



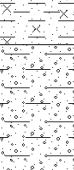
Arisings from WS06



Arisings from WS07

APPENDIX D – Exploratory Logs

Exploratory Logs

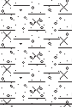
 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA Tel: 01306 646510 www.leapenvironmental.com				Trial Pit Log				Trialpit No TP01 Sheet 1 of 1	
Project Name: Land North of Lee's Yard				Project No. LP2616		Co-ords: - Level:		Date 09/08/2021	
Location: Lidsey Road, Woodgate, West Sussex, PO20 3SU				Dimensions (m): 1.8 		Scale 1:25		Logged LS	
Client: Thakeham Partnerships Ltd				Depth 1.50					
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.15	ES	N=6	0.20			Grass over brown silty slightly sandy clay TOPSOIL with occasional fine sub-rounded to sub-angular flint gravel and rootlets.		
	0.40	ES				Firm light brown and orange silty slightly sandy CLAY with occasional fine sub-rounded flint gravel and rootlets. <i>Hand Pen at 0.4m = 145kPa</i>			
	0.70 - 1.00	B		0.65		Light brown and orange very clayey silty slightly sandy GRAVEL of fine to coarse sub-rounded flint.			
	1.10 - 1.50	B		1.10		Loose orange and light brown silty fine SAND.			
					1.50		End of pit at 1.50 m		
1 2 3 4 5									
Remarks: Trial pit terminated at 1.5m to allow for soakage test in gravel. Trial pit dry.									
Stability: Stable									

 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA Tel: 01306 646510 www.leapenvironmental.com				Trial Pit Log				Trialpit No TP02 Sheet 1 of 1	
Project Name: Land North of Lee's Yard				Project No. LP2616		Co-ords: - Level:		Date 09/08/2021	
Location: Lidsey Road, Woodgate, West Sussex, PO20 3SU						Dimensions (m): 1.8 		Scale 1:25	
Client: Thakeham Partnerships Ltd						Depth 1.20		Logged LS	
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
▼	0.10	ES	N=5	0.20		 Grass over greyish brown silty slightly sandy clay TOPSOIL with occasional fine sub-rounded flint gravels and rootlets.	1 2 3 4 5		
	0.50	D		0.60	 Firm orange and light brown silty sandy slightly gravelly CLAY with rootlets and occasional roots. Gravel is fine to medium sub-rounded of flint. <i>Hand Pen at 0.3m = 205kPa</i>				
	0.80 - 1.20	B		 Loose orange and grey slightly silty gravelly fine to coarse SAND with occasional cobbles. Gravel is fine to coarse sub-rounded of flint.					
	End of pit at 1.20 m								
Remarks: Trial pit terminated at 1.2m to allow soakage test in sand. Groundwater seepage from 1.2m bgl. Trial pit collapsing from base of pit up to 0.7m bgl.									
Stability: Unstable									



 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA Tel: 01306 646510 www.leapenvironmental.com				Trial Pit Log				Trialpit No TP03 Sheet 1 of 1		
Project Name: Land North of Lee's Yard				Project No. LP2616		Co-ords: - Level:		Date 09/08/2021		
Location: Lidsey Road, Woodgate, West Sussex, PO20 3SU						Dimensions (m): 1.8 		Scale 1:25		
Client: Thakeham Partnerships Ltd						Depth 1.80		Logged LS		
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
	Depth	Type	Results							
	0.10	ES	N=16	0.25		 Grass over brown silty sandy clay TOPSOIL with occasional fine sub-rounded flint gravels and rootlets.	1 2 3 4 5			
	0.50 - 0.80	D				 Firm to stiff orange, light brown and grey mottled silty slightly sandy CLAY with occasional fine to medium sub-rounded flint gravels. <i>Hand Pen at 0.3m = 155kPa</i> <i>Hand Pen at 0.5m = 225kPa</i>				
	1.10 - 1.40	D			1.00					 Firm orange and grey mottled silty very sandy CLAY with occasional fine sub-rounded flint gravels.
	1.60 - 1.80	B			1.50					 Medium dense orange, dark orange and grey slightly silty fine SAND.
					1.80					End of pit at 1.80 m
Remarks: Trial pit terminated at 1.8m to allow for soakage test in sand. Groundwater seepage at 1.8m.										
Stability: Stable										



 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA Tel: 01306 646510 www.leapenvironmental.com				Trial Pit Log				Trialpit No TP04 Sheet 1 of 1	
Project Name: Land North of Lee's Yard				Project No. LP2616		Co-ords: - Level:		Date 09/08/2021	
Location: Lidsey Road, Woodgate, West Sussex, PO20 3SU						Dimensions (m): 1.8		Scale 1:25	
Client: Thakeham Partnerships Ltd						Depth 2.80		Logged LS	
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
				0.20		 Grass over greyish brown silty sandy clay TOPSOIL with rare fine sub-rounded flint gravels, roots and rootlets.	1 5		
	0.40	ES			 Firm light brown and orange silty sandy slightly gravelly CLAY with occasional rootlets. Gravel is fine to medium sub-rounded of flint. <i>Hand Pen at 0.4m = 175kPa</i> <i>From 0.5m: Becoming gravelly and dark grey and orange in colour.</i>				
	0.70 - 1.00	D			 <i>Hand Pen at 0.6m = 115kPa</i> <i>At 0.7m: Band of orange and greyish brown clayey sandy gravel.</i>				
	1.00 - 1.50	B	N=8	1.00	 Loose orange, dark orange and grey silty fine SAND.				
	1.80 - 2.20	B		1.80	 Orange and brown silty very gravelly slightly cobbly fine to coarse SAND. Gravel is fine to coarse rounded to sub-angular of flint.				
	2.50 - 2.80	D		2.40	 Firm dark purpleish grey silty CLAY. <i>At 2.4m: Remnant roots present.</i> <i>Hand Pen at 2.5m = 145kPa</i>				
				2.80		 <i>At 2.7m Band of dark grey fine to coarse sand.</i> End of pit at 2.80 m			
Remarks: Groundwater seepage from 1.1m bgl. Trial pit collapsing from base of pit up to 1.0m bgl.									
Stability: Unstable									



 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA Tel: 01306 646510 www.leapenvironmental.com				Trial Pit Log				Trialpit No TP05 Sheet 1 of 1	
Project Name: Land North of Lee's Yard				Project No. LP2616		Co-ords: - Level:		Date 09/08/2021	
Location: Lidsey Road, Woodgate, West Sussex, PO20 3SU						Dimensions (m): 1.8 		Scale 1:25	
Client: Thakeham Partnerships Ltd						Depth 2.80		Logged LS	
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
▼	0.20	ES		0.25			Grass over greyish brown silty sandy clay TOPSOIL with rare fine sub-rounded flint gravels, roots and rootlets.		
	0.70 - 1.00	B		0.70			Firm greyish brown and orange silty very sandy slightly gravelly CLAY. Gravel is fine to medium sub-rounded of flint and occasionally fine to coarse sub-angular of chalk.		
	1.50 - 1.80	B		1.50			Orange and brown silty fine SAND.		
	2.20 - 2.50	D		1.90			Firm to stiff dark purpleish grey silty CLAY.		
	2.80			2.80			Hand Pen at 2m = 80kPa		
							Hand Pen at 2.3m = 185kPa		
							Hand Pen at 2.6m = 195kPa		
							End of pit at 2.80 m		
Remarks: Groundwater seepage from 1.2m bgl. Trial pit collapsing from base of pit up to 0.5m bgl.									
Stability: Unstable									



 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA Tel: 01306 646510 www.leapenvironmental.com				Trial Pit Log				Trialpit No TP06 Sheet 1 of 1	
Project Name: Land North of Lee's Yard				Project No. LP2616		Co-ords: - Level:		Date 09/08/2021	
Location: Lidsey Road, Woodgate, West Sussex, PO20 3SU				Dimensions (m): 1.8		Scale 1:25		Logged LS	
Client: Thakeham Partnerships Ltd				Depth 3.00					

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
▼	0.10	ES					Cut grass over greyish brown silty sandy clay TOPSOIL with roots, rootlets and occasional fine sub-rounded flint gravels.	
	0.40	ES		0.35			Stiff yellowish brown silty sandy CLAY with rare fine sub-rounded flint gravel and rootlets. <i>Hand Pen at 0.4m = 335kPa</i>	
	0.70	D		0.65			Firm orange and brown mottled silty very sandy slightly gravelly CLAY. Gravel is fine to medium sub-rounded of flint and occasionally fine to coarse sub-angular of chalk. <i>Hand Pen at 0.8m = 115kPa</i>	1
	1.20 - 1.50	B		1.00			Orange and greyish brown slightly silty very gravelly fine to coarse SAND with occasional cobbles. Gravel is fine to coarse sub-rounded to sub-angular of flint.	
	1.80	D		1.50			Firm grey and orangeish brown mottled silty slightly gravelly CLAY with occasional rootlets. Gravel is fine to medium sub-rounded of flint. <i>Hand Pen at 1.6m = 145kPa</i> <i>From 1.8m: Becoming less gravelly with depth.</i>	2
	2.50	D		2.30			At 2.2m: Remnant roots present. Firm to stiff dark grey silty CLAY. <i>Hand Pen at 2.4m = 250kPa</i> <i>Hand Pen at 2.5m = 250kPa</i> <i>Hand Pen at 2.8m = 230kPa</i>	
			3.00			End of pit at 3.00 m		3
								4
								5

Remarks: Groundwater seepage from 1.3m bgl. Trial pit collapsing from base of pit up to 0.5m bgl.		
Stability: Unstable		

Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA Tel: 01306 646510 www.leapenvironmental.com				Trial Pit Log				Trialpit No TP07 Sheet 1 of 1	
Project Name: Land North of Lee's Yard				Project No. LP2616		Co-ords: - Level:		Date 09/08/2021	
Location: Lidsey Road, Woodgate, West Sussex, PO20 3SU						Dimensions (m): 1.8 		Scale 1:25	
Client: Thakeham Partnerships Ltd						Depth 2.50		Logged LS	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.25			Grass over brown silty sandy clay TOPSOIL with occasional fine sub-rounded flint gravels and rootlets.	1 2 3 4 5
	0.35	ES		0.45			Firm light yellowish brown silty slightly sandy CLAY with rare fine sub-rounded flint gravels.	
	0.50	D					Firm to stiff orange and grey mottled silty sandy CLAY with occasional fine to medium sub-rounded flint gravels and rootlets.	
							Hand Pen at 0.6m = 205kPa	
							Hand Pen at 0.8m = 235kPa	
			N=14				At 1.1m: Band of very gravelly clay.	
	1.40 - 1.80	B		1.30			Medium dense orange and grey slightly silty fine SAND.	
				2.50			End of pit at 2.50 m	

Remarks: Groundwater seepage from 1.8m bgl. Trial pit collapsing from base of pit up to 0.3m bgl.	
Stability: Unstable	

 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA Tel: 01306 646510 www.leapenvironmental.com				Trial Pit Log				Trialpit No TP08 Sheet 1 of 1	
Project Name: Land North of Lee's Yard				Project No. LP2616		Co-ords: - Level:		Date 09/08/2021	
Location: Lidsey Road, Woodgate, West Sussex, PO20 3SU						Dimensions (m): 1.8 		Scale 1:25	
Client: Thakeham Partnerships Ltd						Depth 2.80		Logged LS	
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10	ES	N=10	0.20		 Grass over greyish brown silty sandy clay TOPSOIL with occasional fine to medium sub-rounded flint gravels, roots and rootlets.	1 2 3 4 5		
				0.45		 Light brown clayey silty fine SAND with occasional fine to medium sub-rounded flint gravels and occasional rootlets.			
	0.70	D				 Stiff orange and grey mottled silty slightly sandy slightly gravelly CLAY. Gravel is fine to medium sub-rounded of flint. <i>Hand Pen at 0.7m = 235kPa</i> <i>Hand Pen at 0.9m = 265kPa</i>			
				1.35		 Medium dense light orange and grey silty fine SAND.			
	1.60 - 2.00	B				 Medium dense orange and purpleish grey silty gravelly medium to coarse SAND with occasional cobbles. Gravel is fine to coarse sub-rounded of flint.			
		2.50							
		2.80					End of pit at 2.80 m		
Remarks: Groundwater seepage at 1.5m bgl. Trial pit collapsing from base of pit up to 1.2m bgl.									
Stability: Unstable									



 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA Tel: 01306 646510 www.leapenvironmental.com				Borehole Log				Borehole No. WS01 Sheet 1 of 1	
Project Name: Land North of Lee's Yard				Project No. LP2616		Co-ords: -		Hole Type WS	
Location: Lidsey Road, Woodgate, West Sussex, PO20 3SU				Level:		Scale 1:20			
Client: Thakeham Partnerships Ltd				Dates: 27/08/2021 - 27/08/2021		Logged By LS			

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.25		Grass over brown silty sand TOPSOIL with rootlets and occasional roots.	1	
		0.40	ES		0.70		Yellowish brown very clayey silty fine SAND with occasional rootlets and rare fine sub angular flint.		
		0.80	D		1.00		Firm orange and grey silty fine sandy CLAY with rare fine sub angular flint. <i>Hand Pen at 0.7m =170kPa</i> <i>Hand Pen at 0.9m =170kPa</i> <i>Flint gravel becoming more frequent below 1m.</i>		
		1.00		N=2 (2,2/1,0,1,0)	1.20		Loose orangish brown slightly clayey sandy GRAVEL of fine to coarse sub rounded to sub angular flint.	2	
		2.00	D		1.80		Firm dark grey silty CLAY with fine selenite crystals. <i>Hand Pen at 1.9m =120kPa</i> <i>Hand Pen at 2.1m =150kPa</i> <i>Hand Pen at 2.3m =130kPa</i>		
		2.00		N=12 (1,2/3,3,3,3)					
		3.00	D		3.00			3	
		3.00		N=12 (1,2/3,2,3,4)			<i>Hand Pen at 3m =250kPa</i> <i>Hand Pen at 3.3m =230kPa</i> <i>Hand Pen at 3.7m =430kPa</i>		
		3.90	D		4.00				
		4.00		N=11 (2,2/2,3,3,3)	4.00		End of borehole at 4.00 m	4	

Remarks Borehole collapsing below 2mbgl. Monitoring well installed to 2mbgl, with 1m plain pipe with bentonite surround and 1m slotted with gravel surround.	
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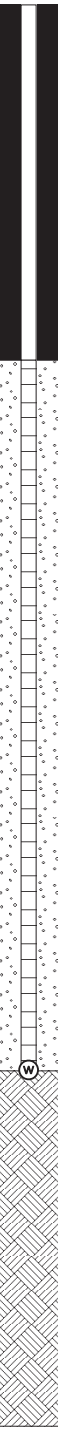
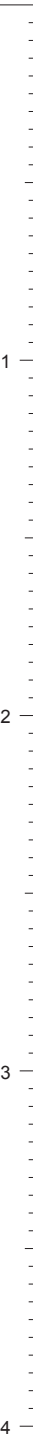
 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA Tel: 01306 646510 www.leapenvironmental.com				Borehole Log				Borehole No. WS02 Sheet 1 of 1	
Project Name: Land North of Lee's Yard				Project No. LP2616		Co-ords: -		Hole Type WS	
Location: Lidsey Road, Woodgate, West Sussex, PO20 3SU				Level:		Scale 1:20			
Client: Thakeham Partnerships Ltd				Dates: 27/08/2021 - 27/08/2021		Logged By LS			

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.30		Grass over brown silty sand TOPSOIL with rootlets and rare fine to medium sub angular flint.		
		0.60	D			Stiff yellowish brown silty sandy CLAY with occasional rootlets and rare fine to medium sub angular flint. <i>Hand Pen at 0.4m =240kPa</i> <i>Becoming orange mottled orange below 0.5m.</i> <i>Hand Pen at 0.6m =240kPa</i> <i>Thin band (1-2mm) of fine to medium grained sand at 0.7m.</i>			
		0.90 - 1.50	B		0.85		Loose yellowish brown silty fine to medium SAND with rare fine to medium sub angular flint.		
		1.00		N=6 (1,2/2,1,2,1)					
					1.70		Loose orangish brown silty fine to coarse sandy GRAVEL of fine to coarse rounded to sub angular flint. <i>Becoming sandy below 2m.</i>		
		2.00		N=6 (2,3/3,2,1,0)					
					2.30		Firm to stiff dark grey silty CLAY with selenite crystals. <i>Hand Pen at 2.7m =200kPa</i>		
		2.80	D						
		3.00		N=13 (2,2/2,3,3,5)			<i>Hand Pen at 3.3m =250kPa</i> <i>Hand Pen at 3.6m =400kPa</i>		
		3.80	D						
	4.00		N=12 (3,3/3,3,3,3)	4.00		End of borehole at 4.00 m			

Remarks
 Borehole remained stable, with a groundwater strike at 1.5mbgl. Monitoring well installed to 3mbgl, with 1m plain pipe with bentonite surround and 2m slotted pipe with gravel surround.

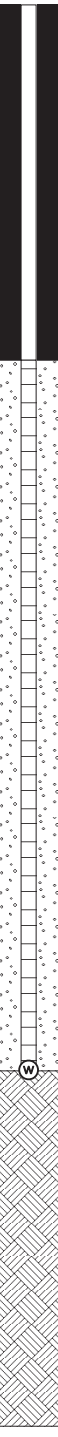


 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA Tel: 01306 646510 www.leapenvironmental.com				Borehole Log				Borehole No. WS03 Sheet 1 of 1	
Project Name: Land North of Lee's Yard				Project No. LP2616		Co-ords: -		Hole Type WS	
Location: Lidsey Road, Woodgate, West Sussex, PO20 3SU				Level:		Scale 1:20			
Client: Thakeham Partnerships Ltd				Dates: 27/08/2021 - 27/08/2021		Logged By LS			

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.25		Grass over dark greyish brown silty slightly gravelly sand TOPSOIL with rootlets and rare wood. Gravel is fine to medium sub angular flint and rare fine chalk fragments.		
		0.40	ES				 Stiff orangish and yellowish brown silty sandy CLAY with occasional fine sub angular flint and rootlets. <i>Clay is desiccated from 0.25 to 0.7m.</i>		
		0.80	D		 <i>Hand Pen at 0.7m =200kPa</i>				
		1.00	B	N=9 (2,3/2,3,2,2)	0.95	 Loose yellowish brown slightly silty gravelly medium to coarse SAND.			
		1.00 - 1.50					 <i>Becoming very gravelly below 1.5m.</i>		
					1.70	 Firm to stiff dark grey silty CLAY with selenite crystals.			
		2.00	D	N=13 (1,2/3,3,3,4)			 <i>Hand Pen at 1.9m =130kPa</i>		
		2.10			 <i>Old rootlets noted at 2.2m.</i>				
						 <i>Hand Pen at 2.5m =220kPa</i>			
							 <i>Hand Pen at 2.8m =230kPa</i>		
		3.00	D	N=13 (1,2/3,3,3,4)		 <i>Hand Pen at 3.1m =330kPa</i>			
		3.50					 <i>Hand Pen at 3.5m =400kPa</i>		
						 <i>Hand Pen at 3.8m =380kPa</i>			
		4.00	N=12 (2,3/2,3,3,4)	4.00					
End of borehole at 4.00 m								4	

Remarks Borehole remained dry and stable. Monitoring well installed to 3mbgl, with 1m plain pipe with bentonite surround and 2m slotted pipe with gravel surround.	
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 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA Tel: 01306 646510 www.leapenvironmental.com				Borehole Log				Borehole No. WS04 Sheet 1 of 1	
Project Name: Land North of Lee's Yard				Project No. LP2616		Co-ords: -		Hole Type WS	
Location: Lidsey Road, Woodgate, West Sussex, PO20 3SU				Level:		Scale 1:20			
Client: Thakeham Partnerships Ltd				Dates: 27/08/2021 - 27/08/2021		Logged By LS			

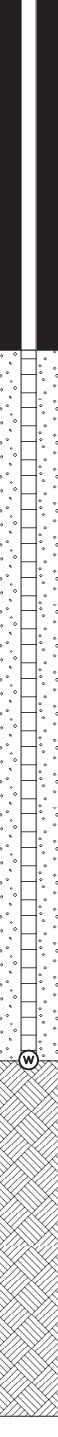
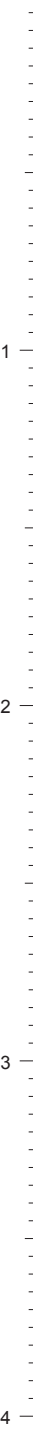
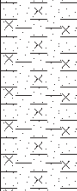
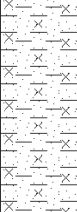
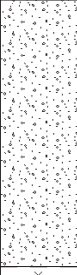
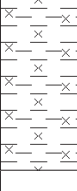
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES				Grass over brown slightly silty sandy TOPSOIL with rootlets.		
					0.25				
		0.45	ES		0.50		Yellowish brown slightly silty slightly gravelly SAND. Gravel is fine to medium sub angular flint with rare fine sub angular chalk fragments.		
		0.80	D				Stiff orangish brown mottled brown silty sandy CLAY with rare fine sub angular flint and rootlets. <i>Hand Pen at 0.6m =240kPa</i> <i>Becoming very gravelly below 0.7m.</i>		
		1.00		N=6 (2,2/2,1,2,1)	0.95		Loose to medium dense orangish brown and yellowish brown fine to medium SAND.	1	
		1.20 - 2.00	B						
		2.00		N=11 (2,1/2,3,3,3)				2	
					2.70		Becoming greyish brown in colour and generally coarser 2.4m.		
		3.00		N=9 (2,1/2,2,3,2)	3.00		Loose orangish brown sandy GRAVEL of fine to coarse sub angular flint.	3	
		3.50	D				Firm to stiff dark grey silty CLAY with selenite crystals. <i>Hand Pen at 3.1m =210kPa</i> <i>Hand Pen at 3.4m =220kPa</i> <i>Hand Pen at 3.7m =280kPa</i>		
	4.00		N=15 (2,2/2,4,4,5)	4.00			4		

End of borehole at 4.00 m

Remarks
 Borehole remained stable, with a groundwater strike at 2mbgl. Monitoring well installed to 3mbgl, with 1m plain pipe with bentonite surround and 2m slotted pipe with gravel surround.



 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA Tel: 01306 646510 www.leapenvironmental.com				Borehole Log				Borehole No. WS05 Sheet 1 of 1	
Project Name: Land North of Lee's Yard				Project No. LP2616		Co-ords: -		Hole Type WS	
Location: Lidsey Road, Woodgate, West Sussex, PO20 3SU				Level:		Scale 1:20			
Client: Thakeham Partnerships Ltd				Dates: 27/08/2021 - 27/08/2021		Logged By LS			

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.15	ES		0.25		Grass over brown slightly silty sand TOPSOIL with rootlets.		
		0.40	ES						Stiff yellow, orange and greyish brown silty sandy CLAY with occasional rootlets.
		0.80	D		1.40		<i>Hand Pen at 0.8m =340kPa</i>		
		1.00		N=13 (2,2/2,3,4,4)			<i>Becoming grey and slightly gravelly with fine to medium sub angular flints from 1m.</i>		
		1.20	D				<i>Becoming very sandy below 1.3m.</i>		
		1.50 - 2.50	B				Very loose light brown fine SAND.		
		2.00		N=2 (0,0/1,0,1,0)	2.75		Loose light brown slightly gravelly medium to coarse SAND. Gravel is fine to medium sub angular flint with shell fragments.		
		3.00		N=6 (5,3/2,2,1,1)			<i>Becoming grey and very gravelly below 3m.</i>		
									Firm dark grey silty CLAY with fine selenite crystals. <i>Hand Pen at 3.6m =120kPa</i>
			4.00		N=13 (5,4/3,4,3,3)	4.00			End of borehole at 4.00 m

Remarks Borehole remained stable, with a groundwater strike at 1.8mbgl. Monitoring well installed to 3mbgl, with 1m plain pipe with bentonite surround and 2m slotted pipe with gravel surround.	
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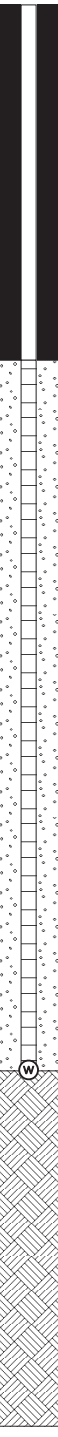
 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA Tel: 01306 646510 www.leapenvironmental.com				Borehole Log				Borehole No. WS06 Sheet 1 of 1	
Project Name: Land North of Lee's Yard				Project No. LP2616		Co-ords: -		Hole Type WS	
Location: Lidsey Road, Woodgate, West Sussex, PO20 3SU				Level:		Scale 1:20			
Client: Thakeham Partnerships Ltd				Dates: 27/08/2021 - 27/08/2021		Logged By LS			

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.15	ES		0.30		Grass over brown silty sand TOPSOIL with rootlets and rare fine sub angular flint.		
							Stiff light brown silty sandy CLAY with rare fine sub angular flint and occasional rootlets.		
							Hand Pen at 0.5m =330kPa		
							Becoming slightly more gravelly below 0.6m.		
							Becoming very sandy below 0.8m.		
		1.00 1.00	D	N=7 (1,2/2,1,2,2)	1.30		Hand Pen at 1.1m =100kPa	1	
		1.50 - 2.00	B				Medium dense orangish brown mottled yellowish brown slightly silty fine SAND.		
		2.00		N=14 (1,2/2,4,4,4)	2.50		Loose orangish brown and light brown slightly gravelly medium to coarse SAND. Gravel is fine to coarse sub rounded to sub angular flint.	2	
		3.00 3.00	D	N=5 (2,1/1,2,1,1)	3.80		Stiff dark grey slightly silty CLAY.	3	
		4.00		N=8 (2,2/2,2,2,2)	4.00		Hand Pen at 3.9m =230kPa	4	
						End of borehole at 4.00 m			

Remarks
 Borehole remained stable, with a groundwater strike at 2.1mbgl. Monitoring well installed to 3mbgl, with 1m plain pipe with bentonite surround and 2m slotted pipe with gravel surround.



 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA Tel: 01306 646510 www.leapenvironmental.com				Borehole Log				Borehole No. WS07 Sheet 1 of 1	
Project Name: Land North of Lee's Yard				Project No. LP2616		Co-ords: -		Hole Type WS	
Location: Lidsey Road, Woodgate, West Sussex, PO20 3SU				Level:		Scale 1:20			
Client: Thakeham Partnerships Ltd				Dates: 27/08/2021 - 27/08/2021		Logged By LS			

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.05			0.05		Grass over brown gravelly sand TOPSOIL with abundant rootlets and gravel of fine to medium sub angular flint.		
		0.20	ES		0.30		Brown fine sandy gravel MADE GROUND with fragments of concrete, brick and gravel of fine to coarse rounded to sub angular flint.		
		0.40	ES				Very stiff yellowish brown silty very sandy CLAY with rare fine to medium sub angular flint.		
		0.60	D				Hand Pen at 0.5m =240kPa		
							Hand Pen at 0.8m =210kPa		
		1.00		N=6 (1,2/2,1,2,1)	1.00				1
		1.00 - 1.50	B				Loose to medium dense orangish brown mottled yellowish brown slightly silty fine SAND.		
		2.00		N=20 (10,12/5,5,5,5)				Sand is becoming coarser below 2m.	2
		2.30							
	2.50 - 3.00	B				Loose orangish brown and orange gravelly medium to coarse SAND with gravel of fine to coarse sub rounded to sub angular flint.			
	3.00		N=10 (2,1/2,2,3,3)	3.00			Firm to stiff dark grey slightly silty CLAY with fine selenite crystals.	3	
							Hand Pen at 3.2m =210kPa		
	3.50	D					Hand Pen at 3.5m =310kPa		
							Hand Pen at 3.8m =360kPa		
	4.00		N=11 (1,1/2,3,3,3)	4.00			End of borehole at 4.00 m	4	

Remarks Borehole remained dry and stable. Monitoring well installed to 3mbgl, with 1m plain pipe with bentonite surround and 2m slotted pipe with gravel surround.	
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APPENDIX E – Geotechnical Field Test Results

Geotechnical Field Test Results

Dynamic Cone CBR Test

Nr Blows	S Blows	Penetration mm	S Pen. mm
0	0	50	50
I	1	50	100
I	2	50	150
I	3	50	200
I	4	50	250
0	4	50	300
I	5	50	350
I	6	50	400
I	7	50	450
0	7	50	500
I	8	50	550
I	9	50	600
I	10	50	650
I	11	50	700
I	12	50	750
I	13	50	800
I	14	50	850
I	15	50	900

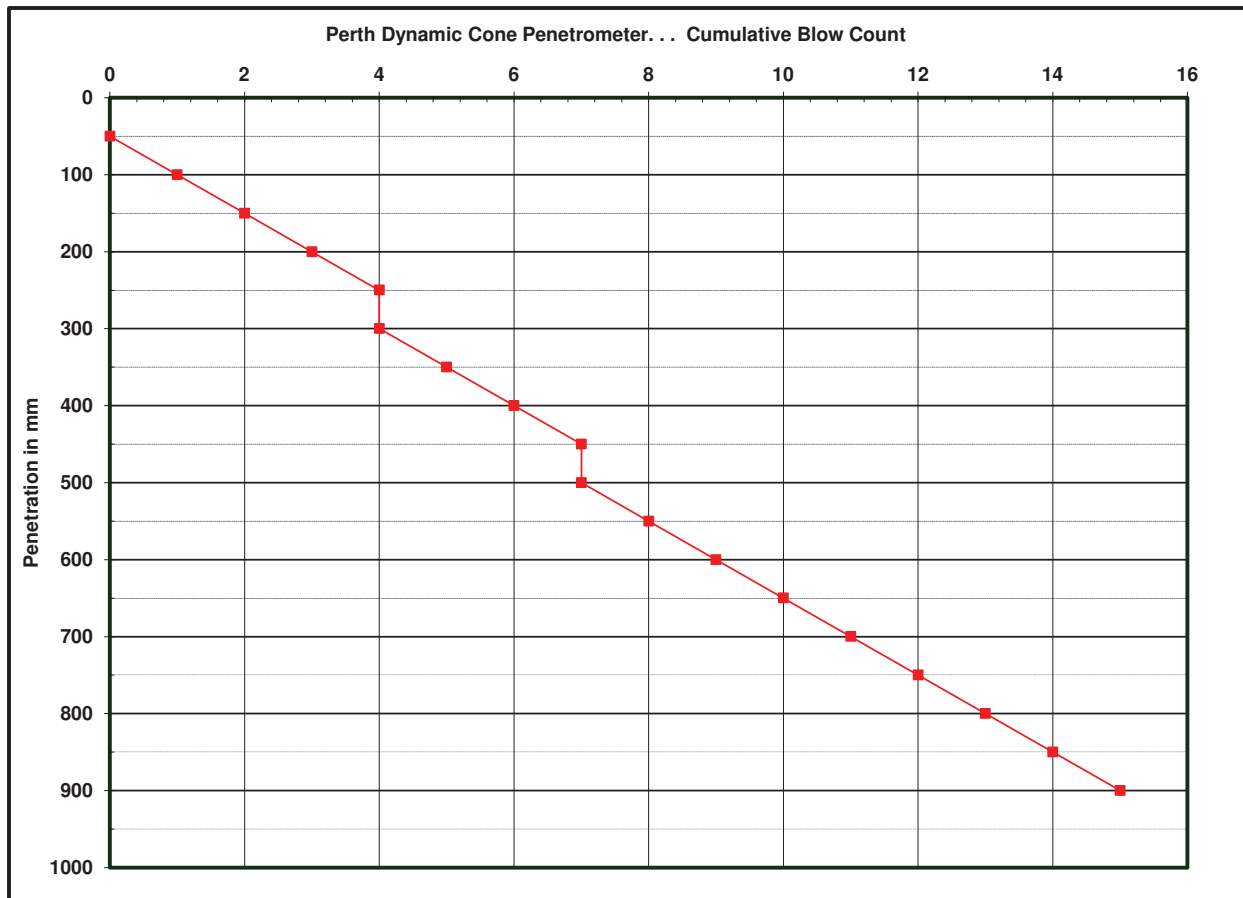
Land North of Lee's Yard Test Reference: - DCP01

Job Nr LP2616

Date 01-Oct-21

CBR VALUE CALCULATIONS

Initial S Pen mm	Final S Pen mm	Initial S Blows	Final S Blows	Pen/Blow mm	CBR TRRL	CBR KVH	CBR Value (%)
100	250	1	4	50.0	4.8	2.9	2.9
300	450	4	7	50.0	4.8	2.9	2.9
500	900	7	15	50.0	4.8	2.9	2.9



Tested by	LS	Checked		Approved	
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Site: Land North of Lee's Yard	Client: Thakeham Partnerships Ltd	Date: 01/10/2021
	Job No: LP2616	Test No: DCP01

Dynamic Cone CBR Test

Nr Blows	S Blows	Penetration mm	S Pen. mm
1	1	50	50
1	2	50	100
1	3	50	150
0	3	50	200
1	4	50	250
1	5	50	300
1	6	50	350
0	6	50	400
1	7	50	450
1	8	50	500
1	9	50	550
1	10	50	600
1	11	50	650
1	12	50	700
1	13	50	750
1	14	50	800
1	15	50	850
2	17	50	900

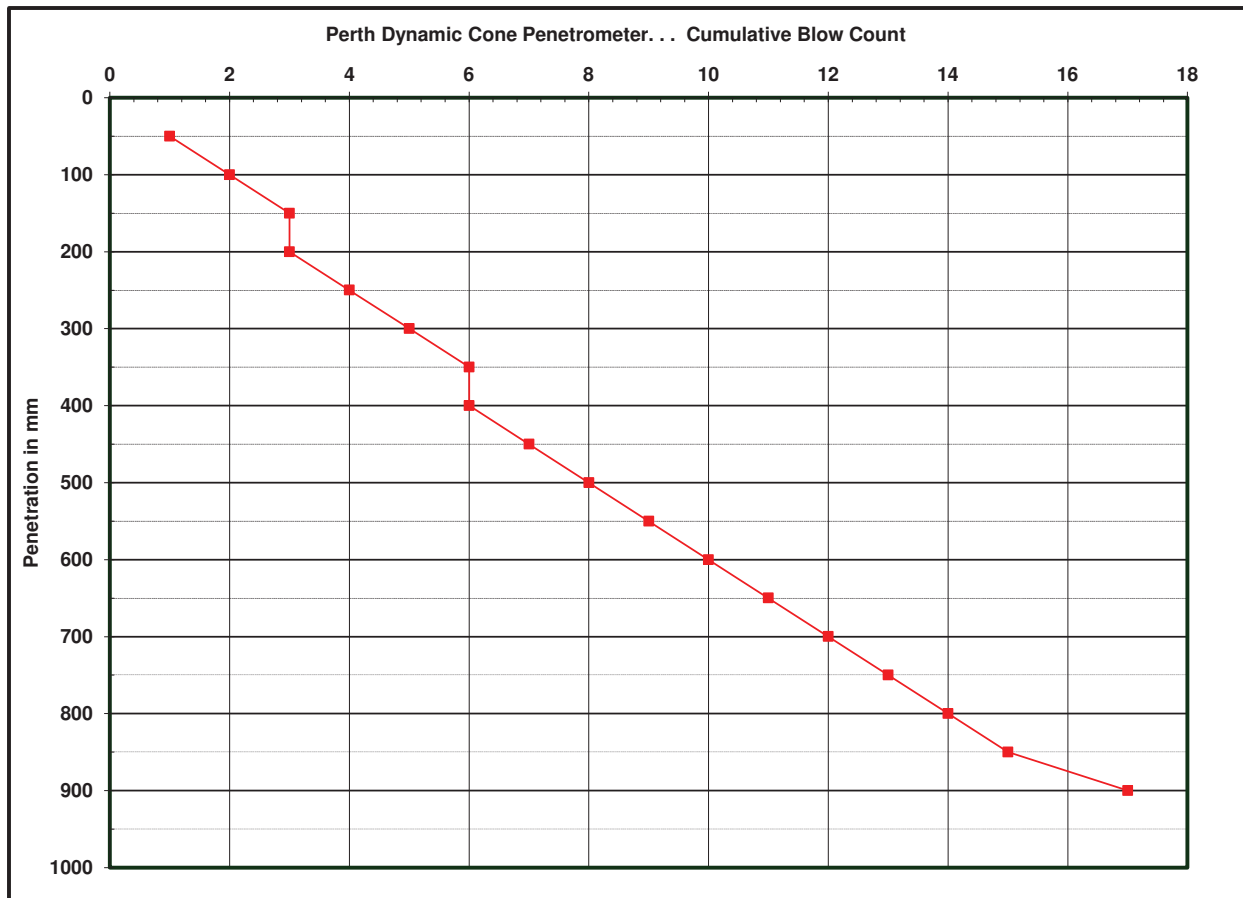
Land North of Lee's Yard Test Reference: - DCP02

Job Nr LP2616

Date 01-Oct-21

CBR VALUE CALCULATIONS

Initial S Pen mm	Final S Pen mm	Initial S Blows	Final S Blows	Pen/Blow mm	CBR TRRL	CBR KVH	CBR Value (%)
50	350	1	6	60.0	4.0	2.3	2.3
400	900	6	17	45.5	5.3	3.2	3.2



Tested by	LS	Checked		Approved	
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Site: Land North of Lee's Yard	Client: Thakeham Partnerships Ltd	Date: 01/10/2021
	Job No: LP2616	Test No: DCP02

Dynamic Cone CBR Test

Nr Blows	S Blows	Penetration mm	S Pen. mm
2	2	50	50
2	4	50	100
3	7	50	150
3	10	50	200
2	12	50	250
2	14	50	300
2	16	50	350
2	18	50	400
1	19	50	450
2	21	50	500
1	22	50	550
2	24	50	600
1	25	50	650
2	27	50	700
2	29	50	750
1	30	50	800
3	33	50	850
1	34	50	900

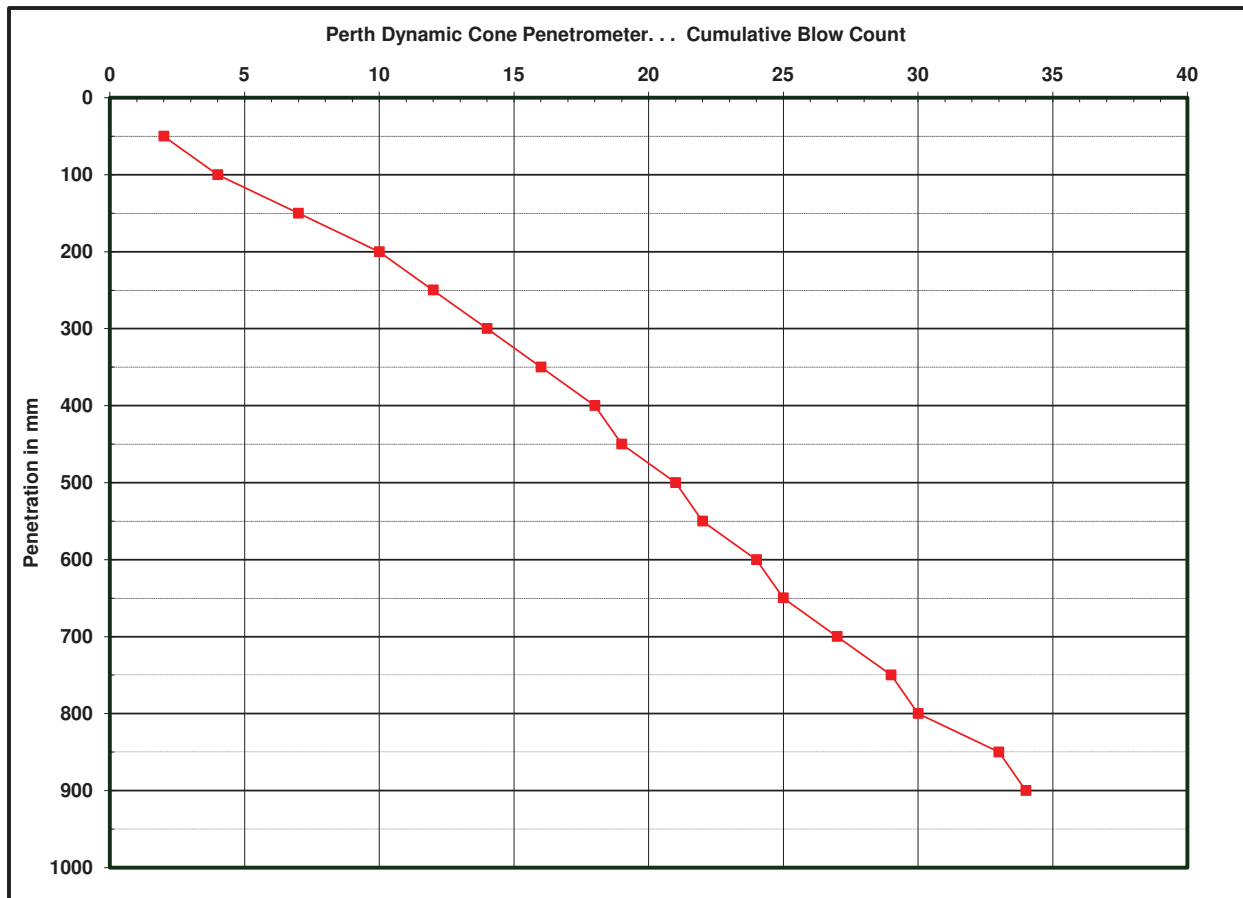
Land North of Lee's Yard Test Reference: - DCP03

Job Nr LP2616

Date 01-Oct-21

CBR VALUE CALCULATIONS

Initial S Pen mm	Final S Pen mm	Initial S Blows	Final S Blows	Pen/Blow mm	CBR TRRL	CBR KVH	CBR Value (%)
50	200	2	10	18.8	13.6	10.1	10.1
200	400	10	18	25.0	10.1	7.0	7.0
400	900	18	34	31.3	7.9	5.2	5.2



Tested by	LS	Checked		Approved	
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Site: Land North of Lee's Yard	Client: Thakeham Partnerships Ltd	Date: 01/10/2021
	Job No: LP2616	Test No: DCP03

Dynamic Cone CBR Test

Nr Blows	S Blows	Penetration mm	S Pen. mm
1	1	50	50
2	3	50	100
3	6	50	150
4	7	50	200
5	8	50	250
6	9	50	300
7	10	50	350
8	11	50	400
9	12	50	450
10	13	50	500
11	14	50	550
12	15	50	600
13	16	50	650
14	16	50	700
15	17	50	750
16	18	50	800
17	19	50	850
18	20	50	900

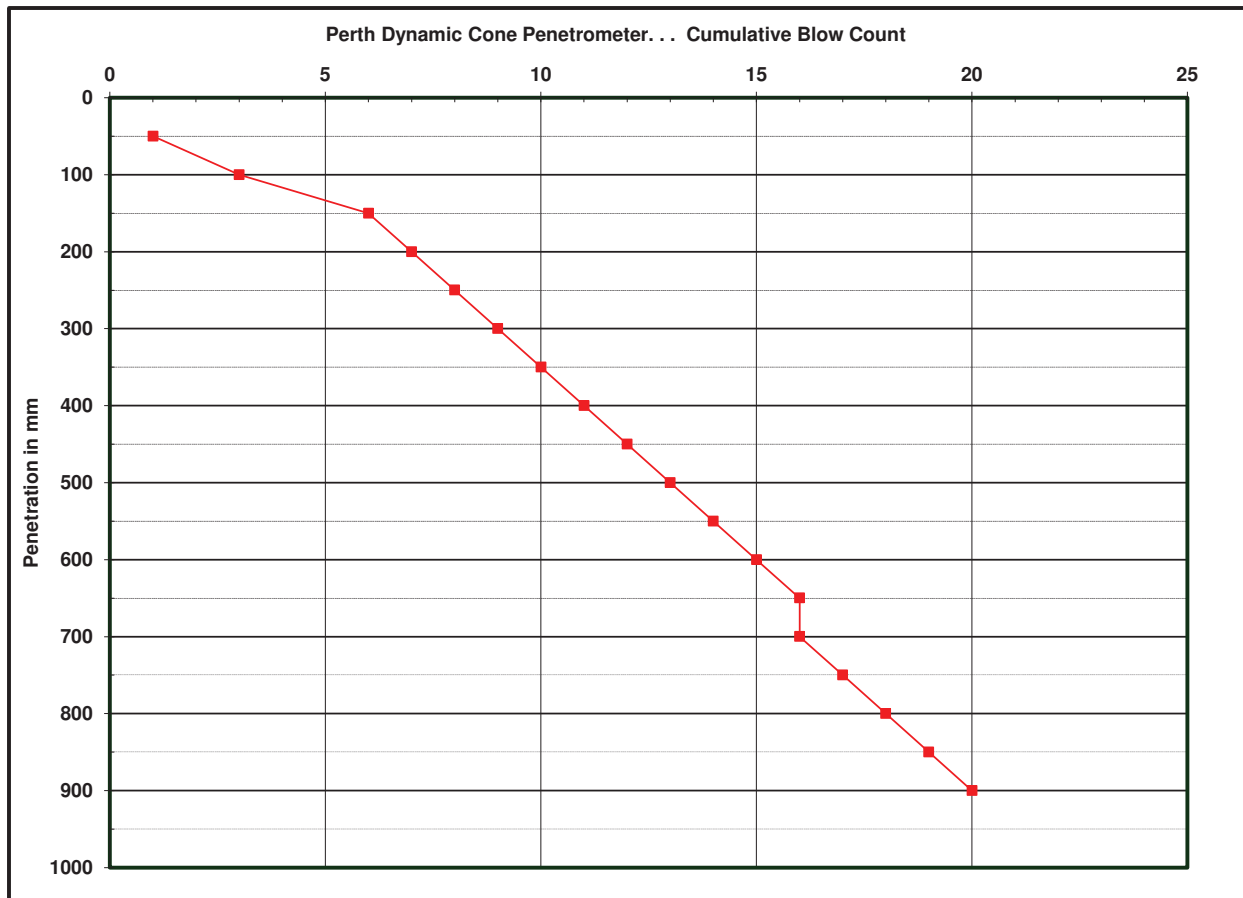
Land North of Lee's Yard Test Reference: - DCP04

Job Nr LP2616

Date 01-Oct-21

CBR VALUE CALCULATIONS

Initial S Pen mm	Final S Pen mm	Initial S Blows	Final S Blows	Pen/Blow mm	CBR TRRL	CBR KVH	CBR Value (%)
50	150	1	6	20.0	12.7	9.3	9.3
150	650	6	16	50.0	4.8	2.9	2.9
700	900	16	20	50.0	4.8	2.9	2.9



Tested by	LS	Checked		Approved	
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Site: Land North of Lee's Yard	Client: Thakeham Partnerships Ltd	Date: 01/10/2021
	Job No: LP2616	Test No: DCP04

Dynamic Cone CBR Test

Nr Blows	S Blows	Penetration mm	S Pen. mm
1	1	50	50
1	2	50	100
1	3	50	150
1	4	50	200
2	6	50	250
1	7	50	300
1	8	50	350
1	9	50	400
1	10	50	450
2	12	50	500
1	13	50	550
1	14	50	600
2	16	50	650
1	17	50	700
1	18	50	750
1	19	50	800
2	21	50	850
2	23	50	900

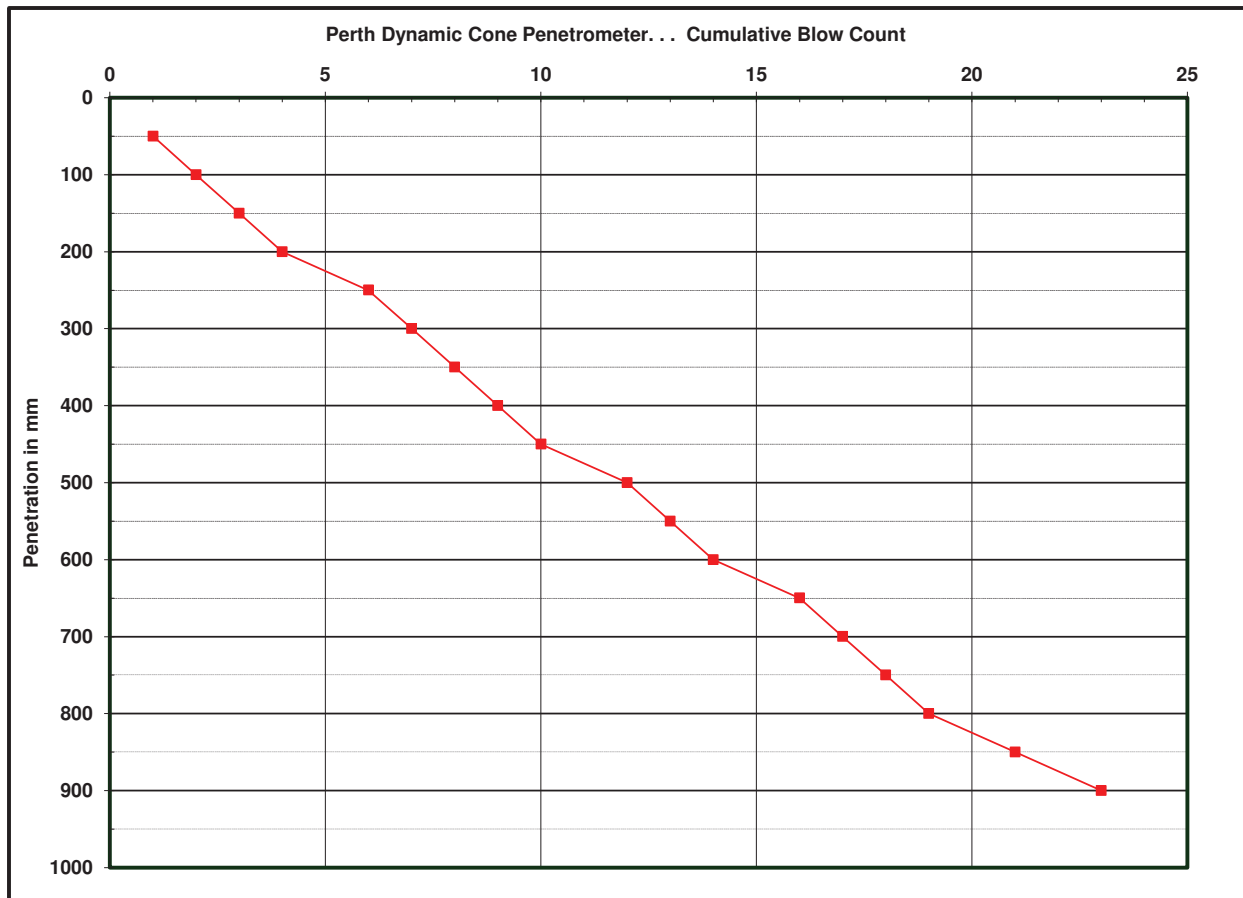
Land North of Lee's Yard Test Reference: - DCP05

Job Nr LP2616

Date 01-Oct-21

CBR VALUE CALCULATIONS

Initial S Pen mm	Final S Pen mm	Initial S Blows	Final S Blows	Pen/Blow mm	CBR TRRL	CBR KVH	CBR Value (%)
50	450	1	10	44.4	5.5	3.3	3.3
450	900	10	23	34.6	7.1	4.6	4.6



Tested by	LS	Checked		Approved	
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Site: Land North of Lee's Yard	Client: Thakeham Partnerships Ltd	Date: 01/10/2021
	Job No: LP2616	Test No: DCP05

Dynamic Cone CBR Test

Nr Blows	S Blows	Penetration mm	S Pen. mm
1	1	50	50
1	2	50	100
2	4	50	150
1	5	50	200
2	7	50	250
1	8	50	300
1	9	50	350
3	12	50	400
4	16	50	450
1	17	50	500
1	18	50	550
1	19	50	600
1	20	50	650
1	21	50	700
1	22	50	750
2	24	50	800
2	26	50	850
2	28	50	900

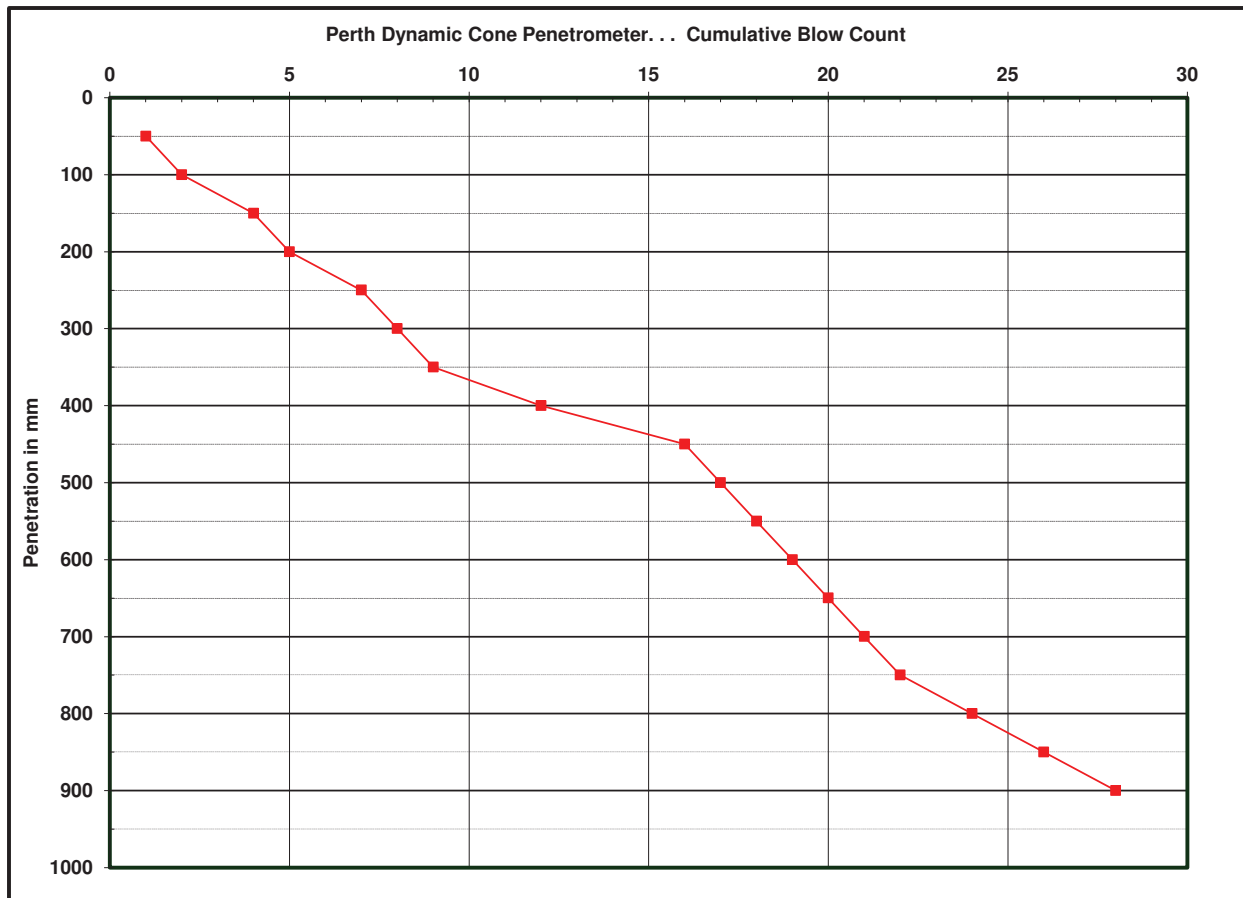
Land North of Lee's Yard Test Reference: - DCP06

Job Nr LP2616

Date 01-Oct-21

CBR VALUE CALCULATIONS

Initial S Pen mm	Final S Pen mm	Initial S Blows	Final S Blows	Pen/Blow mm	CBR TRRL	CBR KVH	CBR Value (%)
50	350	1	9	37.5	6.6	4.1	4.1
350	450	9	16	14.3	18.2	14.2	14.2
450	750	16	22	50.0	4.8	2.9	2.9
750	900	22	28	25.0	10.1	7.0	7.0



Tested by	LS	Checked		Approved	
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Site: Land North of Lee's Yard

Client: Thakeham Partnerships Ltd

Date: 01/10/2021

Job No: LP2616

Test No: DCP06

Dynamic Cone CBR Test

Nr Blows	S Blows	Penetration mm	S Pen. mm
1	1	50	50
2	3	50	100
2	5	50	150
1	6	50	200
2	8	50	250
2	10	50	300
1	11	50	350
1	12	50	400
1	13	50	450
1	14	50	500
1	15	50	550
1	16	50	600
1	17	50	650
2	19	50	700
1	20	50	750
1	21	50	800
1	22	50	850
1	23	50	900

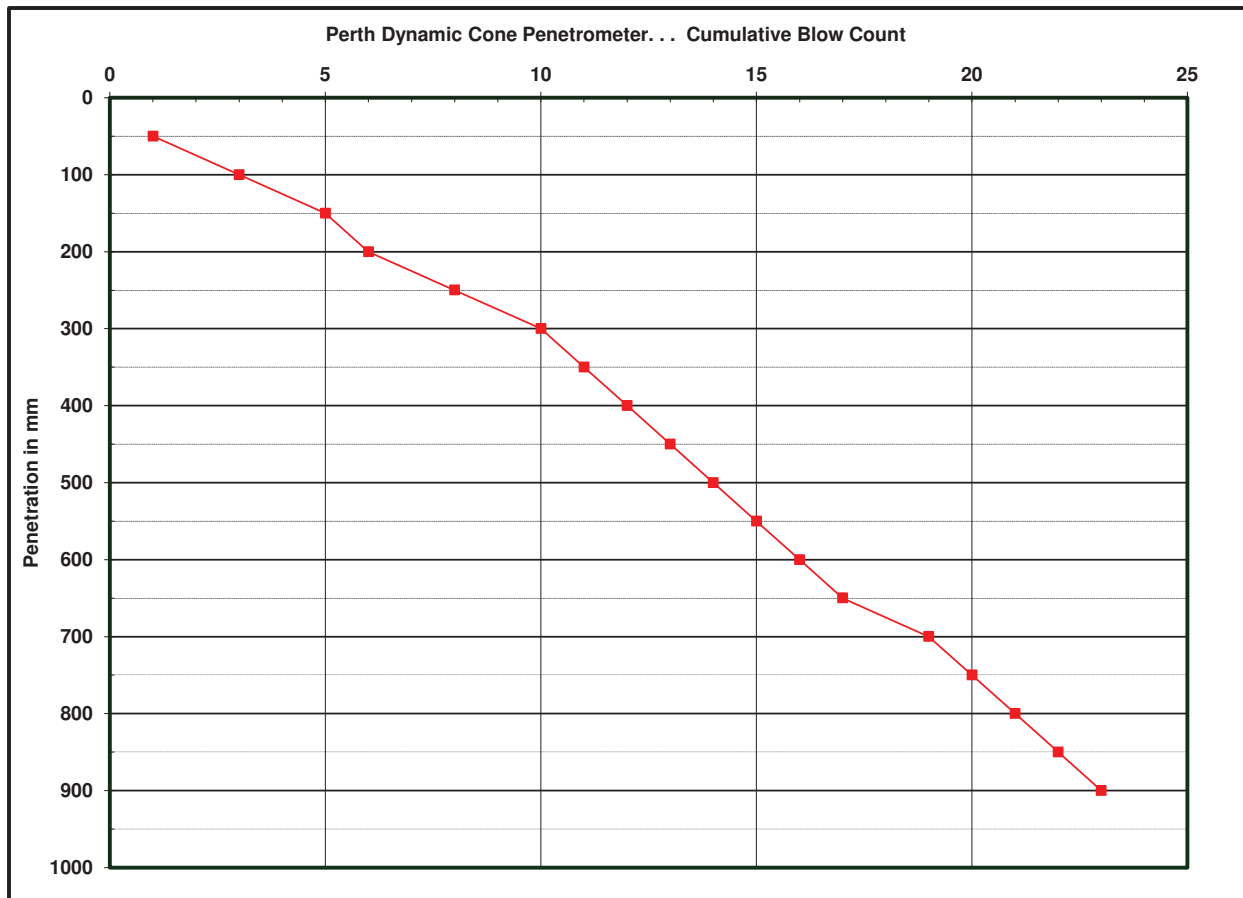
Land North of Lee's Yard Test Reference: - DCP07

Job Nr LP2616

Date 01-Oct-21

CBR VALUE CALCULATIONS

Initial S Pen mm	Final S Pen mm	Initial S Blows	Final S Blows	Pen/Blow mm	CBR TRRL	CBR KVH	CBR Value (%)
50	300	1	10	27.8	9.0	6.1	6.1
300	600	10	16	50.0	4.8	2.9	2.9
600	900	16	23	42.9	5.7	3.5	3.5



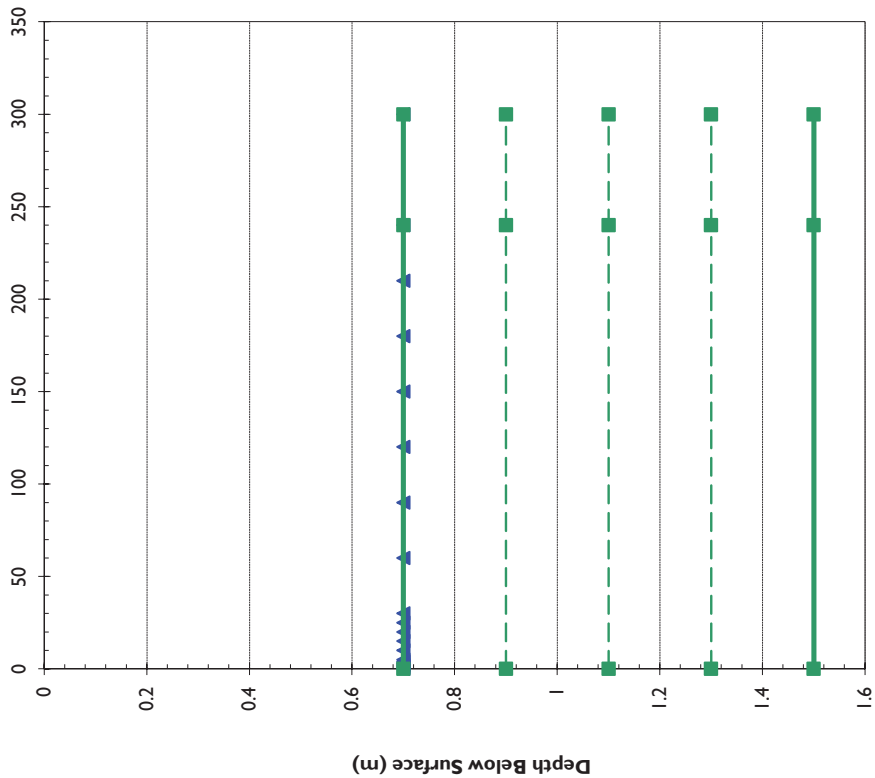
Tested by	LS	Checked		Approved	
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Site: Land North of Lee's Yard	Client: Thakeham Partnerships Ltd	Date: 01/10/2021
	Job No: LP2616	Test No: DCP07

BRE Digest 365 - Soakage Test

initial)

Filling to Max Water Depth (min)



Test Hole No: TP01
Test No: Test No I

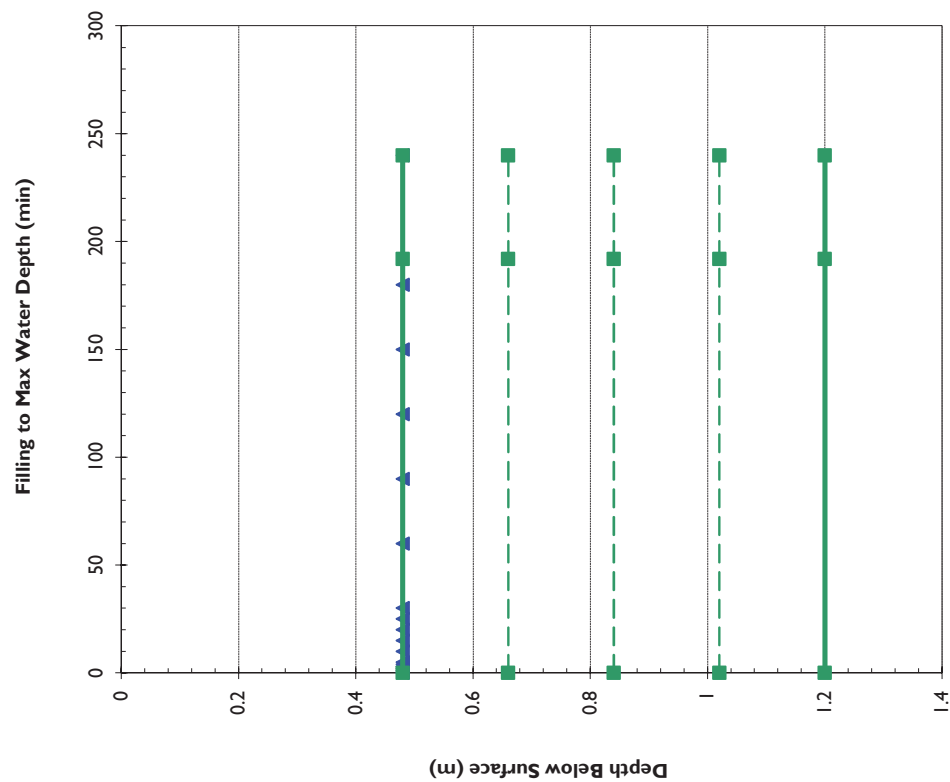


Pit Length (m)	1.8
Pit Width (m)	0.7
Depth to Pit Base (m)	1.5
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
Voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.7
Max Water Dropdown during Test (m)	0
Total Soakage Test Time (min)	300
Mean Internal Discharge Area (m2)	5.26
Discharge Rate (litre/min)	0
Soakage Rate (litre/m2/min)	0
BRE Soil Infiltration Rate (m/sec)	0

Comments:
Water level did not fall to 75% max water depth, calc
Result not compliant with BRE365 requirement since

Client: Thakeham Partnerships Ltd
Site: Land North of Lee's Yard
Tested By: Oakland SI
Test Date: 01/10/21

initial)



Test Hole No:	TP02
Test No:	Test No 1

Pit Length (m)	1.8
Pit Width (m)	0.6
Depth to Pit Base (m)	1.2
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	1.2
Depth to Top of Granular Fill (m)	
Voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.48
Max Water Dropdown during Test (m)	0
Total Soakage Test Time (min)	240
Mean Internal Discharge Area (m2)	4.536
Discharge Rate (litre/min)	0
Soakage Rate (litre/m2/min)	0
BRE Soil Infiltration Rate (m/sec)	0

Comments:

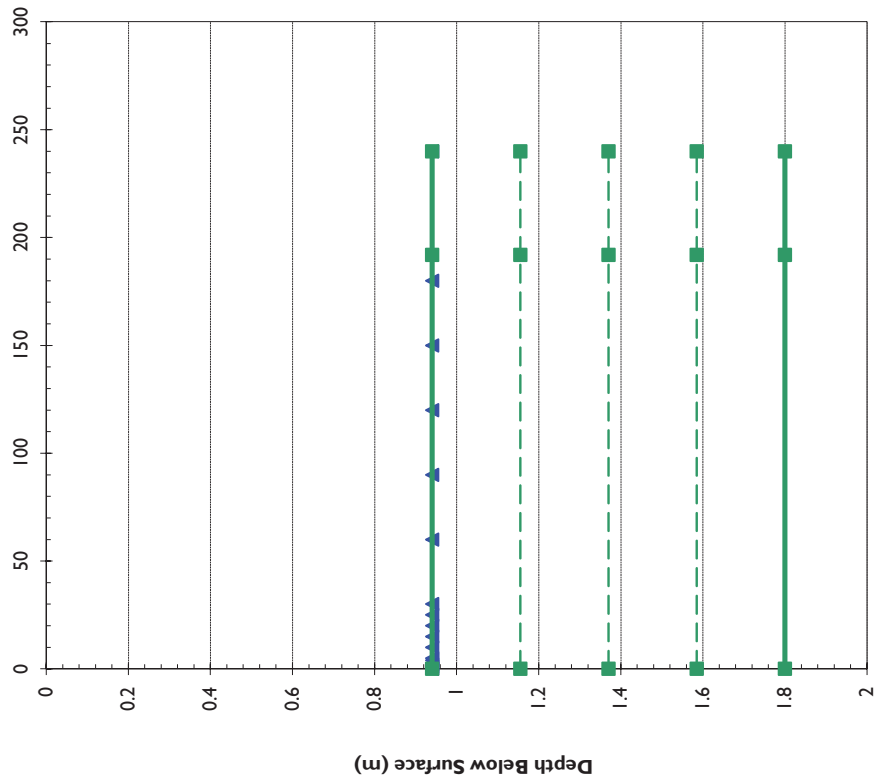
Water level did not fall to 75% max water depth, calc Result not compliant with BRE365 requirement since

Client:	Thakeham Partnerships Ltd
Site:	Land North of Lee's Yard
Tested By:	Oakland SI
Test Date:	01/10/21

BRE Digest 365 - Soakage Test

initial)

Filling to Max Water Depth (min)



Test Hole No: TP03
Test No: Test No I



Pit Length (m)	1.8
Pit Width (m)	0.6
Depth to Pit Base (m)	1.8
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
Voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.94
Max Water Dropdown during Test (m)	0
Total Soakage Test Time (min)	240
Mean Internal Discharge Area (m2)	5.208
Discharge Rate (litre/min)	0
Soakage Rate (litre/m2/min)	0
BRE Soil Infiltration Rate (m/sec)	0

Comments: Water level did not fall to 75% max water depth, calc Result not compliant with BRE365 requirement since

Client: Thakeham Partnerships Ltd
Site: Land North of Lee's Yard
Tested By: Oakland SI
Test Date: 01/10/21

APPENDIX F – Groundwater and Ground Gas Monitoring Records

Groundwater and
Ground Gas Monitoring
Records

Continuous Gas Monitoring Record								
Date	20/09/2021	Engineer	SH					
Project No	LP2616	Temp °C	21					
Site	Lees Yard	Ambient Pressure	1023					
WS01 Hole ID								
	Time	Flow (l/h)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)	
	00:00	0.0	0.2	0.0	20.7	2	0	
	00:15	0.0	0.2	2.5	19.3	2	0	
VOC peak (ppm)	Not Measured	00:30	0.0	0.2	2.5	19.1	2	0
		01:00	0.0	0.2	2.5	19.0	1	0
VOC steady (ppm)	Not Measured	01:30	0.0	0.2	2.5	19.1	1	0
		02:00	0.0	0.2	2.5	19.1	2	0
Borehole Depth (mbgl)	1.84	02:30	0.0	0.2	2.5	19.1	2	0
		03:00	0.0	0.2	2.5	19.1	1	0
Water level (mbgl)	1.2	03:30	0.0	0.2	2.5	19.1	1	0
		04:00	0.0	0.2	2.5	19.1	1	0
Borehole Pressure (mb)	1023	04:30	0.0	0.2	2.4	19.2	1	0
		05:00	0.0	0.2	2.3	19.3	1	0
		05:30	0.0	0.2	2.2	19.4	2	0
		06:00	0.0	0.2	2.1	19.5	2	0
		06:30	0.0	0.2	2.0	19.6	1	0
		07:00	0.0	0.2	1.9	19.7	1	0
		07:30	0.0	0.2	1.8	19.8	2	0
		08:00	0.0	0.2	1.7	19.8	2	0
		08:30	0.0	0.2	1.6	19.9	2	0
		09:00	0.0	0.2	1.5	20.0	1	0
		09:30	0.0	0.2	1.4	20.0	1	0
		10:00	0.0	0.2	1.4	20.0	1	0

Continuous Gas Monitoring Record								
Date	20/09/2021	Engineer	SH					
Project No	LP2616	Temp °C	21					
Site	Lees Yard	Ambient Pressure	1023					
WS03		Time	Flow (l/h)	CH ⁴ (%)	CO ² (%)	O ² (%)	CO (ppm)	H ² S (ppm)
		00:00	0.0	0.1	0.1	20.4	1	0
Hole ID		00:15	0.0	0.2	0.1	20.0	2	0
VOC peak (ppm)	Not Measured	00:30	0.0	0.2	1.3	19.7	2	0
		01:00	0.0	0.2	1.4	19.7	2	0
VOC steady (ppm)	Not Measured	01:30	0.0	0.2	1.5	19.6	1	0
		02:00	0.0	0.2	1.6	19.6	1	0
Borehole Depth (mbgl)	3.06	02:30	0.0	0.2	1.7	19.5	1	0
		03:00	0.0	0.2	1.9	19.5	1	0
Water level (mbgl)	1.57	03:30	0.0	0.2	2.0	19.4	1	0
		04:00	0.0	0.2	2.1	19.3	1	0
Borehole Pressure (mb)	1023	04:30	0.0	0.2	2.2	19.3	1	0
		05:00	0.0	0.2	2.3	19.2	1	0
		05:30	0.0	0.2	2.4	19.2	1	0
		06:00	0.0	0.2	2.5	19.1	1	0
		06:30	0.0	0.2	2.5	19.1	1	0
		07:00	0.0	0.2	2.5	19.1	1	0
		07:30	0.0	0.2	2.5	19.1	1	0
		08:00	0.0	0.2	2.5	19.1	1	0
		08:30	0.0	0.2	2.5	19.1	1	0
		09:00	0.0	0.2	2.5	19.1	1	0
		09:30	0.0	0.2	2.5	19.1	1	0
		10:00	0.0	0.2	2.5	19.1	1	0

Continuous Gas Monitoring Record								
Date	20/09/2021	Engineer	SH					
Project No	LP2616	Temp °C	21					
Site	Lees Yard	Ambient Pressure	1023					
WS04 Hole ID								
		Time	Flow (l/h)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)
		00:00	0.0	0.2	0.1	20.9	2	0
		00:15	0.0	0.2	0.1	21.0	4	0
VOC peak (ppm)	Not Measured	00:30	0.0	0.2	1.4	20.1	6	0
		01:00	0.0	0.2	1.4	20.0	2	0
VOC steady (ppm)	Not Measured	01:30	0.0	0.2	1.4	20.0	2	0
		02:00	0.0	0.2	1.4	20.1	2	0
Borehole Depth (mbgl)	1.96	02:30	0.0	0.2	1.4	20.1	2	0
		03:00	0.0	0.2	1.4	20.1	2	0
Water level (mbgl)	1.42	03:30	0.0	0.2	1.4	20.1	2	0
		04:00	0.0	0.2	1.4	20.1	2	0
Borehole Pressure (mb)	1023	04:30	0.0	0.2	1.4	20.1	2	0
		05:00	0.0	0.2	1.4	20.1	2	0
		05:30	0.0	0.2	1.4	20.2	1	0
		06:00	0.0	0.2	1.4	20.2	2	0
		06:30						
		07:00						
		07:30						
		08:00						
		08:30						
		09:00						
		09:30						
		10:00						

Continuous Gas Monitoring Record								
Date	20/09/2021	Engineer	SH					
Project No	LP2616	Temp °C	21					
Site	Lees Yard	Ambient Pressure	1023					
WS05		Time	Flow (l/h)	CH ⁴ (%)	CO ² (%)	O ² (%)	CO (ppm)	H ² S (ppm)
		Hole ID	00:00	0.0	0.2	0.0	21.1	2
		00:15	0.0	0.2	1.3	20.1	6	0
		00:30	0.0	0.2	1.4	19.9	5	0
VOC peak (ppm)	Not Measured	01:00	0.0	0.2	1.4	19.8	2	0
VOC steady (ppm)	Not Measured	01:30	0.0	0.2	1.4	19.8	2	0
		02:00	0.0	0.2	1.4	19.8	2	0
Borehole Depth (mbgl)	2.05	02:30	0.0	0.2	1.4	19.8	2	0
		03:00	0.0	0.2	1.4	19.8	2	0
Water level (mbgl)	1.60	03:30	0.0	0.2	1.4	19.9	2	0
		04:00	0.0	0.2	1.4	19.9	2	0
Borehole Pressure (mb)	1026	04:30	0.0	0.2	1.4	19.9	2	0
		05:00	0.0	0.2	1.4	19.9	2	0
		05:30	0.0	0.2	1.3	19.9	2	0
		06:00	0.0	0.2	1.3	19.9	2	0
		06:30	0.0	0.2	1.3	20.0	2	0
		07:00	0.0	0.2	1.3	20.0	2	0
		07:30	0.0	0.2	1.2	20.0	2	0
		08:00	0.0	0.2	1.2	20.1	4	0
		08:30	0.0	0.2	1.1	20.1	2	0
		09:00	0.0	0.2	1.1	20.2	2	0
		09:30	0.0	0.2	1.0	20.3	2	0
		10:00	0.0	0.2	1.0	20.3	2	0

Continuous Gas Monitoring Record								
Date	20/09/2021	Engineer	SH					
Project No	LP2616	Temp °C	21					
Site	Lees Yard	Ambient Pressure	1023					
WS07 Hole ID		Time	Flow (f/h)	CH ⁴ (%)	CO ² (%)	O ² (%)	CO (ppm)	H ² S (ppm)
		00:00	0.0	0.1	0.0	20.9	2	0
		00:15	0.0	0.1	1.8	20.8	4	0
		00:30	0.0	0.1	1.8	20.8	2	0
VOC peak (ppm)	Not Measured	01:00	0.0	0.1	1.8	19.5	2	0
		01:30	0.0	0.1	1.8	19.5	1	0
		VOC steady (ppm)	Not Measured	02:00	0.0	0.1	1.8	19.5
Borehole Depth (mbgl)		02:30	0.0	0.1	1.8	19.4	1	0
		03:00	0.0	0.1	1.8	19.4	1	0
Water level (mbgl)		03:30	0.0	0.2	1.9	19.4	0	0
		04:00	0.0	0.1	1.8	19.4	0	0
Borehole Pressure (mb)		04:30	0.0	0.1	1.9	19.4	1	0
		05:00	0.0	0.1	1.9	19.4	1	0
		05:30	0.0	0.1	1.9	19.4	1	0
		06:00	0.0	0.1	1.8	19.4	1	0
		06:30	0.0	0.1	1.8	19.4	1	0
		07:00	0.0	0.1	1.8	19.4	1	0
		07:30	0.0	0.1	1.8	19.4	1	0
		08:00	0.0	0.1	1.8	19.4	1	0
		08:30	0.0	0.1	1.7	19.6	1	0
		09:00	0.0	0.1	1.6	19.6	1	0
		09:30	0.0	0.1	1.5	19.7	1	0
		10:00	0.0	0.1	1.4	19.8	1	0

APPENDIX G – Geotechnical Laboratory Test Results

Geotechnical Laboratory Test Results

SUMMARY OF GEOTECHNICAL TESTING

Soil Test Results																			
Sample details					Classification Tests				Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments	
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L		W/S Mg mg/L
TP03	1.10-1.40		D	Light grey mottled yellowish brown slightly gravelly sandy silty CLAY. Gravel is fine to medium and includes chalk and sand is fine.	19.5	39	15	24	97										
TP04	2.40-2.80		D	Dark grey very slightly gravelly sandy silty CLAY with chalk. Gravel is fine to medium.	29.7	50	21	29	98										
TP06	0.70		D	Orangish brown and greyish brown mottled sandy gravelly silty CLAY. Gravel is fine to medium.	24.4	47	19	28	97										
TP08	0.70		D	Orangish brown mottled greyish brown gravelly sandy silty CLAY with rootlets. Gravel is fine to medium and sand is fine.	20.2	40	18	22	97										
WS01	0.80		D																Chemical
WS01	3.00		D																Chemical
WS02	0.60		D	Yellowish brown, orangish brown and grey mottled gravelly sandy silty CLAY with rootlets. Gravel is fine to medium and sand is fine.	22.0	43	18	25	99										
WS03	2.10		D																Chemical
WS04	1.20-2.00		B	Yellowish brown silty fine SAND.															Particle Size Distribution
WS05	1.20		D																Chemical

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

NP=Non Plastic

Checked and Approved by


S Burke - Senior Technician
24/09/2021

Project Number:

GEO / 33854

Project Name:

LAND NORTH OF LEE'S YARD
LP2616



SUMMARY OF GEOTECHNICAL TESTING

Soil Test Results																			
Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L	W/S Mg mg/L	
WS06	3.00		D	Yellowish brown slightly clayey silty gravelly SAND. Sand is fine.	13.5		NP		55										
WS07	3.50		D																Chemical

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

NP=Non Plastic

Checked and Approved by

S Burke

S Burke - Senior Technician
24/09/2021

Project Number:

GEO / 33854

Project Name:

LAND NORTH OF LEE'S YARD
LP2616



Tested by Chemtest Ltd : MCERTS / UKAS No 2183

GEOLABS

PARTICLE SIZE DISTRIBUTION

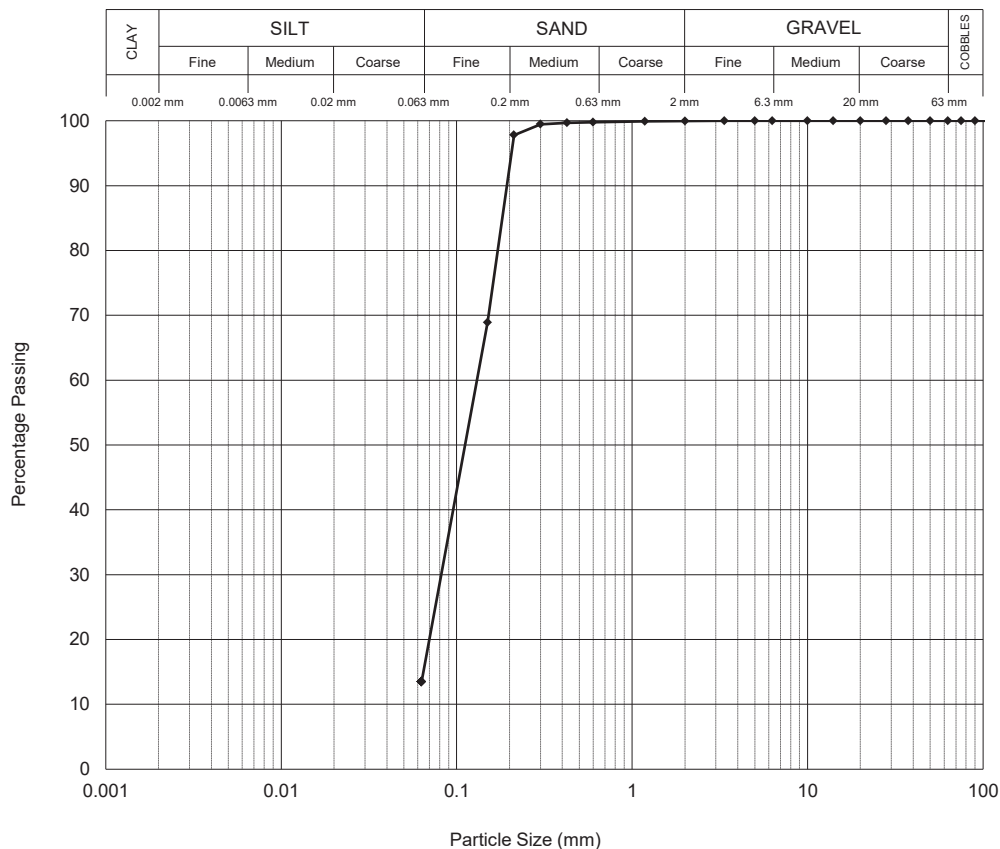
Location WS04
Depth (m) 1.20-2.00
Sample Type B

Description

Yellowish brown silty fine SAND.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	100
20.0 mm	100
14.0 mm	100
10.0 mm	100
6.30 mm	100
5.00 mm	100
3.35 mm	100
2.00 mm	100
1.18 mm	100
600 µm	100
425 µm	100
300 µm	99
212 µm	98
150 µm	69
63 µm	13



Particle Proportions	
Cobbles	0.0
Gravel	0.0
Sand	86.5
Silt & Clay	13.5

Tested by AW ☐
Checked and Approved by

S Burke

S Burke - Senior Technician ☐
24/09/2021

Project Number:

GEO / 33854

Project Name:

**LAND NORTH OF LEE'S YARD
LP2616**

APPENDIX H– Analytical Summary and Quantitative Risk Assessment Tables

Analytical Summary and
Quantitative Risk
Assessment Tables

LP2616 Land North of Lee's Yard
Table G1: Soil Analytical Results and Human Health QRA

Determinand		Units	LOD	Assessment Criteria Value	Source	Sample Location:		Date Sampled:											
						Depth (m):	Matrix:	TP01 Topsoil 09/08/2021	TP03 Topsoil 09/08/2021	TP05 Topsoil 09/08/2021	TP07 Natural 09/08/2021	WS07 Natural 27/08/2021	WS03 Topsoil 27/08/2021	WS05 Natural 27/08/2021	WS01 Topsoil 27/08/2021				
																Maximum Detected			
Miscellaneous																			
pH	pH units	0.1		n.v.	n.a.	9.1	7.9	6.3	6.6	7.2	9.1	8.5	7.8	8.4					
	%	0.1		n.v.	n.a.	1.9	1.3	1.8	1.9	0.24	0.35	1.8	0.33	1.6					
	%	-		n.v.	n.a.	3.268	2.24	3.10	3.27	0.41	0.60	3.10	0.57	2.75					
Metals																			
Arsenic	mg/kg	2		37	C4SL	11.1	8.7	8.3	9.5	10.2	8.7	11.1	10.7	11.1					
Cadmium	mg/kg	0.1		22	C4SL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					
Chromium	mg/kg	0.5		910	S4UL	34.8	29.1	25.3	27.7	31.3	27.1	31	31.3	34.8					
Chromium VI	mg/kg	1		21	C4SL	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8					
Copper	mg/kg	2		2,400	S4UL	20.8	10.1	11.3	11.7	9.7	6.5	20.8	5.9	8.8					
Lead	mg/kg	2		200	C4SL	30.6	23.4	30.3	30.6	13.7	17.1	30.6	14.3	30.4					
Mercury	mg/kg	1		40	S4UL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					
Nickel	mg/kg	0.5		130	S4UL	18.2	15.4	12.2	14.7	16.3	17.1	17.4	15.1	18.2					
Selenium	mg/kg	3		250	S4UL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
Zinc	mg/kg	2		3,700	S4UL	151	45	49	49.5	41.2	48.7	151	48.7	60.2					
Asbestos																			
Asbestos Identification		-	-	Presence	n.a.	n.a.	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD					
Polycyclic Aromatic Hydrocarbons (USEPA 16)																			
Benzo(a)pyrene	mg/kg	0.1		5.0	C4SL	0.2	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					
Naphthalene	mg/kg	0.1		2.3 / 5.6*	S4UL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					
Acenaphthylene	mg/kg	0.1		n.v.	n.a.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					
Acenaphthene	mg/kg	0.1		n.v.	n.a.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					
Fluorene	mg/kg	0.1		n.v.	n.a.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					
Phenanthrene	mg/kg	0.1		n.v.	n.a.	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					
Anthracene	mg/kg	0.1		n.v.	n.a.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					
Fluoranthene	mg/kg	0.1		n.v.	n.a.	0.3	0.1	0.3	0.1	<0.1	<0.1	0.2	<0.1	<0.1					
Pyrene	mg/kg	0.1		n.v.	n.a.	0.3	<0.1	0.3	0.1	<0.1	<0.1	0.2	<0.1	<0.1					
Benzo(a)anthracene	mg/kg	0.1		n.v.	n.a.	0.2	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					
Chrysene	mg/kg	0.1		n.v.	n.a.	0.2	<0.1	0.2	<0.1	<0.1	<0.1	0.1	<0.1	<0.1					
Benzo(b)fluoranthene	mg/kg	0.1		n.v.	n.a.	0.2	<0.1	0.2	<0.1	0.1	<0.1	<0.1	<0.1	<0.1					
Benzo(k)fluoranthene	mg/kg	0.1		n.v.	n.a.	0.2	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					
Indeno(1,2,3-cd)pyrene	mg/kg	0.1		n.v.	n.a.	0.2	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					
Dibenzo(a,h)anthracene	mg/kg	0.1		n.v.	n.a.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					
Benzo(ghi)perylene	mg/kg	0.1		n.v.	n.a.	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					
Total PAH (16)	mg/kg	0.1		n.v.	n.a.	2	<0.4	2	<0.4	<0.4	<0.4	0.6	<0.4	<0.4					

* 1% SOM / 2.5% SOM

** - Soil Organic Matter = Total Organic Carbon x 1.72

NAD = No asbestos detected

MG = Made ground

- = not tested

n.a = not applicable

n.v = no published value available

- Exceedances of residential with homegrown produce GAC

APPENDIX I– Geoenvironmental Analytical Laboratory Certificates

Geoenvironmental
Analytical Laboratory
Certificates



Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9BY
Telephone: (01424) 718618

cs@elab-uk.co.uk
info@elab-uk.co.uk

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 21-35367

Issue: 1

Date of Issue: 17/08/2021

Contact: Lauren Stillwell

Customer Details: Leap Environmental Ltd
Book House
Glebelands Centre
Dorking
Surrey RH4 3HW

Quotation No: Q14-00063

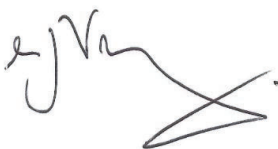
Order No: LPO4230

Customer Reference: LP2616

Date Received: 11/08/2021

Date Approved: 17/08/2021

Details: Land North of Lee's Yard

Approved by: 

Mike Varley, Technical Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

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Sample Summary

Report No.: 21-35367, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
247612	TP01 0.15	09/08/2021	11/08/2021	Silty loam	
247613	TP01 0.40	09/08/2021	11/08/2021		
247614	TP02 0.10	09/08/2021	11/08/2021		
247615	TP03 0.10	09/08/2021	11/08/2021	Silty loam	
247616	TP04 0.40	09/08/2021	11/08/2021		
247617	TP05 0.20	09/08/2021	11/08/2021	Silty loam	
247618	TP06 0.10	09/08/2021	11/08/2021		
247619	TP06 0.40	09/08/2021	11/08/2021		
247620	TP07 0.35	09/08/2021	11/08/2021	Silty clayey loam	
247621	TP08 0.10	09/08/2021	11/08/2021		

Results Summary

Report No.: 21-35367, issue number 1

ELAB Reference				247612	247615	247617	247620
Customer Reference							
Sample ID							
Sample Type				SOIL	SOIL	SOIL	SOIL
Sample Location				TP01	TP03	TP05	TP07
Sample Depth (m)				0.15	0.10	0.20	0.35
Sampling Date				09/08/2021	09/08/2021	09/08/2021	09/08/2021
Determinand	Codes	Units	LOD				
Soil sample preparation parameters							
Material removed	N	%	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Description of Inert material removed	N		0	None	None	None	None
Metals							
Arsenic	M	mg/kg	1	8.7	8.3	9.5	10.2
Cadmium	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	M	mg/kg	5	29.1	25.3	27.7	31.3
Copper	M	mg/kg	5	10.1	11.3	11.7	9.7
Lead	M	mg/kg	5	23.4	30.3	30.6	13.7
Mercury	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel	M	mg/kg	5	15.4	12.2	14.7	16.3
Selenium	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
Zinc	M	mg/kg	5	45.0	49.0	49.5	41.2
Inorganics							
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	< 0.8	< 0.8	< 0.8
Miscellaneous							
pH	M	pH units	0.1	7.9	6.3	6.6	7.2
Total Organic Carbon	N	%	0.01	1.3	1.8	1.9	0.24
Polyaromatic hydrocarbons							
Naphthalene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	M	mg/kg	0.1	< 0.1	0.1	< 0.1	< 0.1
Anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	M	mg/kg	0.1	0.1	0.3	0.1	< 0.1
Pyrene	M	mg/kg	0.1	< 0.1	0.3	0.1	< 0.1
Benzo(a)anthracene	M	mg/kg	0.1	< 0.1	0.2	< 0.1	< 0.1
Chrysene	M	mg/kg	0.1	< 0.1	0.2	< 0.1	< 0.1
Benzo(b)fluoranthene	M	mg/kg	0.1	< 0.1	0.2	< 0.1	0.1
Benzo(k)fluoranthene	M	mg/kg	0.1	< 0.1	0.2	< 0.1	< 0.1
Benzo(a)pyrene	M	mg/kg	0.1	< 0.1	0.2	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	M	mg/kg	0.1	< 0.1	0.2	< 0.1	< 0.1
Dibenzo(a,h)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	M	mg/kg	0.1	< 0.1	0.1	< 0.1	< 0.1
Total PAH(16)	M	mg/kg	0.4	< 0.4	2.0	< 0.4	< 0.4



Unit A2, Windmill Road, Ponswood Industrial Estate, St Leonards on Sea, East Sussex, TN38 9BY
Tel: +44 (0)1424 718618, Email: info@elab-uk.co.uk, Web: www.elab-uk.co.uk

Results Summary

Report No.: 21-35367, issue number 1

Asbestos Results

Analytical result only applies to the sample as submitted by the client. Any comments, opinions or interpretations (marked #) in this report are outside UKAS accreditation (Accreditation No2683). They are subjective comments only which must be verified by the client.

Elab No	Depth (m)	Clients Reference	Description of Sample Matrix #	Asbestos Identification	Gravimetric Analysis Total (%)	Gravimetric Analysis by ACM Type (%)	Free Fibre Analysis (%)	Total Asbestos (%)
247612	0.15	TP01	Brown sandy soil, stones, chalk, organics	No asbestos detected	n/t	n/t	n/t	n/t
247615	0.10	TP03	Brown soil, stones, organics	No asbestos detected	n/t	n/t	n/t	n/t
247617	0.20	TP05	Brown sandy soil, stones, clinker, organics	No asbestos detected	n/t	n/t	n/t	n/t
247620	0.35	TP07	Brown sandy soil, stones	No asbestos detected	n/t	n/t	n/t	n/t



Method Summary

Report No.: 21-35367, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Hexavalent chromium	N	As submitted sample	13/08/2021	110	Colorimetry
pH	M	Air dried sample	13/08/2021	113	Electromeric
PAH (GC-FID)	M	As submitted sample	13/08/2021	133	GC-FID
Total organic carbon/Total sulphur	N	Air dried sample	16/08/2021	210	IR
Asbestos identification	U	Air dried sample	17/08/2021	280	Microscopy
Aqua regia extractable metals	M	Air dried sample	13/08/2021	300	ICPMS

Tests marked N are not UKAS accredited

Report Information

Report No.: 21-35367, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"
LOD	LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination. Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed. ELAB are unable to provide an interpretation or opinion on the content of this report. The results relate only to the sample received. PCB congener results may include any coeluting PCBs Uncertainty of measurement for the determinands tested are available upon request Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

- | | |
|---|--|
| a | No date of sampling supplied |
| b | No time of sampling supplied (Waters Only) |
| c | Sample not received in appropriate containers |
| d | Sample not received in cooled condition |
| e | The container has been incorrectly filled |
| f | Sample age exceeds stability time (sampling to receipt) |
| g | Sample age exceeds stability time (sampling to analysis) |

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage



Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9BY
Telephone: (01424) 718618

cs@elab-uk.co.uk
info@elab-uk.co.uk

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 21-35727

Issue: 1

Date of Issue: 08/09/2021

Contact: Lauren Stillwell

Customer Details: Leap Environmental Ltd
Book House
Glebelands Centre
Dorking
Surrey RH4 3HW

Quotation No: Q14-00063

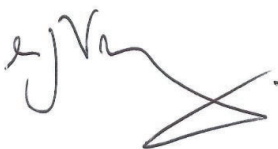
Order No: LPO-4318

Customer Reference: LP2616

Date Received: 01/09/2021

Date Approved: 08/09/2021

Details: Land North of Lee's Yard

Approved by: 

Mike Varley, Technical Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

This report may only be reproduced in full



Sample Summary

Report No.: 21-35727, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
249478	WS07 0.40	27/08/2021	01/09/2021	Silty clayey loam	
249479	WS03 0.10	27/08/2021	01/09/2021	Silty loam	
249480	WS05 0.40	27/08/2021	01/09/2021	Silty clayey loam	
249481	WS01 0.10	27/08/2021	01/09/2021	Silty loam	
249482	WS01 0.40	27/08/2021	01/09/2021		
249483	WS02 0.10	27/08/2021	01/09/2021		
249484	WS03 0.40	27/08/2021	01/09/2021		
249485	WS04 0.10	27/08/2021	01/09/2021		
249486	WS04 0.45	27/08/2021	01/09/2021		
249487	WS05 0.15	27/08/2021	01/09/2021		
249488	WS06 0.15	27/08/2021	01/09/2021		
249489	WS07 0.20	27/08/2021	01/09/2021		

Results Summary

Report No.: 21-35727, issue number 1

ELAB Reference				249478	249479	249480	249481
Customer Reference							
Sample ID							
Sample Type				SOIL	SOIL	SOIL	SOIL
Sample Location				WS07	WS03	WS05	WS01
Sample Depth (m)				0.40	0.10	0.40	0.10
Sampling Date				27/08/2021	27/08/2021	27/08/2021	27/08/2021
Determinand	Codes	Units	LOD				
Soil sample preparation parameters							
Material removed	N	%	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Description of Inert material removed	N		0	None	None	None	None
Metals							
Arsenic	M	mg/kg	1	8.7	11.1	10.7	11.1
Cadmium	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	M	mg/kg	5	27.1	31.0	31.3	34.8
Copper	M	mg/kg	5	6.5	20.8	5.9	8.8
Lead	M	mg/kg	5	17.1	30.6	14.3	30.4
Mercury	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel	M	mg/kg	5	17.1	17.4	15.1	18.2
Selenium	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
Zinc	M	mg/kg	5	48.7	151	48.7	60.2
Inorganics							
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	< 0.8	< 0.8	< 0.8
Miscellaneous							
pH	M	pH units	0.1	9.1	8.5	7.8	8.4
Total Organic Carbon	N	%	0.01	0.35	1.8	0.33	1.6
Polyaromatic hydrocarbons							
Naphthalene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	M	mg/kg	0.1	< 0.1	0.2	< 0.1	< 0.1
Pyrene	M	mg/kg	0.1	< 0.1	0.2	< 0.1	< 0.1
Benzo(a)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	M	mg/kg	0.1	< 0.1	0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total PAH(16)	M	mg/kg	0.4	< 0.4	0.6	< 0.4	< 0.4



Unit A2, Windmill Road, Ponswood Industrial Estate, St Leonards on Sea, East Sussex, TN38 9BY
Tel: +44 (0)1424 718618, Email: info@elab-uk.co.uk, Web: www.elab-uk.co.uk

Results Summary

Report No.: 21-35727, issue number 1

Asbestos Results

Analytical result only applies to the sample as submitted by the client. Any comments, opinions or interpretations (marked #) in this report are outside UKAS accreditation (Accreditation No2683). They are subjective comments only which must be verified by the client.

Elab No	Depth (m)	Clients Reference	Description of Sample	Matrix #	Asbestos Identification	Gravimetric Analysis Total (%)	Gravimetric Analysis by ACM Type (%)	Free Fibre Analysis (%)	Total Asbestos (%)
249478	0.40	WS07	Brown Soil, Stones		No asbestos detected	n/t	n/t	n/t	n/t
249479	0.10	WS03	Brown Soil, Stones, Root		No asbestos detected	n/t	n/t	n/t	n/t
249480	0.40	WS05	Brown Soil		No asbestos detected	n/t	n/t	n/t	n/t
249481	0.10	WS01	Brown soil, Stones		No asbestos detected	n/t	n/t	n/t	n/t



Method Summary

Report No.: 21-35727, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Hexavalent chromium	N	As submitted sample	03/09/2021	110	Colorimetry
pH	M	Air dried sample	08/09/2021	113	Electromeric
PAH (GC-FID)	M	As submitted sample	03/09/2021	133	GC-FID
Total organic carbon/Total sulphur	N	Air dried sample	06/09/2021	210	IR
Asbestos identification	U	Air dried sample	07/09/2021	280	Microscopy
Aqua regia extractable metals	M	Air dried sample	03/09/2021	300	ICPMS

Tests marked N are not UKAS accredited

Report Information

Report No.: 21-35727, issue number 1

Key

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I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"
LOD	LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination. Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed. ELAB are unable to provide an interpretation or opinion on the content of this report. The results relate only to the sample received. PCB congener results may include any coeluting PCBs Uncertainty of measurement for the determinands tested are available upon request Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

- | | |
|---|--|
| a | No date of sampling supplied |
| b | No time of sampling supplied (Waters Only) |
| c | Sample not received in appropriate containers |
| d | Sample not received in cooled condition |
| e | The container has been incorrectly filled |
| f | Sample age exceeds stability time (sampling to receipt) |
| g | Sample age exceeds stability time (sampling to analysis) |

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage

APPENDIX J – Approach to the Selection of Generic Assessment Criteria

Approach to the
Selection of Generic
Assessment Criteria

LEAP APPROACH TO THE SELECTION OF GENERIC ASSESSMENT CRITERIA

Chronic Risks to Human Health

Defra and the EA have published a limited number of Soil Guideline Values (SGVs)¹⁹ that represent minimal chronic risk to human health. CL:AIRE has published a limited number of Category Four Screening Levels (C4SLs)²⁰ which represent a low but still strongly precautionary level of chronic risk to human health. Both the SGVs and C4SLs have both been derived for a Soil Organic Matter (SOM) content of 6%, which is not always representative of the low SOM that are encountered within Made Ground on brownfield sites.

Land Quality Management Ltd. (LQM) responded to the demand for a more comprehensive set of screening values and for a wider range of SOM by producing Suitable for Use Levels (S4ULs)²¹ which are a hybrid of SGVs and C4SLs. The S4ULs have been endorsed by the Chartered Institute of Environmental Health (CIEH).

A smaller set of 35 GACs was published by CL:AIRE in association with AGS and EIC in 2010. These were based on the exposure scenarios that were used to derive the SGVs. These exposure scenarios have since been superseded, in part, by the publication of the C4SLs and the S4ULs. A second phase of C4SLs is currently under development.

LEAP uses C4SLs where they are available as generic assessment criteria to quantitatively assess the potential chronic risks to human health. Where C4SLs are not available, the S4ULs or CL:AIRE GACs are used. It is noted that S4ULs are not equivalent to C4SLs in all their exposure assumptions but are generally more conservative. To ensure the greatest possible consistency in LEAP's human health GQRAs, the physicochemical and toxicological input parameters that were used to derive the CL:AIRE GACs have been re-modelled using the exposure parameters selected by LQM to derive the S4ULs.

For the organic compounds benzene and benzo(a)pyrene) for which C4SLs are available for a SOM of 6% only, LEAP has calculated equivalent C4SLs for 1% and 2.5% SOM. SOM does not affect the inorganic contaminants.

¹⁹ Environment Agency Science Report SC050021 series.

²⁰ CL:AIRE Final Project Report. 'SPI010 – Development of Category 4 Screening Levels for assessment of land affected by contamination'. CL:AIRE, December 2013

²¹ 'The LQM/CIEH S4ULs for Human Health Risk Assessment', Nathaniel P et al, 2015. Copyright Land Quality Management Ltd, reproduced with permission: Publication Number S4UL3509.

In accordance with current Public Health England (PHE) guidance²², LEAP carries out the assessment of PAHs using a surrogate marker approach, whereby the assessment of risk from benzo(a)pyrene also captures potential risks from other carcinogenic PAHs that may be present. The alternative S4ULs for PAHs using the Toxic Equivalent Factor (TEF) approach are not used because this approach is likely to under predict the true carcinogenicity of PAHs and is not advocated by PHE. The threshold PAHs have been assessed similarly, by using naphthalene as a marker compound due to its high volatility relative to other PAHs.

Total phenols are assessed by LEAP against the S4UL for phenol and total chromium is assessed against the S4UL for trivalent chromium.

LEAP does not consider the theoretical soil saturations in the evaluation of organic compounds and as such, some of the S4ULs for the less sensitive exposure scenarios are lower than their more sensitive equivalents.

Risks to human health from inhalation of vapours derived from groundwater are evaluated by LEAP using the SoBRA groundwater $GAC_{gw vap}^{23}$.

Acute Risks to Human Health

Cyanide has not been modelled using CLEA because it has high acute toxicity and CLEA is designed to evaluate chronic risks. Assuming an acute risk and based on a single dose of 3 g of soil, an assessment criterion of 33 mgkg⁻¹ free inorganic cyanide and 544 mgkg⁻¹ complex cyanide has been calculated by LEAP. At this stage LEAP has chosen to adopt a conservative screening value of 20 mgkg⁻¹ for total cyanide (essentially the sum of free and complex cyanides) to highlight any potential risks to human health.

Risks to Controlled Waters

RTM (2006)²⁴ requires receptor-specific Water Quality Standards (WQS) to be used to determine potentially unacceptable risks to water bodies in England and Wales. It requires appropriate criteria to be taken from a hierarchy of sources, where they are available as follows:

²² HPA 'Contaminated Land Information Sheet. Risk Assessment Approaches for Polycyclic Aromatic Hydrocarbons (PAHs)'. Public Health England, 2017.

²³ Society of Brownfield Risk Assessment (SoBRA) 'Development of Generic Assessment Criteria for Assessing Vapour Risks to Human Health from Volatile Contaminants in Groundwater' Version 1.0. February 2017.

²⁴ EA 'Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination' 2006.

1. UK published values
2. EU published values
3. WHO published values

Drinking Water Resources

For groundwater and surface waters that are abstracted for potable supply LEAP uses:

- UK Drinking Water Quality Standards (DWS) from *The Water Supply (Water Quality) Regulations 2016* (England).
- *The Water Supply (Water Quality) Regulations 2010* (Wales) as amended in 2016.
- World Health Organisation *Guidelines for Drinking Water Quality*, Fourth Edition, Volume I, (2011).

■ Where the groundwater is not abstracted for potable supply, this is a precautionary approach which protects the potential future exploitation of the groundwater.

Surface Water (Ecological) Receptors

For surface waters as ecological receptors, LEAP uses the Environmental Quality Standards (EQS) from *The Water Framework Directive (Standards and Classification) Directions* (England and Wales) 2015. There are no appropriate EU or WHO standards available.

Petroleum Hydrocarbons

■ There are no current UK standards available for petroleum hydrocarbons, either for groundwater or surface water receptors, so an initial assessment criterion of 10µg/l, based on the former target concentration for dissolved or emulsified hydrocarbons, is used to represent a conservative preliminary screening value for total petroleum hydrocarbons.

■ Where considered appropriate, LEAP then follows the guidance of CL:AIRE 2017²⁵ for the further assessment of the petroleum hydrocarbon fractions and derivatives. For a drinking water resource, the WHO guidelines are used. For surface waters as ecological receptors, proxy compounds are used to select appropriate EQS based on recommended indicator compounds, as follows:

- Aromatic EC5-EC7 – benzene
- Aromatic >EC7-EC8 – toluene

²⁵ CL:AIRE, 2017. 'Petroleum Hydrocarbons in Groundwater: Guidance on assessing petroleum hydrocarbons using existing hydrogeological risk assessment methodologies'. CL:AIRE, London. ISBN 978-1-905046-31-7.

- Aromatic >EC8-EC10 – ethylbenzene
- Aromatic >EC10-EC12 – naphthalene
- Aromatic >EC12-EC16 – no proxy
- Aromatic >EC16-EC21 – anthracene
- Aromatic >EC21-EC35 – benzo(a)pyrene

APPENDIX K – HazWasteOnline™ Classification Report

HazWasteOnline™
Classification Report

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



DEED3-XXR6R-Z9UGU

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in **pale yellow**.

Job name

LP2616

Description/Comments

Project

Site

Classified by

Name:
Martin Weil
Date:
01 Oct 2021 07:31 GMT
Telephone:

Company:
Leap Environmental Ltd

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:

Course
Hazardous Waste Classification

Date

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	TP01	0.15	Non Hazardous		2
2	TP03	0.1	Non Hazardous		4
3	TP05	0.2	Non Hazardous		6
4	TP07	0.35	Non Hazardous		8
5	WS07	0.4	Non Hazardous		10
6	WS03	0.1	Non Hazardous		12
7	WS05	0.4	Non Hazardous		14
8	WS01	0.1	Non Hazardous		16

Related documents

#	Name	Description
1	Leap Standard Classification WM3	waste stream template used to create this Job

Report

Created by: Martin Weil

Created date: 01 Oct 2021 07:31 GMT

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	18
Appendix B: Rationale for selection of metal species	19
Appendix C: Version	19

Classification of sample: TP01

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
TP01	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.15 m		

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	pH				7.9	pH		7.9	pH	7.9 pH		
2	arsenic { arsenic trioxide }				8.7	mg/kg	1.32	11.487	mg/kg	0.00115 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium sulfide }			1	<0.5	mg/kg	1.285	<0.643	mg/kg	<0.00005 %		<LOD
	048-010-00-4	215-147-8	1306-23-6									
4	chromium { chromium(VI) oxide }				<0.8	mg/kg	1.923	<1.538	mg/kg	<0.000154 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
5	copper { dicopper oxide; copper (I) oxide }				10.1	mg/kg	1.126	11.371	mg/kg	0.00114 %		
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead chromate }			1	23.4	mg/kg	1.56	36.5	mg/kg	0.00234 %		
	082-004-00-2	231-846-0	7758-97-6									
7	mercury { mercury dichloride }				<0.5	mg/kg	1.353	<0.677	mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel dihydroxide }				15.4	mg/kg	1.579	24.324	mg/kg	0.00243 %		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
9	zinc { zinc chromate }				45	mg/kg	2.774	124.837	mg/kg	0.0125 %		
	024-007-00-3	236-878-9	13530-65-9									
10	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
11	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									
12	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9									
13	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7									
14	phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-581-5	85-01-8									
15	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-371-1	120-12-7									
16	fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		205-912-4	206-44-0									
17	pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-927-3	129-00-0									
18	benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-033-00-9	200-280-6	56-55-3									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
19	chrysene 601-048-00-0205-923-4218-01-9				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
20	benzo[b]fluoranthene 601-034-00-4205-911-9205-99-2				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
21	benzo[k]fluoranthene 601-036-00-5205-916-6207-08-9				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3200-028-550-32-8				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	●	indeno[123-cd]pyrene 205-893-2193-39-5			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24		dibenz[a,h]anthracene 601-041-00-2200-181-853-70-3			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	●	benzo[ghi]perylene 205-883-8191-24-2			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	●	confirm TPH has NOT arisen from diesel or petrol			☒					
Total:								0.02 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- ⚗ Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- ND** Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: TP03

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
TP03	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.1 m		

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	pH				6.3	pH		6.3	pH	6.3 pH		
2	arsenic { arsenic trioxide }				8.3	mg/kg	1.32	10.959	mg/kg	0.0011 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium sulfide }			1	<0.5	mg/kg	1.285	<0.643	mg/kg	<0.00005 %		<LOD
	048-010-00-4	215-147-8	1306-23-6									
4	chromium { chromium(VI) oxide }				<0.8	mg/kg	1.923	<1.538	mg/kg	<0.000154 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
5	copper { dicopper oxide; copper (I) oxide }				11.3	mg/kg	1.126	12.723	mg/kg	0.00127 %		
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead chromate }			1	30.3	mg/kg	1.56	47.262	mg/kg	0.00303 %		
	082-004-00-2	231-846-0	7758-97-6									
7	mercury { mercury dichloride }				<0.5	mg/kg	1.353	<0.677	mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel dihydroxide }				12.2	mg/kg	1.579	19.27	mg/kg	0.00193 %		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
9	zinc { zinc chromate }				49	mg/kg	2.774	135.933	mg/kg	0.0136 %		
	024-007-00-3	236-878-9	13530-65-9									
10	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
11	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									
12	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9									
13	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7									
14	phenanthrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		201-581-5	85-01-8									
15	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-371-1	120-12-7									
16	fluoranthene				0.3	mg/kg		0.3	mg/kg	0.00003 %		
		205-912-4	206-44-0									
17	pyrene				0.3	mg/kg		0.3	mg/kg	0.00003 %		
		204-927-3	129-00-0									
18	benzo[a]anthracene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
	601-033-00-9	200-280-6	56-55-3									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
19	chrysene				0.2 mg/kg		0.2 mg/kg	0.00002 %			
	601-048-00-0	205-923-4	218-01-9								
20	benzo[b]fluoranthene				0.2 mg/kg		0.2 mg/kg	0.00002 %			
	601-034-00-4	205-911-9	205-99-2								
21	benzo[k]fluoranthene				0.2 mg/kg		0.2 mg/kg	0.00002 %			
	601-036-00-5	205-916-6	207-08-9								
22	benzo[a]pyrene; benzo[def]chrysene				0.2 mg/kg		0.2 mg/kg	0.00002 %			
	601-032-00-3	200-028-5	50-32-8								
23	indeno[123-cd]pyrene				0.2 mg/kg		0.2 mg/kg	0.00002 %			
		205-893-2	193-39-5								
24	dibenz[a,h]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
25	benzo[ghi]perylene				0.1 mg/kg		0.1 mg/kg	0.00001 %			
		205-883-8	191-24-2								
26	confirm TPH has NOT arisen from diesel or petrol				☒						
Total:									0.0214 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP05

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
TP05	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.2 m		

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	pH				6.6	pH		6.6	pH	6.6 pH		
2	arsenic { arsenic trioxide }				9.5	mg/kg	1.32	12.543	mg/kg	0.00125 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium sulfide }			1	<0.5	mg/kg	1.285	<0.643	mg/kg	<0.00005 %		<LOD
	048-010-00-4	215-147-8	1306-23-6									
4	chromium { chromium(VI) oxide }				<0.8	mg/kg	1.923	<1.538	mg/kg	<0.000154 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
5	copper { dicopper oxide; copper (I) oxide }				11.7	mg/kg	1.126	13.173	mg/kg	0.00132 %		
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead chromate }			1	30.6	mg/kg	1.56	47.73	mg/kg	0.00306 %		
	082-004-00-2	231-846-0	7758-97-6									
7	mercury { mercury dichloride }				<0.5	mg/kg	1.353	<0.677	mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel dihydroxide }				14.7	mg/kg	1.579	23.219	mg/kg	0.00232 %		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
9	zinc { zinc chromate }				49.5	mg/kg	2.774	137.32	mg/kg	0.0137 %		
	024-007-00-3	236-878-9	13530-65-9									
10	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
11	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									
12	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9									
13	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7									
14	phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-581-5	85-01-8									
15	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-371-1	120-12-7									
16	fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		205-912-4	206-44-0									
17	pyrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		204-927-3	129-00-0									
18	benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-033-00-9	200-280-6	56-55-3									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
19	chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-048-00-0	205-923-4	218-01-9								
20	benzo[b]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-034-00-4	205-911-9	205-99-2								
21	benzo[k]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-036-00-5	205-916-6	207-08-9								
22	benzo[a]pyrene; benzo[def]chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-032-00-3	200-028-5	50-32-8								
23	indeno[123-cd]pyrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-893-2	193-39-5								
24	dibenz[a,h]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
25	benzo[ghi]perylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-883-8	191-24-2								
26	confirm TPH has NOT arisen from diesel or petrol				☒						
Total:									0.0221 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- 🧪 Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- ND** Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: TP07

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name: **TP07** LoW Code: Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: **0.35 m** Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	pH				7.2	pH		7.2	pH	7.2 pH		
2	arsenic { arsenic trioxide }				10.2	mg/kg	1.32	13.467	mg/kg	0.00135 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium sulfide }			1	<0.5	mg/kg	1.285	<0.643	mg/kg	<0.00005 %		<LOD
	048-010-00-4	215-147-8	1306-23-6									
4	chromium { chromium(VI) oxide }				<0.8	mg/kg	1.923	<1.538	mg/kg	<0.000154 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
5	copper { dicopper oxide; copper (I) oxide }				9.7	mg/kg	1.126	10.921	mg/kg	0.00109 %		
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead chromate }			1	13.7	mg/kg	1.56	21.369	mg/kg	0.00137 %		
	082-004-00-2	231-846-0	7758-97-6									
7	mercury { mercury dichloride }				<0.5	mg/kg	1.353	<0.677	mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel dihydroxide }				16.3	mg/kg	1.579	25.746	mg/kg	0.00257 %		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
9	zinc { zinc chromate }				41.2	mg/kg	2.774	114.295	mg/kg	0.0114 %		
	024-007-00-3	236-878-9	13530-65-9									
10	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
11	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									
12	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9									
13	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7									
14	phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-581-5	85-01-8									
15	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-371-1	120-12-7									
16	fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-912-4	206-44-0									
17	pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-927-3	129-00-0									
18	benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-033-00-9	200-280-6	56-55-3									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
19	chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-048-00-0	205-923-4	218-01-9								
20	benzo[b]fluoranthene				0.1 mg/kg		0.1 mg/kg	0.00001 %			
	601-034-00-4	205-911-9	205-99-2								
21	benzo[k]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-036-00-5	205-916-6	207-08-9								
22	benzo[a]pyrene; benzo[def]chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-032-00-3	200-028-5	50-32-8								
23	indeno[123-cd]pyrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-893-2	193-39-5								
24	dibenz[a,h]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
25	benzo[ghi]perylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-883-8	191-24-2								
26	confirm TPH has NOT arisen from diesel or petrol				☒						
Total:									0.0182 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- 🔍 Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- ND** Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS07

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
WS07	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.4 m		

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	pH				9.1	pH		9.1	pH	9.1 pH		
2	arsenic { arsenic trioxide }				8.7	mg/kg	1.32	11.487	mg/kg	0.00115 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium sulfide }			1	<0.5	mg/kg	1.285	<0.643	mg/kg	<0.00005 %		<LOD
	048-010-00-4	215-147-8	1306-23-6									
4	chromium { chromium(VI) oxide }				<0.8	mg/kg	1.923	<1.538	mg/kg	<0.000154 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
5	copper { dicopper oxide; copper (I) oxide }				6.5	mg/kg	1.126	7.318	mg/kg	0.000732 %		
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead chromate }			1	17.1	mg/kg	1.56	26.673	mg/kg	0.00171 %		
	082-004-00-2	231-846-0	7758-97-6									
7	mercury { mercury dichloride }				<0.5	mg/kg	1.353	<0.677	mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel dihydroxide }				17.1	mg/kg	1.579	27.009	mg/kg	0.0027 %		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
9	zinc { zinc chromate }				48.7	mg/kg	2.774	135.101	mg/kg	0.0135 %		
	024-007-00-3	236-878-9	13530-65-9									
10	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
11	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									
12	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9									
13	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7									
14	phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-581-5	85-01-8									
15	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-371-1	120-12-7									
16	fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-912-4	206-44-0									
17	pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-927-3	129-00-0									
18	benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-033-00-9	200-280-6	56-55-3									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
19	chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-048-00-0	205-923-4	218-01-9								
20	benzo[b]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-034-00-4	205-911-9	205-99-2								
21	benzo[k]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-036-00-5	205-916-6	207-08-9								
22	benzo[a]pyrene; benzo[def]chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-032-00-3	200-028-5	50-32-8								
23	indeno[123-cd]pyrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-893-2	193-39-5								
24	dibenz[a,h]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
25	benzo[ghi]perylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-883-8	191-24-2								
26	confirm TPH has NOT arisen from diesel or petrol				☒						
Total:									0.0202 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- 🔍 Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- ND** Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS03

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	WS03	LoW Code:	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	0.1 m	Entry:		17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	pH				8.5	pH		8.5	pH	8.5 pH		
2	arsenic { arsenic trioxide }				11.1	mg/kg	1.32	14.656	mg/kg	0.00147 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium sulfide }			1	<0.5	mg/kg	1.285	<0.643	mg/kg	<0.00005 %		<LOD
	048-010-00-4	215-147-8	1306-23-6									
4	chromium { chromium(VI) oxide }				<0.8	mg/kg	1.923	<1.538	mg/kg	<0.000154 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
5	copper { dicopper oxide; copper (I) oxide }				20.8	mg/kg	1.126	23.418	mg/kg	0.00234 %		
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead chromate }			1	30.6	mg/kg	1.56	47.73	mg/kg	0.00306 %		
	082-004-00-2	231-846-0	7758-97-6									
7	mercury { mercury dichloride }				<0.5	mg/kg	1.353	<0.677	mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel dihydroxide }				17.4	mg/kg	1.579	27.483	mg/kg	0.00275 %		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
9	zinc { zinc chromate }				151	mg/kg	2.774	418.896	mg/kg	0.0419 %		
	024-007-00-3	236-878-9	13530-65-9									
10	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
11	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									
12	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9									
13	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7									
14	phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-581-5	85-01-8									
15	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-371-1	120-12-7									
16	fluoranthene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
		205-912-4	206-44-0									
17	pyrene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
		204-927-3	129-00-0									
18	benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-033-00-9	200-280-6	56-55-3									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
19	chrysene				0.1 mg/kg		0.1 mg/kg	0.00001 %			
	601-048-00-0	205-923-4	218-01-9								
20	benzo[b]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-034-00-4	205-911-9	205-99-2								
21	benzo[k]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-036-00-5	205-916-6	207-08-9								
22	benzo[a]pyrene; benzo[def]chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-032-00-3	200-028-5	50-32-8								
23	indeno[123-cd]pyrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-893-2	193-39-5								
24	dibenz[a,h]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
25	benzo[ghi]perylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-883-8	191-24-2								
26	confirm TPH has NOT arisen from diesel or petrol				☒						
Total:									0.052 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- ND** Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS05

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name: **WS05** LoW Code: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**
Sample Depth: **0.4 m** Chapter: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**
Entry:

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	pH				7.8	pH		7.8	pH	7.8 pH		
2	arsenic { arsenic trioxide }				10.7	mg/kg	1.32	14.127	mg/kg	0.00141 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium sulfide }			1	<0.5	mg/kg	1.285	<0.643	mg/kg	<0.00005 %		<LOD
	048-010-00-4	215-147-8	1306-23-6									
4	chromium { chromium(VI) oxide }				<0.8	mg/kg	1.923	<1.538	mg/kg	<0.000154 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
5	copper { dicopper oxide; copper (I) oxide }				5.9	mg/kg	1.126	6.643	mg/kg	0.000664 %		
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead chromate }			1	14.3	mg/kg	1.56	22.305	mg/kg	0.00143 %		
	082-004-00-2	231-846-0	7758-97-6									
7	mercury { mercury dichloride }				<0.5	mg/kg	1.353	<0.677	mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel dihydroxide }				15.1	mg/kg	1.579	23.85	mg/kg	0.00239 %		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
9	zinc { zinc chromate }				48.7	mg/kg	2.774	135.101	mg/kg	0.0135 %		
	024-007-00-3	236-878-9	13530-65-9									
10	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
11	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									
12	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9									
13	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7									
14	phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-581-5	85-01-8									
15	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-371-1	120-12-7									
16	fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-912-4	206-44-0									
17	pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-927-3	129-00-0									
18	benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-033-00-9	200-280-6	56-55-3									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
19	chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-048-00-0	205-923-4	218-01-9								
20	benzo[b]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-034-00-4	205-911-9	205-99-2								
21	benzo[k]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-036-00-5	205-916-6	207-08-9								
22	benzo[a]pyrene; benzo[def]chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-032-00-3	200-028-5	50-32-8								
23	indeno[123-cd]pyrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-893-2	193-39-5								
24	dibenz[a,h]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
25	benzo[ghi]perylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-883-8	191-24-2								
26	confirm TPH has NOT arisen from diesel or petrol				☒						
Total:									0.0198 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- 🔍 Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- ND** Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS01

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	WS01	LoW Code:	
Sample Depth:	0.1 m	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	pH				8.4	pH		8.4	pH	8.4 pH		
2	arsenic { arsenic trioxide }				11.1	mg/kg	1.32	14.656	mg/kg	0.00147 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium sulfide }			1	<0.5	mg/kg	1.285	<0.643	mg/kg	<0.00005 %		<LOD
	048-010-00-4	215-147-8	1306-23-6									
4	chromium { chromium(VI) oxide }				<0.8	mg/kg	1.923	<1.538	mg/kg	<0.000154 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
5	copper { dicopper oxide; copper (I) oxide }				8.8	mg/kg	1.126	9.908	mg/kg	0.000991 %		
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead chromate }			1	30.4	mg/kg	1.56	47.418	mg/kg	0.00304 %		
	082-004-00-2	231-846-0	7758-97-6									
7	mercury { mercury dichloride }				<0.5	mg/kg	1.353	<0.677	mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel dihydroxide }				18.2	mg/kg	1.579	28.747	mg/kg	0.00287 %		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
9	zinc { zinc chromate }				60.2	mg/kg	2.774	167.004	mg/kg	0.0167 %		
	024-007-00-3	236-878-9	13530-65-9									
10	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
11	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									
12	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9									
13	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7									
14	phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-581-5	85-01-8									
15	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-371-1	120-12-7									
16	fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-912-4	206-44-0									
17	pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-927-3	129-00-0									
18	benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-033-00-9	200-280-6	56-55-3									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
19	chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-048-00-0	205-923-4	218-01-9								
20	benzo[b]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-034-00-4	205-911-9	205-99-2								
21	benzo[k]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-036-00-5	205-916-6	207-08-9								
22	benzo[a]pyrene; benzo[def]chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-032-00-3	200-028-5	50-32-8								
23	indeno[123-cd]pyrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-893-2	193-39-5								
24	dibenz[a,h]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
25	benzo[ghi]perylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-883-8	191-24-2								
26	confirm TPH has NOT arisen from diesel or petrol				☒						
Total:									0.0255 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non CLP determinands

• pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

• acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4 H302 , Acute Tox. 1 H330 , Acute Tox. 1 H310 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315

• acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Aquatic Chronic 2 H411

• fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

• phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Carc. 2 H351 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Skin Irrit. 2 H315

• anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

• fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4 H302 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

• pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

• indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

• benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

• **confirm TPH has NOT arisen from diesel or petrol**

Description/Comments: Chapter 3, section 4b requires a positive confirmation for benzo[a]pyrene to be used as a marker in evaluating Carc. 1B; H350 (HP 7) and Muta. 1B; H340 (HP 11)
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on risk phrases

cadmium {cadmium sulfide}

Worst case species based on risk phrases

chromium {chromium(VI) oxide}

Worst case species based on risk phrases

copper {dicopper oxide; copper (I) oxide}

Most likely common species

lead {lead chromate}

Worst case species based on risk phrases

mercury {mercury dichloride}

Worst case species based on risk phrases

nickel {nickel dihydroxide}

Worst case species based on risk phrases

zinc {zinc chromate}

Worst case species based on risk phrases

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.1, May 2018**

HazWasteOnline Classification Engine Version: 2021.246.4869.9247 (05 Sep 2021)

HazWasteOnline Database: 2021.246.4869.9247 (05 Sep 2021)

This classification utilises the following guidance and legislation:

WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2019 - UK: 2019 No. 720 of 27th March 2019

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK:

2020 No. 1540 of 16th December 2020

POPs Regulation 2019 - Regulation (EU) 2019/1021 of 20 June 2019

• **confirm TPH has NOT arisen from diesel or petrol**

Description/Comments: Chapter 3, section 4b requires a positive confirmation for benzo[a]pyrene to be used as a marker in evaluating Carc. 1B; H350 (HP 7) and Muta. 1B; H340 (HP 11)
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on risk phrases

cadmium {cadmium sulfide}

Worst case species based on risk phrases

chromium {chromium(VI) oxide}

Worst case species based on risk phrases

copper {dicopper oxide; copper (I) oxide}

Most likely common species

lead {lead chromate}

Worst case species based on risk phrases

mercury {mercury dichloride}

Worst case species based on risk phrases

nickel {nickel dihydroxide}

Worst case species based on risk phrases

zinc {zinc chromate}

Worst case species based on risk phrases

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.1, May 2018**

HazWasteOnline Classification Engine Version: 2021.246.4869.9247 (05 Sep 2021)

HazWasteOnline Database: 2021.246.4869.9247 (05 Sep 2021)

This classification utilises the following guidance and legislation:

WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2019 - UK: 2019 No. 720 of 27th March 2019

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK:

2020 No. 1540 of 16th December 2020

POPs Regulation 2019 - Regulation (EU) 2019/1021 of 20 June 2019

Appendix C BGS Records

GEORGE STOW CO. LTD.

Waterworks Engineers

READING ROAD - HENLEY-on-THAMES, OXON.

RECORD OF WELL (SHAFT OR BOREHOLE)

Borehole No. 9

DATE COMPLETED 1.8.78

317/453
Su 90/93

All depths to be measured below Ground Level

Work carried out for Southern Water Authority, SUSSEX River & Water Division (Brighton)
Locality (Exact Site) Woodgate, Nr. Chichester, SUSSEX - N.G.P. SU 40 SW (4383 0400)
Level of Ground Surface above Sea Level (O.D.) 20 m.
Depth of Shaft 135.65 m. Diameter 100 mm. (1.0 m)
Depth of Bore 156 m. Diameter: At Top 100 mm. At Bottom 200 mm.

Details of Permanent Lining Tubes

Diameter	Length Inserted	Plain	Slotted	Top At	above Ground Level
200 mm	135.65 m.	NIL		0.15 m	below

Water Struck at depth of (in m.) 135.65

Rest Level of Water below Ground Level 5.5 m.

Yield on 15 Hours test. Pumping 10 litres per sec. Date

Pump Water level 135.65 m. below Ground Level.

Time of Recovery

Remarks 1 Borehole drilled by mud flush Rotary therefore depth at which water struck not apparent. The borehole was developed by swabbing and jetting. No test pumping was carried out.

Loc. by O.M. 6" Map Sheet 62 SW/E
see back for Strata Record.

DETAILS OF STRATA

317/453

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA (and any additional remarks)	THICKNESS	DEPTH
		METRES	METRES
	Topsoil	0.50	0.50
	Sandy brown clay	0.50	1.00
DRIFT	C lay with stones	1.00	2.00
	Bed of gravel	1.00	3.00
	Sandy blue clay	9.00	12.00
LOAMING CLAY	Blue clay with bands of hard stone	62.00	74.00
	Bed of blue coloured clay	5.00	79.00
	Very hard black stone with pyrites	0.50	84.50
	Blue clay with bands of stone	17.50	102.00
	Sandy/green/brown clay	1.00	103.00
BROWN CLAY	Red mottled clay	9.00	112.00
BROWN CLAY	Dark blue mottled clay	2.00	114.00
	Red mottled clay	2.00	116.00
	Red clay with bands of blue/green shale	3.00	119.00
	Red/blue mottled clay	14.00	133.00
	Red clay mottled green and yellow	3.00	136.00
Upper chalk	Chalk and flints	20.00	156.00
REST 9/78			(512 ft)



Appendix D Southern Water Public Sewer Records

04429



SU9304SE

Drawn by: kumaria

Scale: 1:2500

Date: 05/10/2017

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility for the event of inaccuracy.

n the event of inaccuracy.
The actual positions should be determined on site.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement. The actual positions should be determined on site.

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494198

41/21/REF
e 21567X8XDX8X4X1X2X3X1X

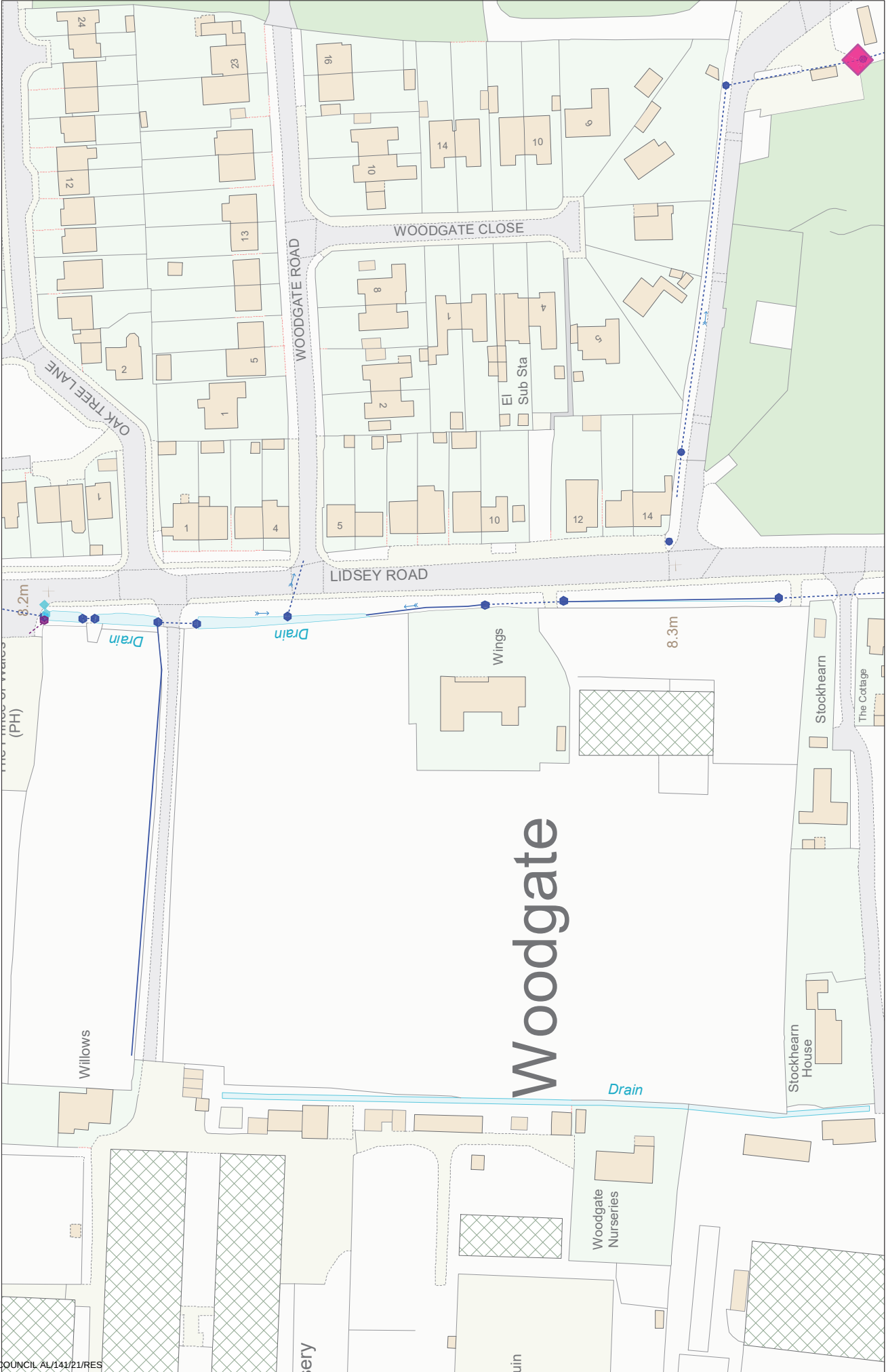


Date: 05/10/2017

[illegible]

Appendix E Arun District Council Correspondence

Arun District Council Maps



Mapping produced by Arun District Council

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Production Date: 08 January 2020

Scale: 1:1000 @ A3

www.arun.gov.uk



Appendix F West Sussex County Council Correspondence

Appendix G Lidsey Surface Water Management Plan

Lidsey Surface Water Management Plan

West Sussex County Council

ATKINS

A Partnership between:

- West Sussex County Council
- Southern Water
- Arun District Council
- Environment Agency

**Summary**

Opportunity Area Reference	Lidsey Road & Oak Tree Lane
Local Flood Risk Zone	LFRZ_018
Properties at Risk (1 in 100 Year)	10
Average Annual Damages	£6,861
Preferred Intervention	Asset Management. Reduce surface water and infiltration entering public foul sewers. Improve surface water conveyance.
Present Value Damage Avoided (Assuming a 1 in 30 year level of protection scheme is identified and implemented)	£2,406
Key Stakeholders	WSCC, ADC, SWS

Flood History	Pluvial flooding experienced during the summer 2012 storm along Lidsey Road - otherwise flooding has not occurred here in recent history. Hydraulic overload of sewers reported in Oak Tree Lane on 02/01/2013 and on Westergate Street on 29/01/2013 and 09/11/2010.
Constraints	Limited detail on surface water drainage records in this area.
Receptors	Property and Highway
Opportunities	Asset Management. Reduce surface water and infiltration entering public foul sewers. Improve surface water conveyance.

Overview of Key Flood Risk Sources, Mechanisms, and Pathways

Property flooding caused by pluvial runoff from highway. Flooding from foul manholes in highway due to hydraulic overload.

Flood Risk Damage Estimates

Rainfall Return Period	Number of Properties at Risk		Average Annual Damages
	Residential	Commercial	
1 in 30 Year	8	0	£6,861
1 in 100 Year	10	0	
1 in 100 Year + CC (2080's)	16	1	

Shortlisting of Interventions

Option Ref.	Option Category (Source / Pathway / Receptor / Other)	Option	Potential	Considered	Scoring (-2 to +2)					Summary of scheme / General discussion
					Economic	Environmental	Objectives	Social	Technical	
1	Do Nothing	Do Nothing	No	No	0	0	0	0	0	
2	Do minimum	Do minimum - continue current maintenance	Yes	Yes	2	2	0	2	1	7
3	Source	Green Roof	No	No	0	0	0	0	0	
4	Source	Detention Basins (Attenuation / Retention)	No	No	0	0	0	0	0	
5	Source	Permeable Paving	No	No	0	0	0	0	0	
6	Source	Ponds and Wetlands	No	No	0	0	0	0	0	
7	Source	Rainwater Harvesting	Yes	Yes	2	2	1	2	2	9
8	Source	Soakaways	No	No	0	0	0	0	0	
9	Source	Swales	No	No	0	0	0	0	0	
10	Source	Bioretention Basins	No	No	0	0	0	0	0	
11	Source	Bioretention Street Planting	No	No	0	0	0	0	0	
12	Source	Sealing of manhole covers and protecting gullies	Yes	Yes	1	2	2	2	1	8
13	Source	Sealing Sewers (Reduce ground water / rainfall induced infiltration)	Yes	Yes	1	2	2	2	0	7
14	Source	Other Source Measures	No	No	0	0	0	0	0	
15	Pathway	Increasing Capacity in Drainage System (Storage, Upsize)	Yes	Yes	0	0	2	0	2	4
16	Pathway	Deculverting Watercourse(s)	No	No	0	0	0	0	0	
17	Pathway	Improved maintenance regimes	Yes	Yes	-2	0	2	0	2	2
18	Pathway	Increase Gully Assets	Yes	Yes	0	0	2	1	2	5
19	Pathway	Land management practices	No	No	0	0	0	0	0	
20	Pathway	Managing overland flows (above ground storage)	Yes	No	0	0	0	0	0	
21	Pathway	Managing overland flows (preferential flow paths during exceedance)	Yes	No	0	0	0	0	0	
22	Pathway	Separation of foul and surfacewater	Yes	Yes	0	2	2	0	0	4
23	Receptor	Improve Weather Warning	No	No	0	0	0	0	0	
24	Receptor	Improve resilience to flooding	Yes	Yes	2	2	2	2	1	9
25	Receptor	Social change, education and awareness	No	No	0	0	0	0	0	
26	Receptor	Raising doorway / access threshold	Yes	Yes	2	2	2	2	1	9
27	Receptor	Planning policies to influence development (Development Control, SUDS Strategy, Blue Development Corridors, New Development).	Yes	No	0	0	0	0	0	
28	Receptor	Temporary demountable flood defences	Yes	Yes	1	0	2	0	2	5
29	Strategy	Further Study / Investigations	Yes	Yes	1	1	1	1	1	5
30	Strategy	Survey, Advise & Monitoring	No	No	0	0	0	0	0	
31	Strategy	Community Awareness	No	No	0	0	0	0	0	

Key Stakeholders

Provisionally Identified
ADC / WSCC (Action 1) SWS (Action 2), ADC (Action 3), SWS WSCC (Action 4)

Actions

As Agreed by Partner Organisations
1 Survey private road existing highway drainage and confirm condition and arrangements. Implement clearance of the ditch on the west side of Lidsey Road and investigate capacity downstream of the highway ditch
2 Area to be considered as part of the DSF study.
3 Consider use of flood mitigation to protect properties from pluvial flooding from highway based on outputs from the DSF study
4 Investigate and prioritise interventions to reduce clear water inflow and infiltration of public foul sewers. Work with Local Authority to target resilience improvements.
5

LFRZ_0018 - Oak Tree Lane, Woodgate

Figure 7.37 - Flood Risk LFRZ_018 (1 in 100 year storm event)

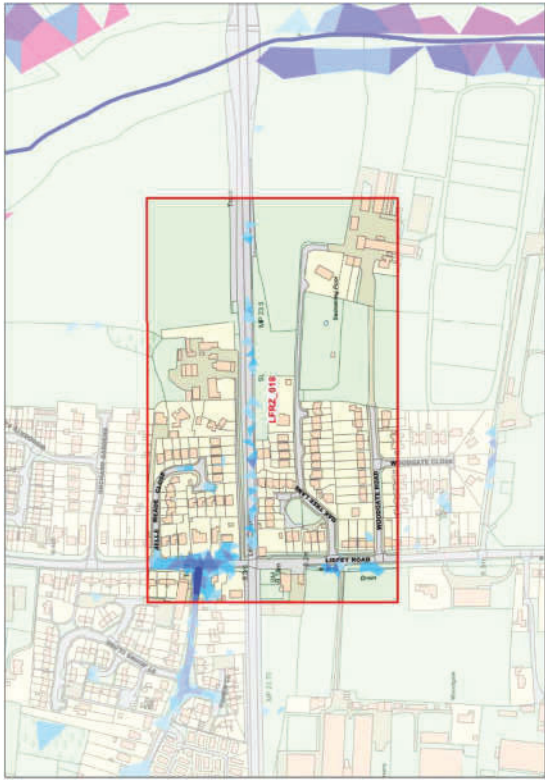


Figure 7.38 - Flood Hazard LFRZ_018 (1 in 100 year storm event)

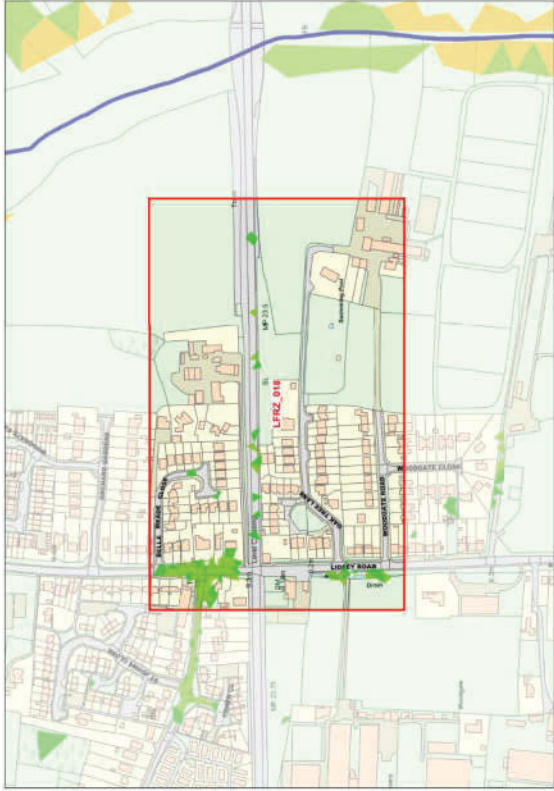


Table 7-36 - Predicted Residential and Commercial Property Flood Impact LFRZ_018

Rainfall Return Period	Predicted number of properties at risk of flooding	
	Residential	Commercial
1 in 30 Year	8	0
1 in 100 Year	10	0
1 in 100 Year + (Climate Change (2080's)	16	1

Table 7-37 - Summary of local flood risk within the LFRZ_018

Flood Risk Source			
Pluvial Flood Risk	Fluvial Flood Risk	Ground Water Flood Risk	Public Sewer Flood Risk
Medium	Low	Low	High
Flood Mechanism			
Property flooding caused by pluvial runoff from highway. Flooding from foul manholes in highway due to hydraulic overload.			
Flood Risk Receptors			
Residential, commercial properties and highway.			
Flood Hazard			
A 'low' flood hazard is predicted for 1% annual chance storm event (1 in 100 year return period) of Burndeil Road			
Validation			
Pluvial flooding experienced during the summer 2012 storm along Lidsey Road - otherwise flooding has not occurred here in recent history. Hydraulic overload of sewers reported in Oak Tree Lane on 02/01/2013 and on Westergate Street on 29/01/2013 and 09/11/2010.			

Table 0-1 - LFRZ Average Annual Damages

Local Flood Risk Zone	Location Name	Average Annual Damages (£)	Assuming a flood relief scheme was implemented providing 1 in 30 year level of flood protection	
			Predicted Residual Annual Average Damages (£)	Annual Average Damages Avoided (£)
LFRZ_006	Lake Lane, Barnham	£277,702	£76,471	£201,231
LFRZ_017	Felpham Road, Felpham	£74,582	£22,367	£52,215
LFRZ_013	Elmer Sands, Middleton on Sea	£70,270	£18,790	£51,481
LFRZ_019	Wandleys Lane, Eastergate	£42,018	£10,454	£31,564
LFRZ_023	Rudwicks Close, Broomcroft Road, The Loop, Jacken Close, Bramfield Road, Leverton Avenue, Limmer Lane (east end), Burley Road and Dryad Way in Felpham	£40,048	£17,538	£22,510
LFRZ_025	Limmer Lane, Felpham	£39,629	£13,084	£26,545
LFRZ_003	Walberton Village (Barnham Lane (A))	£36,918	£10,881	£26,037
LFRZ_002	Elm Grove, Barnham	£31,363	£11,984	£19,379
LFRZ_026	Eastergate Lane, Eastergate	£27,116	£15,545	£11,572
LFRZ_024	West Close, Middleton on Sea	£24,643	£5,608	£19,035
LFRZ_014	Lodge Close & Willow Brook, Middleton on Sea	£22,553	£9,285	£13,268
LFRZ_015	Sea Way, Middleton on Sea	£14,495	£2,965	£11,530
LFRZ_004	Maple Road, Walberton	£13,692	£3,298	£10,394
LFRZ_021	Marshalls Close / Church Lane, Barnham	£13,006	£3,839	£9,167
LFRZ_022	Southdean Close, Middleton on Sea	£9,816	£4,502	£5,313
LFRZ_018	Oak Tree Lane, Woodgate	£6,861	£2,406	£4,454
LFRZ_020	Highground Lane, Barnham	£5,916	£1,885	£4,030
LFRZ_012	Yapton Road, Middleton on Sea	£4,439	£2,197	£2,242
LFRZ_010	Burndell Road, Yapton	£4,065	£1,722	£2,343
LFRZ_027	Downsview Road, Barnham	£3,794	£825	£2,970
LFRZ_001	West Walberton Lane, Walberton	£3,693	£723	£2,970
LFRZ_016	Golf Links Road, Felpham	£524	£330	£194
LFRZ_009	Yapton Road, Yapton	£429	£429	£-
LFRZ_008	Barnham Lane, Barnham (C)	£362	£362	£-
LFRZ_005	Barnham Lane, Barnham (B)	£68	£68	£-
LFRZ_007	Park Road, Barnham	£-	£-	£-
LFRZ_011	West View Drive, Yapton	£-	£-	£-
Total		£768,001	£237,559	£530,442

Analysis from the integrated modelling predicts that there are 592 residential properties and 215 non-residential properties at risk across the catchment for a 3.33 probability storm event. This totals £2.7 million estimated Average Annual Damages (AAD), of which £0.77 million is within 27 LFRZs. As such, the LFRZs account for 28% of the Lidsey SWMP study areas AADs predicted to be incurred. If schemes were implemented in all of the LFRZs and continued for 100 years, then the Present Value benefits would be in the order of £15.8M based on the current Treasury variable discount rate which starts at 3.5%.

7.6 LFRZ Prioritisation

To assist with prioritising future works on all LFRZs a prioritisation methodology was applied. It is considered important to use a simple approach to ensure clear interpretation of the prioritisation process between one LFRZ over another. Given the economic AADs for the LFRZ incorporates the predicted number of properties flooded and accounts for apportioned damages to commercial properties it is considered appropriate that the following priority is given to each of the LFRZs as shown in Table 7.57.

Table 0-2 - LFRZ Prioritisation

Local Flood Risk Zone	Location Name	Priority
LFRZ_006	Lake Lane, Barnham	High
LFRZ_017	Felpham Road, Felpham	High
LFRZ_013	Elmer Sands, Middleton on Sea	High
LFRZ_019	Wandleys Lane, Eastergate	High
LFRZ_023	Rudwicks Close, Broomcroft Road, The Loop, Jacken Close, Bramfield Road, Leverton Avenue, Limmer Lane (East), Burley Road and Dryad Way in Felpham	High
LFRZ_025	Limmer Lane, Felpham	High
LFRZ_003	Walberton Village (Barnham Lane (A))	High
LFRZ_002	Elm Grove, Barnham	Medium
LFRZ_026	Eastergate Lane, Eastergate	Medium
LFRZ_024	West Close, Middleton on Sea	Medium
LFRZ_014	Lodge Close & Willow Brook, Middleton on Sea	Medium
LFRZ_015	Sea Way, Middleton on Sea	Medium
LFRZ_004	Maple Road, Walberton	Medium
LFRZ_021	Marshalls Close / Church Lane, Barnham	Medium
LFRZ_022	Southdean Close, Middleton on Sea	Medium
LFRZ_018	Oak Tree Lane, Woodgate	Medium
LFRZ_020	Highground Lane, Barnham	Medium
LFRZ_012	Yapton Road, Middleton on Sea	Medium
LFRZ_010	Burndell Road, Yapton	Medium
LFRZ_027	Downsview Road, Barnham	Medium
LFRZ_001	West Walberton Lane, Walberton	Medium
LFRZ_016	Golf Links Road, Felpham	Low
LFRZ_009	Yapton Road, Yapton	Low
LFRZ_008	Barnham Lane, Barnham (C)	Low
LFRZ_005	Barnham Lane, Barnham (B)	Low
LFRZ_007	Park Road, Barnham	Low
LFRZ_011	West View Drive, Yapton	Low

LFRZ_018 – Oak Tree Lane, Woodgate**Preferred Interventions:** Asset Management. Reduce surface water and infiltration entering public foul sewers. Improve surface water conveyance.**Table 10-19 - LFRZ_018 Options**

Option Ref.	Option Category (Source / Pathway / Receptor / Other)	Option	Potential	Considered	Economic	Environmental	Objectiveness	Social	Technical	Total Score	Summary of scheme / General discussion
2	Do minimum	Do minimum - continue current maintenance	Yes	Yes	2	2	0	2	1	7	
7	Source	Rainwater Harvesting	Yes	Yes	2	2	1	2	2	9	Installation of water butts in upstream catchment.
12	Source	Sealing of manhole covers and protecting gullies	Yes	Yes	1	2	2	2	1	8	Reduce surface water inflow.
13	Source	Sealing Sewers (Reduce ground water / rainfall induced infiltration)	Yes	Yes	1	2	2	2	0	7	Reduce ground water inflows.
15		Increasing Capacity in Drainage System (Storage, Upsize)	Yes	Yes	0	0	2	0	2	4	Investigate conveying surface water away from properties. This should be completed after survey of existing drainage assets. See figure 9.9.
17	Pathway	Improved maintenance regimes	Yes	Yes	-2	0	2	0	2	2	Optimisation of existing assets. WSCC and ADC are planning to clear the ditch on the west side of Lidsey Road
18	Pathway	Increase Gully Assets	Yes	Yes	0	0	2	1	2	5	This should be investigated to remove highway flooding.
22	Pathway	Separation of foul and surface water	Yes	Yes	0	2	2	0	0	4	Control at source see activities 12 & 13
24	Receptor	Improve resilience to flooding	Yes	Yes	2	2	2	2	1	9	To be considered in a hydraulic investigation.
26	Receptor	Raising doorway / access threshold	Yes	Yes	2	2	2	2	1	9	To be considered in a hydraulic investigation.
28	Receptor	Temporary demountable flood defences	Yes	Yes	1	0	2	0	2	5	Potentially applicable.
29	Strategy	Further Study / Investigations	Yes	Yes	1	1	1	1	1	5	Detailed hydraulic investigation is required. As detailed in Option 15.

LFRZ_018 – Oak Tree Lane, Woodgate (Cont.)

Increased Surface Water Conveyance

A: Improve / maintain existing ditch. The conveyance system upgrade may also need to extend further north to the level crossing as the hydraulic model indicates that surface water runoff is predicted to occur north of the railway line. Conveying surface water from Lidsey Road (north of railway crossing) to the south would require construction of a culvert. If practical this would be costly element of works.

B: New Culvert

C: Install new ditch to convey water to open green space

Note: This option has not been hydraulically modelled.

Figure 10.9 - Oak Tree Lane, Woodgate

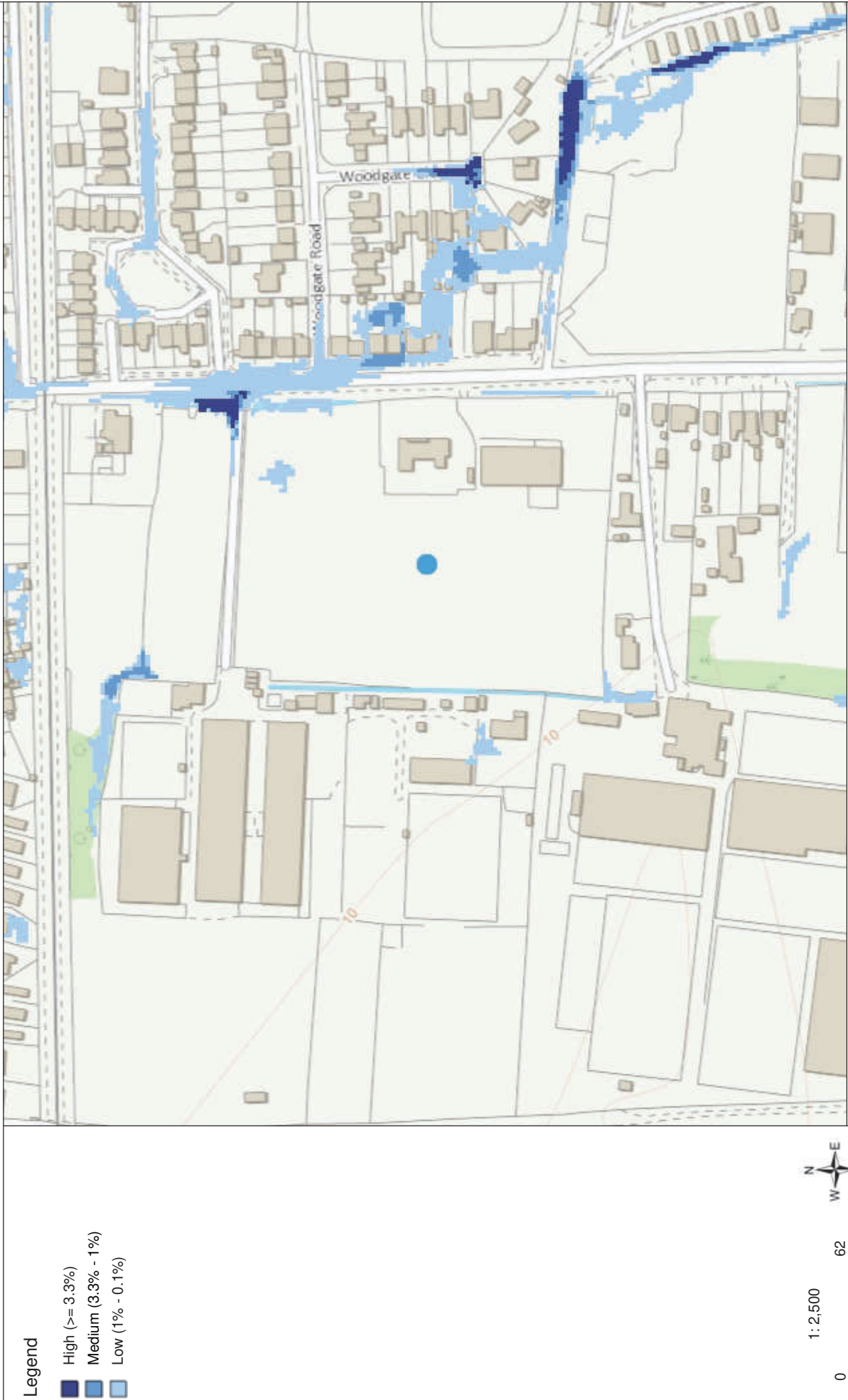


WSCC and ADC are planning to clear the ditch on the west side of Lidsey Road and are investigating liaising with land owners to ensure capacity is available downstream of the highway ditch.

13	LFRZ_004 Maple Road, Walberton	 Carry out a detailed investigation of flooding issue and where required develop hydraulic solution.	 Investigate fat, oil, grease problems reported by residents.	  Investigate and prioritise interventions to reduce clear water inflow and infiltration of public foul sewers. Work with Local Authority to target resilience improvements.	 Continue proactive maintenance of highway gullies and jetting of sewers to optimise existing drainage assets.	
14	LFRZ_021 Marshalls Close / Church Lane, Barnham	 Investigate the Operation of Marshalls Close CSO	 Investigate options to reduce flood risk as part of the EA 2014 ARIFRM project.	 Investigate additional flood protection measures for two properties in Marshalls Close i.e. sealing floors and walls.		
15	LFRZ_022 Southdean Close, Middleton on Sea	  Confirm surface water drainage arrangements and condition in Southdean Close.	  Consider connecting existing or new highway drainage system into the Rose Avenue public storm water system. The storm system may require upgrade to accommodate increased inflows.	 Consider use of ATAC (Temporary Treatment Plant)		
16	LFRZ_018 Oak Tree Lane, Woodgate	 Survey private road existing highway drainage and confirm condition and arrangements. Implement clearance of the ditch on the west side of Lidsey Road and investigate capacity downstream of the highway ditch	 Area to be considered as part of the DSF study.	  Consider use of flood mitigation to protect properties from pluvial flooding from highway based on outputs from the DSF study	  Investigate and prioritise interventions to reduce clear water inflow and infiltration of public foul sewers. Work with Local Authority to target resilience improvements.	
17	LFRZ_020 Highground Lane	  Investigate and prioritise interventions to reduce clear water inflow and infiltration of public foul sewers. Work with Local Authority to target resilience improvements.				
18	LFRZ_012 Yapton Road, Middleton on Sea	 Optimise existing drainage assets. Continue maintenance of ditch system.	 Monitor flooding to evaluate improvements in the ditch system.	 Consider increased conveyance and provide attenuation for surface water flows into the fields to the north or east.	 Consider more gullies along Yapton Lane to intercept highway runoff from Norton Road and Yapton Road.	 Investigate flood mitigations.

Appendix H Environment Agency Correspondence

Surface Water Flooding - Map



Appendix I CD Surveys Topographical Survey

Appendix J Calculations



Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	10	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	19.400	Minimum Backdrop Height (m)	0.500
Ratio-R	0.333	Preferred Cover Depth (m)	0.900
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.029	5.00	8.825	1200	493832.202	104055.549	1.525
2	0.029	5.00	8.825	1200	493834.231	104040.801	1.575
3	0.029	5.00	8.775	1200	493841.632	104029.356	1.575
4	0.026	5.00	8.100	450	493872.616	104061.386	0.700
5	0.055	5.00	8.550	1200	493871.167	104028.072	1.500
6	0.010	5.00	8.150	1200	493898.051	104036.412	1.050
7	0.006	5.00	8.150	1200	493921.341	104035.399	1.200
8	0.022	5.00	8.125	450	493917.233	104030.093	0.510
9	0.007	5.00	8.070	1200	493926.695	104026.709	0.610
10	0.050	5.00	8.125	1200	493923.483	104025.797	1.275
11	0.029	5.00	8.050	1200	493929.240	104020.087	1.200
12	0.009	5.00	7.950	450	493931.103	104009.504	0.610
13	0.009	5.00	7.950	450	493930.817	104002.990	0.610
14	0.029	5.00	7.975	1200	493928.499	104003.045	1.175
15	0.030	5.00	8.925	1200	493826.842	103989.460	1.825
16	0.050	5.00	8.725	450	493846.281	103987.108	0.610
17	0.016	5.00	8.725	1200	493848.622	103988.513	1.700
18	0.040	5.00	8.725	1200	493866.845	104003.736	1.700
19	0.029	5.00	8.600	1200	493866.150	103987.750	1.650
20	0.050	5.00	8.125	1200	493920.724	103985.377	1.375
21	0.040	5.00	8.000	450	493929.503	103988.648	0.610
22			8.025	1350	493927.945	103990.314	1.325
22_OUT	0.070		7.760	1350	493941.250	103988.699	1.110
23		5.00	7.760	1200	493953.873	103961.990	1.110
24			7.760	1200	493954.713	103960.849	1.120
24_OUT			7.100	1200	493960.277	103953.288	0.510



Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1	2	14.887	0.600	7.300	7.250	0.050	297.7	375	5.24	50.0
1.001	2	3	13.629	0.600	7.250	7.200	0.050	272.6	375	5.45	50.0
1.002	3	5	29.563	0.600	7.200	7.050	0.150	197.1	375	5.83	50.0
2.000	4	5	33.345	0.600	7.400	7.200	0.200	166.7	150	5.72	50.0
1.003	5	10	52.365	0.600	7.050	6.875	0.175	299.2	375	6.67	50.0
3.000	6	7	23.312	0.600	7.100	6.950	0.150	155.4	150	5.48	50.0
3.001	7	10	9.838	0.600	6.950	6.850	0.100	98.4	150	5.65	50.0
4.000	8	10	7.584	0.600	7.615	7.565	0.050	151.7	150	5.16	50.0
5.000	9	10	3.339	0.600	7.460	7.435	0.025	133.6	150	5.06	50.0
1.004	10	11	8.108	0.600	6.875	6.850	0.025	324.3	375	6.80	50.0
1.005	11	14	17.058	0.600	6.850	6.800	0.050	341.2	375	7.09	50.0
6.000	12	14	6.964	0.600	7.340	7.290	0.050	139.3	150	5.14	50.0
7.000	13	14	2.319	0.600	7.340	7.315	0.025	92.7	150	5.04	50.0
1.006	14	22	12.743	0.600	6.800	6.760	0.040	318.6	375	7.30	50.0
8.000	15	17	21.801	0.600	7.100	7.025	0.075	290.7	375	5.34	50.0
9.000	16	17	2.730	0.600	8.115	8.090	0.025	109.2	150	5.05	50.0
8.001	17	19	17.545	0.600	7.025	6.950	0.075	233.9	375	5.59	50.0
10.000	18	19	16.001	0.600	7.025	6.950	0.075	213.3	300	5.25	50.0
8.002	19	20	54.626	0.600	6.950	6.750	0.200	273.1	375	6.43	50.0
8.003	20	22	8.747	0.600	6.750	6.700	0.050	174.9	375	6.53	50.0
11.000	21	22	2.281	0.600	7.390	7.365	0.025	91.2	150	5.04	50.0
1.007	22	22_OUT	13.403	0.600	6.700	6.650	0.050	268.1	375	7.51	50.0
12.000	23	24	1.417	0.600	6.650	6.640	0.010	141.7	150	5.03	50.0
12.001	24	24_OUT	9.388	0.600	6.640	6.590	0.050	187.8	150	5.24	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.000	1.045	115.4	3.9	1.150	1.200	0.029	0.0
1.001	1.092	120.6	7.9	1.200	1.200	0.058	0.0
1.002	1.287	142.1	11.8	1.200	1.125	0.087	0.0
2.000	0.775	13.7	3.5	0.550	1.200	0.026	0.0
1.003	1.042	115.1	22.8	1.125	0.875	0.168	0.0
3.000	0.803	14.2	1.4	0.900	1.050	0.010	0.0
3.001	1.013	17.9	2.2	1.050	1.125	0.016	0.0
4.000	0.813	14.4	3.0	0.360	0.410	0.022	0.0
5.000	0.868	15.3	0.9	0.460	0.540	0.007	0.0
1.004	1.000	110.5	35.6	0.875	0.825	0.263	0.0
1.005	0.975	107.7	39.6	0.825	0.800	0.292	0.0
6.000	0.849	15.0	1.2	0.460	0.535	0.009	0.0
7.000	1.044	18.4	1.2	0.460	0.510	0.009	0.0
1.006	1.009	111.5	45.9	0.800	0.890	0.339	0.0
8.000	1.057	116.8	4.1	1.450	1.325	0.030	0.0
9.000	0.961	17.0	6.8	0.460	0.485	0.050	0.0
8.001	1.180	130.3	13.0	1.325	1.275	0.096	0.0
10.000	1.072	75.8	5.4	1.400	1.350	0.040	0.0
8.002	1.091	120.5	22.4	1.275	1.000	0.165	0.0
8.003	1.367	150.9	29.1	1.000	0.950	0.215	0.0
11.000	1.052	18.6	5.4	0.460	0.510	0.040	0.0
1.007	1.102	121.7	80.5	0.950	0.735	0.594	0.0
12.000	0.842	14.9	0.0	0.960	0.970	0.000	0.0
12.001	0.730	12.9	0.0	0.970	0.360	0.000	0.0

Pipeline Schedule

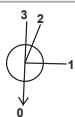
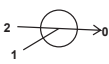
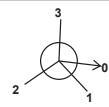
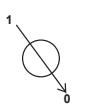
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	14.887	297.7	375	Circular	8.825	7.300	1.150	8.825	7.250	1.200
1.001	13.629	272.6	375	Circular	8.825	7.250	1.200	8.775	7.200	1.200
1.002	29.563	197.1	375	Circular	8.775	7.200	1.200	8.550	7.050	1.125
2.000	33.345	166.7	150	Circular	8.100	7.400	0.550	8.550	7.200	1.200
1.003	52.365	299.2	375	Circular	8.550	7.050	1.125	8.125	6.875	0.875
3.000	23.312	155.4	150	Circular	8.150	7.100	0.900	8.150	6.950	1.050
3.001	9.838	98.4	150	Circular	8.150	6.950	1.050	8.125	6.850	1.125
4.000	7.584	151.7	150	Circular	8.125	7.615	0.360	8.125	7.565	0.410
5.000	3.339	133.6	150	Circular	8.070	7.460	0.460	8.125	7.435	0.540
1.004	8.108	324.3	375	Circular	8.125	6.875	0.875	8.050	6.850	0.825
1.005	17.058	341.2	375	Circular	8.050	6.850	0.825	7.975	6.800	0.800
6.000	6.964	139.3	150	Circular	7.950	7.340	0.460	7.975	7.290	0.535
7.000	2.319	92.7	150	Circular	7.950	7.340	0.460	7.975	7.315	0.510
1.006	12.743	318.6	375	Circular	7.975	6.800	0.800	8.025	6.760	0.890
8.000	21.801	290.7	375	Circular	8.925	7.100	1.450	8.725	7.025	1.325
9.000	2.730	109.2	150	Circular	8.725	8.115	0.460	8.725	8.090	0.485
8.001	17.545	233.9	375	Circular	8.725	7.025	1.325	8.600	6.950	1.275
10.000	16.001	213.3	300	Circular	8.725	7.025	1.400	8.600	6.950	1.350
8.002	54.626	273.1	375	Circular	8.600	6.950	1.275	8.125	6.750	1.000
8.003	8.747	174.9	375	Circular	8.125	6.750	1.000	8.025	6.700	0.950
11.000	2.281	91.2	150	Circular	8.000	7.390	0.460	8.025	7.365	0.510
1.007	13.403	268.1	375	Circular	8.025	6.700	0.950	7.760	6.650	0.735
12.000	1.417	141.7	150	Circular	7.760	6.650	0.960	7.760	6.640	0.970
12.001	9.388	187.8	150	Circular	7.760	6.640	0.970	7.100	6.590	0.360

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	1200	Manhole	Adoptable	2	1200	Manhole	Adoptable
1.001	2	1200	Manhole	Adoptable	3	1200	Manhole	Adoptable
1.002	3	1200	Manhole	Adoptable	5	1200	Manhole	Adoptable
2.000	4	450	Manhole	Adoptable	5	1200	Manhole	Adoptable
1.003	5	1200	Manhole	Adoptable	10	1200	Manhole	Adoptable
3.000	6	1200	Manhole	Adoptable	7	1200	Manhole	Adoptable
3.001	7	1200	Manhole	Adoptable	10	1200	Manhole	Adoptable
4.000	8	450	Manhole	Adoptable	10	1200	Manhole	Adoptable
5.000	9	1200	Manhole	Adoptable	10	1200	Manhole	Adoptable
1.004	10	1200	Manhole	Adoptable	11	1200	Manhole	Adoptable
1.005	11	1200	Manhole	Adoptable	14	1200	Manhole	Adoptable
6.000	12	450	Manhole	Adoptable	14	1200	Manhole	Adoptable
7.000	13	450	Manhole	Adoptable	14	1200	Manhole	Adoptable
1.006	14	1200	Manhole	Adoptable	22	1350	Manhole	Adoptable
8.000	15	1200	Manhole	Adoptable	17	1200	Manhole	Adoptable
9.000	16	450	Manhole	Adoptable	17	1200	Manhole	Adoptable
8.001	17	1200	Manhole	Adoptable	19	1200	Manhole	Adoptable
10.000	18	1200	Manhole	Adoptable	19	1200	Manhole	Adoptable
8.002	19	1200	Manhole	Adoptable	20	1200	Manhole	Adoptable
8.003	20	1200	Manhole	Adoptable	22	1350	Manhole	Adoptable
11.000	21	450	Manhole	Adoptable	22	1350	Manhole	Adoptable
1.007	22	1350	Manhole	Adoptable	22_OUT	1350	Manhole	Adoptable
12.000	23	1200	Manhole	Adoptable	24	1200	Manhole	Adoptable
12.001	24	1200	Manhole	Adoptable	24_OUT	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
1	493832.202	104055.549	8.825	1.525	1200		0	1.000	7.300	375
2	493834.231	104040.801	8.825	1.575	1200		1	1.000	7.250	375
3	493841.632	104029.356	8.775	1.575	1200		0	1.001	7.250	375
4	493872.616	104061.386	8.100	0.700	450		1	1.001	7.200	375
5	493871.167	104028.072	8.550	1.500	1200		0	1.002	7.200	375
6	493898.051	104036.412	8.150	1.050	1200		0	2.000	7.400	150
7	493921.341	104035.399	8.150	1.200	1200		1	2.000	7.200	150
8	493917.233	104030.093	8.125	0.510	450		2	1.002	7.050	375
9	493926.695	104026.709	8.070	0.610	1200		0	1.003	7.050	375
10	493923.483	104025.797	8.125	1.275	1200		0	3.000	7.100	150
11	493929.240	104020.087	8.050	1.200	1200		1	3.000	6.950	150
12	493931.103	104009.504	7.950	0.610	450		0	3.001	6.950	150
13	493930.817	104002.990	7.950	0.610	450		0	4.000	7.615	150
14	493926.695	104026.709	8.070	0.610	1200		0	5.000	7.460	150
15	493923.483	104025.797	8.125	1.275	1200		1	5.000	7.435	150
16	493929.240	104020.087	8.050	1.200	1200		2	4.000	7.565	150
17	493931.103	104009.504	7.950	0.610	450		3	3.001	6.850	150
18	493930.817	104002.990	7.950	0.610	450		4	1.003	6.875	375
19	493926.695	104026.709	8.070	0.610	1200		0	1.004	6.875	375
20	493923.483	104025.797	8.125	1.275	1200		1	1.004	6.850	375
21	493929.240	104020.087	8.050	1.200	1200		0	1.005	6.850	375
22	493931.103	104009.504	7.950	0.610	450		0	6.000	7.340	150
23	493930.817	104002.990	7.950	0.610	450		0	7.000	7.340	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
14	493928.499	104003.045	7.975	1.175	1200		1	7.000	7.315	150
							2	6.000	7.290	150
							3	1.005	6.800	375
							0	1.006	6.800	375
15	493826.842	103989.460	8.925	1.825	1200		0	8.000	7.100	375
16	493846.281	103987.108	8.725	0.610	450		0	9.000	8.115	150
17	493848.622	103988.513	8.725	1.700	1200		1	9.000	8.090	150
							2	8.000	7.025	375
							0	8.001	7.025	375
18	493866.845	104003.736	8.725	1.700	1200		0	10.000	7.025	300
19	493866.150	103987.750	8.600	1.650	1200		1	10.000	6.950	300
							2	8.001	6.950	375
							0	8.002	6.950	375
20	493920.724	103985.377	8.125	1.375	1200		1	8.002	6.750	375
							0	8.003	6.750	375
21	493929.503	103988.648	8.000	0.610	450		0	11.000	7.390	150
22	493927.945	103990.314	8.025	1.325	1350		1	11.000	7.365	150
							2	8.003	6.700	375
							3	1.006	6.760	375
							0	1.007	6.700	375
22_OUT	493941.250	103988.699	7.760	1.110	1350		1	1.007	6.650	375
23	493953.873	103961.990	7.760	1.110	1200		0	12.000	6.650	150
24	493954.713	103960.849	7.760	1.120	1200		1	12.000	6.640	150
							0	12.001	6.640	150
24_OUT	493960.277	103953.288	7.100	0.510	1200		1	12.001	6.590	150

Simulation Settings

Rainfall Methodology	FSR	Skip Steady State	✓
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	19.400	Additional Storage (m³/ha)	21.0
Ratio-R	0.333	Check Discharge Rate(s)	x
Winter CV	1.000	Check Discharge Volume	x
Analysis Speed	Detailed		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	0	0	0
100	40	0	0
100	40	10	0

Node 22 OUT Online Orifice Control

Flap Valve	x	Invert Level (m)	6.650	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.375		

Node 24 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	6.640	Product Number	CTL-SHE-0066-2000-1100-2000
Design Depth (m)	1.100	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node 16 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.610	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.3		
Invert Level (m)	8.115	Diameter (m)	0.017		

Node 8 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.610	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.3		
Invert Level (m)	7.615	Diameter (m)	0.017		

Node 9 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.610	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.3		
Invert Level (m)	7.460	Diameter (m)	0.017		

Node 12 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.610	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.3		
Invert Level (m)	7.340	Diameter (m)	0.017		

Node 13 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.610	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.3		
Invert Level (m)	7.340	Diameter (m)	0.017		

Node 21 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.610	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.3		
Invert Level (m)	7.390	Diameter (m)	0.017		

Node 23 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	29.500
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	6.650	Main Channel Slope (1:X)	1000.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.025

Inlets

22_OUT

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	450.0	0.0	1.100	732.4	0.0

Node 16 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.115	Slope (1:X)	200.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.500
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	0.500
Porosity	0.32	Length (m)	35.600		

Node 8 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	7.615	Slope (1:X)	200.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.500
Safety Factor	2.0	Width (m)	4.800	Inf Depth (m)	0.500
Porosity	0.32	Length (m)	46.250		

Node 9 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	7.460	Slope (1:X)	200.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.500
Safety Factor	2.0	Width (m)	4.200	Inf Depth (m)	0.500
Porosity	0.32	Length (m)	10.000		

Node 12 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	7.340	Slope (1:X)	200.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	182	Depth (m)	0.500
Safety Factor	2.0	Width (m)	4.800	Inf Depth (m)	0.500
Porosity	0.32	Length (m)	5.200		



Node 13 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	7.340	Slope (1:X)	200.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	198	Depth (m)	0.500
Safety Factor	2.0	Width (m)	4.800	Inf Depth (m)	0.500
Porosity	0.32	Length (m)	5.800		

Node 21 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	7.390	Slope (1:X)	200.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.500
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	0.500
Porosity	0.32	Length (m)	30.000		

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	7.356	0.056	5.7	0.0849	0.0000	OK
15 minute winter	2	10	7.331	0.081	11.3	0.1223	0.0000	OK
15 minute winter	3	11	7.285	0.085	16.7	0.1297	0.0000	OK
15 minute winter	4	11	7.463	0.063	5.1	0.0591	0.0000	OK
15 minute winter	5	11	7.182	0.132	31.9	0.2507	0.0000	OK
15 minute winter	6	10	7.137	0.037	2.0	0.0496	0.0000	OK
15 minute winter	7	12	7.074	0.124	3.1	0.1534	0.0000	OK
240 minute winter	8	184	7.760	0.145	1.0	3.3740	0.0000	OK
120 minute winter	9	88	7.533	0.073	0.5	0.7495	0.0000	OK
15 minute winter	10	12	7.072	0.222	43.3	0.4337	0.0000	OK
15 minute winter	11	12	7.049	0.199	46.6	0.3261	0.0000	OK
120 minute winter	12	86	7.465	0.125	0.6	0.9565	0.0000	OK
180 minute winter	13	132	7.457	0.117	0.5	0.9696	0.0000	OK
15 minute winter	14	12	7.015	0.215	51.1	0.3553	0.0000	OK
15 minute winter	15	10	7.156	0.056	5.9	0.0830	0.0000	OK
600 minute winter	16	480	8.294	0.179	1.1	10.6528	0.0000	SURCHARGED
15 minute winter	17	11	7.091	0.066	9.2	0.0875	0.0000	OK
15 minute winter	18	10	7.089	0.064	7.9	0.1045	0.0000	OK
15 minute winter	19	11	7.057	0.107	22.3	0.1598	0.0000	OK
15 minute winter	20	12	6.989	0.239	31.2	0.4533	0.0000	OK
600 minute winter	21	465	7.544	0.154	0.9	7.8387	0.0000	SURCHARGED
15 minute winter	22	12	6.986	0.286	77.9	0.4099	0.0000	OK
1440 minute winter	22_OUT	1320	6.969	0.319	7.4	0.8805	0.0000	OK
1440 minute winter	23	1320	6.969	0.319	4.6	0.3611	0.0000	SURCHARGED
1440 minute winter	24	1320	6.969	0.329	1.9	0.3719	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	5.6	0.413	0.049	0.2044	
15 minute winter	2	1.001	3	11.1	0.617	0.092	0.2456	
15 minute winter	3	1.002	5	16.6	0.637	0.117	0.7891	
15 minute winter	4	2.000	5	4.9	0.710	0.359	0.2310	
15 minute winter	5	1.003	10	31.5	0.701	0.274	2.4077	
15 minute winter	6	3.000	7	1.9	0.430	0.136	0.2175	
15 minute winter	7	3.001	10	2.9	0.175	0.161	0.1632	
240 minute winter	8	4.000	10	0.2	0.297	0.015	0.0056	
120 minute winter	9	5.000	10	0.2	0.277	0.010	0.0018	
15 minute winter	10	1.004	11	41.6	0.719	0.376	0.4783	
15 minute winter	11	1.005	14	46.2	0.768	0.429	1.0654	
120 minute winter	12	6.000	14	0.2	0.298	0.014	0.0047	
180 minute winter	13	7.000	14	0.2	0.334	0.011	0.0014	
15 minute winter	14	1.006	22	50.6	0.856	0.454	0.8605	
15 minute winter	15	8.000	17	5.8	0.504	0.050	0.2521	
600 minute winter	16	9.000	17	0.2	0.340	0.014	0.0020	
15 minute winter	17	8.001	19	9.0	0.478	0.069	0.3392	
15 minute winter	18	10.000	19	7.8	0.494	0.103	0.2658	
15 minute winter	19	8.002	20	21.9	0.628	0.181	2.7020	
15 minute winter	20	8.003	22	27.2	0.485	0.180	0.7196	
600 minute winter	21	11.000	22	0.2	0.352	0.012	0.0015	
15 minute winter	22	1.007	22_OUT	77.2	0.840	0.635	1.2415	
1440 minute winter	22_OUT	Flow through pond	23	4.6	0.012	0.000	148.8052	
1440 minute winter	23	12.000	24	1.9	0.187	0.125	0.0249	
1440 minute winter	24	Hydro-Brake®	24_OUT	1.9				148.4



Results for 2 year Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	24_OUT	1	6.590	0.000	1.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	7.381	0.081	10.9	0.1233	0.0000	OK
15 minute winter	2	10	7.365	0.115	21.6	0.1743	0.0000	OK
15 minute winter	3	11	7.318	0.118	32.0	0.1797	0.0000	OK
15 minute winter	4	11	7.494	0.094	9.7	0.0879	0.0000	OK
15 minute winter	5	12	7.284	0.234	61.0	0.4450	0.0000	OK
15 minute winter	6	11	7.276	0.176	4.1	0.2339	0.0000	SURCHARGED
15 minute winter	7	12	7.264	0.314	5.4	0.3880	0.0000	SURCHARGED
360 minute winter	8	288	7.829	0.214	1.3	7.2493	0.0000	FLOOD RISK
120 minute winter	9	92	7.595	0.135	0.9	1.6710	0.0000	OK
15 minute winter	10	12	7.254	0.404	78.3	0.7893	0.0000	SURCHARGED
15 minute winter	11	12	7.235	0.385	77.2	0.6311	0.0000	SURCHARGED
120 minute winter	12	92	7.603	0.263	1.2	2.1172	0.0000	SURCHARGED
120 minute winter	13	96	7.583	0.243	1.2	2.1478	0.0000	SURCHARGED
1440 minute winter	14	1410	7.227	0.427	6.4	0.7043	0.0000	SURCHARGED
1440 minute winter	15	1410	7.227	0.127	0.6	0.1877	0.0000	OK
600 minute winter	16	555	8.388	0.273	2.0	21.4913	0.0000	SURCHARGED
1440 minute winter	17	1410	7.227	0.202	1.2	0.2687	0.0000	OK
1440 minute winter	18	1410	7.227	0.202	0.8	0.3285	0.0000	OK
1440 minute winter	19	1410	7.227	0.277	2.6	0.4157	0.0000	OK
1440 minute winter	20	1410	7.227	0.477	3.6	0.9040	0.0000	SURCHARGED
600 minute winter	21	555	7.627	0.237	1.6	15.9460	0.0000	SURCHARGED
1440 minute winter	22	1410	7.227	0.527	9.9	0.7542	0.0000	SURCHARGED
1440 minute winter	22_OUT	1440	7.227	0.577	11.3	1.5897	0.0000	OK
1440 minute winter	23	1410	7.227	0.577	6.6	0.6524	0.0000	SURCHARGED
1440 minute winter	24	1410	7.227	0.587	1.9	0.6633	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	10.7	0.468	0.092	0.3416	
15 minute winter	2	1.001	3	21.1	0.726	0.175	0.3956	
15 minute winter	3	1.002	5	31.6	0.753	0.222	1.4776	
15 minute winter	4	2.000	5	9.4	0.835	0.687	0.3757	
15 minute winter	5	1.003	10	57.3	0.778	0.498	4.7811	
15 minute winter	6	3.000	7	3.6	0.466	0.251	0.4104	
15 minute winter	7	3.001	10	5.8	0.329	0.323	0.1732	
360 minute winter	8	4.000	10	0.3	0.315	0.019	0.0065	
120 minute winter	9	5.000	10	0.2	0.304	0.014	0.0023	
15 minute winter	10	1.004	11	68.7	0.761	0.622	0.8942	
15 minute winter	11	1.005	14	77.1	0.795	0.716	1.8814	
120 minute winter	12	6.000	14	0.3	0.335	0.020	0.0062	
120 minute winter	13	7.000	14	0.3	0.376	0.016	0.0018	
1440 minute winter	14	1.006	22	6.3	0.511	0.057	1.4055	
1440 minute winter	15	8.000	17	0.6	0.231	0.005	1.0184	
600 minute winter	16	9.000	17	0.3	0.362	0.018	0.0023	
1440 minute winter	17	8.001	19	1.2	0.265	0.009	1.2972	
1440 minute winter	18	10.000	19	0.8	0.226	0.011	0.9481	
1440 minute winter	19	8.002	20	2.5	0.360	0.021	5.3974	
1440 minute winter	20	8.003	22	3.4	0.252	0.023	0.9648	
600 minute winter	21	11.000	22	0.3	0.377	0.015	0.0017	
1440 minute winter	22	1.007	22_OUT	9.8	0.355	0.081	1.4783	
1440 minute winter	22_OUT	Flow through pond	23	6.6	0.016	0.000	293.3204	
1440 minute winter	23	12.000	24	1.9	0.187	0.126	0.0249	
1440 minute winter	24	Hydro-Brake®	24_OUT	1.9				144.4



Results for 30 year Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	24_OUT	1	6.590	0.000	1.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 100 year Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	12	7.477	0.177	14.1	0.2713	0.0000	OK
15 minute winter	2	13	7.479	0.229	28.2	0.3474	0.0000	OK
15 minute winter	3	13	7.454	0.254	41.4	0.3860	0.0000	OK
15 minute winter	4	12	7.534	0.134	12.6	0.1262	0.0000	OK
15 minute winter	5	13	7.450	0.400	79.2	0.7610	0.0000	SURCHARGED
15 minute winter	6	13	7.429	0.329	6.4	0.4373	0.0000	SURCHARGED
15 minute winter	7	13	7.422	0.472	6.1	0.5830	0.0000	SURCHARGED
240 minute winter	8	232	7.866	0.251	2.3	9.9106	0.0000	FLOOD RISK
120 minute winter	9	98	7.640	0.180	1.2	2.3345	0.0000	SURCHARGED
15 minute winter	10	13	7.411	0.561	87.6	1.0970	0.0000	SURCHARGED
2160 minute winter	11	2100	7.393	0.543	5.4	0.8895	0.0000	SURCHARGED
120 minute winter	12	94	7.701	0.361	1.5	2.9510	0.0000	FLOOD RISK
120 minute winter	13	96	7.672	0.332	1.5	2.9899	0.0000	FLOOD RISK
2160 minute winter	14	2100	7.393	0.593	6.2	0.9779	0.0000	SURCHARGED
2160 minute winter	15	2100	7.393	0.293	0.6	0.4325	0.0000	OK
600 minute winter	16	585	8.449	0.334	2.6	28.5517	0.0000	FLOOD RISK
2160 minute winter	17	2100	7.393	0.368	1.2	0.4891	0.0000	OK
2160 minute winter	18	2100	7.393	0.368	0.8	0.5981	0.0000	SURCHARGED
2160 minute winter	19	2100	7.393	0.443	2.6	0.6646	0.0000	SURCHARGED
2160 minute winter	20	2100	7.393	0.643	3.3	1.2186	0.0000	SURCHARGED
600 minute winter	21	570	7.689	0.299	2.1	21.9487	0.0000	SURCHARGED
2160 minute winter	22	2100	7.393	0.693	9.4	0.9917	0.0000	SURCHARGED
2160 minute winter	22_OUT	2100	7.394	0.744	10.6	2.0494	0.0000	OK
2160 minute winter	23	2100	7.393	0.743	6.2	0.8401	0.0000	SURCHARGED
2160 minute winter	24	2100	7.392	0.752	1.9	0.8510	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	17.2	0.484	0.149	0.8654	
15 minute winter	2	1.001	3	27.3	0.773	0.226	1.0220	
15 minute winter	3	1.002	5	40.5	0.786	0.285	2.8063	
15 minute winter	4	2.000	5	12.1	0.848	0.883	0.5710	
15 minute winter	5	1.003	10	62.3	0.790	0.541	5.7757	
15 minute winter	6	3.000	7	3.4	0.447	0.240	0.4104	
15 minute winter	7	3.001	10	6.1	0.347	0.341	0.1732	
240 minute winter	8	4.000	10	0.3	0.323	0.020	0.0069	
120 minute winter	9	5.000	10	0.2	0.318	0.016	0.0026	
15 minute winter	10	1.004	11	76.3	0.761	0.691	0.8943	
2160 minute winter	11	1.005	14	5.3	0.438	0.049	1.8814	
120 minute winter	12	6.000	14	0.4	0.352	0.024	0.0070	
120 minute winter	13	7.000	14	0.3	0.393	0.018	0.0020	
2160 minute winter	14	1.006	22	6.1	0.460	0.055	1.4055	
2160 minute winter	15	8.000	17	0.6	0.229	0.005	2.2039	
600 minute winter	16	9.000	17	0.3	0.373	0.020	0.0025	
2160 minute winter	17	8.001	19	1.2	0.262	0.009	1.9305	
2160 minute winter	18	10.000	19	0.8	0.216	0.011	1.1268	
2160 minute winter	19	8.002	20	2.3	0.328	0.019	6.0251	
2160 minute winter	20	8.003	22	3.1	0.244	0.021	0.9648	
600 minute winter	21	11.000	22	0.3	0.389	0.017	0.0019	
2160 minute winter	22	1.007	22_OUT	9.3	0.346	0.077	1.4783	
2160 minute winter	22_OUT	Flow through pond	23	6.2	0.020	0.000	395.4370	
2160 minute winter	23	12.000	24	1.9	0.204	0.126	0.0249	
2160 minute winter	24	Hydro-Brake®	24_OUT	1.9				212.6



Results for 100 year Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	24_OUT	1	6.590	0.000	1.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	12	8.057	0.757	50.3	1.1578	0.0000	SURCHARGED
15 minute winter	2	13	8.030	0.780	55.9	1.1833	0.0000	SURCHARGED
15 minute winter	3	12	8.065	0.865	52.7	1.3136	0.0000	SURCHARGED
15 minute winter	4	12	8.100	0.700	17.6	0.6573	0.4460	FLOOD
15 minute winter	5	13	8.019	0.969	94.6	1.8427	0.0000	SURCHARGED
15 minute winter	6	12	7.992	0.892	10.5	1.1873	0.0000	FLOOD RISK
15 minute winter	7	13	7.969	1.019	9.5	1.2598	0.0000	FLOOD RISK
360 minute winter	8	344	7.936	0.321	2.4	14.9298	0.0000	FLOOD RISK
120 minute winter	9	114	7.715	0.255	1.7	3.4419	0.0000	SURCHARGED
15 minute winter	10	13	7.943	1.093	112.0	2.1359	0.0000	FLOOD RISK
15 minute winter	11	13	7.899	1.049	117.8	1.7177	0.0000	FLOOD RISK
120 minute winter	12	92	7.950	0.610	2.1	4.1811	0.0249	FLOOD
120 minute winter	13	98	7.818	0.478	2.1	4.3520	0.0000	FLOOD RISK
15 minute winter	14	13	7.811	1.011	131.3	1.6678	0.0000	FLOOD RISK
15 minute winter	15	13	7.796	0.696	23.7	1.0276	0.0000	SURCHARGED
720 minute winter	16	690	8.570	0.455	3.2	42.5469	0.0000	FLOOD RISK
15 minute winter	17	12	7.793	0.768	37.0	1.0207	0.0000	SURCHARGED
15 minute winter	18	12	7.806	0.781	27.2	1.2694	0.0000	SURCHARGED
15 minute winter	19	12	7.800	0.850	63.8	1.2746	0.0000	SURCHARGED
15 minute winter	20	12	7.748	0.998	96.2	1.8908	0.0000	SURCHARGED
960 minute winter	21	915	7.805	0.415	2.0	33.2469	0.0000	FLOOD RISK
15 minute winter	22	13	7.720	1.020	205.6	1.4603	0.0000	SURCHARGED
2880 minute winter	22_OUT	2820	7.670	1.020	11.5	2.8103	0.0000	OK
2880 minute winter	23	2820	7.669	1.019	6.5	1.1526	0.0000	FLOOD RISK
2880 minute winter	24	2820	7.669	1.029	1.9	1.1634	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	37.4	0.497	0.324	1.6420	
15 minute winter	2	1.001	3	34.2	0.811	0.283	1.5032	
15 minute winter	3	1.002	5	46.8	0.801	0.329	3.2607	
15 minute winter	4	2.000	5	14.0	0.862	1.023	0.5870	
15 minute winter	5	1.003	10	80.1	0.799	0.696	5.7757	
15 minute winter	6	3.000	7	6.0	0.482	0.421	0.4104	
15 minute winter	7	3.001	10	10.9	0.619	0.609	0.1732	
360 minute winter	8	4.000	10	0.3	0.335	0.023	0.0075	
120 minute winter	9	5.000	10	0.3	0.335	0.019	0.0029	
15 minute winter	10	1.004	11	103.1	0.935	0.933	0.8943	
15 minute winter	11	1.005	14	116.0	1.052	1.077	1.8814	
120 minute winter	12	6.000	14	0.5	0.381	0.031	0.0085	
120 minute winter	13	7.000	14	0.4	0.415	0.022	0.0023	
15 minute winter	14	1.006	22	130.0	1.178	1.166	1.4055	
15 minute winter	15	8.000	17	25.9	0.630	0.222	2.4046	
720 minute winter	16	9.000	17	0.4	0.391	0.024	0.0028	
15 minute winter	17	8.001	19	29.2	0.575	0.224	1.9352	
15 minute winter	18	10.000	19	23.9	0.626	0.316	1.1268	
15 minute winter	19	8.002	20	64.3	0.643	0.533	6.0251	
15 minute winter	20	8.003	22	92.0	0.834	0.609	0.9648	
960 minute winter	21	11.000	22	0.3	0.397	0.019	0.0402	
15 minute winter	22	1.007	22_OUT	206.7	1.875	1.699	1.4783	
2880 minute winter	22_OUT	Flow through pond	23	6.5	0.021	0.000	581.2502	
2880 minute winter	23	12.000	24	1.9	0.207	0.130	0.0249	
2880 minute winter	24	Hydro-Brake®	24_OUT	1.9				305.6



Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	24_OUT	1	6.590	0.000	1.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	12	8.203	0.903	22.5	1.4181	0.0000	SURCHARGED
15 minute winter	2	12	8.228	0.978	39.6	1.5211	0.0000	SURCHARGED
15 minute winter	3	12	8.197	0.997	66.1	1.5510	0.0000	SURCHARGED
15 minute winter	4	11	8.100	0.700	21.1	0.7119	3.0885	FLOOD
15 minute winter	5	12	8.179	1.129	86.9	2.2332	0.0000	SURCHARGED
15 minute winter	6	12	8.142	1.042	9.2	1.4077	0.0000	FLOOD RISK
15 minute winter	7	12	8.130	1.180	11.0	1.4699	0.0000	FLOOD RISK
360 minute winter	8	352	7.963	0.348	2.6	16.9418	0.0000	FLOOD RISK
2880 minute winter	9	2760	7.760	0.300	0.2	4.1119	0.0000	SURCHARGED
15 minute winter	10	12	8.100	1.250	120.8	2.5465	0.0000	FLOOD RISK
15 minute winter	11	12	8.050	1.200	124.3	2.0268	0.3284	FLOOD
180 minute winter	12	116	7.950	0.610	1.8	4.2000	0.4594	FLOOD
180 minute winter	13	128	7.950	0.610	1.8	4.6362	0.0974	FLOOD
15 minute winter	14	12	7.964	1.164	135.8	1.9801	0.0000	FLOOD RISK
15 minute winter	15	12	7.986	0.886	22.4	1.3395	0.0000	SURCHARGED
960 minute winter	16	900	8.609	0.494	2.8	47.1577	0.0000	FLOOD RISK
15 minute winter	17	12	7.974	0.949	30.3	1.2795	0.0000	SURCHARGED
15 minute winter	18	12	7.963	0.938	29.9	1.5715	0.0000	SURCHARGED
15 minute winter	19	12	7.966	1.016	74.8	1.5617	0.0000	SURCHARGED
15 minute winter	20	12	7.903	1.153	99.8	2.2733	0.0000	FLOOD RISK
960 minute winter	21	945	7.851	0.461	2.2	37.8713	0.0000	FLOOD RISK
15 minute winter	22	12	7.870	1.170	220.7	1.6746	0.0000	FLOOD RISK
2160 minute winter	22_OUT	1980	7.760	1.110	16.1	3.2057	9.4255	FLOOD
2160 minute winter	23	2100	7.760	1.110	8.8	1.2554	0.0000	FLOOD RISK
2160 minute winter	24	2100	7.759	1.119	2.0	1.2661	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	21.8	0.503	0.189	1.6420	
15 minute winter	2	1.001	3	41.3	0.784	0.342	1.5032	
15 minute winter	3	1.002	5	49.9	0.808	0.351	3.2607	
15 minute winter	4	2.000	5	15.2	0.880	1.107	0.5870	
15 minute winter	5	1.003	10	85.7	0.806	0.745	5.7757	
15 minute winter	6	3.000	7	6.4	0.476	0.453	0.4104	
15 minute winter	7	3.001	10	11.9	0.674	0.663	0.1732	
360 minute winter	8	4.000	10	0.3	0.340	0.024	0.0078	
2880 minute winter	9	5.000	10	0.2	0.289	0.012	0.0588	
15 minute winter	10	1.004	11	107.4	0.974	0.972	0.8943	
15 minute winter	11	1.005	14	118.9	1.078	1.104	1.8814	
180 minute winter	12	6.000	14	0.5	0.370	0.031	0.0771	
180 minute winter	13	7.000	14	0.5	0.430	0.026	0.0217	
15 minute winter	14	1.006	22	133.1	1.207	1.194	1.4055	
15 minute winter	15	8.000	17	18.4	0.639	0.158	2.4046	
960 minute winter	16	9.000	17	0.4	0.396	0.025	0.0029	
15 minute winter	17	8.001	19	32.6	0.565	0.250	1.9352	
15 minute winter	18	10.000	19	29.2	0.614	0.385	1.1268	
15 minute winter	19	8.002	20	62.5	0.660	0.519	6.0251	
15 minute winter	20	8.003	22	91.3	0.828	0.605	0.9648	
960 minute winter	21	11.000	22	0.4	0.397	0.021	0.0402	
15 minute winter	22	1.007	22_OUT	220.4	1.999	1.812	1.4783	
2160 minute winter	22_OUT	Flow through pond	23	8.8	0.015	0.001	646.5787	
2160 minute winter	23	12.000	24	2.0	0.191	0.136	0.0249	
2160 minute winter	24	Hydro-Brake®	24_OUT	2.0				242.4



Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	24_OUT	1	6.590	0.000	1.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
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