E+02	4.12E+00
Chrysene		1.55E+01	1.13E+02	1.45E+01	4.40E-01	2.34E+01	1.49E+02	3.17E+01	1.10E+00	3.15E+01	1.06E+02	3.87E+01	2.64E+00
Dibenzo(a,h)anthracene		2.90E-01	1.45E+00	2.41E-01	3.93E-03	3.43E-01	1.64E+00	2.84E-01	9.82E-03	3.69E-01	1.74E+00	3.04E-01	2.36E-02
Fluoranthene		2.87E+02	3.83E+04	2.85E+02	1.89E+01	5.33E+02	2.27E+04	5.82E+02	4.73E+01	3.00E+02	1.23E+05	3.95E+02	1.13E+02
Fluorene		1.77E+02	5.20E+03	1.72E+02	3.09E+01	4.19E+02	1.53E+04	4.07E+02	7.65E+01	8.59E+02	3.82E+04	8.77E+02	1.63E+02
Hexachlorobenzene		3.89E-01	NR	NR	8.17E+00	6.67E-01	NR	NR	2.01E+01	5.5E-01	NR	NR	4.81E+01
Indeno(1,2,3-cd)pyrene		3.79E+01	2.12E+02	3.70E+01	6.13E-02	4.23E+01	2.39E+02	3.59E+01	1.53E-01	4.92E+01	2.50E+02	4.11E+01	3.68E-01
Naphthalene		2.78E+04	2.33E+01	1.87E+01	7.64E+01	8.35E-01	5.49E+01	3.04E+01	1.83E+02	5.2E+02	3.31E+02	3.65E+01	4.32E+02
Phenanthrene		9.85E+01	7.17E+02	9.75E+01	3.60E+01	2.34E+02	1.76E+04	2.23E+02	8.96E+01	4.49E+02	4.07E+04	4.43E+02	2.14E+02
Pyrene		5.25E+02	8.78E+04	5.20E+02	2.20E+00	1.25E+03	2.04E+05	1.24E+03	5.49E+00	2.09E+03	4.23E+05	2.04E+03	1.32E+01
Phenol		1.80E+05	4.88E+02	1.20E+02	2.42E+04	2.98E+02	8.96E+02	2.09E+05	3.81E+04	5.66E+03	1.16E+03	3.89E+02	7.03E+04

Total Petroleum Hydrocarbons

Aliphatic hydrocarbons <EC ₁₀ -EC ₁₀		4.99E+03	4.24E+01	4.32E+01	3.04E+02	1.13E+04	7.79E+01	7.78E+01	5.59E+02	2.50E+04	8.81E+02	8.80E+02	1.15E+03
Aliphatic hydrocarbons >EC ₁₀ -EC ₂₅		1.49E+04	5.4E+02	1.03E+02	1.44E+02	3.43E+04	2.34E+02	2.31E+02	3.22E+02	7.11E+04	5.29E+02	5.28E+02	7.36E+02
Aliphatic hydrocarbons >EC ₂₅ -EC ₁₀		1.51E+03	2.8E+01	2.67E+01	7.77E+01	2.91E+03	8.22E+01	8.51E+01	1.90E+02	4.26E+03	2.6E+02	1.54E+02	4.51E+02
Aliphatic hydrocarbons >EC ₁₀ -EC ₁₅		4.57E+03	1.33E+02	1.32E+02	4.75E+01	5.51E+03	3.31E+02	3.26E+02	1.18E+02	5.98E+03	7.93E+02	7.65E+02	2.83E+02
Aliphatic hydrocarbons >EC ₁₅ -EC ₁₅		6.27E+03	1.11E+03	1.05E+03	2.37E+01	6.34E+03	2.78E+03	2.41E+03	5.91E+01	6.36E+03	6.67E+03	4.34E+03	1.42E+02
Aliphatic hydrocarbons >EC ₁₅ -EC ₃₅	(b)	6.46E+04	NR	NR	8.48E+00	9.17E+04	NR	NR	2.12E+01	1.10E+05	NR	NR	5.09E+01
Aliphatic hydrocarbons >EC ₃₅ -EC ₃₄	(d)	6.46E+04	NR	NR	8.48E+00	9.17E+04	NR	NR	2.12E+01	1.10E+05	NR	NR	5.09E+01
Aromatic hydrocarbons >EC ₁₀ -EC ₁₀		5.79E+01	4.74E+01	3.49E+01	6.13E+02	1.38E+02	1.6E+02	8.36E+01	1.50E+03	3.07E+02	2.77E+02	1.94E+02	3.58E+02
Aromatic hydrocarbons >EC ₁₀ -EC ₁₅		8.29E+01	2.55E+02	2.5E+01	3.64E+02	1.93E+02	8.29E+02	1.76E+02	8.99E+02	4.29E+02	2.5E+03	3.91E+02	2.15E+03
Aromatic hydrocarbons >EC ₁₅ -EC ₁₅		1.47E+02	2.95E+03	1.95E+02	1.69E+02	3.39E+02	7.07E+03	3.32E+02	4.19E+02	6.81E+02	1.68E+04	8.74E+02	1.00E+03
Aromatic hydrocarbons >EC ₁₅ -EC ₂₅	(b)	2.61E+02	NR	NR	5.37E+01	5.45E+02	NR	NR	1.34E+01	5.24E+02	NR	NR	3.21E+02
Aromatic hydrocarbons >EC ₂₅ -EC ₂₅	(b)	1.03E+02	NR	NR	4.89E+00	1.47E+03	NR	NR	1.21E+01	1.70E+03	NR	NR	2.90E+01
Aromatic hydrocarbons >EC ₂₅ -EC ₄₄	(d)	1.03E+02	NR	NR	4.89E+00	1.47E+03	NR	NR	1.21E+01	1.70E+03	NR	NR	2.90E+01

Notes:

EC = equivalent carbon. 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 affect the interpretation of any exceedances as the contribution of the indoor and outdoor vapour pathway to total exposure is >10%.
	Calculated SAC exceeds soil saturation limit but the exceedance will not affect the SAC significantly as the contribution of the indoor and outdoor vapour pathway to total exposure is <10%.
	Calculated SAC does not exceed the soil saturation limit.

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, PAHs naphthalene, acenaphthene and acenaphthylene, 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) SAC for arsenic, benzene, benzo(a)pyrene, cadmium, chromium VI and lead are derived using the C4SL toxicology data.

(b) SAC for boron and selenium should not include the inhalation pathway as no expert group HCV has been derived; aliphatic and aromatic hydrocarbons >EC₁₅ should not include inhalation pathway due to their non-volatile nature and inhalation exposure being minimal (oral, dermal and inhalation exposure is compared to the oral HCV); arsenic should only be based on oral contribution (rather than combined) owing to the relative small contribution from inhalation in accordance with the SGV report. The Oral SAC should be adopted for zinc and benzo(a)pyrene.

(c) SAC for CrIII should be based on the lower of the oral and inhalation SAC (see LQM/CIEH 2015 Section 6.8)

(d) SAC for elemental mercury, chromium VI and nickel should be based on the inhalation pathway only.

(e) SAC for 1,3,5-trimethylbenzene is not recorded owing to the lack of toxicological data, SAC for 1,2,4-trimethylbenzene may be used.

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH HOME-GROWN PRODUCE



Table 5
Human Health Generic Assessment Criteria for Residential with home-grown produce

Compound	SAC for Soil SOM 1% (mg/kg)	SAC for Soil SOM 2.5% (mg/kg)	SAC for Soil SOM 6% (mg/kg)
Metals			
Arsenic	37	37	37
Barium	1,300	1,300	1,300
Beryllium	1.7	1.7	1.7
Boron	300	300	300
Cadmium	22	22	22
Chromium (Ib) - trivalent	910	910	910
Chromium (VI) - hexavalent	21	21	21
Copper	2,500	2,500	2,500
Lead	200	200	200
Elemental Mercury (Hg ⁰)	0.2	0.6	1.2
Inorganic Mercury (Hg ²⁺)	39	39	39
Methyl Mercury (Hg ⁺)	10	10	10
Nickel	130	130	130
Selenium	258	258	258
Vanadium	410	410	410
Zinc	3,900	3,900	3,900
Cyanide (free)	1.4	1.4	1.4
Volatile Organic Compounds			
Benzene	0.20	0.41	0.87
Toluene	130	300	680
Ethylbenzene	50	110	260
Xylene - m	59	140	327
Xylene - o	61	143	332
Xylene - p	57	133	310
Total xylene	57	133	310
Methyl tertiary-Butyl ether (MTBE)	60	110	210
1,1,1,2-Tetrachloroethane	1.20	2.78	6.46
1,1,2,2-Tetrachloroethane	1.6	3.5	7.7
1,1,1-Trichloroethane	9	18	39
1,1,2-Trichloroethane	0.8	1.6	3.5
1,1-Dichloroethane	0.32	0.57	1.16
1,2-Dichloroethane	0.007	0.011	0.019
1,2,4-Trimethylbenzene	1.8	4.3	9.7
1,3,5-Trimethylbenzene	NR	NR	NR
1,2-Dichloropropane	0.034	0.060	0.120
Carbon Tetrachloride (tetrachloromethane)	0.026	0.056	0.127
Chloroethane	11.7	15.9	25.7
Chloromethane	0.012	0.014	0.018
Cis 1,2-Dichloroethane	0.16	0.27	0.52
Dichloromethane	0.62	1.08	1.92
Tetrachloroethene	0.2	0.4	0.9
Trans 1,2-Dichloroethene	0.28	0.50	1.02
Trichloroethene	0.02	0.03	0.06
Vinyl Chloride (chloroethane)	0.0006	0.0009	0.0014
Semi-Volatile Organic Compounds			
2-Chloronaphthalene	5	13	31
Acenaphthene	230	540	1,170
Acenaphthylene	180	440	970
Anthracene	2,400	5,500	10,900
Benzo(a)anthracene	7	11	13
Benzo(a)pyrene	5	5	5
Benzo(b)fluoranthene	2.6	3.3	3.7
Benzo(g,h,i)perylene	310	340	350
Benzo(k)fluoranthene	77	92	100
Chrysene	15	22	27
Dibenzo(a,h)anthracene	0.24	0.28	0.30
Fluoranthene	290	560	900
Fluorene	170	410	880
Hexachloromethane	0.27	0.66	1.55
Indeno(1,2,3-cd)pyrene	27	36	41
Naphthalene	13	30	71
Phenanthrene	100	220	440
Pyrene	620	1,240	2,040
Phenol	120	210	390
Total Petroleum Hydrocarbons			
Aliphatic hydrocarbons EC ₅ -EC ₉	42	78	160
Aliphatic hydrocarbons >EC ₉ -EC ₁₅	100	230	530
Aliphatic hydrocarbons >EC ₁₅ -EC ₁₀	27	65	154
Aliphatic hydrocarbons >EC ₁₀ -EC ₁₂	130 (48)	330 (118)	760 (283)
Aliphatic hydrocarbons >EC ₁₂ -EC ₁₆	1,100 (24)	2,400 (59)	4,300 (142)
Aliphatic hydrocarbons >EC ₁₆ -EC ₃₅	65,000 (8)	92,000 (21)	110,000
Aliphatic hydrocarbons >EC ₃₅ -EC ₄₄	65,000 (8)	92,000 (21)	110,000
Aromatic hydrocarbons >EC ₅ -EC ₁₀	30	80	190
Aromatic hydrocarbons >EC ₁₀ -EC ₁₂	80	180	390
Aromatic hydrocarbons >EC ₁₂ -EC ₁₆	140	330	670
Aromatic hydrocarbons >EC ₁₆ -EC ₂₁	260	540	930
Aromatic hydrocarbons >EC ₂₁ -EC ₃₅	1,100	1,500	1,700
Aromatic hydrocarbons >EC ₃₅ -EC ₄₄	1,100	1,500	1,700
Minerals			
Asbestos	Stage 1 test -- No asbestos detected with ID; Stage 2 test - <0.001% dry weight (exceedance of either equates to an exceedance of the GAC) ¹		
Notes:			
¹ Generic assessment criteria not calculated owing to low volatility of substance and therefore no pathway, or an absence of toxicological data.			
NR - SAC for 1,3,5-trimethylbenzene is not recorded owing to the lack of toxicological data. SAC for 1,2,4-trimethylbenzene may be used.			
EC - equivalent carbon. SAC - soil assessment criteria.			
LOD for weight of asbestos per tonk weight of soil calculated on a dry weight basis using PLM, handpicking and gravimetry.			
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, PAHs naphthalene, acenaphthene and acenaphthylene, 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.			
(VALUE IN BRACKETS)			
RSK has adopted an approach for petroleum hydrocarbons in accordance with LQM/CIH 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.			



APPENDIX K

GQRA DATA SCREENING TABLES – SOILS

Project code: 305145
Water lane, Angmering

Land use: Residential with home-grown produce
SOM: 2.5%

Project name	Water lane, Angmering
Project code	305145
Client name	
Address	
NCR	
Land use	Residential with home-grown produce
SOM	2.5%
GAC version	2019_00

Notes



Analyte	Unit	GAC	T1	Max	Min	Count	# Detects	# Non-detects	Lab sample ID: 20/09515/1	20/09515/2	20/09515/3	20/09515/4	20/09515/5	20/09515/6	20/09515/7	
									Client sample ID: WS1	WS2	WS3	WS4	WS5	WS6	WS7	
									Depth to top:	0.1	0.5	0.5	0.2	0.2	0.2	0.1
									Depth to bottom:	0.2	0.6	0.6	0.3	0.3	0.3	0.2
Date sampled:									02/11/20	02/11/20	02/11/20	02/11/20	02/11/20	02/11/20	02/11/20	
Metals and Inorganics																
Arsenic	mg/kg	37		7	4	7	7	0	4	5	4	4	6	7	5	
Cadmium	mg/kg	22		0.9	<0.1	7	4	3	<0.1	<0.1	<0.1	0.5	0.6	0.7	0.9	
Chromium	mg/kg	910	21	32	20	7	7	0	25	26	32	20	20	24	25	
Copper	mg/kg	2500		16	9	7	7	0	10	11	9	12	11	15	16	
Lead	mg/kg	200		46	9	7	7	0	21	24	9	23	23	36	46	
Mercury	mg/kg	39	0.6	<0.1		7	0	7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Nickel	mg/kg	130		28	13	7	7	0	15	16	28	14	13	18	19	
Selenium	mg/kg	258		2	<1	7	4	3	<1	2	<1	<1	<1	1	2	
Zinc	mg/kg	3900		78	39	7	7	0	47	53	39	51	48	58	78	
Asbestos																
Asbestos in soil							5	0	5	NAD	NAD	NAD	NAD	NAD	NAD	
Petroleum Hydrocarbons																
Ali >C5-C6	mg/kg	78			<0.01	7	0	7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Ali >C6-C8	mg/kg	230			<0.01	7	0	7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Ali >C8-C10	mg/kg	65			<1	7	0	7	<1	<1	<1	<1	<1	<1	<1	
Ali >C10-C12	mg/kg	330	118		<1	7	0	7	<1	<1	<1	<1	<1	<1	<1	
Ali >C12-C16	mg/kg	2400	59		<1	7	0	7	<1	<1	<1	<1	<1	<1	<1	
Ali >C16-C21	mg/kg				<1	7	0	7	<1	<1	<1	<1	<1	<1	<1	
Ali >C21-C35	mg/kg				3	<1	7	4	3	<1	<1	<1	2	1	3	2
Ali >C16-C35 calculated	mg/kg	92000	21		3	<1	7	4	3	<1	<1	<1	2	1	3	2
Total Aliphatics	mg/kg				3	<1	7	4	3	<1	<1	<1	2	1	3	2
Aro >C5-C7	mg/kg				<0.01	7	0	7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Aro >C7-C8	mg/kg				<0.01	7	0	7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Aro >C8-C10	mg/kg	80			<1	7	0	7	<1	<1	<1	<1	<1	<1	<1	
Aro >C10-C12	mg/kg	180			<1	7	0	7	<1	<1	<1	<1	<1	<1	<1	
Aro >C12-C16	mg/kg	330			<1	7	0	7	<1	<1	<1	<1	<1	<1	<1	
Aro >C16-C21	mg/kg	540			<1	7	0	7	<1	<1	<1	<1	<1	<1	<1	
Aro >C21-C35	mg/kg	1500			6	<1	7	6	1	2	2	<1	3	3	5	6
Total Aromatics	mg/kg				6	<1	7	6	1	2	2	<1	3	3	5	6
TPH (Ali & Aro)	mg/kg				9	<1	7	6	1	2	2	<1	5	5	8	9
BTEX - Benzene	mg/kg	0.41			<0.01	7	0	7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
BTEX - Toluene	mg/kg	300			<0.01	7	0	7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
BTEX - Ethyl Benzene	mg/kg	110			<0.01	7	0	7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
BTEX - o Xylene	mg/kg	143			<0.01	7	0	7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
BTEX - m & p Xylene	mg/kg	133			<0.01	7	0	7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MTBE	mg/kg	110			<0.01	7	0	7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Polycyclic aromatic hydrocarbons																
Acenaphthene	mg/kg	540			<0.01	7	0	7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Acenaphthylene	mg/kg	440			<0.01	7	0	7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Anthracene	mg/kg	5500			<0.01	7	0	7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Benzo(a)anthracene	mg/kg	11			0.05	<0.04	7	1	6	<0.04	<0.04	<0.04	<0.04	0.05	<0.04	

ARJUN DISTRICT COUNCIL A/2011/20/DOC

Analyte	Unit	GAC	T1	Max	Min	Count	# Detects	# Non-detects	# exceeding		Max sample (ID and depth)
									GAC	T1	
Metals and Inorganics											
Chromium	mg/kg	910	21	32	20	7	7	0		5	WS3 - 0.5-0.6

APPENDIX L

GENERIC ASSESSMENT CRITERIA FOR PHYTOTOXIC EFFECTS

GENERIC ASSESSMENT CRITERIA FOR PHYTOTOXIC EFFECTS

Several compounds can inhibit plant growth; hence it is important to have generic assessment criteria (GAC) to promote healthy plant growth. In the absence of other published GAC, the GAC have been obtained from legislation (UK and European) and guidance related to the use of sewage sludge on agricultural fields.

The Council of European Communities Sewage Sludge Directive (86/278/EEC) dated 1986, has been transposed into UK law by Statutory Instrument No. 1263, The Sludge (use in Agriculture) Regulations 1989 (Public Health England, Wales and Scotland), as amended in 1990 and The Sludge (use in Agriculture) Regulations (Northern Ireland) SR No, 245, 1990. In addition the Department of Environment (DoE) produced a Code of Practice (CoP) (Updated 2nd Edition) in 2006 which provided guidance on the application of sewage sludge on agricultural land (however the status of this document is unclear as it is on the archive section of the Defra website).

The directive seeks to encourage the use of sewage sludge in agriculture and to regulate its use in such a way as to ***“prevent harmful effects on soil, vegetation, animals and man”***. To this end, it prohibits the use of untreated sludge on agricultural land unless it is injected or incorporated into the soil. Treated sludge is defined as having undergone “biological, chemical or heat treatment, long-term storage or any other appropriate process so as significantly to reduce its fermentability and the health hazards resulting from its use”. To provide protection against potential health risks from residual pathogens, sludge must not be applied to soil in which fruit and vegetable crops are growing, or less than ten months before fruit and vegetable crops are to be harvested. Grazing animals must not be allowed access to grassland or forage land less than three weeks after the application of sludge.

The specified limits of concentrations of selected elements in soil are presented in Table 4 of the updated 2nd Edition of the DoE Code of Practice and are designed to protect plant growth. It is noted that these values are more stringent than the values set in current UK regulations. However since they were amended following recommendations from the Independent Scientific Committee in 1993. (MAFF/DOE 1993). The GAC are presented in Table 1.

Table 1: Generic assessment criteria

Determinant	Generic assessment criteria (mg/kg)			
	pH 5.0 < 5.5	pH 5.5 < 6.0	pH 6.0 < 7.0	pH >7.0
Zinc	200	200	200	300
Copper	80	100	135	200
Nickel	50	60	75	110
Lead	300	300	300	300
Cadmium	3	3	3	3
Mercury	1	1	1	1
Note: Only compounds with assessment criteria documented within the Directive 86/278/EEC have been included, although criteria for 5 additional compounds have been presented within the 2006 CoP				

APPENDIX M

GENERIC ASSESSMENT CRITERIA FOR POTABLE WATER SUPPLY PIPES

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

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

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

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

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

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

Since water supply pipes are typically laid at a minimum depth of 0.75 m below finished ground levels, sample results from depths between 0.5 m and 1.5 m below finished level are generally considered suitable for assessing risks to water supply. Samples outside these depths can be used, providing the stratum is the same as that in which water supply pipes are likely to be located. The report specifies that sampling should characterise the ground conditions to a minimum of 0.5 m below the proposed depth of the pipe.

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

Table Q1: Generic assessment criteria for water supply pipes

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



APPENDIX N

GQRA DATA SCREENING TABLES – GAS

Exploratory position ID	Monitoring round	Monitoring date	Response zone top (mbgl)	Response zone base (mbgl)	Depth to water (m)	Methane peak (%/vol)	Methane steady-state (%/vol)	Carbon dioxide peak (%/vol)	Carbon dioxide steady-state (%/vol)	Oxygen minimum (%/vol)	Peak gas flow max (l/hr)	Steady-state gas flow (l/hr)	Atmospheric pressure (mb)	Response zone entirely flooded?	Response zone partially flooded?
MBH01	1	05/11/2020	1	10	9.85	0.1	0.1	1.8	1.8	18.9	0.1	0.1	1031	FALSE	TRUE
MBH01	2	04/12/2020	1	10	10.07	0.1	0.1	2.6	2.6	18.4	0.1	0.1	994	FALSE	FALSE
MBH01	3	15/12/2020	1	10	9.98	0.1	0.1	2.6	2.6	17.8	0.1	0.1	999	FALSE	TRUE
WS1	1	05/11/2020	1	3	n/a	0.1	0.1	2	2	17.9	0.1	0.1	1031	FALSE	TRUE
WS1	2	04/12/2020	1	3	n/a	0.1	0.1	1.8	1.8	17.3	0.1	0.1	995	FALSE	TRUE
WS1	3	15/12/2020	1	3	n/a	0.1	0.1	2.1	2.1	16.6	0.1	0.1	998	FALSE	TRUE
WS2	1	05/11/2020	1	3	n/a	0.1	0.1	1.3	1.2	19.5	0.1	0.1	1032	FALSE	TRUE
WS2	2	04/12/2020	1	3	2.73	0.1	0.1	2.5	2.5	15.9	0.1	0.1	996	FALSE	TRUE
WS2	3	15/12/2020	1	3	2.52	0.1	0.1	2.5	2.5	16.2	0.1	0.1	998	FALSE	TRUE
WS3	1	05/11/2020	1	3	2.49	<0.1	<0.1	2.1	2.1	18.8	0.1	0.1	1032	FALSE	TRUE
WS3	2	05/11/2020	1	3	0.8	<0.1	<0.1	1.5	1.2	18.8	0.1	0.1	996	TRUE	FALSE
WS3	3	15/12/2020	1	3	0.57	<0.1	<0.1	1.7	1.7	18.6	0.1	0.1	998	TRUE	FALSE
WS4	1	05/11/2020	1	3	n/a	<0.1	<0.1	2.2	2.2	17.9	0.1	0.1	1032	FALSE	TRUE
WS4	2	04/12/2020	1	3	n/a	<0.1	<0.1	2.1	2.1	17.5	0.1	0.1	996	FALSE	TRUE
WS4	3	15/12/2020	1	3	n/a	<0.1	<0.1	2.1	2.1	17.8	0.1	0.1	998	FALSE	TRUE
WS5	1	05/11/2020	1	3	n/a	<0.1	<0.1	2.7	2.7	13.4	0.1	0.1	1031	FALSE	TRUE
WS5	2	04/12/2020	1	3	n/a	<0.1	<0.1	3.4	3.4	15.2	0.1	0.1	995	FALSE	TRUE
WS5	3	15/12/2020	1	3	n/a	<0.1	<0.1	3.6	3.6	15.8	0.1	0.1	998	FALSE	TRUE
WS6	1	05/11/2020	1	3	n/a	<0.1	<0.1	1.9	1.9	17	0.1	0.1	1031	FALSE	TRUE
WS6	2	04/12/2020	1	3	n/a	<0.1	<0.1	2	2	16.5	0.1	0.1	993	FALSE	TRUE
WS6	3	15/12/2020	1	3	n/a	<0.1	<0.1	2	2	17.2	0.1	0.1	999	FALSE	TRUE
WS7	1	05/11/2020	1	3	n/a	<0.1	<0.1	2.9	2.9	16.9	0.1	0.1	1031	FALSE	TRUE
WS7	2	05/11/2020	1	3	n/a	<0.1	<0.1	3.2	3.2	16.4	0.1	0.1	993	FALSE	TRUE
WS7	3	15/12/2020	1	3	n/a	<0.1	<0.1	3.5	3.5	16.3	0.1	0.1	999	FALSE	TRUE

Exploratory position ID	Date	Device	Serial number	Atmospheric pressure (mb)	Weather	Air Temp (°C)	Ground conditions	Wind	Tidal state
Monitoring round 1									
MBH01	05/11/2020	GA5000	G505800	1031	Sunny	5	Dry	Light	Rising
WS1	05/11/2020	GA5000	G505800	1031	Sunny	5	Dry	Light	Rising
WS2	05/11/2020	GA5000	G505800	1032	Sunny	5	Dry	Light	Rising
WS3	05/11/2020	GA5000	G505800	1032	Sunny	5	Dry	Light	Rising
WS4	05/11/2020	GA5000	G505800	1032	Sunny	5	Dry	Light	Rising
WS5	05/11/2020	GA5000	G505800	1031	Sunny	5	Dry	Light	Rising
WS6	05/11/2020	GA5000	G505800	1031	Sunny	5	Dry	Light	Rising
WS7	05/11/2020	GA5000	G505800	1031	Sunny	5	Dry	Light	Rising
Monitoring round 2									
MBH01	04/12/2020	GA5000	G505786	994	Rainy	3	Wet	Light	Falling
WS1	04/12/2020	GA5000	G505786	995	Rainy	3	Wet	Light	Falling
WS2	05/11/2020	GA5000	G505786	996	Rainy	3	Wet	Light	Falling
WS3	05/11/2020	GA5000	G505786	996	Rainy	3	Wet	Light	Falling
WS4	04/12/2020	GA5000	G505786	996	Rainy	3	Wet	Light	Falling
WS5	04/12/2020	GA5000	G505786	995	Rainy	3	Wet	Light	Falling
WS6	04/12/2020	GA5000	G505786	993	Rainy	3	Wet	Light	Falling
WS7	05/11/2020	GA5000	G505786	993	Rainy	3	Wet	Light	Falling
Monitoring round 3									
MBH01	15/12/2020	GA5000	G505800	999	Sunny	11	Damp	Light	Rising
WS1	15/12/2020	GA5800	G505800	998	Sunny	11	Damp	Light	Rising
WS2	15/12/2020	GA5000	G505800	998	Sunny	11	Damp	Light	Rising
WS3	15/12/2020	GA5000	G505800	998	Sunny	11	Damp	Light	Rising
WS4	15/12/2020	GA5000	G505800	998	Sunny	11	Damp	Light	Rising
WS5	15/12/2020	GA5000	G505800	998	Sunny	11	Damp	Light	Rising
WS6	15/12/2020	GA5000	G505800	999	Sunny	11	Damp	Light	Rising
WS7	15/12/2020	GA5000	G505800	999	Sunny	11	Damp	Light	Rising

This is a summary of the maximum reported concentrations per borehole (or min for oxygen)															
Exploratory position ID	Response zone top (mbgl)	Response zone base (mbgl)	Response zone geological unit	Number of monitoring rounds	Peak methane max (%/vol)	Steady-state methane max (%/vol)	Peak carbon dioxide max (%/vol)	Carbon dioxide steady-state max (%/vol)	Oxygen min (%/vol)	Peak gas flow max (l/hr)	Steady-state gas flow max (l/hr)	Depth to water min (m)	Depth to water max (m)	Atmospheric pressure min (mb)	Atmospheric pressure max (mb)
MBH01	1	10		3	<0.1	<0.1	2.6	2.6	17.8	0.1	0.1	9.85	10.07	994	1031
WS1	1	3		3	<0.1	<0.1	2.1	2.1	16.6	0.1	0.1	n/a	n/a	995	1031
WS2	1	3		3	<0.1	<0.1	2.5	2.5	15.9	0.1	0.1	2.52	2.73	996	1032
WS3	1	3		3	<0.1	<0.1	2.1	2.1	18.6	0.1	0.1	0.57	2.49	996	1032
WS4	1	3		3	<0.1	<0.1	2.2	2.2	17.5	0.1	0.1	n/a	n/a	996	1032
WS5	1	3		3	<0.1	<0.1	3.6	3.6	13.4	0.1	0.1	n/a	n/a	995	1031
WS6	1	3		3	<0.1	<0.1	2	2	16.5	0.1	0.1	n/a	n/a	993	1031
WS7	1	3		3	<0.1	<0.1	3.5	3.5	16.3	0.1	0.1	n/a	n/a	993	1031

This is a summary of the maximum reported concentrations per borehole (or min for oxygen) EXCLUDING data from entirely flooded response zones															
Exploratory position ID	Response zone top (mbgl)	Response zone base (mbgl)	Response zone geological unit	Number of monitoring rounds	Peak methane max (%/vol)	Steady-state methane max (%/vol)	Peak carbon dioxide max (%/vol)	Carbon dioxide steady-state max (%/vol)	Oxygen min (%/vol)	Peak gas flow max (l/hr)	Steady-state gas flow max (l/hr)	Depth to water min (m)	Depth to water max (m)	Atmospheric pressure min (mb)	Atmospheric pressure max (mb)
MBH01	1	10		3	0.1	0.1	2.6	2.6	17.8	0.1	0.1	9.85	10.07	994	1031
WS1	1	3		3	0.1	0.1	2.1	2.1	16.6	0.1	0.1	n/a	n/a	995	1031
WS2	1	3		3	0.1	0.1	2.5	2.5	15.9	0.1	0.1	2.52	2.73	996	1032
WS3	1	3		1	0.1	0.1	2.1	2.1	18.8	0.1	0.1	2.49	2.49	1032	1032
WS4	1	3		3	0.1	0.1	2.2	2.2	17.5	0.1	0.1	n/a	n/a	996	1032
WS5	1	3		3	0.1	0.1	3.6	3.6	13.4	0.1	0.1	n/a	n/a	995	1031
WS6	1	3		3	0.1	0.1	2	2	16.5	0.1	0.1	n/a	n/a	993	1031
WS7	1	3		3	0.1	0.1	3.5	3.5	16.3	0.1	0.1	n/a	n/a	993	1031

Calculations of borehole hazardous gas flow rate in accordance with BS8485

Project No.: 305145
Client: BDW Southern Counties
Site: Water Lane, Angmering

In accordance with BS8485 Section 6.3.1 the data presented below are calculations of borehole hazardous gas flow rates (Q_{hg}).

The Q_{hg} can then be used, along with a robust conceptual site model and review of the data collected, to designate a site characteristic (or zone) gas screening value (GSV).

GSVs are used to characterise the potential risk and inform mitigation measures where appropriate.

The assessment below presents calculated Q_{hg} values and compares them directly to Characteristic Situations as presented in BS8485 Table 2.

The ultimate site characteristic GSV (for the site or for individual zones) to inform risk assessment and mitigation measures is detailed in the body of the report, and may be different to the individual calculations below.

The calculations below use peak concentrations and steady state flow to calculate the Q_{hg} .

Characteristic Situation	Hazard potential	GSV
1	Very Low	<0.07
2	Low	<0.7
3	Moderate	<3.5
4	Moderate to High	<15
5	High	<70
6	Very High	>=70

British Standard Institution (BSI) (2019), 'BS 8485:2015+A1:2019. Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'.

KEY	
Q_{hg}	Borehole hazardous gas flow rate (steady state flow * (peak concentration / 100))
GSV	Gas Screening Value
GSV / Q_{hg}	indicates very low hazard potential
GSV / Q_{hg}	indicates low to moderate hazard potential
GSV / Q_{hg}	indicates moderate or greater hazard potential
	Data exceeds either 1% CH ₄ , 5% CO ₂ or 70 L/hr flow (see BS8485 Table 2)

SUMMARY OF Q_{hg} VALUES PER BOREHOLE, PER MONITORING ROUND

BH NO.	DATE	CH ₄ peak	CH ₄ SS	CO ₂ peak	CO ₂ SS	O ₂ min	Flow SS	Baro	Q_{hg}		CS No.
		%v/v	%v/v	%v/v	%v/v	%v/v	l/hr	mbar	CH ₄	CO ₂	
MBH01	05/11/2020	0.1	0.1	1.8	1.8	18.9	0.1	1031	0.0001	0.0018	CS1
	04/12/2020	0.1	0.1	2.6	2.6	18.4	0.1	994	0.0001	0.0026	CS1
	05/11/2020	0.1	0.1	1.8	1.8	18.9	0.1	1031	0.0001	0.0018	CS1
	15/12/2020	0.1	0.1	2.6	2.6	17.8	0.1	999	0.0001	0.0026	CS1
WS1	05/11/2020	0.1	0.1	2	2	17.9	0.1	1031	0.0001	0.0020	CS1
	04/12/2020	0.1	0.1	1.8	1.8	17.3	0.1	995	0.0001	0.0018	CS1
	05/11/2020	0.1	0.1	2	2	17.9	0.1	1031	0.0001	0.0020	CS1
	15/12/2020	0.1	0.1	2.1	2.1	16.6	0.1	998	0.0001	0.0021	CS1
WS2	05/11/2020	0.1	0.1	1.3	1.2	19.5	0.1	1032	0.0001	0.0013	CS1
	05/11/2020	0.1	0.1	2.5	2.5	15.9	0.1	996	0.0001	0.0025	CS1
	05/11/2020	0.1	0.1	1.3	1.2	19.5	0.1	1032	0.0001	0.0013	CS1
	15/12/2020	0.1	0.1	2.5	2.5	16.2	0.1	998	0.0001	0.0025	CS1
WS3	05/11/2020	0.1	0.1	2.1	2.1	18.8	0.1	1032	0.0001	0.0021	CS1
	05/11/2020	0.1	0.1	1.5	1.2	18.8	0.1	996	0.0001	0.0015	CS1
	05/11/2020	0.1	0.1	2.1	2.1	18.8	0.1	1032	0.0001	0.0021	CS1
	15/12/2020	0.1	0.1	1.7	1.7	18.6	0.1	998	0.0001	0.0017	CS1
WS4	05/11/2020	0.1	0.1	2.2	2.2	17.9	0.1	1032	0.0001	0.0022	CS1
	04/12/2020	0.1	0.1	2.1	2.1	17.5	0.1	996	0.0001	0.0021	CS1
	04/11/2020	0.1	0.1	2.1	2.1	17.5	0.1	996	0.0001	0.0021	CS1
	15/12/2020	0.1	0.1	2.1	2.1	17.8	0.1	998	0.0001	0.0021	CS1
WS5	05/11/2020	0.1	0.1	2.7	2.7	13.4	0.1	1031	0.0001	0.0027	CS1
	04/12/2020	0.1	0.1	3.4	3.4	15.2	0.1	995	0.0001	0.0034	CS1
	05/11/2020	0.1	0.1	2.7	2.7	13.4	0.1	1031	0.0001	0.0027	CS1
	15/12/2020	0.1	0.1	3.6	3.6	15.8	0.1	998	0.0001	0.0036	CS1
WS6	05/11/2020	0.1	0.1	1.9	1.9	17	0.1	1031	0.0001	0.0019	CS1
	04/12/2020	0.1	0.1	2	2	16.5	0.1	993	0.0001	0.0020	CS1
	05/11/2020	0.1	0.1	1.9	1.9	17	0.1	1031	0.0001	0.0019	CS1
	15/12/2020	0.1	0.1	2	2	17.2	0.1	999	0.0001	0.0020	CS1
WS7	05/11/2020	0.1	0.1	2.9	2.9	16.9	0.1	1031	0.0001	0.0029	CS1
	05/11/2020	0.1	0.1	3.2	3.2	16.4	0.1	993	0.0001	0.0032	CS1
	05/11/2020	0.1	0.1	2.9	2.9	16.9	0.1	1031	0.0001	0.0029	CS1
	15/12/2020	0.1	0.1	3.5	3.5	16.3	0.1	999	0.0001	0.0035	CS1

WORST-CASE Q_{hg} VALUES PER BOREHOLE

BH NO.	DATE	Maximum CH ₄		Maximum CO ₂		Min O ₂	Max SS Flow	Baro mbar	Maximum Q_{hg}		CS No.
		CH ₄ peak %v/v	CH ₄ SS %v/v	CO ₂ peak %v/v	CO ₂ SS %v/v				CH ₄	CO ₂	
MBH01		0.1	0.1	2.6	2.6	18.9	0.1		0.0001	0.0026	CS1
WS1		0.1	0.1	2.1	2.1	17.9	0.1		0.0001	0.0021	CS1
WS2		0.1	0.1	2.5	2.5	19.5	0.1		0.0001	0.0025	CS1
WS3		0.1	0.1	2.1	2.1	18.8	0.1		0.0001	0.0021	CS1
WS4		0.1	0.1	2.2	2.2	17.9	0.1		0.0001	0.0022	CS1
WS5		0.1	0.1	3.6	3.6	15.8	0.1		0.0001	0.0036	CS1
WS6		0.1	0.1	2	2	17.2	0.1		0.0001	0.0020	CS1
WS7		0.1	0.1	3.5	3.5	16.9	0.1		0.0001	0.0035	CS1

WORST-CASE Q_{hg} CHECK FOR SITE (BS8485 Section 6.3.7.4)

BH NO.	DATE	Maximum CH ₄		Maximum CO ₂		Min O ₂	Max SS Flow	Baro mbar	Maximum Q_{hg}		CS No.
		CH ₄ peak %v/v	CH ₄ SS %v/v	CO ₂ peak %v/v	CO ₂ SS %v/v				CH ₄	CO ₂	
ALL		0.1	0.1	3.6	3.6	13.4	0.1		0.0001	0.0036	CS1

Calculations of borehole hazardous gas flow rate in accordance with BS8485

Project No.: 305145

Client: BDW Southern Counties

Site: Water Lane, Angmering

In accordance with BS8485 Section 6.3.1 the data presented below are calculations of borehole hazardous gas flow rates (Q_{hg}).

The Q_{hg} can then be used, along with a robust conceptual site model and review of the data collected, to designate a site characteristic (or zone) gas screening value (GSV).

GSVs are used to characterise the potential risk and inform mitigation measures where appropriate.

The assessment below presents calculated Q_{hg} values and compares them directly to Characteristic Situations as presented in BS8485 Table 2.

The ultimate site characteristic GSV (for the site or for individual zones) to inform risk assessment and mitigation measures is detailed in the body of the report, and may be different to the individual calculations below.

The calculations below use peak concentrations and steady state flow to calculate the Q_{hg} .

Characteristic Situation	Hazard potential	GSV
1	Very Low	<0.07
2	Low	<0.7
3	Moderate	<3.5
4	Moderate to High	<15
5	High	<70
6	Very High	>=70

British Standard Institution (BSI) (2019), 'BS 8485:2015+A1:2019, Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'.

KEY	
Q_{hg}	Borehole hazardous gas flow rate (steady state flow * (peak concentration / 100))
GSV	Gas Screening Value
	GSV / Q_{hg} indicates very low hazard potential
	GSV / Q_{hg} indicates low to moderate hazard potential
	GSV / Q_{hg} indicates moderate or greater hazard potential
	Data exceeds either 1% CH ₄ , 5% CO ₂ or 70 L/hr flow (see BS8485 Table 2)

SUMMARY OF Q_{hg} VALUES PER BOREHOLE, PER MONITORING ROUND

BH NO.	DATE	CH ₄ peak	CH ₄ SS	CO ₂ peak	CO ₂ SS	O ₂ min	Flow SS	Baro	Q_{hg}		CS No.
		%v/v	%v/v	%v/v	%v/v	%v/v	l/hr	mbar	CH ₄	CO ₂	
MBH01	05/11/2020	0.1	0.1	1.8	1.8	18.9	0.1	1031	0.0001	0.0018	CS1
	04/12/2020	0.1	0.1	2.6	2.6	18.4	0.1	994	0.0001	0.0026	CS1
	05/11/2020	0.1	0.1	1.8	1.8	18.9	0.1	1031	0.0001	0.0018	CS1
	15/12/2020	0.1	0.1	2.6	2.6	17.8	0.1	995	0.0001	0.0026	CS1
WS1	05/11/2020	0.1	0.1	2	2	17.9	0.1	1031	0.0001	0.0020	CS1
	04/12/2020	0.1	0.1	1.8	1.8	17.3	0.1	995	0.0001	0.0018	CS1
	05/11/2020	0.1	0.1	2	2	17.9	0.1	1031	0.0001	0.0020	CS1
	15/12/2020	0.1	0.1	2.1	2.1	16.6	0.1	998	0.0001	0.0021	CS1
WS2	05/11/2020	0.1	0.1	1.3	1.2	19.5	0.1	1032	0.0001	0.0013	CS1
	05/11/2020	0.1	0.1	2.5	2.5	15.9	0.1	998	0.0001	0.0025	CS1
	05/11/2020	0.1	0.1	1.3	1.2	19.5	0.1	1032	0.0001	0.0013	CS1
	15/12/2020	0.1	0.1	2.5	2.5	16.2	0.1	995	0.0001	0.0025	CS1
WS3	05/11/2020	0.1	0.1	2.1	2.1	18.8	0.1	1032	0.0001	0.0021	CS1
	05/11/2020	0.1	0.1	2.1	2.1	18.8	0.1	1032	0.0001	0.0021	CS1
WS4	05/11/2020	0.1	0.1	2.2	2.2	17.9	0.1	1032	0.0001	0.0022	CS1
	04/12/2020	0.1	0.1	2.1	2.1	17.5	0.1	995	0.0001	0.0021	CS1
	04/11/2020	0.1	0.1	2.1	2.1	17.5	0.1	998	0.0001	0.0021	CS1
	15/12/2020	0.1	0.1	2.1	2.1	17.8	0.1	998	0.0001	0.0021	CS1
WS5	05/11/2020	0.1	0.1	2.7	2.7	13.4	0.1	1031	0.0001	0.0027	CS1
	04/12/2020	0.1	0.1	3.4	3.4	15.2	0.1	995	0.0001	0.0034	CS1
	05/11/2020	0.1	0.1	2.7	2.7	13.4	0.1	1031	0.0001	0.0027	CS1
	15/12/2020	0.1	0.1	3.6	3.6	15.8	0.1	998	0.0001	0.0036	CS1
WS6	05/11/2020	0.1	0.1	1.9	1.9	17	0.1	1031	0.0001	0.0019	CS1
	04/12/2020	0.1	0.1	2	2	16.5	0.1	993	0.0001	0.0020	CS1
	05/11/2020	0.1	0.1	1.9	1.9	17	0.1	1031	0.0001	0.0019	CS1
	15/12/2020	0.1	0.1	2	2	17.2	0.1	998	0.0001	0.0020	CS1
WS7	05/11/2020	0.1	0.1	2.9	2.9	16.9	0.1	1031	0.0001	0.0029	CS1
	05/11/2020	0.1	0.1	3.2	3.2	16.4	0.1	993	0.0001	0.0032	CS1
	05/11/2020	0.1	0.1	2.9	2.9	16.9	0.1	1031	0.0001	0.0029	CS1
	15/12/2020	0.1	0.1	3.5	3.5	16.3	0.1	998	0.0001	0.0035	CS1

WORST-CASE Q_{hg} VALUES PER BOREHOLE

BH NO.	DATE	Maximum CH ₄		Maximum CO ₂		Min O ₂	Max SS Flow	Baro	Maximum Q_{hg}		CS No.
		CH ₄ peak	CH ₄ SS	CO ₂ peak	CO ₂ SS				CH ₄	CO ₂	
MBH01		0.1	0.1	2.6	2.6	18.9	0.1		0.0001	0.0026	CS1
WS1		0.1	0.1	2.1	2.1	17.9	0.1		0.0001	0.0021	CS1
WS2		0.1	0.1	2.5	2.5	19.5	0.1		0.0001	0.0025	CS1
WS3		0.1	0.1	2.1	2.1	18.8	0.1		0.0001	0.0021	CS1
WS4		0.1	0.1	2.2	2.2	17.9	0.1		0.0001	0.0022	CS1
WS5		0.1	0.1	3.6	3.6	15.8	0.1		0.0001	0.0036	CS1
WS6		0.1	0.1	2	2	17.2	0.1		0.0001	0.0020	CS1
WS7		0.1	0.1	3.5	3.5	16.9	0.1		0.0001	0.0035	CS1

WORST-CASE Q_{hg} CHECK FOR SITE (BS8485 Section 6.3.7.4)

BH NO.	DATE	Maximum CH ₄		Maximum CO ₂		Min O ₂	Max SS Flow	Baro	Maximum Q_{hg}		CS No.
		CH ₄ peak	CH ₄ SS	CO ₂ peak	CO ₂ SS				CH ₄	CO ₂	
ALL		0.1	0.1	3.6	3.6	13.4	0.1		0.0001	0.0036	CS1

APPENDIX O

RADON REPORT

Glenn Pendry
BDW Southern Counties
28 Meadowview Road
Epsom
KT19 9UA

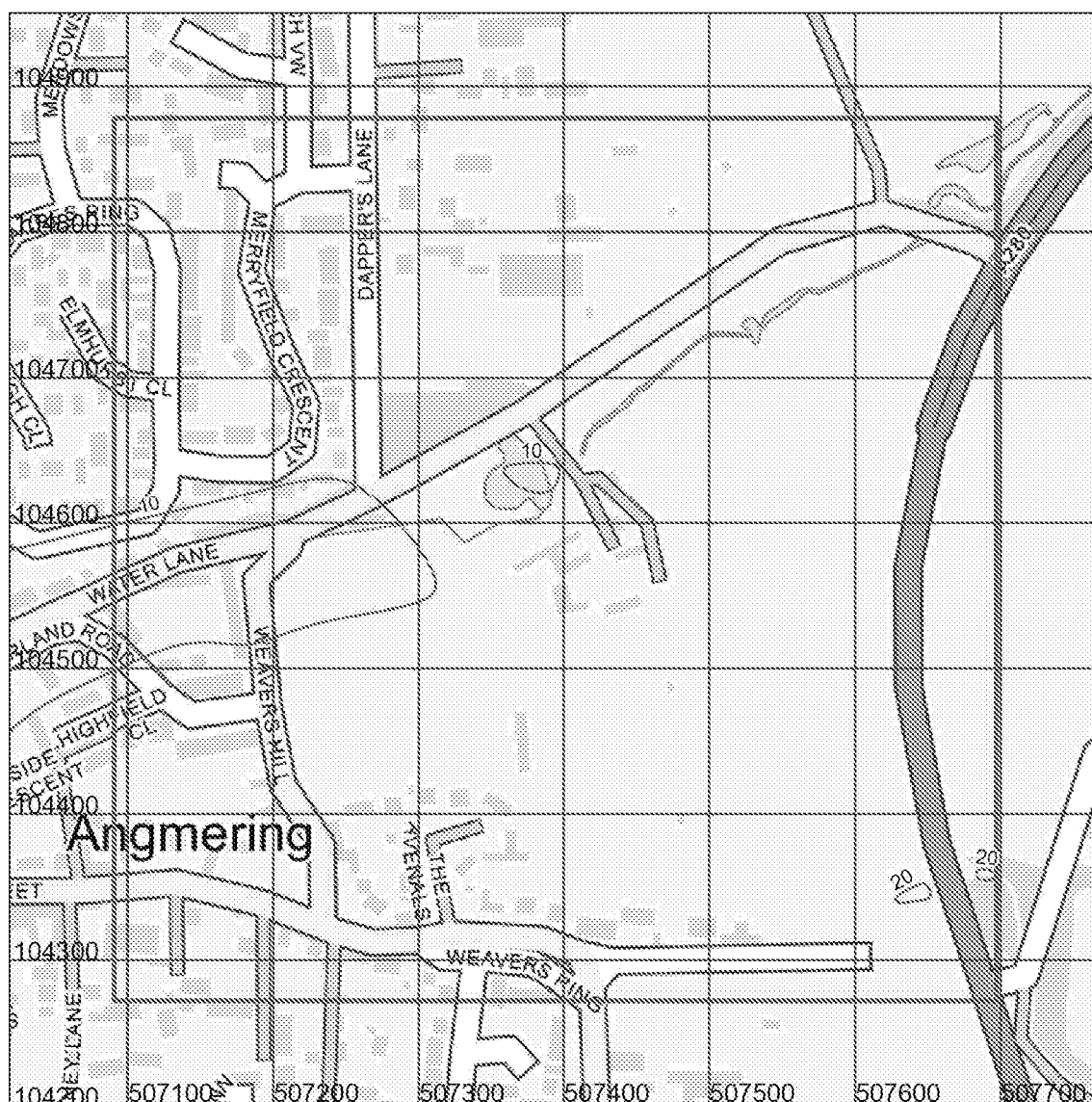
Radon Report

Advisory report on the requirement for radon protective measures in new buildings, conversions and extensions to existing buildings. The report also indicates whether a site is located within a radon Affected Area

Report Id: BGS_313682/18183

Client reference: H8150/GP

Search location



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Search location indicated in red

Site Address:

AVENALS BARN
WATER LANE
ANGMERING
LITTLEHAMPTON
BN16 4EP

This report describes a site located at the National Grid Reference obtained from Ordnance Survey AddressPoint.

Note that for sites of irregular shape, this point may lie outside the site boundary. Where the client has submitted a site plan the assessment will be based on the area given.

Date: 03 December 2020
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BGS_313682/18183

Page: 2 of 8
BGS Report No:

Radon Report: UK

When extensions are made to existing buildings in high radon areas, or new buildings are constructed in these areas, the Building Regulations for England, Wales, Scotland and Northern Ireland require that protective measures are taken against radon entering the building.

This report provides information on whether radon protective measures are required. Depending on the probability of buildings having high radon levels, the Regulations may require either:

1. No protective measures
2. Basic protective measures
3. Full protective measures

This is an advisory report on the requirement for radon protective measures in new buildings, conversions and extensions. The report also indicates whether a site is located within a radon Affected Area

Requirement for radon protective measures

The determination below follows advice in *BR211 Radon: Guidance on protective measures for new buildings (2015 edition)*, which also provides guidance on what to do if the result indicates that protective measures are required.

Is the property in an area where radon protective measures are required for new buildings or extensions to existing ones as described in publication BR211 (2015 edition) Radon: Guidance on protective measures for new buildings?

BASIC RADON PROTECTIVE MEASURES ARE REQUIRED FOR THE REPORT AREA.

More details of the protective measures required are available in *BR211 Radon: Guidance on protective measures for new buildings (2015 Edition)*. Additional information and guidance is available from the Building Research Establishment website (<http://www.bre.co.uk/radon/>).

Whether or not the radon level in a building is above or below the radon Action Level can only be established by having the building tested. The PHE provides a radon testing service which can be accessed at www.ukradon.org or by telephone [REDACTED]

If you require further information or guidance, you should contact your local authority building control officer or approved inspector.

Radon Affected Area



% Homes estimated to be at or above the action level
0-1%
1-3%
3-5%
5-10%
10-30%
30-100%

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Scale: 1:10 000 (1cm = 100 m)
Search area indicated in red

Is the property in a radon Affected Area as defined by Public Health England (PHE) and if so what percentage of homes are estimated to be above the Action Level? YES

Additional Information

THE PROPERTY IS IN A RADON AFFECTED AREA WHERE 5 TO 10% OF HOMES ARE ESTIMATED TO BE AT OR ABOVE THE ACTION LEVEL.

PHE recommends a radon 'Action Level' of 200 Becquerels per cubic metre of air (Bq m^{-3}) for the annual average of the radon gas concentration in a home. Where 1% or more of homes are estimated to exceed the Action Level the area should be regarded as a radon Affected Area.

This report informs you whether the property is in a radon Affected Area and the percentage of homes that are estimated to be at or above the radon Action Level at this location. Being in an Affected Area does not necessarily mean there is a radon problem in the property; the only way to find out whether the radon level is above or below the Action Level is to carry out a radon measurement.

PHE advises that radon gas should be measured in all properties within radon Affected Areas and that homes with radon levels above the Action Level (200 Bq m^{-3}) should be remediated. Householders with levels between the Target Level (100 Bq m^{-3}) and Action Level should seriously consider reducing their radon level, especially if they are at greater risk, such as if they are current or ex smokers. Whether or not a home is in fact above or below the Action Level or Target Level can only be established by having the building tested. PHE provides a validated radon testing service which can be accessed at www.ukradon.org.

The information in this report provides an answer to one of the standard legal enquiries on house purchase in England and Wales, known as Law Society CON29 Enquiries of the Local Authority (2016); 3.14 Radon Gas: Do records indicate that the property is in a "Radon Affected Area" as identified by PHE. The data can also be used to advise house buyers and sellers in Scotland and Northern Ireland.

If you are buying a new build property in a Radon Affected Area, you should ask the builder whether radon protective measures were incorporated in the construction of the property.

If you are buying a currently occupied property in a radon Affected Area, you should ask the present owner whether radon levels have been measured in the property. If they have, ask whether the results were above the radon Action Level and if so, whether remedial measures were installed, radon levels were re-tested, and if the results of re-testing confirmed the effectiveness of the measures.

Further information on radon is available from PHE at www.ukradon.org.

What is radon?

Radon is a naturally occurring radioactive gas, which is produced by the radioactive decay of radium which, in turn, is derived from the radioactive decay of uranium. Uranium is found in small quantities in all soils and rocks, although the amount varies from place to place. Radon released from rocks and soils is quickly diluted in the atmosphere. Concentrations in the open air are normally very low and do not present a hazard. Radon that enters enclosed spaces such as some buildings (particularly basements), caves, mines, and tunnels may reach high concentrations in some circumstances. The construction method and degree of ventilation will influence radon levels in individual buildings. A person's exposure to radon will also vary according to how particular buildings and spaces are used.

Inhalation of the radioactive decay products of radon gas increases the chance of developing lung cancer. If individuals are exposed to high concentrations for significant periods of time, there may be cause for concern. In order to limit the risk to individuals, the Government has adopted an Action Level for radon in homes of 200 becquerels per cubic metre (Bq m^{-3}). The Government advises householders that, where the radon level exceeds the Action Level, measures should be taken to reduce the concentration.

Radon in workplaces

The Ionising Radiation Regulations, 1999, require employers to take action when radon is present above a defined level in the workplace. Advice may be obtained from your local Health and Safety Executive Area Office or the Environmental Health Department of your local authority. The BRE publishes a guide (BR293): **Radon in the workplace**. BRE publications may be obtained from the BRE Bookshop, [REDACTED]

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