ARUN DISTRICT COUNCIL AU/137/24/RES

Site

LAND EAST OF HOOK LANE, WESTERGATE

Drawing

illustrative masterplan

Scale

1:1000@A2

Date

04.05.22

Drawing ref

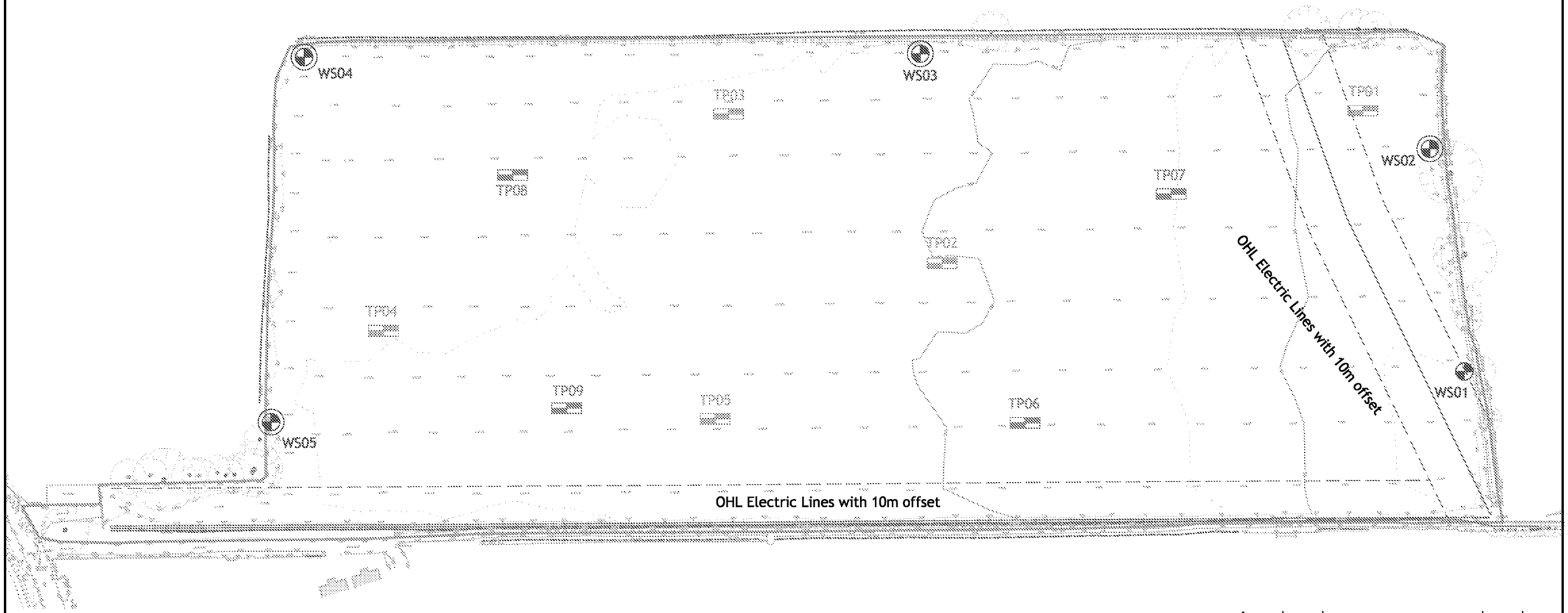
1318.**02**

0 10 20 30 40 50m

KEY

Site boundary

richards urban design



Key:

- BRD Trial Pit Locations
- BRD BRE365 Soil Infiltration Test Locations
- BRD Windowless Sample Borehole Locations with Monitoring Well Installations
- BRD Windowless Sample Borehole Location
- BRD 10m Offset from OHL Electric Cables
- Site Boundary

Notes:

Drawing reproduced from Healer Surveys Land Surveyors
Project: Meadow Way, Westergate
Drawing: Topographical Survey; Date: July 2022
Drawing No: P3584; Sheet No: 1 of 2

All BRD exploratory point were located using a Topographical Grade GPS.

OHL Electric cable located crossing the site was taken from TDS LTD existing service layout (PDF). This is an approximate location due to not being present on the Topographical Survey provide by client.

All site boundaries are approximate.

N

Revision	Date	Description	Drawn	Approved
A	10/11/22	First Issue: Exploratory Point Plan	DB	BD

Drawing title: EXPLORATORY POINT PLAN

Project title: HOOK LANE, WESTERGATE

Client: GLEENSON LAND

Scale	Original drg. size/colour	Date
1:1000	A3 / C	11/10/2022
Drawn	**Checked**	**Approved**
DB	MM	BD

Drawing Number: BRD3963-OD1 — Rev: A

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APPENDIX 2

TRIAL PIT RECORD

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963
Logged By:	M Morgan
Date Completed:	20/09/2022
Method Used:	180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP01

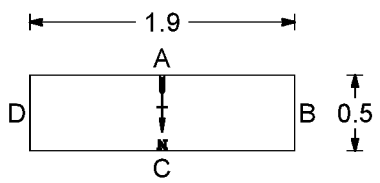
Sheet 1 of 1

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.10	J1		TOPSOIL: Brown, sandy, silty, slightly gravelly clay with occasional rootlets. Gravel of fine to coarse, subangular flint.	0.25 (8.51)	TS	
			Firm, brown / light brown, slightly gravelly, silty CLAY. Gravel of fine to coarse, subangular flint.	0.60 (8.16)	RIVER TERRACE DEPS	
1.00	B1		Medium dense, brown, very clayey, slightly sandy GRAVEL of fine to coarse, angular flint.	1		
1.40	B2		Loose to medium dense, moist, orange brown mottled grey, clayey, fine SAND.	1.30 (7.46)	RBD	
				1.50 (7.26)		
				2		
				3		
				4		

Pit Stability: Generally stable throughout
Groundwater: Not encountered

Surface Elevation Level:
8.762 mAOD

Plan of Trial Pit:



General Remarks:
Trial pit terminated at 1.50m bgl for soakage testing.
Relative density based on visual assessment only.

All dimensions in metres
Log Scale 1:25

BRD

[redacted]

TRIAL PIT RECORD

Client: Gleeson Land
Project Title: Hook Lane, Westergate
Project No: BRD3963
Logged By: M Morgan
Date Completed: 20/09/2022
Method Used: 180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP02

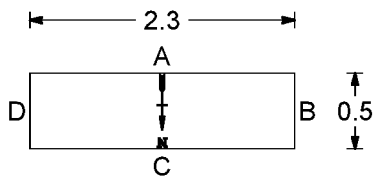
Sheet 1 of 1

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Dark brown, sandy clay with occasional rootlets.		TS	
0.20	J1			0.25 (9.78)		
			Stiff / hard, crumbly. light brown mottled brown and orange, sandy CLAY.		RIVER TERRACE DEPS	
0.80	D1					
0.90	SV	>145 x 3 kPa		1		
			1.40 m: Slightly gravelly of fine to coarse, subangular flint.	1.50 (8.53)		
				2		
				3		
				4		

Pit Stability: Generally stable throughout
Groundwater: Not encountered

Surface Elevation Level:
10.029 mAOD

Plan of Trial Pit:



General Remarks:
Trial pit terminated at 1.50m bgl for soakage testing.
Relative density based on visual assessment only.

All dimensions in metres
Log Scale 1:25

BRD

[redacted]

TRIAL PIT RECORD

Client: Gleeson Land
Project Title: Hook Lane, Westergate
Project No: BRD3963
Logged By: M Morgan
Date Completed: 20/09/2022
Method Used: 180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP03

Sheet 1 of 1

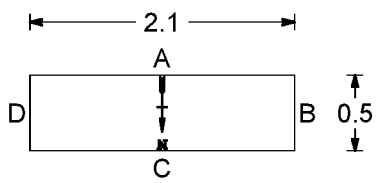
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.15	J1		TOPSOIL: Dark brown, sandy clay with occasional rootlets.	0.30 (10.15)	TS	
0.70	D1		Stiff, light brown with some beige patches, desiccated / dry, sandy, silty CLAY.		RIVER TERRACE DEPS	
0.80	SV	>145 x 3 kPa				
			1.00 m: Brown / orange brown and not desiccated.			
1.40	D2			1.60 (8.85)		

1
2
3
4

Pit Stability: Generally stable throughout
Groundwater: Not encountered

Surface Elevation Level:
10.446 mAOD

Plan of Trial Pit:



General Remarks:
Trial pit terminated at 1.60m bgl for soakage testing.
Relative density based on visual assessment only.

All dimensions in metres
Log Scale 1:25

BRD

[redacted]

TRIAL PIT RECORD

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963
Logged By:	M Morgan
Date Completed:	20/09/2022
Method Used:	180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP04

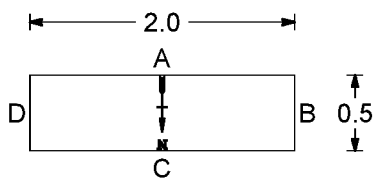
Sheet 1 of 1

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.10	J1		TOPSOIL: Dark brown, sandy clay with occasional rootlets.	0.25 (10.29)	TS	
0.80	D1		Stiff, yellow brown mottled light grey brown, sandy, silty CLAY.	1	RIVER TERRACE DEPS	
1.50	D2			1.60 (8.94)		
				2		
				3		
				4		

Pit Stability: Generally stable throughout
Groundwater: Not encountered

Surface Elevation Level:
10.536 mAOD

Plan of Trial Pit:



General Remarks:
Trial pit terminated at 1.60m bgl for soakage testing.
Relative density based on visual assessment only.

All dimensions in metres
Log Scale 1:25

BRD

[redacted]

TRIAL PIT RECORD

Client: Gleeson Land
Project Title: Hook Lane, Westergate
Project No: BRD3963
Logged By: M Morgan
Date Completed: 20/09/2022
Method Used: 180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP05

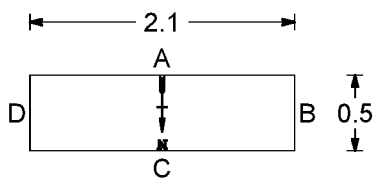
Sheet 1 of 1

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.20	J1		TOPSOIL: Dark brown, sandy clay with occasional rootlets.	0.25 (10.11)	TS	
1.20	D1		Stiff, friable, brown mottled orange brown, sandy CLAY.	1.60 (8.76)	RIVER TERRACE DEPS	

Pit Stability: Generally stable throughout
Groundwater: Not encountered

Surface Elevation Level: 10.357 mAOD

Plan of Trial Pit:



General Remarks:
Trial pit terminated at 1.60m bgl for soakage testing.
Relative density based on visual assessment only.

All dimensions in metres
Log Scale 1:25

BRD

T
E

[redacted]

TRIAL PIT RECORD

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963
Logged By:	M Morgan
Date Completed:	20/09/2022
Method Used:	180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP06

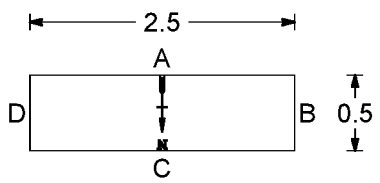
Sheet 1 of 1

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.20	J1		TOPSOIL: Brown / dark brown, slightly sandy clay with occasional rootlets.	0.30 (9.60)	TS	
0.70	J1		Stiff, orange brown to yellow brown, sandy, slightly gravelly CLAY. Gravel of fine, angular flint.	1	RIVER TERRACE DEPS	
0.80	D1		1.20 - 1.60 m: Some very gravelly, sandy pockets. Gravel of fine to medium, subrounded to angular flint.	1.60 (8.30)		
2.00	B1		Moist, medium dense, brown, fine SAND.	2	RAISED BEACH DEPOSITS	
3.00	J3			3		
				3.30 (6.60)		
				4		

Pit Stability: See General Remarks
Groundwater: Seepage at 2.40m bgl.

Surface Elevation Level:
9.899 mAOD

Plan of Trial Pit:



General Remarks:
Trial pit terminated at 3.30m bgl.
Sides collapsed below 2.40m bgl.
Relative density based on visual assessment only.

All dimensions in metres
Log Scale 1:25

BRD

[redacted]

TRIAL PIT RECORD

Client: Gleeson Land
Project Title: Hook Lane, Westergate
Project No: BRD3963
Logged By: M Morgan
Date Completed: 20/09/2022
Method Used: 180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP07

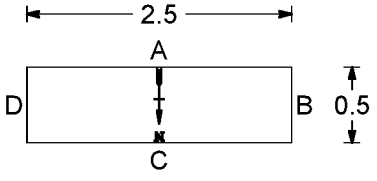
Sheet 1 of 1

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.20	J1		TOPSOIL: Dark brown, sandy, slightly gravelly clay. Gravel of fine to coarse, subangular flint.	0.30 (9.33)	TS	
0.60	J2		Stiff / hard, brown to light brown, sandy, gravelly in parts, CLAY. Gravel of fine to coarse, subangular to angular flint.	1	RIVER TERRACE DEPOSITS	
0.80	D1			1.10 (8.53)		
1.30	B1		Medium dense, brown, clayey, sandy GRAVEL of fine to medium, angular flint.	1.80 (7.83)		
2.50	B2		Moist, medium dense, uncompacted, light brown mottled orange, fine SAND.	2	RAISED BEACH DEPS	
				3	3.00 (6.63)	
				4		

Pit Stability: See General Remarks
Groundwater: Slight seepage at 2.00m bgl.

Surface Elevation Level:
9.627 mAOD

Plan of Trial Pit:



General Remarks:
Trial pit terminated at 3.00m bgl.
Sides collapsed below 2.40m bgl.
Relative density based on visual assessment only.

All dimensions in metres
Log Scale 1:25

BRD

[redacted]

TRIAL PIT RECORD

Client: Gleeson Land
Project Title: Hook Lane, Westergate
Project No: BRD3963
Logged By: M Morgan
Date Completed: 20/09/2022
Method Used: 180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP08

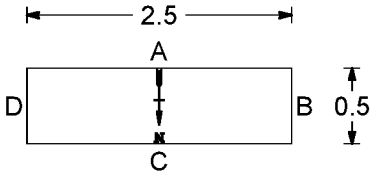
Sheet 1 of 1

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.10	J1		TOPSOIL: Brown, silty, slightly sandy clay with occasional rootlets.	0.30 (10.42)	TS	
			Stiff, light brown mottled orange brown, silty, sandy, slightly gravelly CLAY. Gravel of fine to coarse, angular flint.		RIVER TERRACE DEPOSITS	
0.80	J2					
0.90	D1			1		
1.90	J3					
2.00	SV	80/70/70 kPa		2		
2.10	D2		2.20 m: Some large pockets of grey, very gravelly CLAY. Gravel of fine to medium, angular flint.			
			Moist, medium dense, uncompacted, orange brown and grey brown, fine SAND.	2.50 (8.22)	RBD	
3.00	B1			3		
				3.20 (7.52)		
				4		

Pit Stability: See General Remarks
Groundwater: Seepage at 2.80m bgl.

Surface Elevation Level: 10.723 mAOD

Plan of Trial Pit:



General Remarks:
Trial pit terminated at 3.20m bgl.
Sides collapsed below 2.50m bgl.
Relative density based on visual assessment only.

All dimensions in metres
Log Scale 1:25

BRD

[redacted]

TRIAL PIT RECORD

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963
Logged By:	M Morgan
Date Completed:	20/09/2022
Method Used:	180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP09

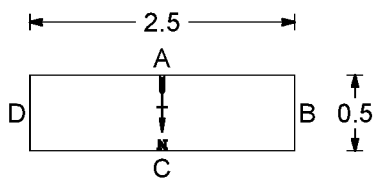
Sheet 1 of 1

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.20	J1		TOPSOIL: Brown, silty, slightly sandy clay with occasional rootlets.	0.30 (10.26)	TS	
0.80	J2		Stiff, light brown mottled orange brown, silty, sandy, slightly gravelly CLAY. Gravel of fine to coarse, angular flint.		RIVER TERRACE DEPOSITS	
0.90	D1			1		
			1.50 m: Rare flint gravel.	1.70 (8.86)		
1.90	J3		Firm, orange brown mottled grey, slightly gravely, slightly sandy, clayey SILT. Gravel of fine to medium, subrounded to angular flint and occasional subrounded chalk.			
2.00	B1			2		
				2.50 (8.06)		
			Moist / wet, medium dense, uncompacted, light brown to orange brown, silty, fine SAND.		RBD	
3.20	D2			3		
				3.40 (7.16)		
				4		

Pit Stability: See General Remarks
Groundwater: Seepage at 3.00m bgl.

Surface Elevation Level:
10.557 mAOD

Plan of Trial Pit:



General Remarks:
Trial pit terminated at 3.40m bgl.
Sides collapsed below 2.50m bgl.
Relative density based on visual assessment only.

All dimensions in metres
Log Scale 1:25

BRD

Trial Pit Photographs

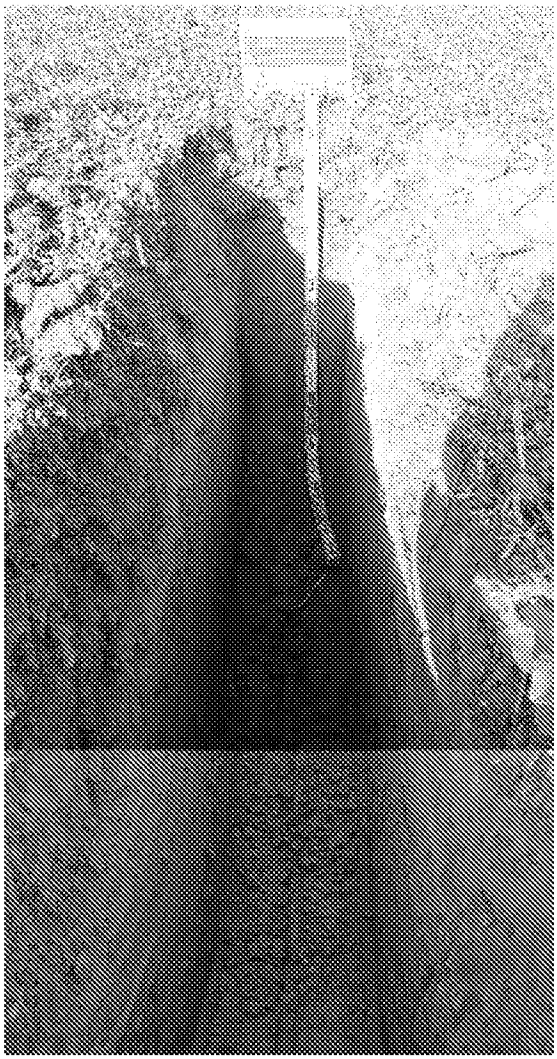
TP01

Project Title:	Hook Lane, Westergate
Client:	Gleeson Land
BRD Reference:	BRD3963-OP7-A
Date Issued:	November 2022

BRD
01295 272244
info@brduk.com

Trial Pit Photographs

TP02

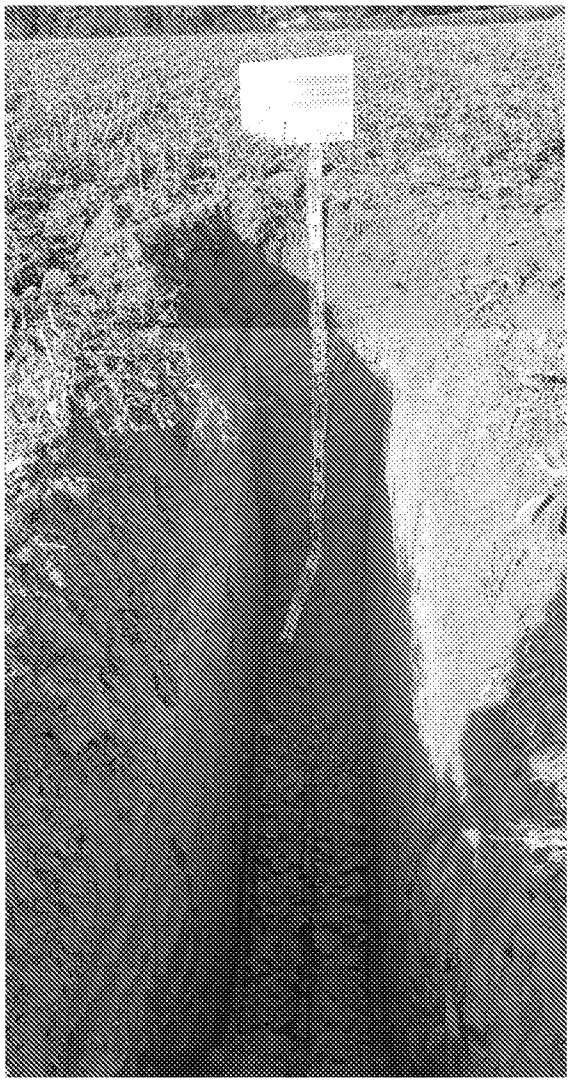


Project Title:	Hook Lane, Westergate
Client:	Gleeson Land
BRD Reference:	BRD3963-OP7-A
Date Issued:	November 2022

BRD
01295 272244
info@brduk.com

Trial Pit Photographs

TP03

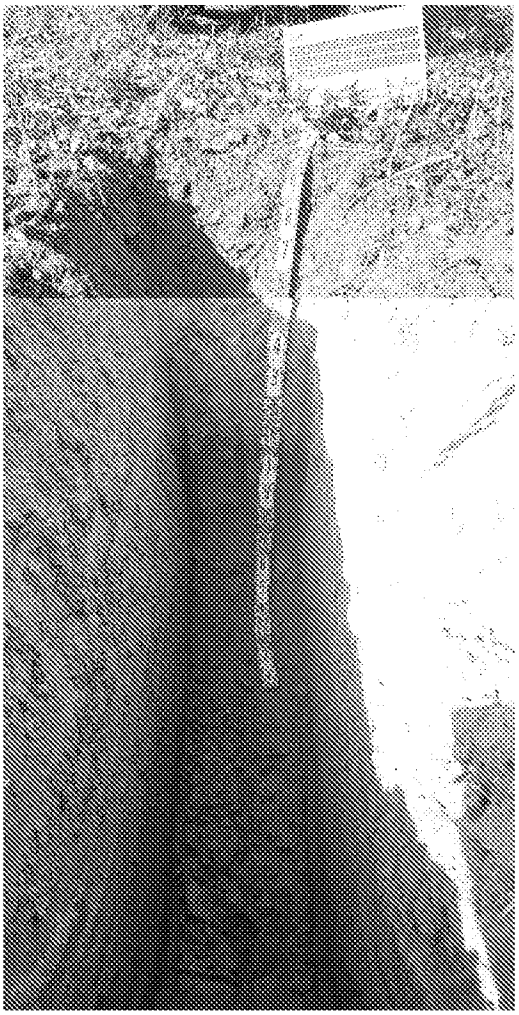


Project Title:	Hook Lane, Westergate
Client:	Gleeson Land
BRD Reference:	BRD3963-OP7-A
Date Issued:	November 2022

BRD
01295 272244
info@brduk.com

Trial Pit Photographs

TP04

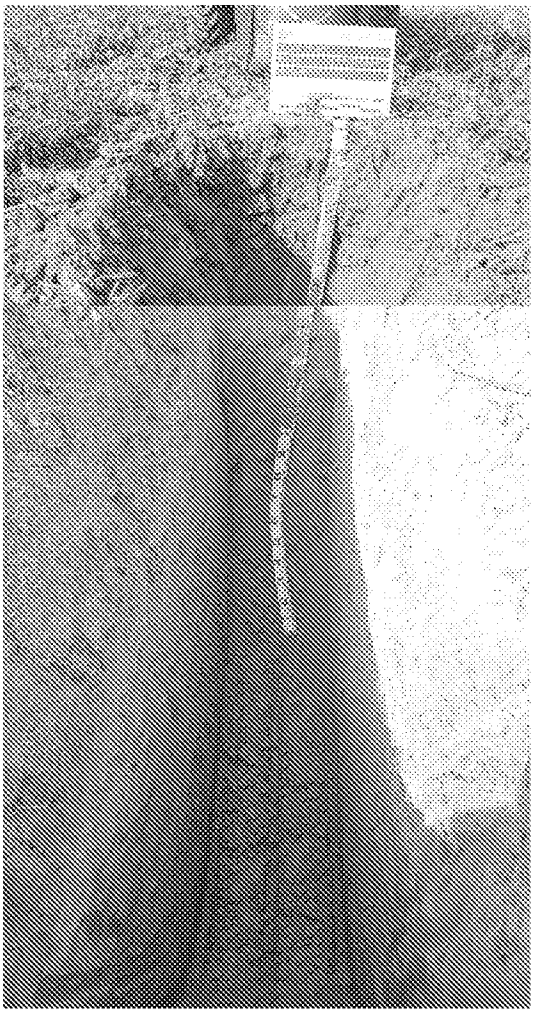


Project Title:	Hook Lane, Westergate
Client:	Gleeson Land
BRD Reference:	BRD3963-OP7-A
Date Issued:	November 2022

BRD
01295 272244
info@brduk.com

Trial Pit Photographs

TP05



Project Title:	Hook Lane, Westergate
Client:	Gleeson Land
BRD Reference:	BRD3963-OP7-A
Date Issued:	November 2022

BRD
01295 272244
info@brduk.com

Trial Pit Photographs

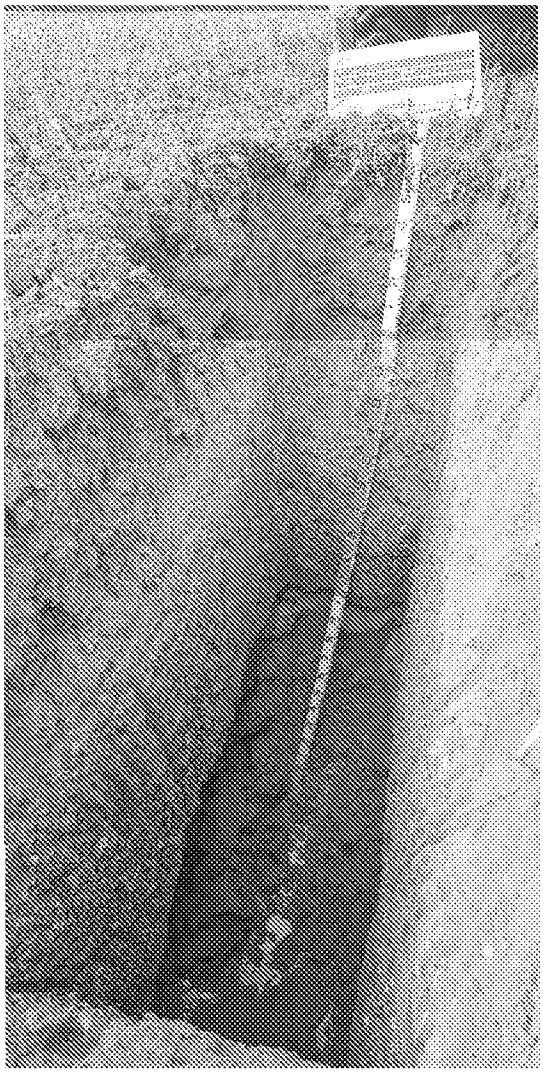
TP06

Project Title:	Hook Lane, Westergate
Client:	Gleeson Land
BRD Reference:	BRD3963-OP7-A
Date Issued:	November 2022

BRD
01295 272244
info@brduk.com

Trial Pit Photographs

TP07

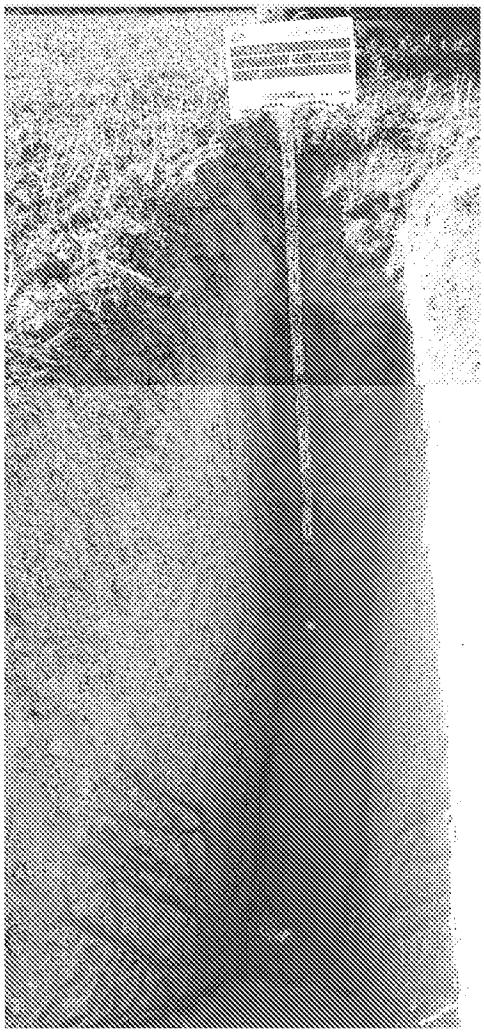


Project Title:	Hook Lane, Westergate
Client:	Gleeson Land
BRD Reference:	BRD3963-OP7-A
Date Issued:	November 2022

BRD
01295 272244
info@brduk.com

Trial Pit Photographs

TP08

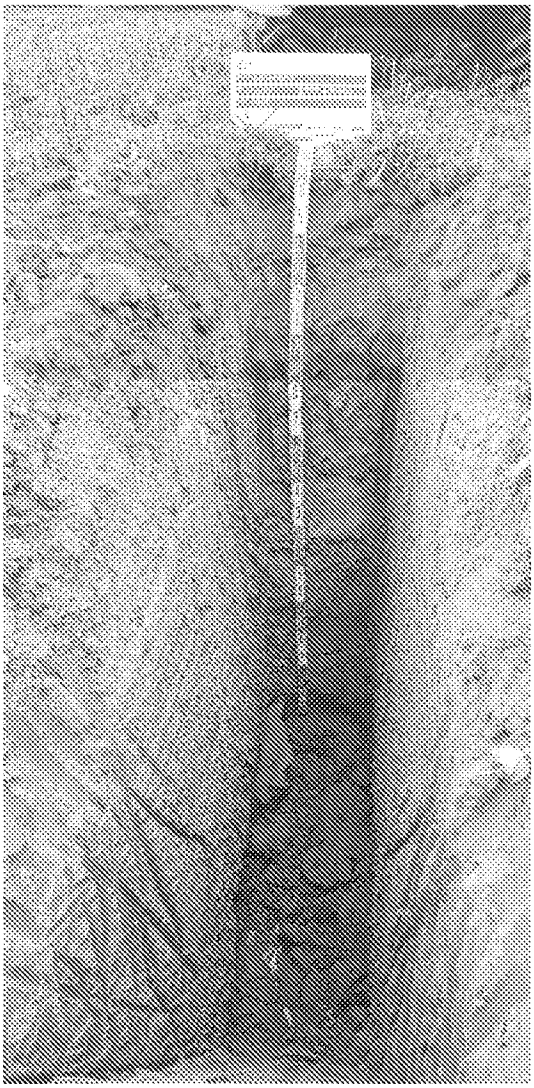


Project Title:	Hook Lane, Westergate
Client:	Gleeson Land
BRD Reference:	BRD3963-OP7-A
Date Issued:	November 2022

BRD
01295 272244
info@brduk.com

Trial Pit Photographs

TP09



Project Title:	Hook Lane, Westergate
Client:	Gleeson Land
BRD Reference:	BRD3963-OP7-A
Date Issued:	November 2022

BRD
01295 272244
info@brduk.com

PROBEHOLE RECORD

Client: Gleeson Land
Project Title: Hook Lane, Westergate
Project No: BRD3963
Logged By: M Morgan
Date Commenced: 12/10/2022
Date Completed: 12/10/2022
Method Used: Windowless Percussive Sampling Rig

Borehole No.

WS01

Sheet 1 of 2

Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
0.20	J1			TOPSOIL: Brown, very sandy, silty, slightly gravelly clay with rootlets. Gravel of fine, angular flint.	0.30		TS	
0.60	PEN	>4.5x3 kg/cm²		Firm to stiff, brown to light brown, slightly sandy, slightly gravelly CLAY. Gravel of fine to medium, angular flint.	0.90		RIVER TERRACE DEPOSITS	
1.00	SPT	12 N		Medium dense, brown, very clayey GRAVEL of fine to medium, angular flint. 1.00 m: SPT: 4,4/4,4,3,1	1.0 1.50			
2.00	SPT	25 N	1 ▽ 1 ▼	Medium dense, brown / greenish brown, fine SAND. 2.00 m: SPT: 1,2/3,6,10,6	2.0 2.70		RAISED BEACH DEPOSITS	
3.00	SPT	11 N		Medium dense, grey brown, gravelly SAND with some clayey pockets. Gravel of fine to coarse, subrounded to angular chalk and flint. 3.00 m: SPT: 7,3/3,2,3,3 3.00 - 5.00 m: Recovery is mostly wet, slightly gravelly sand.	3.0 3.30			
3.70	D1			Stiff, grey, slightly silty CLAY.			LONDON CLAY FORM	
4.00	SPT	15 N		4.00 m: SPT: 2,2/3,3,4,5	4.0 4.50			

General Remarks:
Borehole terminated at 5.45m bgl.

Surface Elevation Level:

All dimensions in metres
Log Scale 1:25

BRD

[redacted]

PROBEHOLE RECORD

Client: Gleeson Land
Project Title: Hook Lane, Westergate
Project No: BRD3963
Logged By: M Morgan
Date Commenced: 12/10/2022
Date Completed: 12/10/2022
Method Used: Windowless Percussive Sampling Rig

Borehole No.

WS01

Sheet 2 of 2

Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
5.00	SPT J2	14 N		Continued from 3.30m bgl: Stiff, grey, slightly silty CLAY. 5.00 m: SPT: 4,3/4,3,3,4	5.0 5.45 6.0 7.0 8.0 9.0		LCF	

General Remarks:
Borehole terminated at 5.45m bgl.

Surface Elevation Level:

All dimensions in metres
Log Scale 1:25

BRD

[redacted]

PROBEHOLE RECORD

Client: Gleeson Land
Project Title: Hook Lane, Westergate
Project No: BRD3963
Logged By: M Morgan
Date Commenced: 12/10/2022
Date Completed: 12/10/2022
Method Used: Windowless Percussive Sampling Rig

Borehole No.

WS02

Sheet 1 of 1

Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
				TOPSOIL: Brown, very sandy, silty, slightly gravelly clay with rootlets. Gravel of fine, angular flint.	0.25		TS	
				Firm to stiff, brown to light brown, slightly sandy, gravelly CLAY. Gravel of fine to medium, angular flint.	0.60		RIVER TERRACE DEPS	
				Medium dense, brown, very clayey GRAVEL of fine to medium, angular flint.				
0.90	J1							
1.00	SPT D1	12 N		1.00 m: SPT: 7,6/3,3,3,3 1.00 - 2.00 m: Poor recovery.	1.0			
			1	Medium dense to very dense, light brown, slightly gravelly, fine SAND. Gravel of fine to medium, angular flint.	1.50		RAISED BEACH DEPOSITS	
2.00	SPT	14 N		2.00 m: SPT: 3,2/2,3,4,5	2.0			
				2.50 m: Very gravelly, Gravel of fine to coarse, subrounded to angular flint and chalk.				
3.00	SPT	46 N		3.00 m: SPT: 14,11/12,14,10,10 3.00 m: Mottled grey with some clayey bands.	3.0			
3.20	D2							
					3.80			
3.90	PEN	2.0/2.5/2.5 kg/cm²		Firm, grey, silty CLAY.	4.0		LCF	
4.00	SPT D3	16 N		4.00 m: SPT: 2,2/2,5,5,4				
					4.45			

General Remarks:
Borehole terminated at 4.45m bgl.
Installed with 50mm standpipe, gas tap and flush metal cover.
Standpipe installed to 3.00m depth due to collapsing sand in borehole.

Surface Elevation Level:

All dimensions in metres
Log Scale 1:25

BRD

PROBEHOLE RECORD

Client: Gleeson Land
Project Title: Hook Lane, Westergate
Project No: BRD3963
Logged By: M Morgan
Date Commenced: 12/10/2022
Date Completed: 12/10/2022
Method Used: Windowless Percussive Sampling Rig

Borehole No.

WS03

Sheet 1 of 2

Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
				TOPSOIL: Brown, silty, sandy. slightly gravelly clay with occasional rootlets. Gravel of fine, angular flint.	0.30		TS	
				Stiff, slightly dry, light brown to orange brown, slightly sandy, silty CLAY.			RIVER TERRACE DEPOSITS	
0.70	PEN	4.5x3 kg/cm²						
0.80	D1							
1.00	SPT	13 N		1.00 m: SPT: 4,3/3,3,3,4	1.0			
					1.90			
2.00	SPT	13 N		Firm, brown, gravelly CLAY. Gravel of fine to medium, angular flint. 2.00 m: SPT: 3,4/3,4,3,3	2.0			
				Wet, loose to medium dense, brown, fine to medium SAND.	2.10		RAISED BEACH DEPOSITS	
			▼1					
3.00	SPT	4 N		3.00 m: SPT: 0,1/1,1,1,1	3.0			
3.50	J1							
4.00	SPT	33 N		4.00 m: SPT: 3,6/7,7,8,11	4.0			
				Dense, dark grey, clayey, very sandy GRAVEL of fine to	4.40			

General Remarks:
Borehole terminated at 4.60m bgl due to refusal in soils.
Installed with 50mm standpipe, gas tap and flush metal cover.
Standpipe installed to 3.70m depth due to collapsing sand in borehole.

Surface Elevation Level:

All dimensions in metres
Log Scale 1:25

BRD

[redacted]

PROBEHOLE RECORD

Client: Gleeson Land
Project Title: Hook Lane, Westergate
Project No: BRD3963
Logged By: M Morgan
Date Commenced: 12/10/2022
Date Completed: 12/10/2022
Method Used: Windowless Percussive Sampling Rig

Borehole No.

WS03

Sheet 2 of 2

Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
4.60	SPT	>50 N		coarse, angular flint and chalk. 4.60m: SPT: 10,12/14,17,19	4.60 5.0 6.0 7.0 8.0 9.0		RB	

General Remarks:
Borehole terminated at 4.60m bgl due to refusal in soils.
Installed with 50mm standpipe, gas tap and flush metal cover.
Standpipe installed to 3.70m depth due to collapsing sand in borehole.

Surface Elevation Level:

All dimensions in metres
Log Scale 1:25

BRD

[redacted]

PROBEHOLE RECORD

Client: Gleeson Land
Project Title: Hook Lane, Westergate
Project No: BRD3963
Logged By: M Morgan
Date Commenced: 12/10/2022
Date Completed: 12/10/2022
Method Used: Windowless Percussive Sampling Rig

Borehole No.

WS04

Sheet 1 of 2

Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
0.10	J1			TOPSOIL: Brown, silty, sandy. slightly gravelly clay with occasional rootlets. Gravel of fine, angular flint.	0.20		TS	
				Stiff, slightly dry, light brown to orange brown, slightly sandy, silty CLAY.			RIVER TERRACE DEPOSITS	
1.00	SPT D1	13 N		1.00 m: SPT: 3,2/3,3,3,4	1.0			
1.60	D2			Firm, grey to white, very gravelly CLAY. Gravel of fine to coarse, angular flint.	1.55			
				Moist, loose to medium dense, yellow brown, fine to medium SAND.	1.75		RAISED BEACH DEPOSITS	
2.00	SPT	8 N		2.00 m: SPT: 2,2/2,2,2,2	2.0			
3.00	SPT	8 N	▼	3.00 m: SPT: 1,1/1,2,2,3 3.00 m: Wet.	3.0			
4.00	SPT	29 N		4.00 m: SPT: 2,4/6,7,8,8	4.0			
					4.50			

General Remarks:
Borehole terminated at 5.45m bgl.
Installed with 50mm standpipe, gas tap and flush metal cover.
Standpipe installed to 4.80m depth due to collapsing sand in borehole.

Surface Elevation Level:

All dimensions in metres
Log Scale 1:25

BRD

[redacted]

PROBEHOLE RECORD

Client: Gleeson Land
Project Title: Hook Lane, Westergate
Project No: BRD3963
Logged By: M Morgan
Date Commenced: 12/10/2022
Date Completed: 12/10/2022
Method Used: Windowless Percussive Sampling Rig

Borehole No.

WS04

Sheet 2 of 2

Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
				Continued from 1.75m: Moist, loose to medium dense, yellow brown, fine to medium SAND.				
				4.50 m: Medium density, darker colour.				
5.00	SPT	>50 N		5.00 m: SPT: 12,13/23,27	5.0		RBD	
				5.40 m: Some flint and chalk gravel.	5.45			
					6.0			
					7.0			
					8.0			
					9.0			

General Remarks:
Borehole terminated at 5.45m bgl.
Installed with 50mm standpipe, gas tap and flush metal cover.
Standpipe installed to 4.80m depth due to collapsing sand in borehole.

Surface Elevation Level:

All dimensions in metres
Log Scale 1:25

BRD

PROBEHOLE RECORD

Client: Gleeson Land
Project Title: Hook Lane, Westergate
Project No: BRD3963
Logged By: M Morgan
Date Commenced: 12/10/2022
Date Completed: 12/10/2022
Method Used: Windowless Percussive Sampling Rig

Borehole No.

WS05

Sheet 1 of 2

Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
				TOPSOIL: Brown, silty, sandy. slightly gravelly clay with occasional rootlets. Gravel of fine, angular flint.	0.20		TS	
				Stiff, slightly dry, light brown to orange brown, slightly sandy, silty CLAY.			RIVER TERRACE DEPOSITS	
0.70	B1							
0.80	PEN	4.5x3 kg/cm²						
1.00	SPT	10 N		1.00 m: SPT: 2,1/2,2,3,3	1.0			
				1.40 m: Gravelly. Gravel of fine to coarse, angular flint.	1.80			
				Loose to medium dense, orange brown, slightly clayey, fine SAND.			RAISED BEACH DEPOSITS	
2.00	SPT	9 N		2.00 m: SPT: 1,1/2,2,2,3	2.0			
3.00	SPT	10 N	▼	3.00 m: SPT: 2,2/2,2,3,3	3.0			
3.50	J1							
4.00	SPT	22 N		4.00 m: SPT: 3,3/2,6,6,8	4.0			
					4.50			

General Remarks:
Borehole terminated at 5.45m bgl.
Installed with 50mm standpipe, gas tap and flush metal cover.
Standpipe installed to 4.00m depth due to collapsing sand in borehole.

Surface Elevation Level:

All dimensions in metres
Log Scale 1:25

BRD

PROBEHOLE RECORD

Client: Gleeson Land
Project Title: Hook Lane, Westergate
Project No: BRD3963
Logged By: M Morgan
Date Commenced: 12/10/2022
Date Completed: 12/10/2022
Method Used: Windowless Percussive Sampling Rig

Borehole No.

WS05

Sheet 2 of 2

Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
5.00	SPT	50 N		Continued from 1.80m bgl: Loose, orange brown, slightly clayey, fine SAND. 4.50 m: Sand becoming dense. 5.00 m: SPT: 5,7/>50	5.0 5.45 6.0 7.0 8.0 9.0		RBD	

General Remarks:
Borehole terminated at 5.45m bgl.
Installed with 50mm standpipe, gas tap and flush metal cover.
Standpipe installed to 4.00m depth due to collapsing sand in borehole.

Surface Elevation Level:

All dimensions in metres
Log Scale 1:25

BRD

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SOIL INFILTRATION RATE

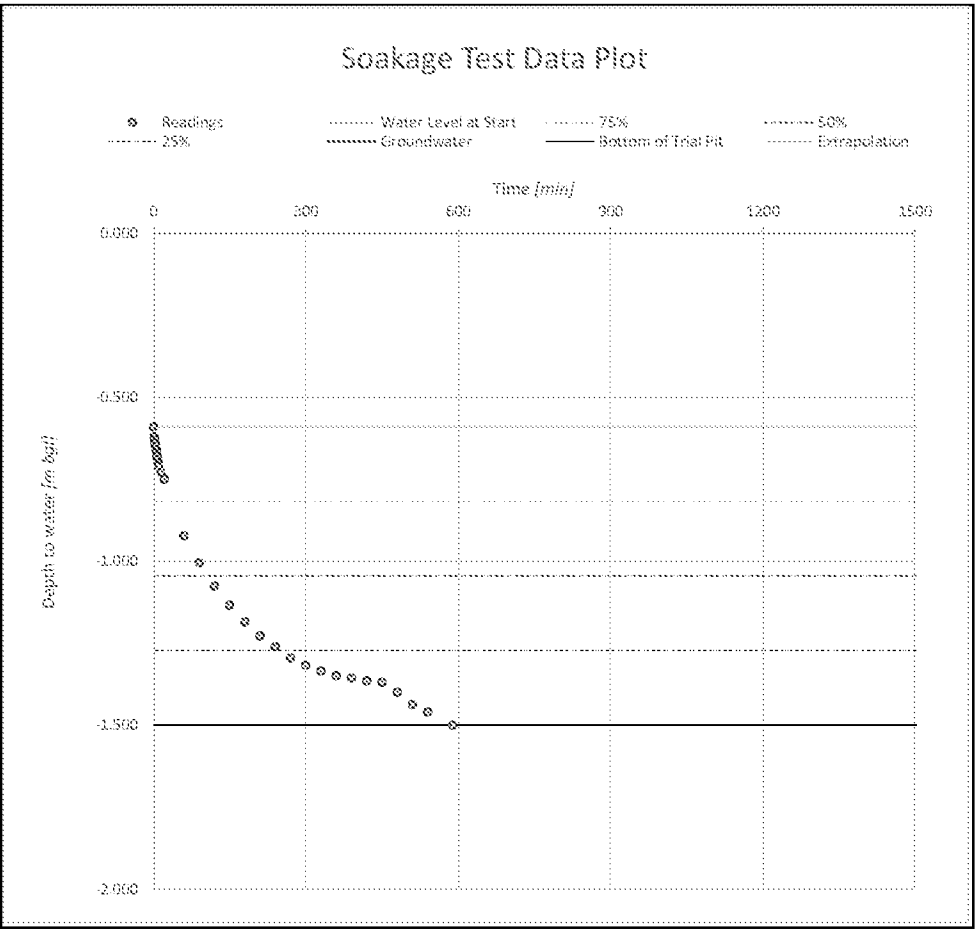
In accordance with BRE Digest 365:2016 - Soakaway Design

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963

Trial Pit No:	TP01	**Length *[m]* :**	1.90
Test No:	1	**Depth *[m]* :**	1.50
Date:	20/09/2022	**Width *[m]* :**	0.45
Logged by:	DB	**Groundwater *[m bgl]* :**	Dry

		from - to *[m bgl]*		**Description**
Ground	**Conditions**	0.25	0.60	Slightly gravelly, silty CLAY
		0.60	1.30	Very clayey, slightly sandy GRAVEL
		1.30	1.50	Clayey fine SAND

Time	**Water Depth**
[min]	***[m bgl]***
0	0.590
1	0.620
2	0.630
3	0.640
4	0.650
5	0.660
6	0.670
7	0.680
8	0.690
9	0.700
10	0.710
15	0.730
21	0.750
60	0.923
90	1.005
120	1.076
150	1.135
180	1.185
210	1.228
240	1.261
270	1.295
300	1.317
330	1.335
360	1.349
390	1.357
420	1.365
450	1.370
480	1.400
510	1.437
540	1.460
590	1.500



Soil Infiltration Rate [m/s]: $f = \frac{V_{p75\_25}}{a_{s50} \times tp_{75-25}}$

with:

V_{p75_25}	as Effective Storage Volume of water between 75% and 25% effective storage depth ***[m³]***	**0.39**
a_{s50}	as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area ***[m²]***	**2.99**
t_{p75_25}	as Time for the water level to fall from 75% to 25% effective storage depth ***[s]***	**1.3.E+04**

Soil Infiltration Rate *[m/s]* : 1.01E-05

Remarks:

SOIL INFILTRATION RATE

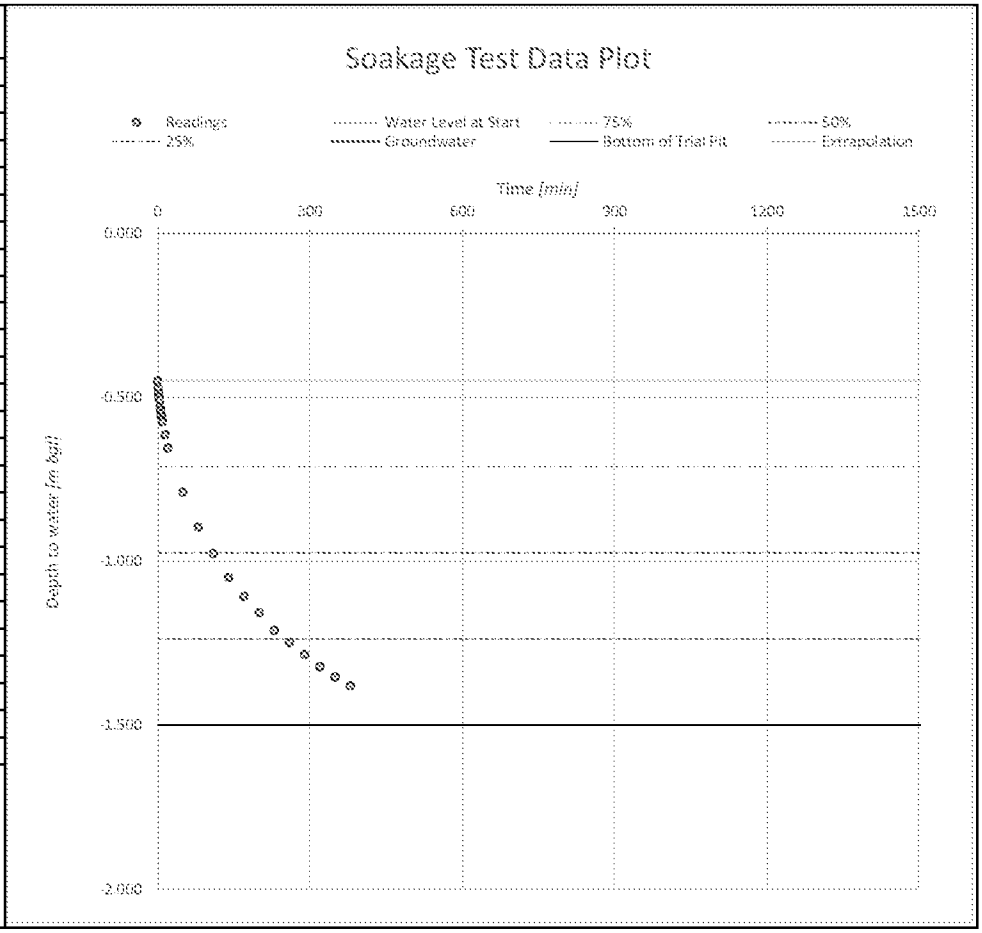
In accordance with BRE Digest 365:2016 - Soakaway Design

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963

Trial Pit No:	TP01	**Length *[m]* :**	1.90
Test No:	2	**Depth *[m]* :**	1.50
Date:	21/09/2022	**Width *[m]* :**	0.45
Logged by:	DB	**Groundwater *[m bgl]* :**	Dry

		from - to *[m bgl]*		**Description**
Ground	**Conditions**	0.25	0.60	Slightly gravelly, silty CLAY
		0.60	1.30	Very clayey, slightly sandy GRAVEL
		1.30	1.50	Clayey fine SAND

Time	**Water Depth**
[min]	***[m bgl]***
0	0.450
1	0.475
2	0.490
3	0.500
4	0.510
5	0.530
6	0.540
7	0.550
8	0.560
9	0.570
10	0.575
15	0.615
20	0.655
50	0.790
80	0.896
110	0.977
140	1.050
170	1.107
200	1.157
230	1.211
260	1.248
290	1.285
320	1.322
350	1.353
380	1.380



Soil Infiltration Rate [m/s]: $f = \frac{V_{p75\_25}}{a_{s50} \times tp_{75-25}}$

with:

V_{p75_25}	as Effective Storage Volume of water between 75% and 25% effective storage depth ***[m³]***	**0.45**
a_{s50}	as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area ***[m²]***	**3.32**
t_{p75_25}	as Time for the water level to fall from 75% to 25% effective storage depth ***[s]***	**1.3.E+04**

Soil Infiltration Rate *[m/s]* : 1.03E-05

Remarks:

SOIL INFILTRATION RATE

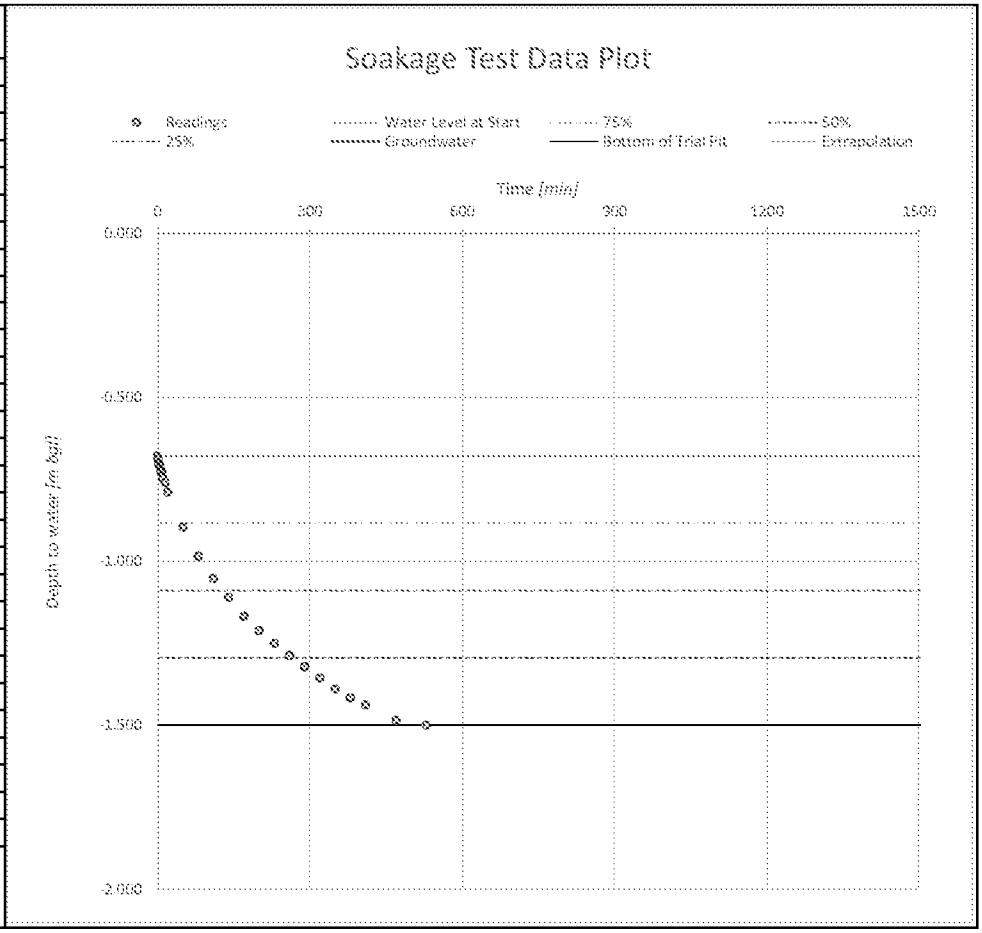
In accordance with BRE Digest 365:2016 - Soakaway Design

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963

Trial Pit No:	TP01	**Length *[m]* :**	1.90
Test No:	3	**Depth *[m]* :**	1.50
Date:	21/09/2022	**Width *[m]* :**	0.45
Logged by:	DB	**Groundwater *[m bgl]* :**	Dry

		from - to *[m bgl]*		**Description**
Ground	**Conditions**	0.25	0.60	Slightly gravelly, silty CLAY
		0.60	1.30	Very clayey, slightly sandy GRAVEL
		1.30	1.50	Clayey fine SAND

Time	**Water Depth**
[min]	***[m bgl]***
0	0.680
1	0.690
2	0.700
3	0.705
4	0.710
5	0.715
6	0.720
7	0.725
8	0.730
9	0.740
10	0.745
15	0.760
20	0.790
50	0.896
80	0.985
110	1.053
140	1.111
170	1.168
200	1.212
230	1.251
260	1.288
290	1.322
320	1.357
350	1.390
380	1.417
410	1.438
470	1.485
530	1.500



Soil Infiltration Rate [m/s]: $f = \frac{V_{p75\_25}}{a_{s50} \times tp_{75-25}}$

with:

V_{p75_25}	as Effective Storage Volume of water between 75% and 25% effective storage depth ***[m³]***	**0.35**
a_{s50}	as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area ***[m²]***	**2.78**
t_{p75_25}	as Time for the water level to fall from 75% to 25% effective storage depth ***[s]***	**1.3.E+04**

Soil Infiltration Rate *[m/s]* : 9.58E-06

Remarks:

SOIL INFILTRATION RATE

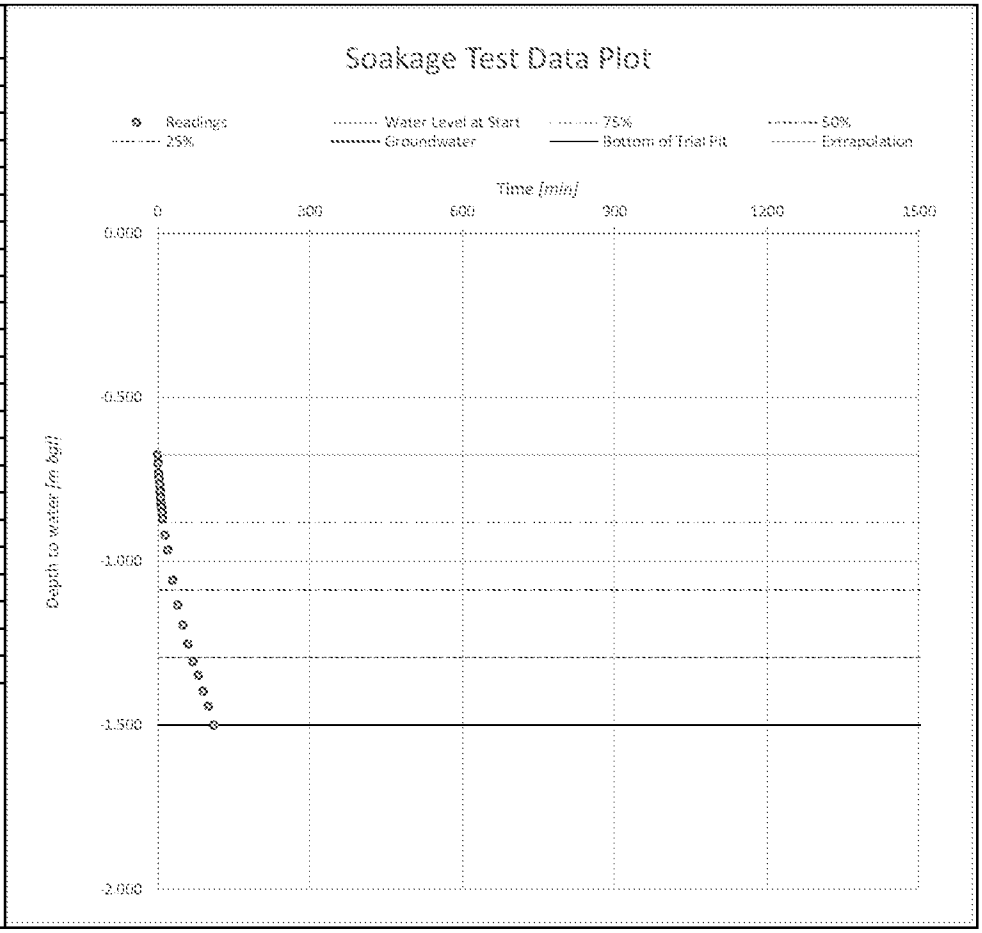
In accordance with BRE Digest 365:2016 - Soakaway Design

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963

Trial Pit No:	TP02	**Length *[m]* :**	2.30
Test No:	1	**Depth *[m]* :**	1.50
Date:	20/09/2022	**Width *[m]* :**	0.45
Logged by:	DB	**Groundwater *[m bgl]* :**	Dry

		from - to *[m bgl]*		Description
Ground	**Conditions**	0.25	1.50	Sandy CLAY.

Time	Water Depth
[min]	*[m bgl]*
0	0.676
1	0.701
2	0.731
3	0.746
4	0.766
5	0.786
6	0.806
7	0.826
8	0.836
9	0.851
10	0.871
15	0.921
20	0.966
30	1.058
40	1.134
50	1.195
60	1.253
70	1.306
80	1.348
90	1.396
100	1.442
110	1.500



Soil Infiltration Rate [m/s]: $f = \frac{V_{p75\_25}}{a_{s50} \times tp_{75-25}}$

with:

V_{p75_25}	as Effective Storage Volume of water between 75% and 25% effective storage depth ***[m³]***	**0.43**
a_{s50}	as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area ***[m²]***	**3.30**
t_{p75_25}	as Time for the water level to fall from 75% to 25% effective storage depth ***[s]***	**3.4.E+03**

Soil Infiltration Rate *[m/s]* : 3.80E-05

Remarks:

SOIL INFILTRATION RATE

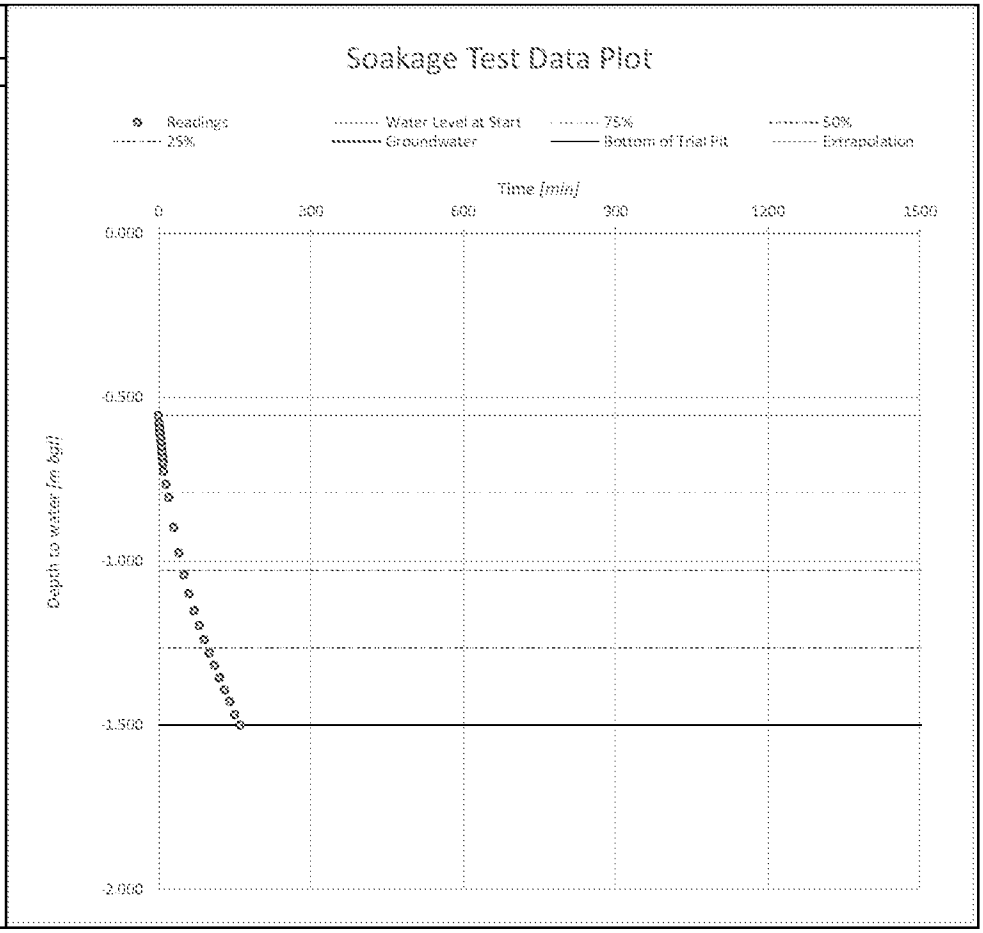
In accordance with BRE Digest 365:2016 - Soakaway Design

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963

Trial Pit No:	TP02	**Length *[m]* :**	2.30
Test No:	2	**Depth *[m]* :**	1.50
Date:	21/09/2022	**Width *[m]* :**	0.45
Logged by:	DB	**Groundwater *[m bgl]* :**	Dry

		from - to *[m bgl]*		**Description**
Ground	**Conditions**	0.25	1.50	Sandy CLAY.

Time	**Water Depth**
[min]	***[m bgl]***
0	0.556
1	0.581
2	0.596
3	0.611
4	0.626
5	0.641
6	0.656
7	0.671
8	0.686
9	0.701
10	0.726
15	0.766
20	0.806
30	0.897
40	0.975
50	1.042
60	1.099
70	1.151
80	1.196
90	1.239
100	1.280
110	1.318
120	1.355
130	1.393
140	1.428
150	1.468
160	1.500



Soil Infiltration Rate [m/s]: $f = \frac{V_{p75\_25}}{a_{s50} \times tp_{75-25}}$

with:

V_{p75_25}	as Effective Storage Volume of water between 75% and 25% effective storage depth ***[m³]***	**0.49**
a_{s50}	as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area ***[m²]***	**3.63**
t_{p75_25}	as Time for the water level to fall from 75% to 25% effective storage depth ***[s]***	**4.7.E+03**

Soil Infiltration Rate *[m/s]* : 2.88E-05

Remarks:

SOIL INFILTRATION RATE

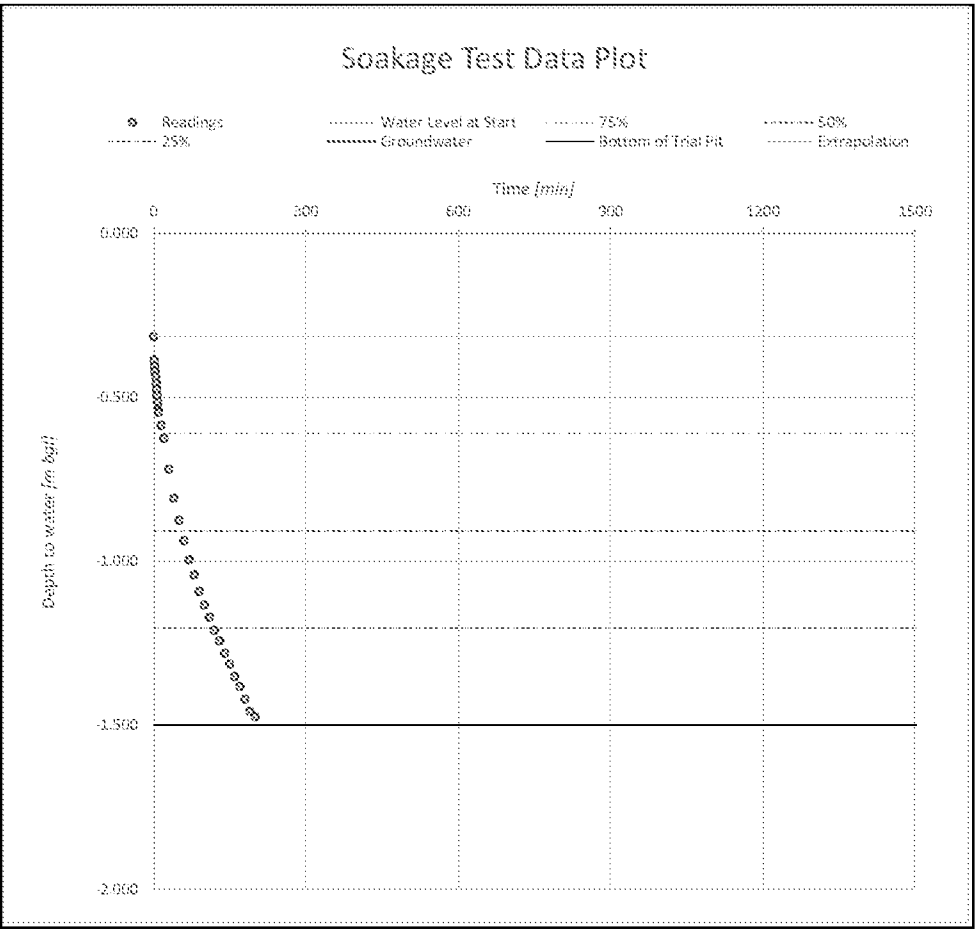
In accordance with BRE Digest 365:2016 - Soakaway Design

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963

Trial Pit No:	TP02	**Length *[m]* :**	2.30
Test No:	3	**Depth *[m]* :**	1.50
Date:	21/09/2022	**Width *[m]* :**	0.45
Logged by:	DB	**Groundwater *[m bgl]* :**	Dry

		from - to *[m bgl]*		Description
Ground	**Conditions**	0.25	1.50	Sandy CLAY.

Time	Water Depth
[min]	*[m bgl]*
0	0.316
1	0.386
2	0.406
3	0.421
4	0.436
5	0.456
6	0.476
7	0.496
8	0.516
9	0.536
10	0.546
15	0.586
20	0.626
30	0.720
40	0.808
50	0.876
60	0.938
70	0.996
80	1.042
90	1.092
100	1.134
110	1.171
120	1.211
130	1.243
140	1.281
150	1.314
160	1.352
170	1.382
180	1.421
190	1.458
200	1.474



Soil Infiltration Rate [m/s]: $f = \frac{V_{p75\_25}}{a_{s50} \times tp_{75-25}}$

with:

V_{p75_25}	as Effective Storage Volume of water between 75% and 25% effective storage depth ***[m³]***	**0.61**
a_{s50}	as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area ***[m²]***	**4.29**
t_{p75_25}	as Time for the water level to fall from 75% to 25% effective storage depth ***[s]***	**6.0.E+03**

Soil Infiltration Rate *[m/s]* : 2.38E-05

Remarks:

SOIL INFILTRATION RATE

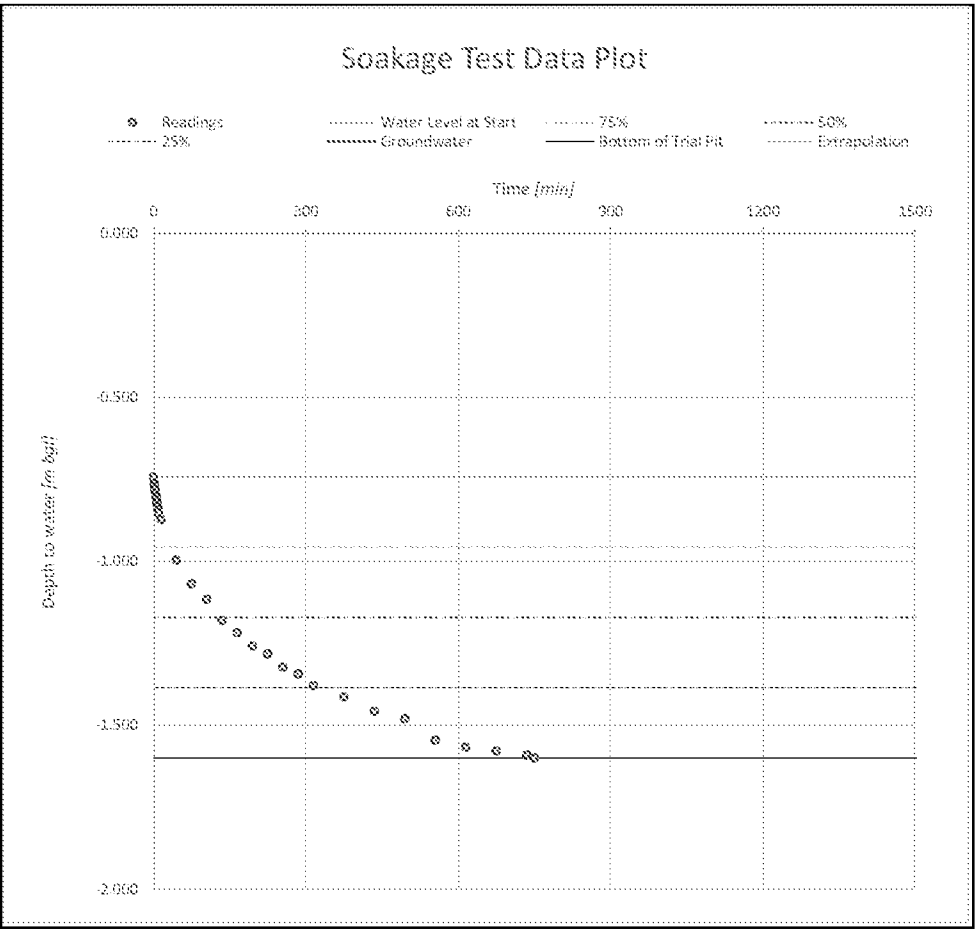
In accordance with BRE Digest 365:2016 - Soakaway Design

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963

Trial Pit No:	TP03	**Length *[m]* :**	2.10
Test No:	1	**Depth *[m]* :**	1.60
Date:	20/09/2022	**Width *[m]* :**	0.45
Logged by:	DB	**Groundwater *[m bgl]* :**	Dry

		from - to *[m bgl]*		**Description**
Ground	**Conditions**	0.30	1.60	Sandy, silty CLAY.

Time	**Water Depth**
[min]	***[m bgl]***
0	0.743
1	0.763
2	0.773
3	0.783
4	0.793
5	0.803
6	0.813
7	0.823
8	0.833
9	0.843
10	0.853
15	0.873
45	0.997
75	1.069
105	1.116
135	1.181
165	1.218
195	1.259
225	1.283
255	1.323
285	1.344
315	1.380
375	1.414
435	1.458
495	1.480
555	1.546
615	1.567
675	1.579
735	1.591
750	1.600



Soil Infiltration Rate [m/s]: $$f = \frac{V_{p75\_25}}{a_{s50} \times tp_{75-25}}$$

with:

V_{p75_25}	as Effective Storage Volume of water between 75% and 25% effective storage depth ***[m³]***	**0.40**
a_{s50}	as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area ***[m²]***	**3.13**
t_{p75_25}	as Time for the water level to fall from 75% to 25% effective storage depth ***[s]***	**1.7.E+04**

Soil Infiltration Rate *[m/s]* : 7.44E-06

Remarks:

SOIL INFILTRATION RATE

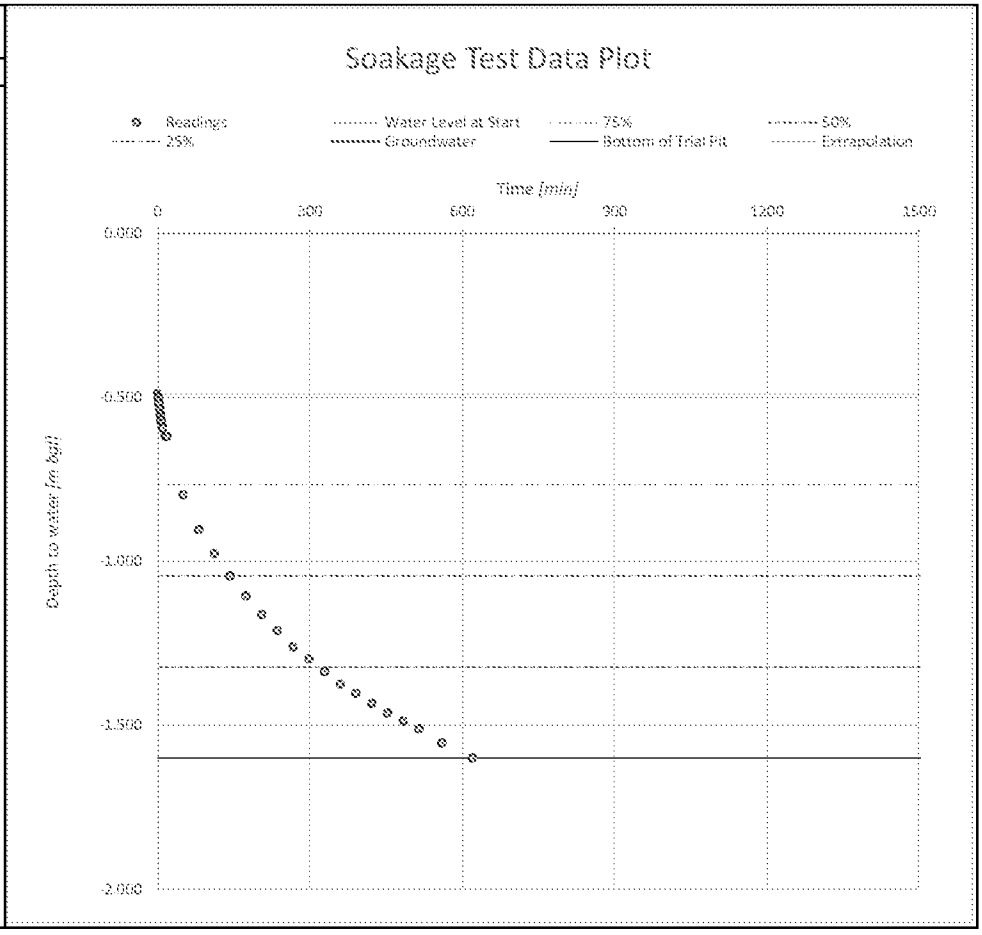
In accordance with BRE Digest 365:2016 - Soakaway Design

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963

Trial Pit No:	TP03	**Length *[m]* :**	2.10
Test No:	2	**Depth *[m]* :**	1.60
Date:	21/09/2022	**Width *[m]* :**	0.45
Logged by:	DB	**Groundwater *[m bgl]* :**	Dry

	from - to *[m bgl]*		**Description**
Ground Conditions	0.30	1.60	Sandy, silty CLAY.

Time	**Water Depth**
[min]	***[m bgl]***
0	0.490
1	0.500
2	0.510
3	0.520
4	0.535
5	0.550
6	0.560
7	0.570
8	0.580
9	0.590
10	0.595
15	0.620
19	0.620
50	0.798
81	0.904
112	0.977
143	1.045
174	1.106
205	1.163
236	1.212
267	1.262
298	1.298
329	1.337
360	1.375
391	1.403
422	1.434
453	1.463
484	1.488
515	1.511
560	1.554
620	1.600



Soil Infiltration Rate [m/s]: $$f = \frac{V_{p75\_25}}{a_{s50} \times tp_{75-25}}$$

with:

V_{p75_25}	as Effective Storage Volume of water between 75% and 25% effective storage depth ***[m³]***	**0.52**
a_{s50}	as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area ***[m²]***	**3.78**
t_{p75_25}	as Time for the water level to fall from 75% to 25% effective storage depth ***[s]***	**1.6.E+04**

Soil Infiltration Rate *[m/s]* : 8.49E-06

Remarks:

SOIL INFILTRATION RATE

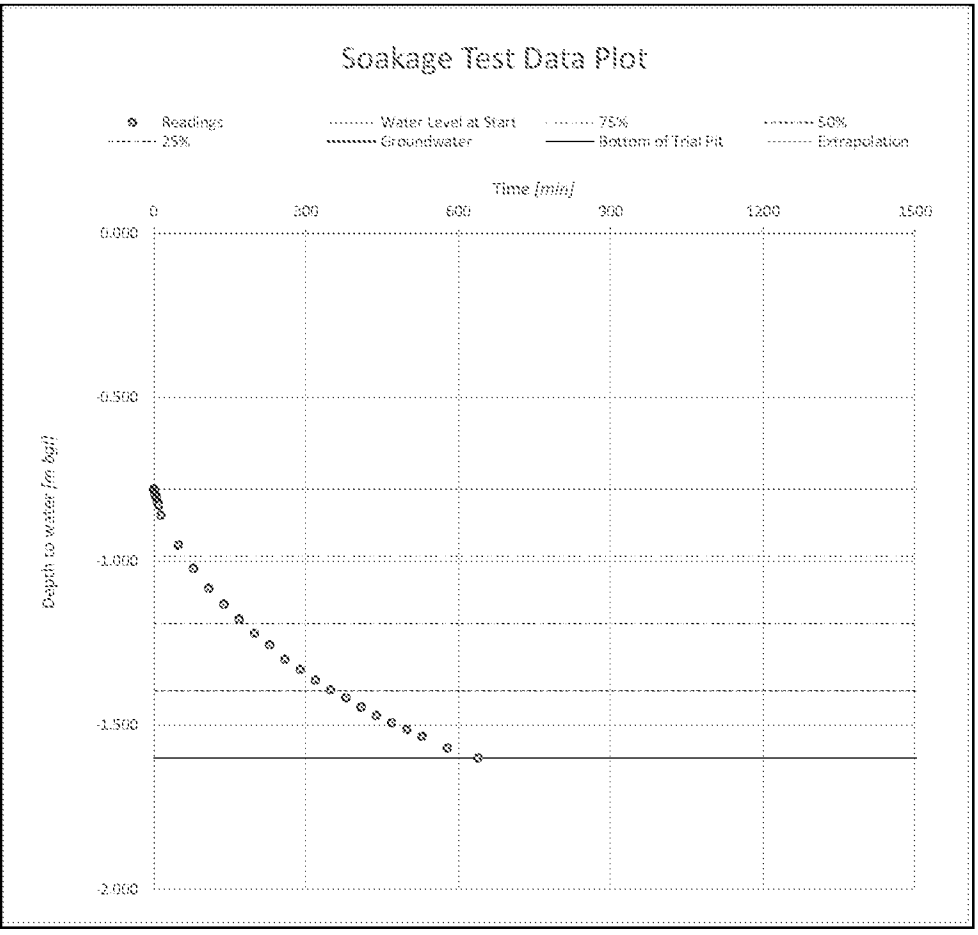
In accordance with BRE Digest 365:2016 - Soakaway Design

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963

Trial Pit No:	TP03	**Length *[m]* :**	2.10
Test No:	3	**Depth *[m]* :**	1.60
Date:	22/09/2022	**Width *[m]* :**	0.45
Logged by:	DB	**Groundwater *[m bgl]* :**	Dry

	from - to *[m bgl]*		**Description**
Ground Conditions	0.30	1.60	Sandy, silty CLAY.

Time	**Water Depth**
[min]	***[m bgl]***
0	0.780
1	0.785
2	0.790
3	0.795
4	0.800
5	0.805
6	0.810
7	0.815
8	0.820
9	0.825
10	0.830
15	0.860
49	0.951
79	1.022
109	1.083
139	1.131
169	1.176
199	1.220
229	1.255
259	1.299
289	1.330
319	1.363
349	1.392
379	1.417
409	1.445
439	1.471
469	1.493
499	1.513
529	1.534
579	1.570
639	1.600



Soil Infiltration Rate [m/s]: $$f = \frac{V_{p75\_25}}{a_{s50} \times tp_{75-25}}$$

with:

V_{p75_25}	as Effective Storage Volume of water between 75% and 25% effective storage depth ***[m³]***	**0.39**
a_{s50}	as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area ***[m²]***	**3.04**
t_{p75_25}	as Time for the water level to fall from 75% to 25% effective storage depth ***[s]***	**1.7.E+04**

Soil Infiltration Rate *[m/s]* : 7.35E-06

Remarks:

SOIL INFILTRATION RATE

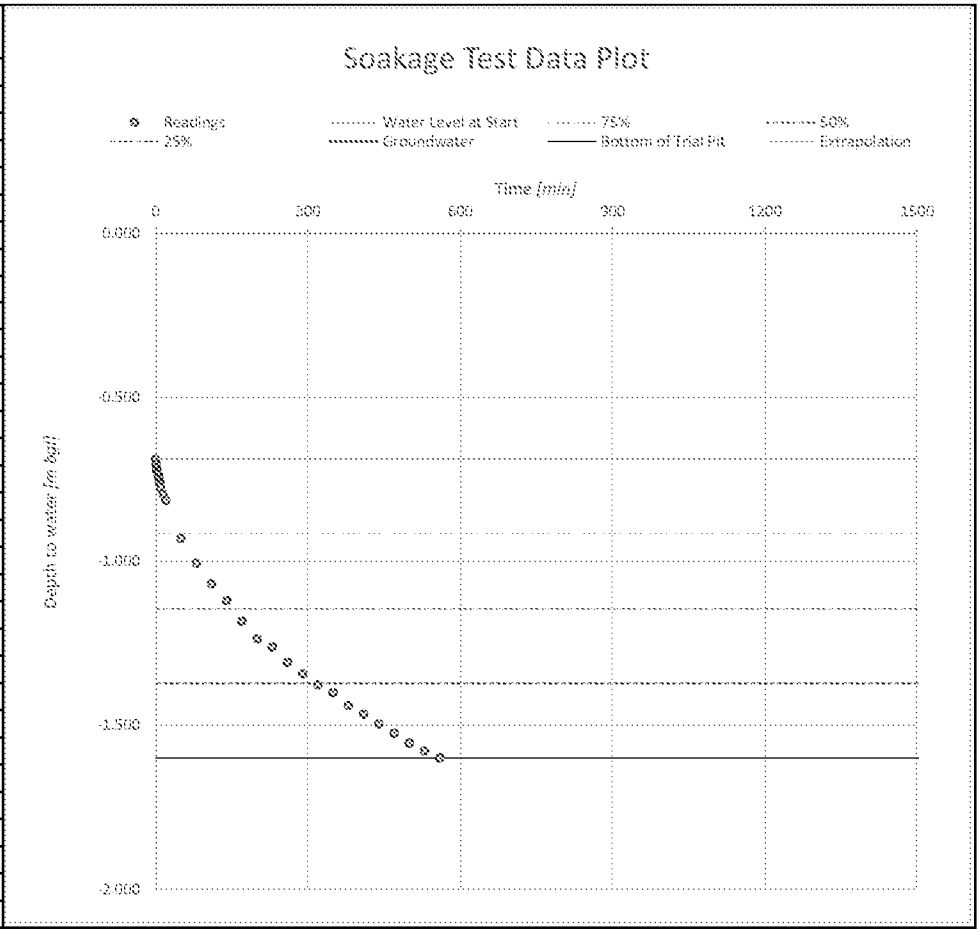
In accordance with BRE Digest 365:2016 - Soakaway Design

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963

Trial Pit No:	TP04	**Length *[m]* :**	2.10
Test No:	1	**Depth *[m]* :**	1.60
Date:	20/09/2022	**Width *[m]* :**	0.45
Logged by:	DB	**Groundwater *[m bgl]* :**	Dry

		from - to *[m bgl]*		Description
Ground	**Conditions**	0.25	1.60	Sandy, silty CLAY.

Time	Water Depth
[min]	*[m bgl]*
0	0.690
1	0.705
2	0.715
3	0.725
4	0.730
5	0.735
6	0.745
7	0.750
8	0.760
9	0.765
10	0.775
15	0.795
20	0.815
50	0.931
80	1.006
110	1.069
140	1.120
170	1.183
200	1.237
230	1.262
260	1.309
290	1.344
320	1.377
350	1.401
380	1.440
410	1.467
440	1.496
470	1.525
500	1.555
530	1.579
560	1.600



Soil Infiltration Rate [m/s]: $f = \frac{V_{p75\_25}}{a_{s50} \times tp_{75-25}}$

with:

V_{p75_25}	as Effective Storage Volume of water between 75% and 25% effective storage depth ***[m³]***	**0.43**
a_{s50}	as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area ***[m²]***	**3.27**
t_{p75_25}	as Time for the water level to fall from 75% to 25% effective storage depth ***[s]***	**1.6.E+04**

Soil Infiltration Rate *[m/s]* : 8.15E-06

Remarks:

SOIL INFILTRATION RATE

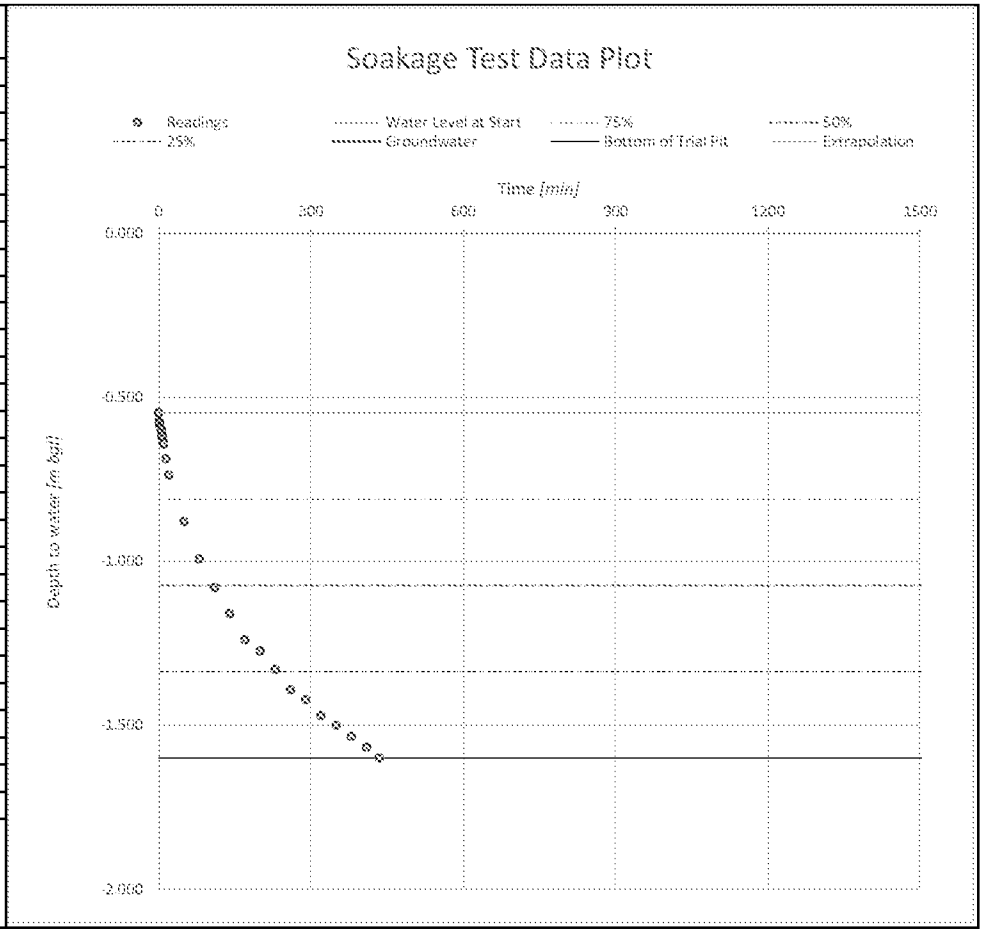
In accordance with BRE Digest 365:2016 - Soakaway Design

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963

Trial Pit No:	TP04	**Length *[m]* :**	2.10
Test No:	2	**Depth *[m]* :**	1.60
Date:	21/09/2022	**Width *[m]* :**	0.45
Logged by:	DB	**Groundwater *[m bgl]* :**	Dry

	from - to *[m bgl]*		Description
Ground Conditions	0.25	1.60	Sandy, silty CLAY.

Time	Water Depth
[min]	*[m bgl]*
0	0.548
1	0.573
2	0.578
3	0.588
4	0.593
5	0.598
6	0.608
7	0.618
8	0.628
9	0.638
10	0.643
15	0.688
20	0.738
50	0.879
80	0.993
110	1.081
140	1.160
170	1.240
200	1.274
230	1.330
260	1.392
290	1.422
320	1.471
350	1.500
380	1.534
410	1.567
435	1.600



Soil Infiltration Rate [m/s]: $f = \frac{V_{p75\_25}}{a_{s50} \times tp_{75-25}}$

with:

V_{p75_25}	as Effective Storage Volume of water between 75% and 25% effective storage depth ***[m³]***	**0.50**
a_{s50}	as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area ***[m²]***	**3.63**
t_{p75_25}	as Time for the water level to fall from 75% to 25% effective storage depth ***[s]***	**1.2.E+04**

Soil Infiltration Rate *[m/s]* : 1.15E-05

Remarks:

SOIL INFILTRATION RATE

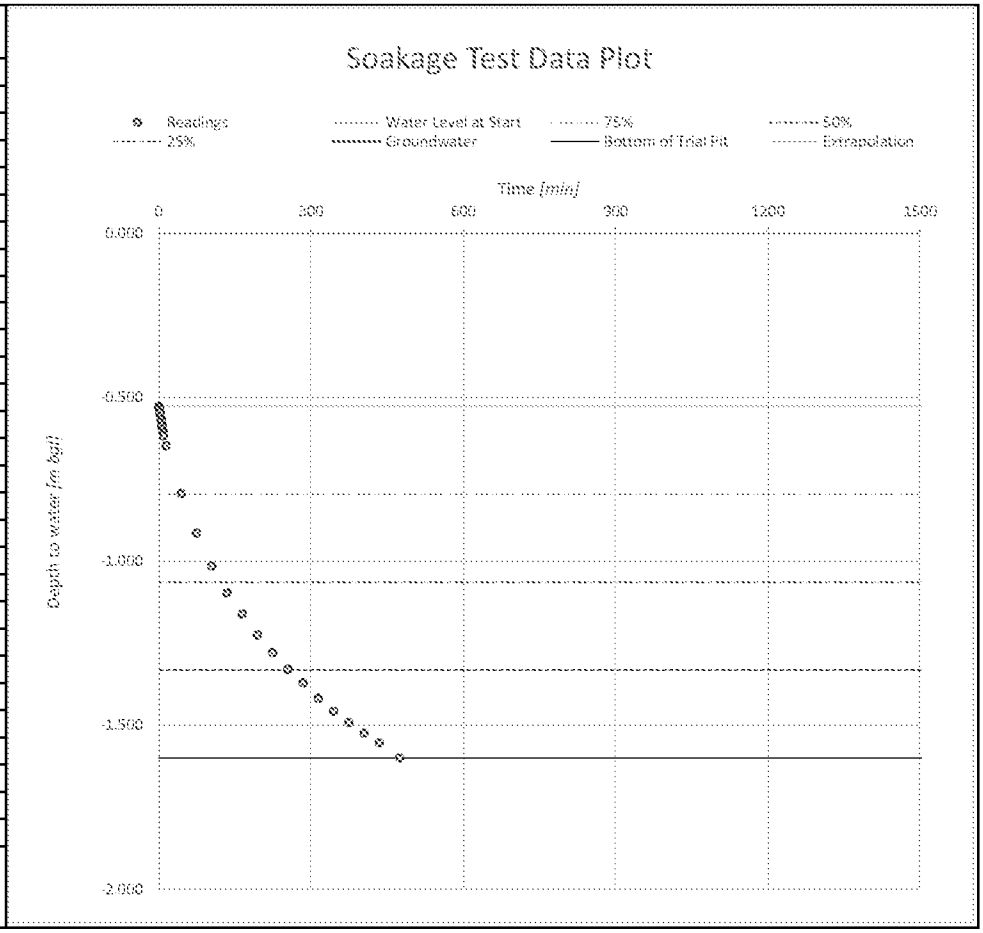
In accordance with BRE Digest 365:2016 - Soakaway Design

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963

Trial Pit No:	TP04	**Length *[m]* :**	2.10
Test No:	3	**Depth *[m]* :**	1.60
Date:	22/04/2022	**Width *[m]* :**	0.45
Logged by:	DB	**Groundwater *[m bgl]* :**	Dry

	from - to *[m bgl]*		Description
Ground Conditions	0.25	1.60	Sandy, silty CLAY.

Time	Water Depth
[min]	*[m bgl]*
0	0.528
1	0.533
2	0.538
3	0.548
4	0.558
5	0.568
6	0.578
7	0.588
8	0.598
9	0.608
10	0.618
15	0.648
45	0.794
75	0.915
105	1.015
135	1.097
165	1.161
195	1.225
225	1.279
255	1.330
285	1.371
315	1.418
345	1.458
375	1.492
405	1.525
435	1.554
475	1.600



Soil Infiltration Rate [m/s]: $f = \frac{V_{p75\_25}}{a_{s50} \times tp_{75-25}}$

with:

V_{p75_25}	as Effective Storage Volume of water between 75% and 25% effective storage depth ***[m³]***	**0.51**
a_{s50}	as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area ***[m²]***	**3.68**
t_{p75_25}	as Time for the water level to fall from 75% to 25% effective storage depth ***[s]***	**1.3.E+04**

Soil Infiltration Rate *[m/s]* : 1.09E-05

Remarks:

SOIL INFILTRATION RATE

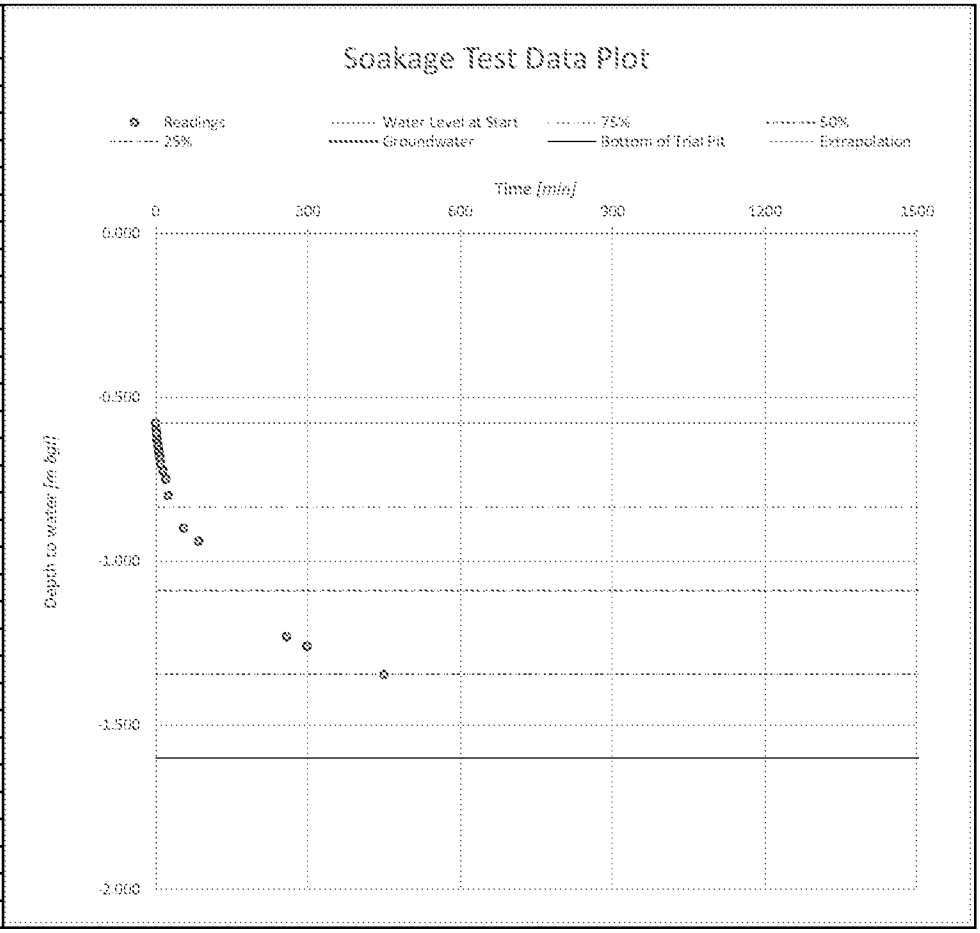
In accordance with BRE Digest 365:2016 - Soakaway Design

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963

Trial Pit No:	TP05	**Length *[m]* :**	2.10
Test No:	1	**Depth *[m]* :**	1.60
Date:	21/09/2022	**Width *[m]* :**	0.45
Logged by:	DB	**Groundwater *[m bgl]* :**	Dry

	from - to *[m bgl]*		Description
Ground Conditions	0.25	1.60	Sandy CLAY.

Time	Water Depth
[min]	*[m bgl]*
0	0.580
1	0.600
2	0.610
3	0.630
4	0.640
5	0.650
6	0.660
7	0.670
8	0.680
9	0.690
10	0.705
15	0.725
20	0.750
25	0.800
55	0.900
85	0.939
258	1.230
298	1.260
450	1.346



Soil Infiltration Rate [m/s]: $f = \frac{V_{p75\_25}}{a_{s50} \times tp_{75-25}}$

with:

V_{p75_25}	as Effective Storage Volume of water between 75% and 25% effective storage depth ***[m³]***	**0.48**
a_{s50}	as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area ***[m²]***	**3.55**
t_{p75_25}	as Time for the water level to fall from 75% to 25% effective storage depth ***[s]***	**2.5.E+04**

Soil Infiltration Rate *[m/s]* : 5.49E-06

Remarks:

SOIL INFILTRATION RATE

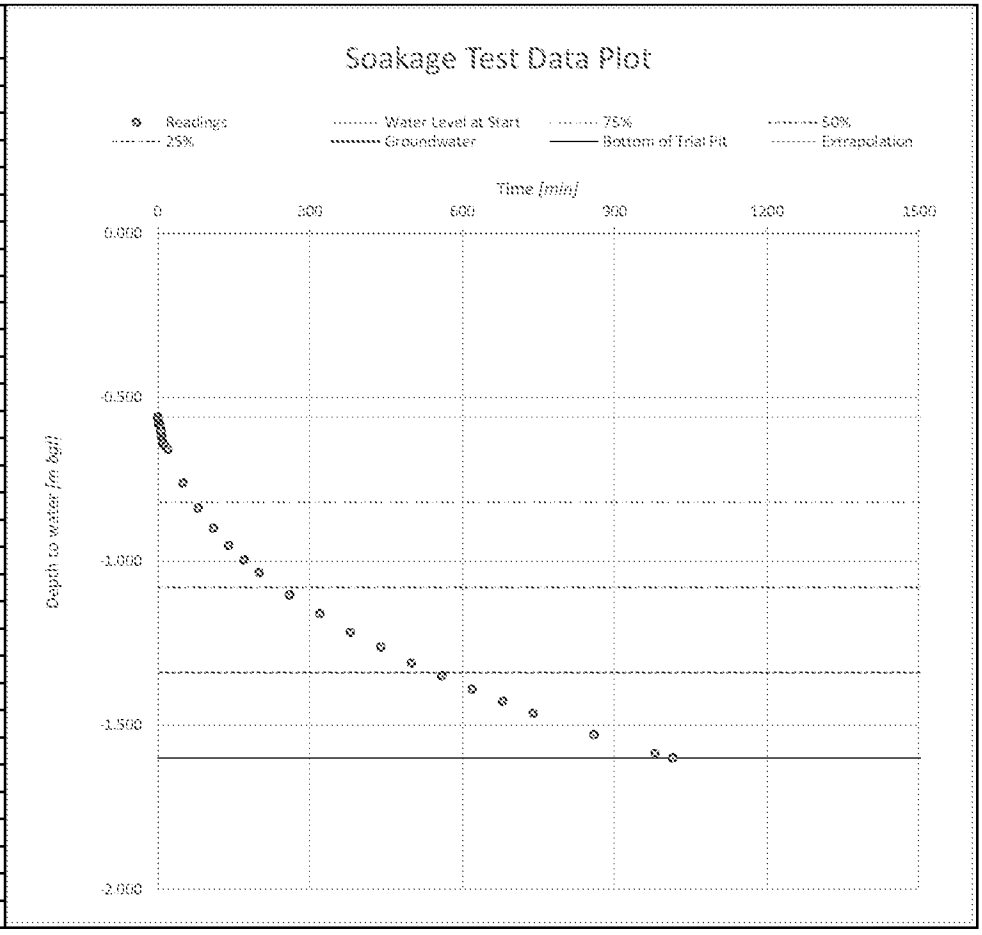
In accordance with BRE Digest 365:2016 - Soakaway Design

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963

Trial Pit No:	TP05	**Length *[m]* :**	2.10
Test No:	2	**Depth *[m]* :**	1.60
Date:	21/09/2022	**Width *[m]* :**	0.45
Logged by:	DB	**Groundwater *[m bgl]* :**	Dry

	from - to *[m bgl]*		**Description**
Ground Conditions	0.25	1.60	Sandy CLAY.

Time	**Water Depth**
[min]	***[m bgl]***
0	0.560
1	0.570
2	0.580
3	0.585
4	0.585
5	0.590
6	0.595
7	0.605
8	0.620
9	0.630
10	0.640
15	0.650
20	0.660
50	0.762
80	0.838
110	0.900
140	0.952
170	0.996
200	1.035
260	1.103
320	1.160
380	1.217
440	1.262
500	1.311
560	1.349
620	1.390
680	1.427
740	1.464
860	1.529
980	1.586
1015	1.600



Soil Infiltration Rate [m/s]: $f = \frac{V_{p75\_25}}{a_{s50} \times tp_{75-25}}$

with:

V_{p75_25}	as Effective Storage Volume of water between 75% and 25% effective storage depth ***[m³]***	**0.49**
a_{s50}	as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area ***[m²]***	**3.60**
t_{p75_25}	as Time for the water level to fall from 75% to 25% effective storage depth ***[s]***	**2.8.E+04**

Soil Infiltration Rate *[m/s]* : 4.81E-06

Remarks:

SOIL INFILTRATION RATE

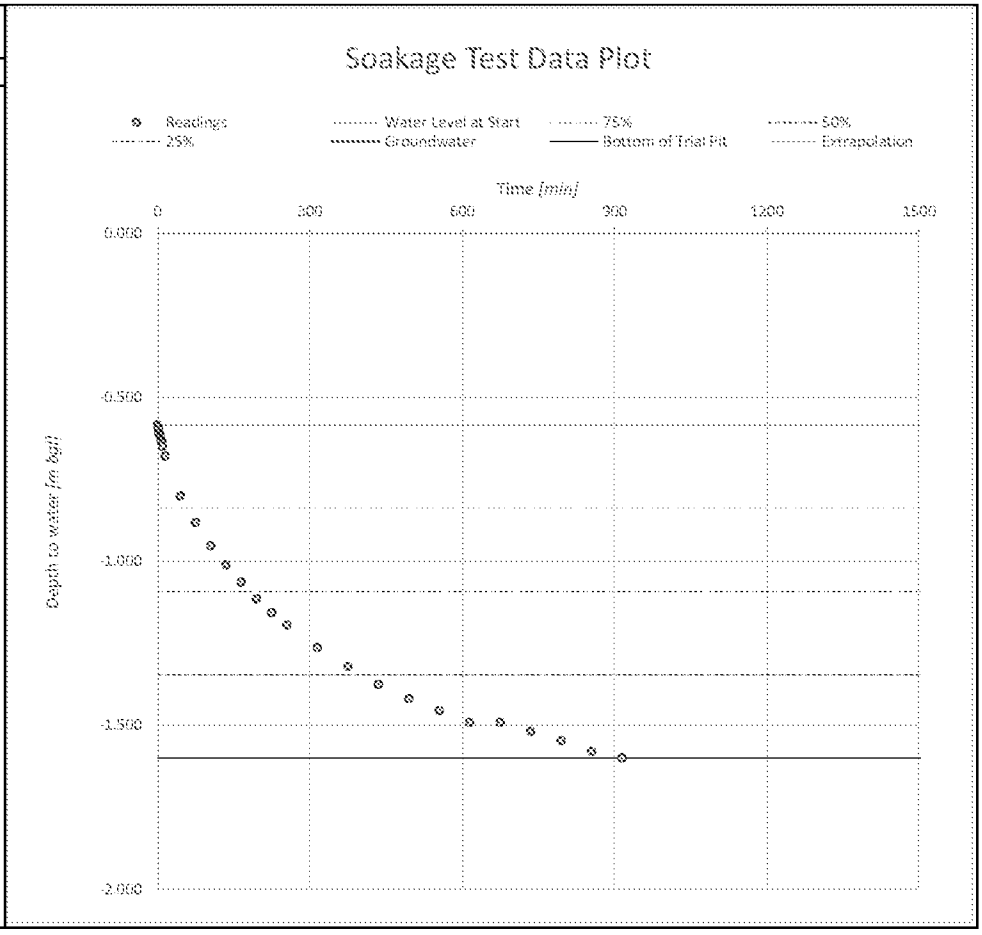
In accordance with BRE Digest 365:2016 - Soakaway Design

Client:	Gleeson Land
Project Title:	Hook Lane, Westergate
Project No:	BRD3963

Trial Pit No:	TP05	**Length *[m]* :**	2.10
Test No:	3	**Depth *[m]* :**	1.60
Date:	22/09/2022	**Width *[m]* :**	0.45
Logged by:	DB	**Groundwater *[m bgl]* :**	Dry

	from - to *[m bgl]*		**Description**
Ground Conditions	0.25	1.60	Sandy CLAY.

Time	**Water Depth**
[min]	***[m bgl]***
0	0.585
1	0.590
2	0.600
3	0.610
4	0.615
5	0.620
6	0.625
7	0.630
8	0.635
9	0.640
10	0.650
15	0.680
45	0.801
75	0.882
105	0.953
135	1.012
165	1.064
195	1.115
225	1.157
255	1.195
315	1.263
375	1.321
435	1.376
495	1.419
555	1.456
615	1.491
675	1.491
735	1.519
795	1.547
855	1.580
915	1.600



Soil Infiltration Rate [m/s]: $f = \frac{V_{p75\_25}}{a_{s50} \times tp_{75-25}}$

with:

V_{p75_25}	as Effective Storage Volume of water between 75% and 25% effective storage depth ***[m³]***	**0.48**
a_{s50}	as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area ***[m²]***	**3.53**
t_{p75_25}	as Time for the water level to fall from 75% to 25% effective storage depth ***[s]***	**2.1.E+04**

Soil Infiltration Rate *[m/s]* : 6.58E-06

Remarks:

Groundwater Monitoring Record

Project: Hook Lane, Westergate
Client: Gleeson Land
Project No: BRD3963

Borehole name	Date	Monitored by (initials)	Borehole depth (m)	Qty free product detected (mm)	Groundwater level below ground surface (m)	Groundwater level below top of standpipe (m)	Amount purged (l)	Post purge groundwater level below top of standpipe (m)	Comments
WS02	17/10/2022	DB	2.55	N/A	1.48	1.34	1.00	1.71	Brown sandy water
WS03	17/10/2022	DB	3.06	N/A	2.60	2.47	1.00	Dry	Brown sandy water
WS04	17/10/2022	DB	3.36	N/A	2.86	2.76	0.50	Dry	Brown sandy water
WS05	17/10/2022	DB	3.20	N/A	2.79	2.69	3.20	N/A	Unable to sample due to bent installation

Groundwater Monitoring Record

Project: Hook Lane, Westergate
Client: Gleeson Land
Project No: BRD3963

Borehole name	Date	Monitored by (initials)	Borehole depth (m)	Qty free product detected (mm)	Groundwater level below ground surface (m)	Groundwater level below top of standpipe (m)	Amount purged (l)	Post purge groundwater level below top of standpipe (m)	Comments
WS02	02/12/2022	BC	2.02	N/A	0.65	0.51	N/A	N/A	Groundwater levels only.
WS03	02/12/2022	BC	2.78	N/A	0.66	0.51	N/A	N/A	Groundwater levels only.
WS04	02/12/2022	BC	2.90	N/A	0.23	0.12	N/A	N/A	Groundwater levels only.
WS05	02/12/2022	BC	3.16	N/A	1.02	0.94	N/A	N/A	Groundwater levels only.

Groundwater Monitoring Record

Project: Hook Lane, Westergate
Client: Gleeson Land
Project No: BRD3963

Borehole name	Date	Monitored by (initials)	Borehole depth (m)	Qty free product detected (mm)	Groundwater level below ground surface (m)	Groundwater level below top of standpipe (m)	Amount purged (l)	Post purge groundwater level below top of standpipe (m)	Comments
WS02	04/01/2023	BC	1.98	N/A	0.37	0.24	N/A	N/A	Groundwater levels only.
WS03	04/01/2023	BC	2.74	N/A	0.68	0.44	N/A	N/A	Groundwater levels only.
WS04	04/01/2023	BC	2.71	N/A	0.05	Flooded	N/A	N/A	Groundwater levels only.
WS05	04/01/2023	BC	3.15	N/A	0.77	0.64	N/A	N/A	Groundwater levels only.

Groundwater Monitoring Record

Project: Hook Lane, Westergate
Client: Gleeson Land
Project No: BRD3963

Borehole name	Date	Monitored by (initials)	Borehole depth (m)	Qty free product detected (mm)	Groundwater level below ground surface (m)	Groundwater level below top of standpipe (m)	Amount purged (l)	Post purge groundwater level below top of standpipe (m)	Comments
WS02	08/02/2023	BC	1.99	N/A	0.95	0.82	N/A	N/A	Groundwater levels only.
WS03	08/02/2023	BC	2.73	N/A	0.85	0.73	N/A	N/A	Groundwater levels only.
WS04	08/02/2023	BC	2.71	N/A	0.85	0.74	N/A	N/A	Groundwater levels only.
WS05	08/02/2023	BC	3.16	N/A	1.37	1.29	N/A	N/A	Groundwater levels only.

Groundwater Monitoring Record

Project: Hook Lane, Westergate
Client: Gleeson Land
Project No: BRD3963

Borehole name	Date	Monitored by (initials)	Borehole depth (m)	Qty free product detected (mm)	Groundwater level below ground surface (m)	Groundwater level below top of standpipe (m)	Amount purged (l)	Post purge groundwater level below top of standpipe (m)	Comments
WS02	01/03/2023	DB	1.99	N/A	1.18	1.04	N/A	N/A	Groundwater levels only.
WS03	01/03/2023	DB	2.73	N/A	1.40	1.28	N/A	N/A	Groundwater levels only.
WS04	01/03/2023	DB	2.71	N/A	1.38	1.28	N/A	N/A	Groundwater levels only.
WS05	01/03/2023	DB	3.16	N/A	1.85	1.73	N/A	N/A	Groundwater levels only.

Groundwater Monitoring Record

Project: Hook Lane, Westergate
Client: Gleeson Land
Project No: BRD3963

Borehole name	Date	Monitored by (initials)	Borehole depth (m)	Qty free product detected (mm)	Groundwater level below ground surface (m)	Groundwater level below top of standpipe (m)	Amount purged (l)	Post purge groundwater level below top of standpipe (m)	Comments
WS02	05/04/2023	SW	1.84	N/A	0.72	0.59	N/A	N/A	Groundwater levels only.
WS03	05/04/2023	SW	2.56	N/A	0.68	0.53	N/A	N/A	Groundwater levels only.
WS04	05/04/2023	SW	2.75	N/A	0.36	0.25	N/A	N/A	Groundwater levels only.
WS05	05/04/2023	SW	3.07	N/A	1.06	0.98	N/A	N/A	Groundwater levels only.

Groundwater Monitoring Record

Project: Hook Lane, Westergate
Client: Gleeson Land
Project No: BRD3963

Borehole name	Date	Monitored by (initials)	Borehole depth (m)	Qty free product detected (mm)	Groundwater level below ground surface (m)	Groundwater level below top of standpipe (m)	Amount purged (l)	Post purge groundwater level below top of standpipe (m)	Comments
WS02	15/05/2023	SW	1.87	N/A	1.06	0.92	N/A	N/A	Groundwater levels only.
WS03	15/05/2023	SW	2.67	N/A	0.97	0.82	N/A	N/A	Groundwater levels only.
WS04	15/05/2023	SW	2.69	N/A	0.74	0.64	N/A	N/A	Groundwater levels only.
WS05	15/05/2023	SW	3.07	N/A	1.57	1.48	N/A	N/A	Groundwater levels only.

Groundwater Monitoring Record

Project: Hook Lane, Westergate
Client: Gleeson Land
Project No: BRD3963

Borehole name	Date	Monitored by (initials)	Borehole depth (m)	Qty free product detected (mm)	Groundwater level below ground surface (m)	Groundwater level below top of standpipe (m)	Amount purged (l)	Post purge groundwater level below top of standpipe (m)	Comments
WS02	08/06/2023	SW	1.89	N/A	1.33	1.20	N/A	N/A	Groundwater levels only.
WS03	08/06/2023	SW	2.60	N/A	1.74	1.59	N/A	N/A	Groundwater levels only. Silt at base.
WS04	08/06/2023	SW	2.71	N/A	1.75	1.67	N/A	N/A	Groundwater levels only.
WS05	08/06/2023	SW	3.07	N/A	2.04	1.95	N/A	N/A	Groundwater levels only.

APPENDIX 3

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Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
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4480

DETS Report No: 22-07925

Site Reference:	Hook Lane, Westergate
Project / Job Ref:	BRD3963
Order No:	None Supplied
Sample Receipt Date:	22/09/2022
Sample Scheduled Date:	22/09/2022
Report Issue Number:	1
Reporting Date:	28/09/2022

Authorised by:
[redacted]

Ela Mysiara
Quality Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

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Soil Analysis Certificate						
DETS Report No: 22-07925	**Date Sampled**	20/09/22	20/09/22	20/09/22	20/09/22	20/09/22
BRD Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Hook Lane, Westergate	**TP / BH No**	TP01	TP02	TP04	TP06	TP06
Project / Job Ref: BRD3963	**Additional Refs**	J1	J1	J1	J1	J2
Order No: None Supplied	**Depth (m)**	0.10	0.20	0.10	0.20	0.70
Reporting Date: 28/09/2022	**DETS Sample No**	613732	613733	613734	613735	613736

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS				6.6	7.0
Total Sulphate as SO_4	mg/kg	< 200	MCERTS					< 200
Total Sulphate as SO_4	%	< 0.02	MCERTS					< 0.02
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS				< 10	< 10
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS				< 0.01	< 0.01
Total Sulphur	%	< 0.02	NONE					< 0.02
Organic Matter (SOM)	%	< 0.1	MCERTS				1.3	
Arsenic (As)	mg/kg	< 2	MCERTS				9	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS				< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS				21	
Chromium (hexavalent)	mg/kg	< 2	NONE				< 2	
Copper (Cu)	mg/kg	< 4	MCERTS				11	
Lead (Pb)	mg/kg	< 3	MCERTS				13	
Mercury (Hg)	mg/kg	< 1	MCERTS				< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS				14	
Selenium (Se)	mg/kg	< 2	MCERTS				< 3	
Zinc (Zn)	mg/kg	< 3	MCERTS				43	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Soil Analysis Certificate						
DETS Report No: 22-07925	**Date Sampled**	20/09/22	20/09/22	20/09/22	20/09/22	20/09/22
BRD Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Hook Lane, Westergate	**TP / BH No**	TP06	TP07	TP07	TP08	TP08
Project / Job Ref: BRD3963	**Additional Refs**	J3	J1	J2	J1	J2
Order No: None Supplied	**Depth (m)**	3.00	0.20	0.60	0.10	0.80
Reporting Date: 28/09/2022	**DETS Sample No**	613737	613738	613739	613740	613741

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	7.8	6.9	7.0	6.4	7.0
Total Sulphate as SO_4	mg/kg	< 200	MCERTS	< 200				< 200
Total Sulphate as SO_4	%	< 0.02	MCERTS	< 0.02				< 0.02
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Sulphur	%	< 0.02	NONE	< 0.02				< 0.02
Organic Matter (SOM)	%	< 0.1	MCERTS		0.3	0.4	0.3	
Arsenic (As)	mg/kg	< 2	MCERTS		9	14	6	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS		< 0.2	< 0.2	< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS		19	26	15	
Chromium (hexavalent)	mg/kg	< 2	NONE		< 2	< 2	< 2	
Copper (Cu)	mg/kg	< 4	MCERTS		10	11	10	
Lead (Pb)	mg/kg	< 3	MCERTS		16	13	18	
Mercury (Hg)	mg/kg	< 1	MCERTS		< 1	< 1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS		13	22	9	
Selenium (Se)	mg/kg	< 2	MCERTS		< 3	< 3	< 3	
Zinc (Zn)	mg/kg	< 3	MCERTS		45	46	41	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Soil Analysis Certificate						
DETS Report No: 22-07925	**Date Sampled**	20/09/22	20/09/22	20/09/22	20/09/22	
BRD Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Hook Lane, Westergate	**TP / BH No**	TP08	TP09	TP09	TP09	
Project / Job Ref: BRD3963	**Additional Refs**	J3	J1	J2	J3	
Order No: None Supplied	**Depth (m)**	1.90	0.20	0.80	1.90	
Reporting Date: 28/09/2022	**DETS Sample No**	613742	613743	613744	613745	

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	7.3	6.6	7.3	7.4	
Total Sulphate as SO_4	mg/kg	< 200	MCERTS	< 200			< 200	
Total Sulphate as SO_4	%	< 0.02	MCERTS	< 0.02			< 0.02	
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	< 10	< 10	< 10	10	
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	< 0.01	< 0.01	< 0.01	0.01	
Total Sulphur	%	< 0.02	NONE	< 0.02			< 0.02	
Organic Matter (SOM)	%	< 0.1	MCERTS		0.9	1		
Arsenic (As)	mg/kg	< 2	MCERTS		6	9		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS		< 0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS		13	25		
Chromium (hexavalent)	mg/kg	< 2	NONE		< 2	< 2		
Copper (Cu)	mg/kg	< 4	MCERTS		10	15		
Lead (Pb)	mg/kg	< 3	MCERTS		16	12		
Mercury (Hg)	mg/kg	< 1	MCERTS		< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS		9	25		
Selenium (Se)	mg/kg	< 2	MCERTS		< 3	< 3		
Zinc (Zn)	mg/kg	< 3	MCERTS		38	47		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 22-07925	**Date Sampled**	20/09/22	20/09/22	20/09/22	20/09/22	20/09/22
BRD Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Hook Lane, Westergate	**TP / BH No**	TP06	TP07	TP07	TP08	TP09
Project / Job Ref: BRD3963	**Additional Refs**	J1	J1	J2	J1	J1
Order No: None Supplied	**Depth (m)**	0.20	0.20	0.60	0.10	0.20
Reporting Date: 28/09/2022	**DETS Sample No**	613735	613738	613739	613740	613743

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

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Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 22-07925	**Date Sampled**	20/09/22					
BRD Environmental Ltd	**Time Sampled**	None Supplied					
Site Reference: Hook Lane, Westergate	**TP / BH No**	TP09					
Project / Job Ref: BRD3963	**Additional Refs**	J2					
Order No: None Supplied	**Depth (m)**	0.80					
Reporting Date: 28/09/2022	**DETS Sample No**	613744					

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

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Soil Analysis Certificate - TPH LQM Banded						
DETS Report No: 22-07925	**Date Sampled**	20/09/22	20/09/22			
BRD Environmental Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: Hook Lane, Westergate	**TP / BH No**	TP07	TP09			
Project / Job Ref: BRD3963	**Additional Refs**	J2	J2			
Order No: None Supplied	**Depth (m)**	0.60	0.80			
Reporting Date: 28/09/2022	**DETS Sample No**	613739	613744			

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01			
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05			
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2			
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2			
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3			
Aliphatic >C16 - C35 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10	< 10			
Aliphatic >C35 - C44 : EH_CU_1D_AL	mg/kg	< 10	NONE	< 10	< 10			
Aliphatic (C5 - C44) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 30	NONE	< 30	< 30			
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01			
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05			
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2			
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2			
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2			
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	< 3	< 3			
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	< 10	< 10			
Aromatic >C35 - C44 : EH_CU_1D_AR	mg/kg	< 10	NONE	< 10	< 10			
Aromatic (>C5 - C44) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 30	NONE	< 30	< 30			
Total >C5 - C44 : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 60	NONE	< 60	< 60			

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 22-07925	Date Sampled	20/09/22	20/09/22			
BRD Environmental Ltd	Time Sampled	None Supplied	None Supplied			
Site Reference: Hook Lane, Westergate	TP / BH No	TP07	TP09			
Project / Job Ref: BRD3963	Additional Refs	J2	J2			
Order No: None Supplied	Depth (m)	0.60	0.80			
Reporting Date: 28/09/2022	DETS Sample No	613739	613744			

Determinand	Unit	RL	Accreditation					
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2			
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5			
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2			
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2			
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2			
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5			

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Soil Analysis Certificate - Semi Volatile Organic Compounds (SVOC)						
DETS Report No: 22-07925	**Date Sampled**	20/09/22	20/09/22			
BRD Environmental Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: Hook Lane, Westergate	**TP / BH No**	TP07	TP09			
Project / Job Ref: BRD3963	**Additional Refs**	J2	J2			
Order No: None Supplied	**Depth (m)**	0.60	0.80			
Reporting Date: 28/09/2022	**DETS Sample No**	613739	613744			

Determinand	Unit	RL	Accreditation					
Phenol	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
1,2,4-Trichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
2-Nitrophenol	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
Nitrobenzene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
0-Cresol	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
bis(2-chloroethoxy)methane	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
bis(2-chloroethyl)ether	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
2,4-Dichlorophenol	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
2-Chlorophenol	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
1,3-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
1,4-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
1,2-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
2,4-Dimethylphenol	mg/kg	< 0.15	ISO17025	< 0.15	< 0.15			
Isophorone	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
Hexachloroethane	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
p-Cresol	mg/kg	< 0.15	MCERTS	< 0.15	< 0.15			
2,4,6-Trichlorophenol	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
2,4,5-Trichlorophenol	mg/kg	< 0.15	MCERTS	< 0.15	< 0.15			
2-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
4-Chloro-3-methylphenol	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
2-Methylnaphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Hexachlorocyclopentadiene	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
Hexachlorobutadiene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
2,6-Dinitrotoluene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Dimethyl phthalate	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
2-Chloronaphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
4-Chloroanaline	mg/kg	< 0.15	NONE	< 0.15	< 0.15			
4-Nitrophenol	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
4-Chlorophenyl phenyl ether	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
3-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
4-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
4-Bromophenyl phenyl ether	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Hexachlorobenzene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
2,4-Dinitrotoluene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Diethyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Dibenzofuran	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Azobenzene	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
Dibutyl phthalate	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
Carbazole	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
bis(2-ethylhexyl)phthalate	mg/kg	< 0.15	ISO17025	< 0.15	< 0.15			
Benzyl butyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Di-n-octyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			

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Soil Analysis Certificate - Organochlorine Pesticides						
DETS Report No: 22-07925	**Date Sampled**	20/09/22	20/09/22	20/09/22		
BRD Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: Hook Lane, Westergate	**TP / BH No**	TP01	TP02	TP04		
Project / Job Ref: BRD3963	**Additional Refs**	J1	J1	J1		
Order No: None Supplied	**Depth (m)**	0.10	0.20	0.10		
Reporting Date: 28/09/2022	**DETS Sample No**	613732	613733	613734		

Determinand	Unit	RL	Accreditation					
Aldrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
alpha-HCH	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
beta-HCH	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
cis-chlordane	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
delta-HCH	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Dieldrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Endosulfan A	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Endosulfan B	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Endrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
gamma-HCH (Lindane)	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Heptachlor	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Heptachlor epoxide	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Hexachlorobenzene (HCB)	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Isodrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Methoxychlor	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
o,p' - DDD	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
o,p' - DDE	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
o,p' - DDT	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
p,p' - DDD	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
p,p' - DDE	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
p,p' - DDT	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
trans-chlordane	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Trifluralin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		

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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 22-07925	
BRD Environmental Ltd	
Site Reference: Hook Lane, Westergate	
Project / Job Ref: BRD3963	
Order No: None Supplied	
Reporting Date: 28/09/2022	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
613732	TP01	J1	0.10	13.3	Brown sandy clay with stones
613733	TP02	J1	0.20	14.3	Light brown sandy clay
613734	TP04	J1	0.10	11.2	Brown sandy clay
613735	TP06	J1	0.20	12.9	Light brown sandy clay
613736	TP06	J2	0.70	11.2	Light brown sandy clay
613737	TP06	J3	3.00	24.2	Light brown sandy clay
613738	TP07	J1	0.20	13.9	Brown sandy clay with vegetation
613739	TP07	J2	0.60	8.6	Light brown sandy clay with stones
613740	TP08	J1	0.10	14.6	Brown sandy clay with stones
613741	TP08	J2	0.80	12.5	Light brown sandy clay
613742	TP08	J3	1.90	13.3	Light brown sandy clay
613743	TP09	J1	0.20	12.9	Brown sandy clay
613744	TP09	J2	0.80	10.6	Light brown sandy clay
613745	TP09	J3	1.90	10.1	Light brown sandy clay with chalk

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

Insufficient Sample I/S

Unsuitable Sample U/S

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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 22-07925
BRD Environmental Ltd
Site Reference: Hook Lane, Westergate
Project / Job Ref: BRD3963
Order No: None Supplied
Reporting Date: 28/09/2022

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

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AR As Received

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List of HWOL Acronyms and Operators
DETS Report No: 22-07925
BRD Environmental Ltd
Site Reference: Hook Lane, Westergate
Project / Job Ref: BRD3963
Order No: None Supplied
Reporting Date: 28/09/2022

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det - Acronym
Benzene - HS_1D_MS
Ethylbenzene - HS_1D_MS
MTBE - HS_1D_MS
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH LQM - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH LQM - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH LQM - Aliphatic >C16 - C35 - EH_CU_1D_AL
TPH LQM - Aliphatic >C35 - C44 - EH_CU_1D_AL
TPH LQM - Aliphatic >C5 - C44 - HS_1D_MS+EH_CU_1D_AL
TPH LQM - Aliphatic >C5 - C6 - HS_1D_MS_AL
TPH LQM - Aliphatic >C6 - C8 - HS_1D_MS_AL
TPH LQM - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH LQM - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH LQM - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH LQM - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH LQM - Aromatic >C35 - C44 - EH_CU_1D_AR
TPH LQM - Aromatic >C5 - C44 - HS_1D_MS+EH_CU_1D_AR
TPH LQM - Aromatic >C5 - C7 - HS_1D_MS_AR
TPH LQM - Aromatic >C7 - C8 - HS_1D_MS_AR
TPH LQM - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH LQM - Total >C5 - C44 - HS_1D_MS+EH_CU_1D_Total
Toluene - HS_1D_MS
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS

Matthew Morgan
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DETS Report No: 22-08576

Site Reference:	Hook Lane, Westergate
Project / Job Ref:	BRD3963
Order No:	None Supplied
Sample Receipt Date:	14/10/2022
Sample Scheduled Date:	14/10/2022
Report Issue Number:	1
Reporting Date:	20/10/2022

Authorised by:

[redacted]
Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

For Topsoil and WAC analysis the expanded uncertainty measurement should be considered while evaluating results against compliance values.

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Soil Analysis Certificate						
DETS Report No: 22-08576	**Date Sampled**	12/10/22	12/10/22	12/10/22	12/10/22	12/10/22
BRD Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Hook Lane, Westergate	**TP / BH No**	WS01	WS01	WS02	WS02	WS04
Project / Job Ref: BRD3963	**Additional Refs**	J1	J2	J1	D2	D2
Order No: None Supplied	**Depth (m)**	0.20	5.00	0.90	3.20	1.60
Reporting Date: 20/10/2022	**DETS Sample No**	616458	616459	616460	616461	616462

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	6.3	8.0		8.3	7.9
Total Sulphate as SO_4	mg/kg	< 200	MCERTS		475		269	< 200
Total Sulphate as SO_4	%	< 0.02	MCERTS		0.05		0.03	< 0.02
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	< 10	64		23	< 10
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	< 0.01	0.06		0.02	< 0.01
Total Sulphur	%	< 0.02	NONE		0.24		0.05	< 0.02
Organic Matter (SOM)	%	< 0.1	MCERTS	2.1				
Arsenic (As)	mg/kg	< 2	MCERTS	8				
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3				
Chromium (Cr)	mg/kg	< 2	MCERTS	16				
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2				
Copper (Cu)	mg/kg	< 4	MCERTS	14				
Lead (Pb)	mg/kg	< 3	MCERTS	27				
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1				
Nickel (Ni)	mg/kg	< 3	MCERTS	10				
Selenium (Se)	mg/kg	< 2	MCERTS	< 3				
Zinc (Zn)	mg/kg	< 3	MCERTS	57				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Soil Analysis Certificate						
DETS Report No: 22-08576	**Date Sampled**	12/10/22				
BRD Environmental Ltd	**Time Sampled**	None Supplied				
Site Reference: Hook Lane, Westergate	**TP / BH No**	WS05				
Project / Job Ref: BRD3963	**Additional Refs**	J1				
Order No: None Supplied	**Depth (m)**	3.50				
Reporting Date: 20/10/2022	**DETS Sample No**	616463				

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	8.2				
Total Sulphate as SO_4	mg/kg	< 200	MCERTS					
Total Sulphate as SO_4	%	< 0.02	MCERTS					
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	< 10				
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	< 0.01				
Total Sulphur	%	< 0.02	NONE					
Organic Matter (SOM)	%	< 0.1	MCERTS	< 0.1				
Arsenic (As)	mg/kg	< 2	MCERTS	7				
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2				
Chromium (Cr)	mg/kg	< 2	MCERTS	9				
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2				
Copper (Cu)	mg/kg	< 4	MCERTS	< 4				
Lead (Pb)	mg/kg	< 3	MCERTS	4				
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1				
Nickel (Ni)	mg/kg	< 3	MCERTS	5				
Selenium (Se)	mg/kg	< 2	MCERTS	< 3				
Zinc (Zn)	mg/kg	< 3	MCERTS	17				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 22-08576	Date Sampled	12/10/22	12/10/22			
BRD Environmental Ltd	Time Sampled	None Supplied	None Supplied			
Site Reference: Hook Lane, Westergate	TP / BH No	WS01	WS05			
Project / Job Ref: BRD3963	Additional Refs	J1	J1			
Order No: None Supplied	Depth (m)	0.20	3.50			
Reporting Date: 20/10/2022	DETS Sample No	616458	616463			

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

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Soil Analysis Certificate - TPH LQM Banded						
DETS Report No: 22-08576	Date Sampled	12/10/22				
BRD Environmental Ltd	Time Sampled	None Supplied				
Site Reference: Hook Lane, Westergate	TP / BH No	WS05				
Project / Job Ref: BRD3963	Additional Refs	J1				
Order No: None Supplied	Depth (m)	3.50				
Reporting Date: 20/10/2022	DETS Sample No	616463				

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01			
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05			
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2			
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2			
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3			
Aliphatic >C16 - C35 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10			
Aliphatic >C35 - C44 : EH_CU_1D_AL	mg/kg	< 10	NONE	< 10			
Aliphatic (C5 - C44) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 30	NONE	< 30			
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01			
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05			
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2			
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2			
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2			
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	< 3			
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	< 10			
Aromatic >C35 - C44 : EH_CU_1D_AR	mg/kg	< 10	NONE	< 10			
Aromatic (>C5 - C44) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 30	NONE	< 30			
Total >C5 - C44 : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 60	NONE	< 60			

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 22-08576	Date Sampled	12/10/22				
BRD Environmental Ltd	Time Sampled	None Supplied				
Site Reference: Hook Lane, Westergate	TP / BH No	WS05				
Project / Job Ref: BRD3963	Additional Refs	J1				
Order No: None Supplied	Depth (m)	3.50				
Reporting Date: 20/10/2022	DETS Sample No	616463				

Determinand	Unit	RL	Accreditation					
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2				
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5				
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2				
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2				
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2				
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5				

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Soil Analysis Certificate - Semi Volatile Organic Compounds (SVOC)							
DETS Report No: 22-08576	**Date Sampled**	12/10/22					
BRD Environmental Ltd	**Time Sampled**	None Supplied					
Site Reference: Hook Lane, Westergate	**TP / BH No**	WS05					
Project / Job Ref: BRD3963	**Additional Refs**	J1					
Order No: None Supplied	**Depth (m)**	3.50					
Reporting Date: 20/10/2022	**DETS Sample No**	616463					

Determinand	Unit	RL	Accreditation					
Phenol	mg/kg	< 0.1	NONE	< 0.1				
1,2,4-Trichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1				
2-Nitrophenol	mg/kg	< 0.1	NONE	< 0.1				
Nitrobenzene	mg/kg	< 0.1	MCERTS	< 0.1				
0-Cresol	mg/kg	< 0.1	NONE	< 0.1				
bis(2-chloroethoxy)methane	mg/kg	< 0.1	MCERTS	< 0.1				
bis(2-chloroethyl)ether	mg/kg	< 0.1	MCERTS	< 0.1				
2,4-Dichlorophenol	mg/kg	< 0.1	MCERTS	< 0.1				
2-Chlorophenol	mg/kg	< 0.1	ISO17025	< 0.1				
1,3-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1				
1,4-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1				
1,2-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1				
2,4-Dimethylphenol	mg/kg	< 0.15	ISO17025	< 0.15				
Isophorone	mg/kg	< 0.1	NONE	< 0.1				
Hexachloroethane	mg/kg	< 0.1	MCERTS	< 0.1				
p-Cresol	mg/kg	< 0.15	MCERTS	< 0.15				
2,4,6-Trichlorophenol	mg/kg	< 0.1	MCERTS	< 0.1				
2,4,5-Trichlorophenol	mg/kg	< 0.15	MCERTS	< 0.15				
2-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1				
4-Chloro-3-methylphenol	mg/kg	< 0.1	NONE	< 0.1				
2-Methylnaphthalene	mg/kg	< 0.1	MCERTS	< 0.1				
Hexachlorocyclopentadiene	mg/kg	< 0.1	NONE	< 0.1				
Hexachlorobutadiene	mg/kg	< 0.1	ISO17025	< 0.1				
2,6-Dinitrotoluene	mg/kg	< 0.1	MCERTS	< 0.1				
Dimethyl phthalate	mg/kg	< 0.1	NONE	< 0.1				
2-Chloronaphthalene	mg/kg	< 0.1	MCERTS	< 0.1				
4-Chloroanaline	mg/kg	< 0.15	NONE	< 0.15				
4-Nitrophenol	mg/kg	< 0.1	NONE	< 0.1				
4-Chlorophenyl phenyl ether	mg/kg	< 0.1	MCERTS	< 0.1				
3-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1				
4-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1				
4-Bromophenyl phenyl ether	mg/kg	< 0.1	MCERTS	< 0.1				
Hexachlorobenzene	mg/kg	< 0.1	MCERTS	< 0.1				
2,4-Dinitrotoluene	mg/kg	< 0.1	MCERTS	< 0.1				
Diethyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1				
Dibenzofuran	mg/kg	< 0.1	MCERTS	< 0.1				
Azobenzene	mg/kg	< 0.1	NONE	< 0.1				
Dibutyl phthalate	mg/kg	< 0.1	ISO17025	< 0.1				
Carbazole	mg/kg	< 0.1	ISO17025	< 0.1				
bis(2-ethylhexyl)phthalate	mg/kg	< 0.15	ISO17025	< 0.15				
Benzyl butyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1				
Di-n-octyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1				

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Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

				Landfill Waste Acceptance Criteria Limits		
DETS Report No: 22-08576	**Date Sampled**	12/10/22		**Inert Waste Landfill**	**Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
BRD Environmental Ltd	**Time Sampled**	None Supplied				
Site Reference: Hook Lane, Westergate	**TP / BH No**	WS02				
Project / Job Ref: BRD3963	**Additional Refs**	J1				
Order No: None Supplied	**Depth (m)**	0.90				
Reporting Date: 20/10/2022	**DETS Sample No**	616460				

Determinand	**Unit**	**MDL**		Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
TOC[MU]	%	< 0.1	0.3	3%	5%	6%
Loss on Ignition	%	< 0.01	3	--	--	10%
BTEX[MU]	mg/kg	< 0.05	< 0.05	6	--	--
Sum of PCBs	mg/kg	< 0.1	< 0.1	1	--	--
Mineral Oil[MU]	mg/kg	< 10	< 10	500	--	--
Total PAH[MU]	mg/kg	< 1.7	< 1.7	100	--	--
pH[MU]	pH Units	N/a	7.8	--	>6	--
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	< 1	--	To be evaluated	To be evaluated

Eluate Analysis	**2:1 mg/l**	**8:1 mg/l**		**Cumulative 10:1 mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
Arsenic[U]	< 0.01	< 0.01		< 0.2	0.5	2	25
Barium[U]	< 0.02	< 0.02		0.2	20	100	300
Cadmium[U]	< 0.0005	< 0.0005		< 0.02	0.04	1	5
Chromium[U]	< 0.005	0.009		< 0.20	0.5	10	70
Copper[U]	< 0.01	< 0.01		< 0.5	2	50	100
Mercury[U]	< 0.0005	< 0.0005		< 0.005	0.01	0.2	2
Molybdenum[U]	0.001	< 0.001		< 0.1	0.5	10	30
Nickel[U]	< 0.007	< 0.007		< 0.2	0.4	10	40
Lead[U]	< 0.005	< 0.005		< 0.2	0.5	10	50
Antimony[U]	< 0.005	< 0.005		< 0.05	0.06	0.7	5
Selenium[U]	< 0.005	< 0.005		< 0.05	0.1	0.5	7
Zinc[U]	0.010	0.009		< 0.2	4	50	200
Chloride[U]	3	2		21	800	15000	25000
Fluoride[U]	< 0.5	< 0.5		< 1	10	150	500
Sulphate[U]	5	2		20	1000	20000	50000
TDS	43	20		215	4000	60000	100000
Phenol Index	< 0.01	< 0.01		< 0.5	1	-	-
DOC	11.1	10.2		102	500	800	1000

Leach Test Information				
Sample Mass (kg)	0.19			
Dry Matter (%)	89.9			
Moisture (%)	11.4			
Stage 1				
Volume Eluate L2 (litres)	0.33			
Filtered Eluate VE1 (litres)	0.12			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation
M Denotes MCERTS accredited test
U Denotes ISO17025 accredited test

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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 22-08576	
BRD Environmental Ltd	
Site Reference: Hook Lane, Westergate	
Project / Job Ref: BRD3963	
Order No: None Supplied	
Reporting Date: 20/10/2022	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
616458	WS01	J1	0.20	16	Brown sandy clay
616459	WS01	J2	5.00	19.9	Brown clay
616460	WS02	J1	0.90	10.1	Brown sandy clay with stones
616461	WS02	D2	3.20	13.7	Brown sandy clay with stones
616462	WS04	D2	1.60	10.6	Brown sandy clay with stones and chalk
616463	WS05	J1	3.50	23.9	Light brown sandy clay

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

Insufficient Sample I/S

Unsuitable Sample U/S

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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 22-08576
BRD Environmental Ltd
Site Reference: Hook Lane, Westergate
Project / Job Ref: BRD3963
Order No: None Supplied
Reporting Date: 20/10/2022

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

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Water Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 22-08576
BRD Environmental Ltd
Site Reference: Hook Lane, Westergate
Project / Job Ref: BRD3963
Order No: None Supplied
Reporting Date: 20/10/2022

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser.	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichlorometha	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

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List of HWOL Acronyms and Operators
DETS Report No: 22-08576
BRD Environmental Ltd
Site Reference: Hook Lane, Westergate
Project / Job Ref: BRD3963
Order No: None Supplied
Reporting Date: 20/10/2022

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det - Acronym
Benzene - HS_1D_MS
Ethylbenzene - HS_1D_MS
MTBE - HS_1D_MS
Mineral Oil (C10 - C40) (BS EN 12457-3) - EH_CU_1D_AL
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH LQM - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH LQM - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH LQM - Aliphatic >C16 - C35 - EH_CU_1D_AL
TPH LQM - Aliphatic >C35 - C44 - EH_CU_1D_AL
TPH LQM - Aliphatic >C5 - C44 - HS_1D_MS+EH_CU_1D_AL
TPH LQM - Aliphatic >C5 - C6 - HS_1D_MS_AL
TPH LQM - Aliphatic >C6 - C8 - HS_1D_MS_AL
TPH LQM - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH LQM - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH LQM - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH LQM - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH LQM - Aromatic >C35 - C44 - EH_CU_1D_AR
TPH LQM - Aromatic >C5 - C44 - HS_1D_MS+EH_CU_1D_AR
TPH LQM - Aromatic >C5 - C7 - HS_1D_MS_AR
TPH LQM - Aromatic >C7 - C8 - HS_1D_MS_AR
TPH LQM - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH LQM - Total >C5 - C44 - HS_1D_MS+EH_CU_1D_Total
Toluene - HS_1D_MS
Total BTEX (BS EN 12457-3) - HS_1D_MS_Total
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS

Parameter	Matrix Type	Suite Reference	Expanded Uncertainity Measurement	Unit
TOC	Soil	BS EN 12457	12.1	%
Loss on Ignition	Soil	BS EN 12457	20.4	%
BTEX	Soil	BS EN 12457	14.0	%
Sum of PCBs	Soil	BS EN 12457	21.1	%
Mineral Oil	Soil	BS EN 12457	9.0	%
Total PAH	Soil	BS EN 12457	13.9	%
pH	Soil	BS EN 12457	0.248	Units
Acid Neutralisation Capacity	Soil	BS EN 12457	18.0	%
Arsenic	Leachate	BS EN 12457	15.9	%
Barium	Leachate	BS EN 12457	14.4	%
Cadmium	Leachate	BS EN 12457	12.6	%
Chromium	Leachate	BS EN 12457	13.4	%
Copper	Leachate	BS EN 12457	13.1	%
Mercury	Leachate	BS EN 12457	16.2	%
Molybdenum	Leachate	BS EN 12457	13.6	%
Nickel	Leachate	BS EN 12457	16.0	%
Lead	Leachate	BS EN 12457	12.4	%
Antimony	Leachate	BS EN 12457	14.6	%
Selenium	Leachate	BS EN 12457	16.5	%
Zinc	Leachate	BS EN 12457	14.5	%
Chloride	Leachate	BS EN 12457	17.0	%
Fluoride	Leachate	BS EN 12457	12.0	%
Sulphate	Leachate	BS EN 12457	25.1	%
TDS	Leachate	BS EN 12457	10.0	%
Phenol Index	Leachate	BS EN 12457	12.9	%
DOC	Leachate	BS EN 12457	10.0	%
Clay Content	Soil	BS 3882: 2015	15.0	%
Silt Content	Soil	BS 3882: 2015	14.0	%
Sand Content	Soil	BS 3882: 2015	13.0	%
Loss on Ignition	Soil	BS 3882: 2015	12.4	%
pH	Soil	BS 3882: 2015	0.248	Units
Carbonate	Soil	BS 3882: 2015	12.0	%
Total Nitrogen	Soil	BS 3882: 2015	12.0	%
Phosphorus (Extractable)	Soil	BS 3882: 2015	24.0	%
Potassium (Extractable)	Soil	BS 3882: 2015	20.0	%
Magnesium (Extractable)	Soil	BS 3882: 2015	26.0	%
Zinc	Soil	BS 3882: 2015	14.9	%
Copper	Soil	BS 3882: 2015	16.0	%
Nickel	Soil	BS 3882: 2015	17.7	%
Available Sodium	Soil	BS 3882: 2015	23.0	%
Available Calcium	Soil	BS 3882: 2015	23.0	%
Electrical Conductivity	Soil	BS 3882: 2015	10.0	%

Matthew Morgan
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DETS Report No: 22-08699

Site Reference:	Hook Lane, Westergate
Project / Job Ref:	BRD3963
Order No:	None Supplied
Sample Receipt Date:	19/10/2022
Sample Scheduled Date:	19/10/2022
Report Issue Number:	1
Reporting Date:	21/10/2022

Authorised by:

[redacted]
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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Water Analysis Certificate						
DETS Report No: 22-08699	**Date Sampled**	17/10/22	17/10/22	17/10/22		
BRD Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: Hook Lane, Westergate	**TP / BH No**	WS02	WS03	WS04		
Project / Job Ref: BRD3963	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	**Depth (m)**	1.48	2.60	2.86		
Reporting Date: 21/10/2022	**DETS Sample No**	617035	617036	617037		

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.4	6.7	6.8		
Sulphate as SO_4	mg/l	< 1	ISO17025	71	60	16		

Subcontracted analysis (S)
Insufficient sample I/S
Unsuitable Sample U/S

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
[redacted]

UKAS TESTING
4480

Water Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 22-08699
BRD Environmental Ltd
Site Reference: Hook Lane, Westergate
Project / Job Ref: BRD3963
Order No: None Supplied
Reporting Date: 21/10/2022

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser.	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichlorometha	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

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

4480

List of HWOL Acronyms and Operators

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det - Acronym

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 07/10/2022

0998

Contract	**Hook Lane, Westergate**
Serial No.	**41499_1**

Client:

BRD Environmental Ltd

BRD Environmental Ltd
Hawthorne Villa
1 Old Parr Road
Banbury
Oxfordshire
OX16 5HT

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG

[redacted]

Website: www.soilpropertytesting.com

Samples Submitted By:

BRD Environmental Ltd

Samples Labelled:

Hook Lane, Westergate

Approved Signatories:

☑ **J.C. Garner B.Eng (Hons) FGS**
Technical Director & Quality Manager

☐ **W. Johnstone**
Materials Lab Manager

[redacted]

Date Received: 23/09/2022

Samples Tested Between: 23/09/2022 **and** 07/10/2022

Remarks:

For the attention of Matt Morgan
Your Reference No: BRD3963

Notes:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
2. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.
4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.
5. The results within this report only relate to the items tested or sampled.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 07/10/2022

0998

Contract	**Hook Lane, Westergate**		
Serial No.	**41499_1**	**Target Date**	07/10/2022
Scheduled By	BRD Environmental Ltd		
Schedule Remarks			

Bore Hole No.	Type	Sample Ref.	Top Depth	Particle Size Distribution (BS1377)	Water Content (BSEN)	Liquid/Plastic Limits	Wet Sieve Preparation														Sample Remarks
TP01	B	1	1.00	1																	
TP02	D	1	0.80		1	1															
TP04	D	1	0.80		1	1															
TP04	D	2	1.50		1	1															
TP07	B	1	1.30		1	1	1														
TP07	B	2	2.50	1																	
TP08	D	2	2.10		1	1	1														
TP08	B	1	3.00	1																	
TP09	B	1	2.00	1	1	1	1														
Totals				**4**	**6**	**6**	**3**														**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 07/10/2022

0998

Contract	Hook Lane, Westergate
Serial No.	41499_1

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index	Sample Preparation				Description	Class
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
TP02	0.80	D	1	15.0	39	21	18	-0.33	From Natural	<1% (A)		24	Hard yellowish brown friable silty CLAY with rare fine chert gravel and recently active roots	CI
TP04	0.80	D	1	18.4	42	22	20	-0.18	From Natural	<1% (A)		24	Hard yellowish brown friable silty CLAY with rare fine and medium chert gravel and recently active roots	CI
TP04	1.50	D	2	17.4	37	20	17	-0.15	From Natural	0 (A)		24	Hard yellowish brown friable silty CLAY with rare calcareous aggregations	CI
TP07	1.30	B	1	13.5	43	19	24	-0.23	Wet Sieved	58 (M)	N/R*	24	Firm yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is brown, black and white fine to coarse angular to subrounded chert	CI
TP08	2.10	D	2	18.1	33	19	14	-0.06	Wet Sieved	4 (M)	18.9*	24	Stiff yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium angular and subangular chert	CL
TP09	2.00	B	1	13.8	41	18	23	-0.18	Wet Sieved	11 (M)	15.5*	24	Firm locally soft brown slightly gravelly slightly sandy silty CLAY. Gravel is brown and white angular to subrounded chert	CI

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1. Where N/R, corrected water content is not reported due to material type.

Table Notation: Ret'd 0.425mm: (A) = Assumed, (M) = Measured

TEST REPORT

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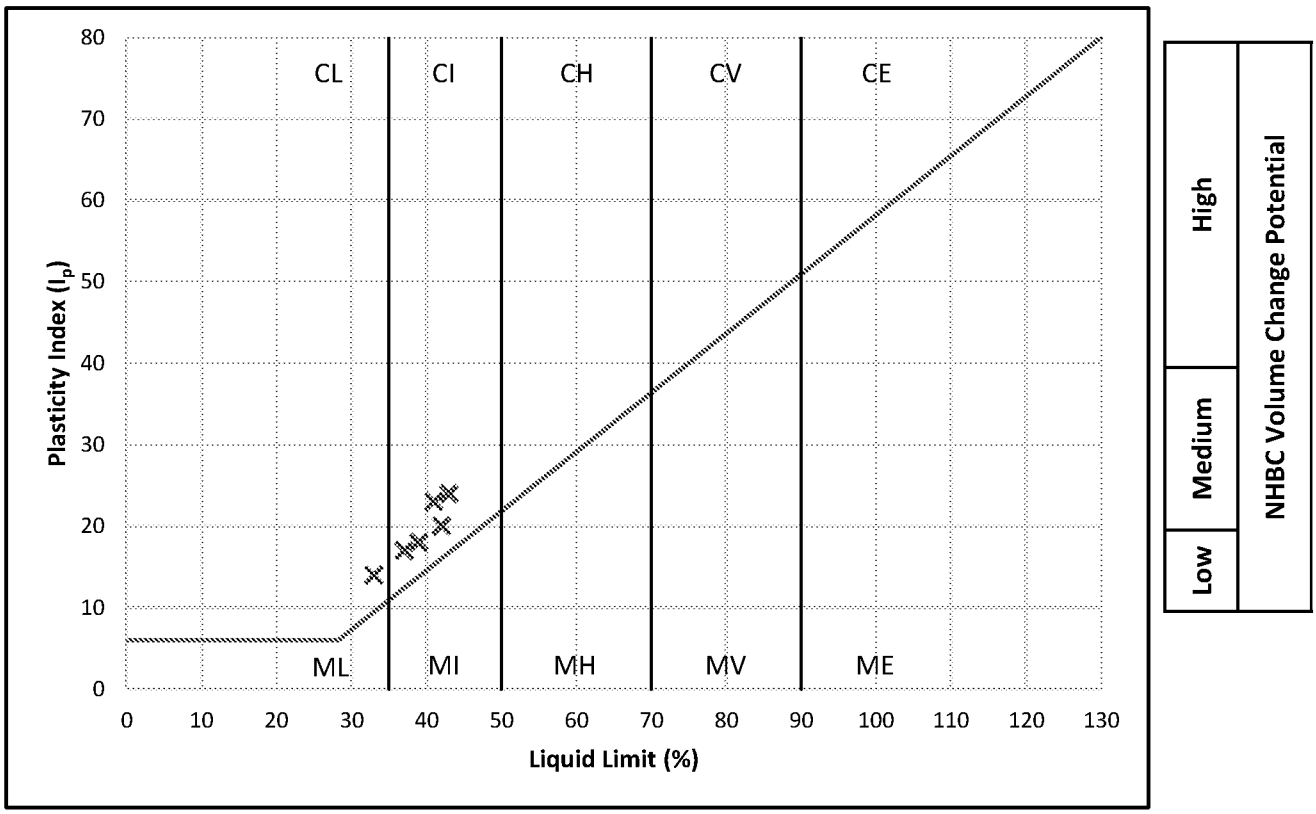
Contract	Hook Lane, Westergate
Serial No.	41499_1

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS 1377: Part 2: 1990: 4.2
Method of Test:	BS1377: Part 2: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 07/10/2022

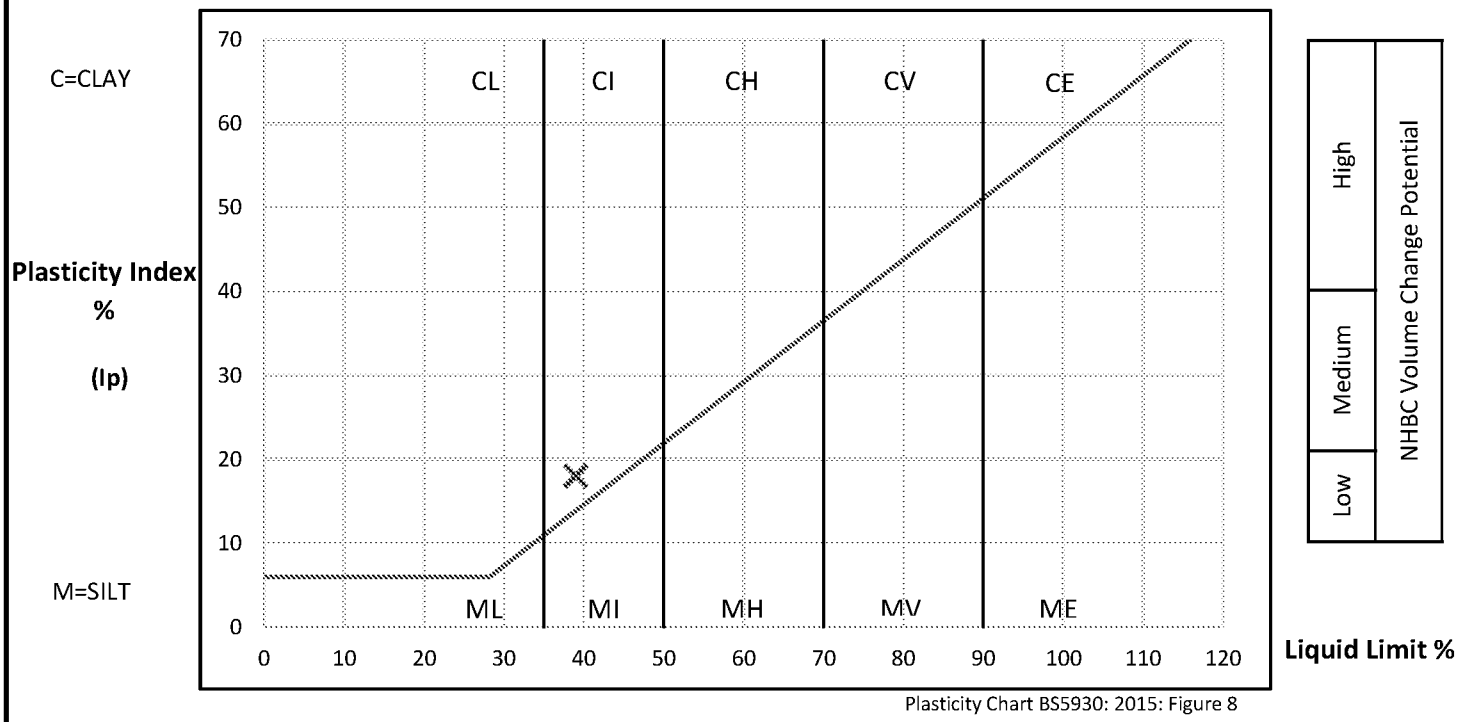
0998

Contract	Hook Lane, Westergate
Serial No.	41499_1

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP02	0.80	D	1	15.0	Hard yellowish brown friable silty CLAY with rare fine chert gravel and recently active roots	

PREPARATION			Liquid Limit	39 %
Method of preparation	From natural/gravel picked out by hand		Plastic Limit	21 %
Sample retained 0.425mm sieve	(Assumed)	0 %	Plasticity Index	18 %
Corrected water content for material passing 0.425mm			Liquidity Index	-0.33
Sample retained 2mm sieve	(Assumed)	<1 %	NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 07/10/2022

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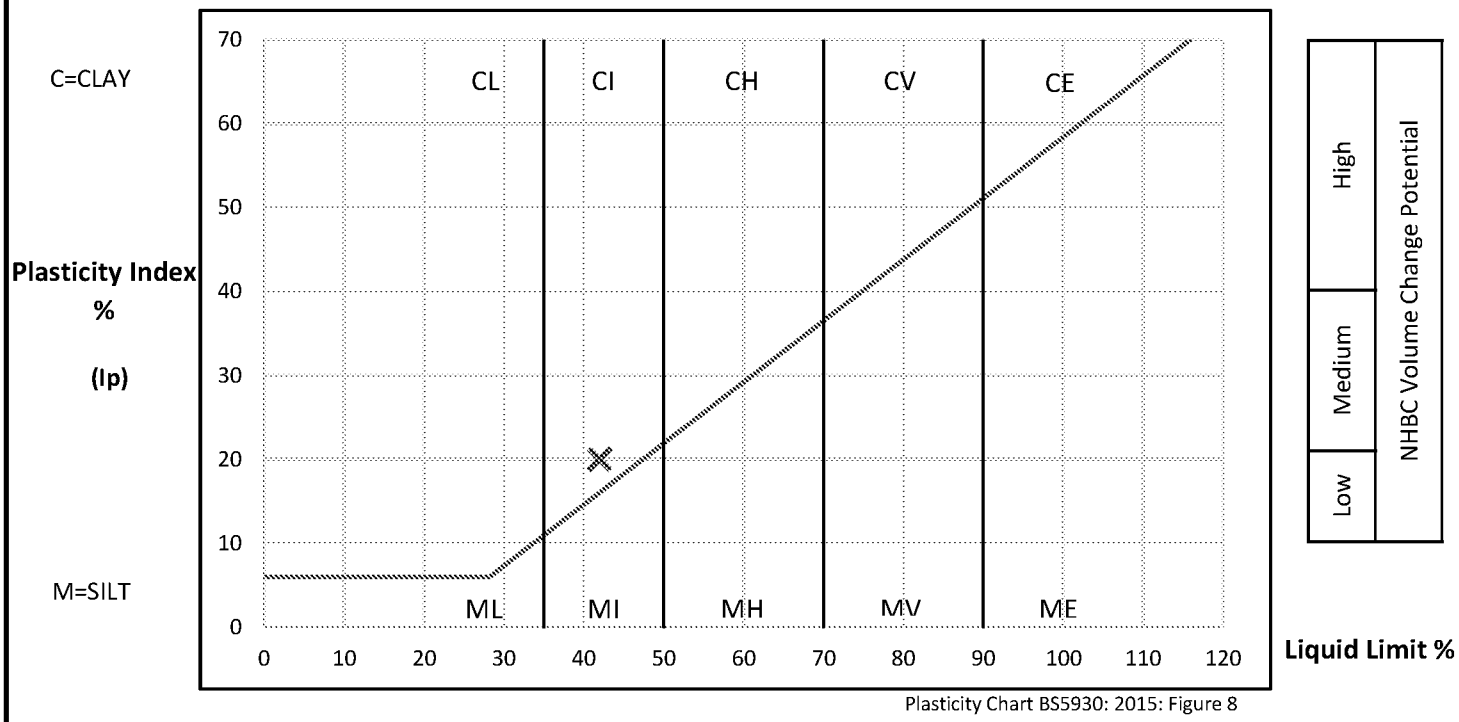
Contract	Hook Lane, Westergate
Serial No.	41499_1

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP04	0.80	D	1	18.4	Hard yellowish brown friable silty CLAY with rare fine and medium chert gravel and recently active roots	

PREPARATION			Liquid Limit	42 %
Method of preparation	From natural/gravel picked out by hand		Plastic Limit	22 %
Sample retained 0.425mm sieve	(Assumed)	0 %	Plasticity Index	20 %
Corrected water content for material passing 0.425mm			Liquidity Index	-0.18
Sample retained 2mm sieve	(Assumed)	<1 %	NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 07/10/2022

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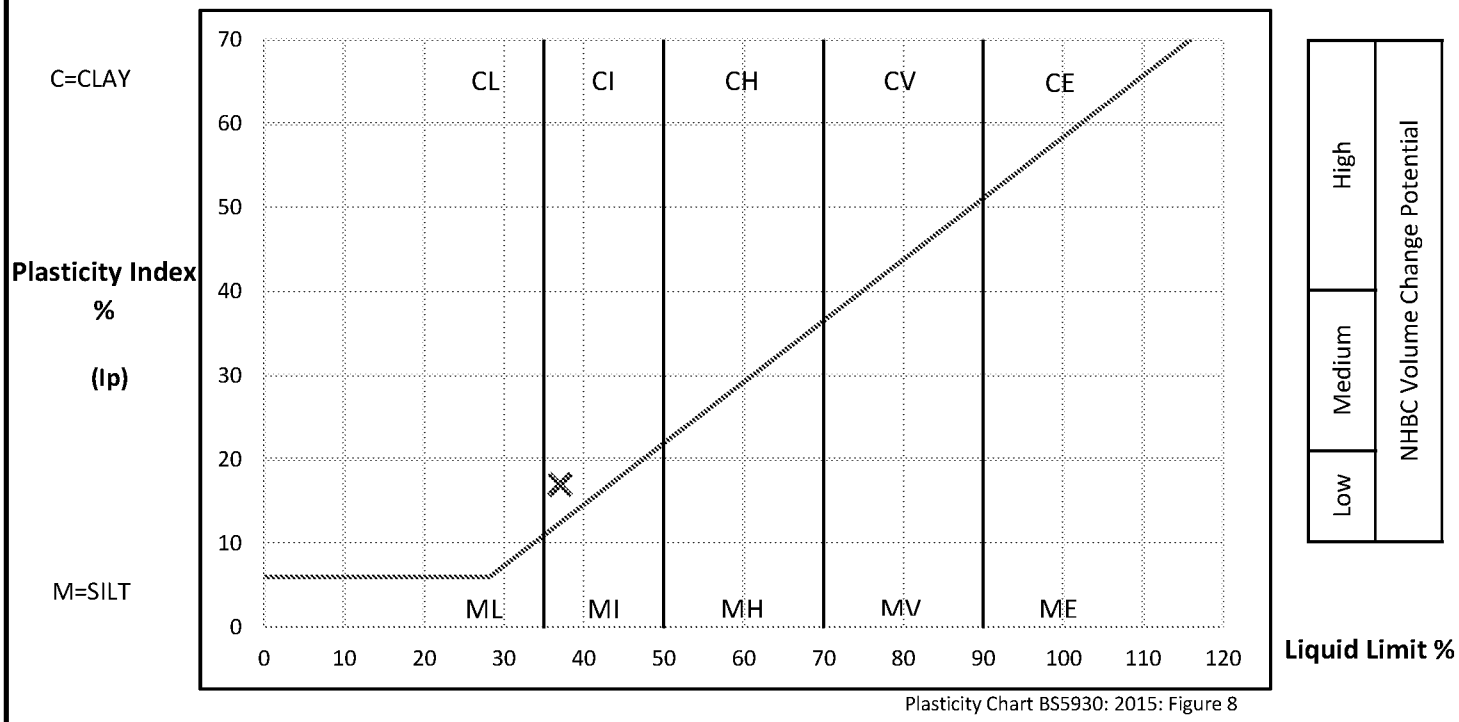
Contract	Hook Lane, Westergate
Serial No.	41499_1

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP04	1.50	D	2	17.4	Hard yellowish brown friable silty CLAY with rare calcareous aggregations	

PREPARATION			Liquid Limit	37 %
Method of preparation		From natural	Plastic Limit	20 %
Sample retained 0.425mm sieve	(Assumed)	0 %	Plasticity Index	17 %
Corrected water content for material passing 0.425mm			Liquidity Index	-0.15
Sample retained 2mm sieve	(Assumed)	0 %	NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content: Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

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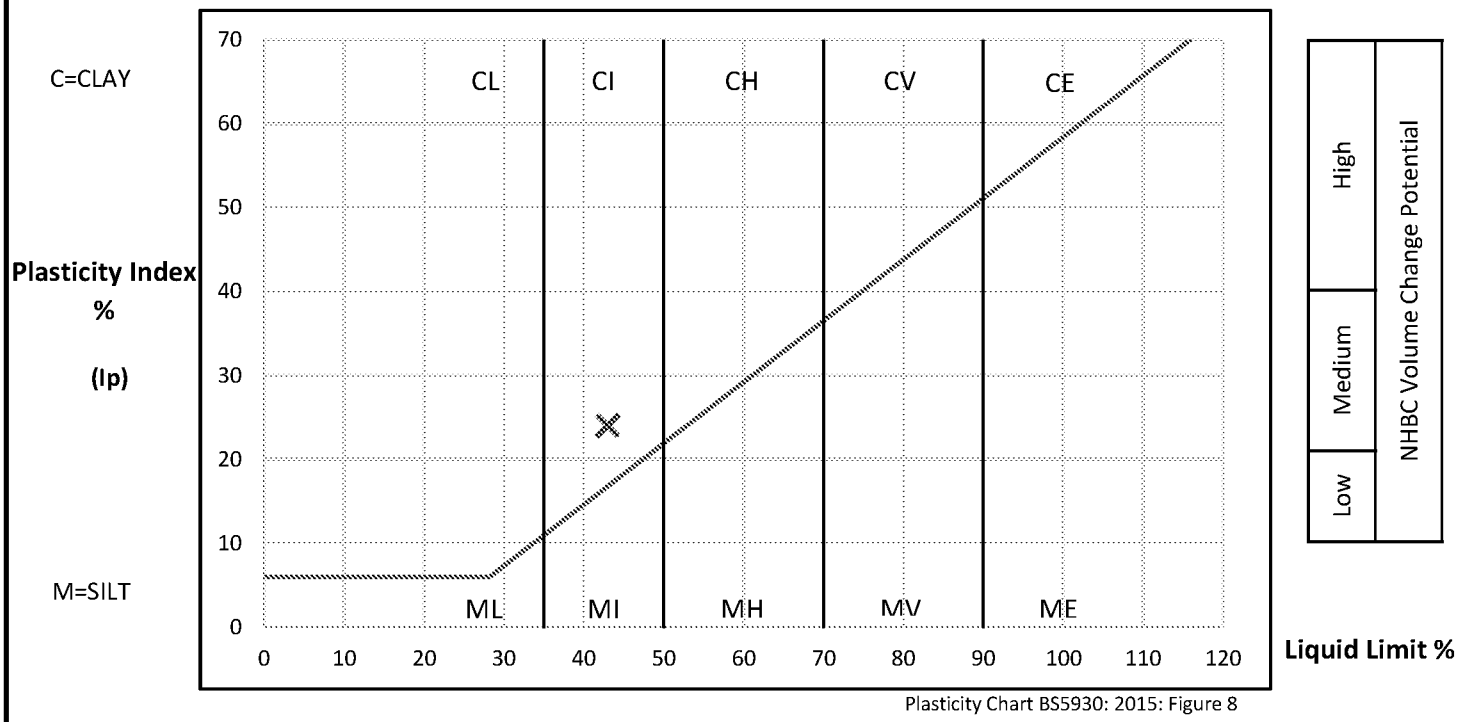
Contract	Hook Lane, Westergate
Serial No.	41499_1

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP07	1.30	B	1	13.5	Firm yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is brown, black and white fine to coarse angular to subrounded chert	

PREPARATION			Liquid Limit	43 %
Method of preparation	Wet sieved over 0.425mm sieve		Plastic Limit	19 %
Sample retained 0.425mm sieve	(Measured)	58 %	Plasticity Index	24 %
Corrected water content for material passing 0.425mm	Not reported		Liquidity Index	-0.23
Sample retained 2mm sieve	(Measured)	55 %	NHBC Modified (I'p)	10 %
Curing time	24 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content not reported due to material type. Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 07/10/2022

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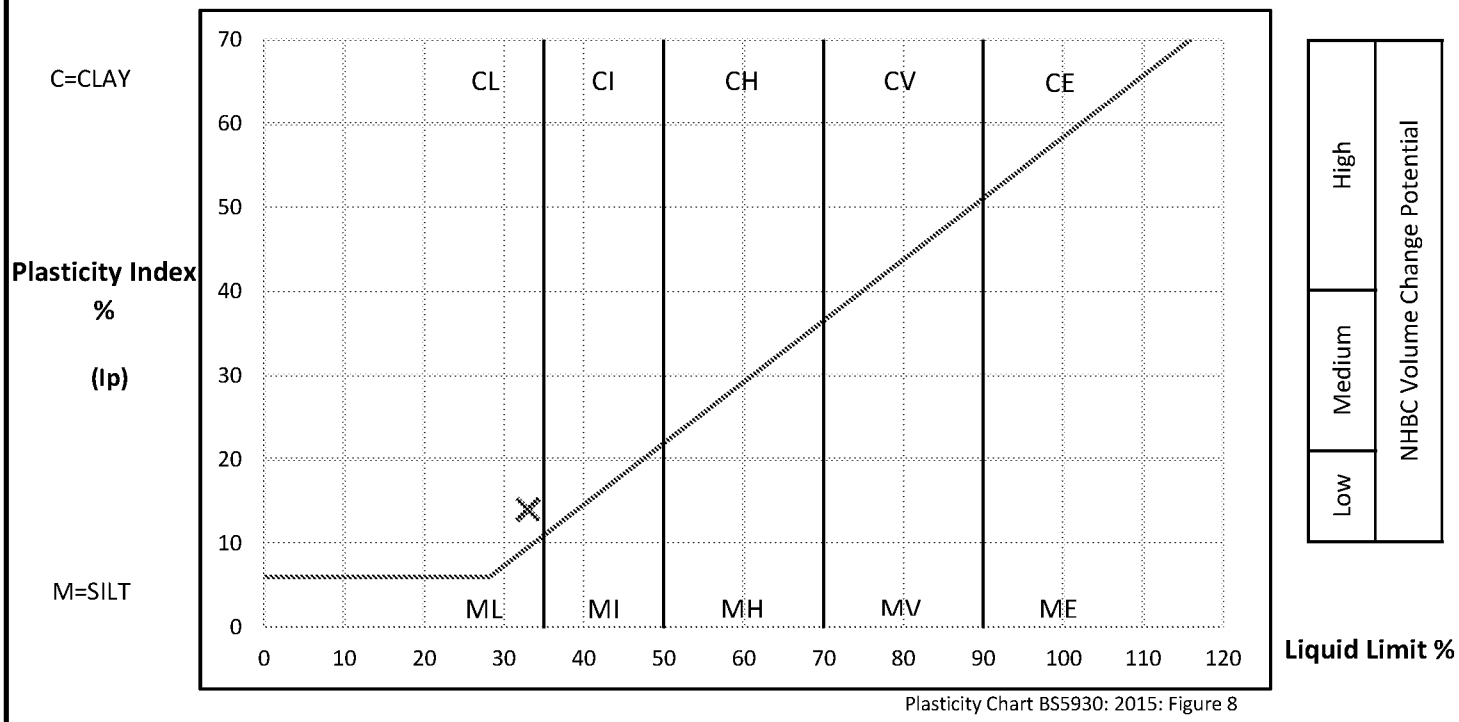
Contract	Hook Lane, Westergate
Serial No.	41499_1

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP08	2.10	D	2	18.1	Stiff yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium angular and subangular chert	

PREPARATION			Liquid Limit	33 %
Method of preparation	Wet sieved over 0.425mm sieve		Plastic Limit	19 %
Sample retained 0.425mm sieve	(Measured)	4 %	Plasticity Index	14 %
Corrected water content for material passing 0.425mm		18.9 %	Liquidity Index	-0.06
Sample retained 2mm sieve	(Measured)	3 %	NHBC Modified (I'p)	13 %
Curing time	24 hrs	Clay Content: Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

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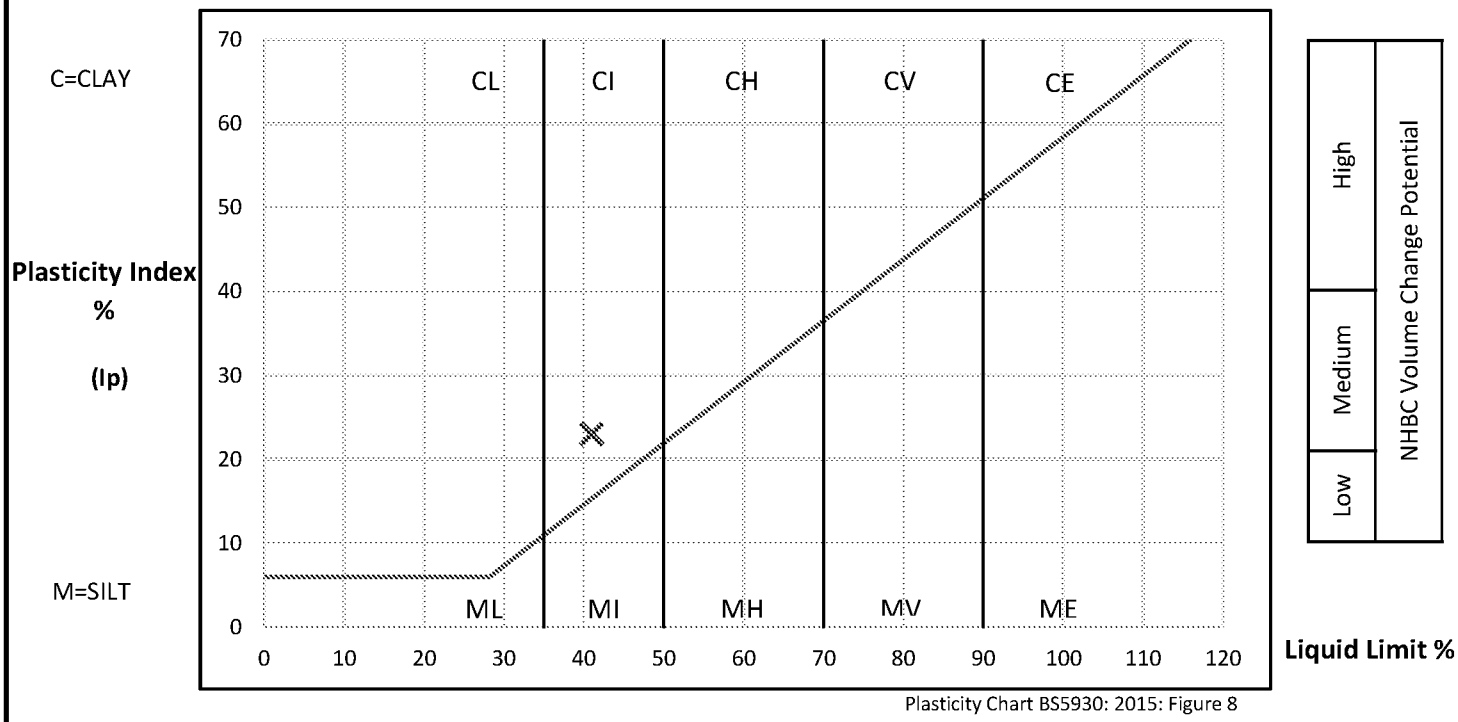
Contract	Hook Lane, Westergate
Serial No.	41499_1

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TP09	2.00	B	1	13.8	Firm locally soft brown slightly gravelly slightly sandy silty CLAY. Gravel is brown and white angular to subrounded chert	

PREPARATION			Liquid Limit	41 %
Method of preparation	Wet sieved over 0.425mm sieve		Plastic Limit	18 %
Sample retained 0.425mm sieve	(Measured)	11 %	Plasticity Index	23 %
Corrected water content for material passing 0.425mm		15.5 %	Liquidity Index	-0.18
Sample retained 2mm sieve	(Measured)	10 %	NHBC Modified (I'p)	20 %
Curing time	24 hrs	Clay Content 25 %	Derived Activity	0.92



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

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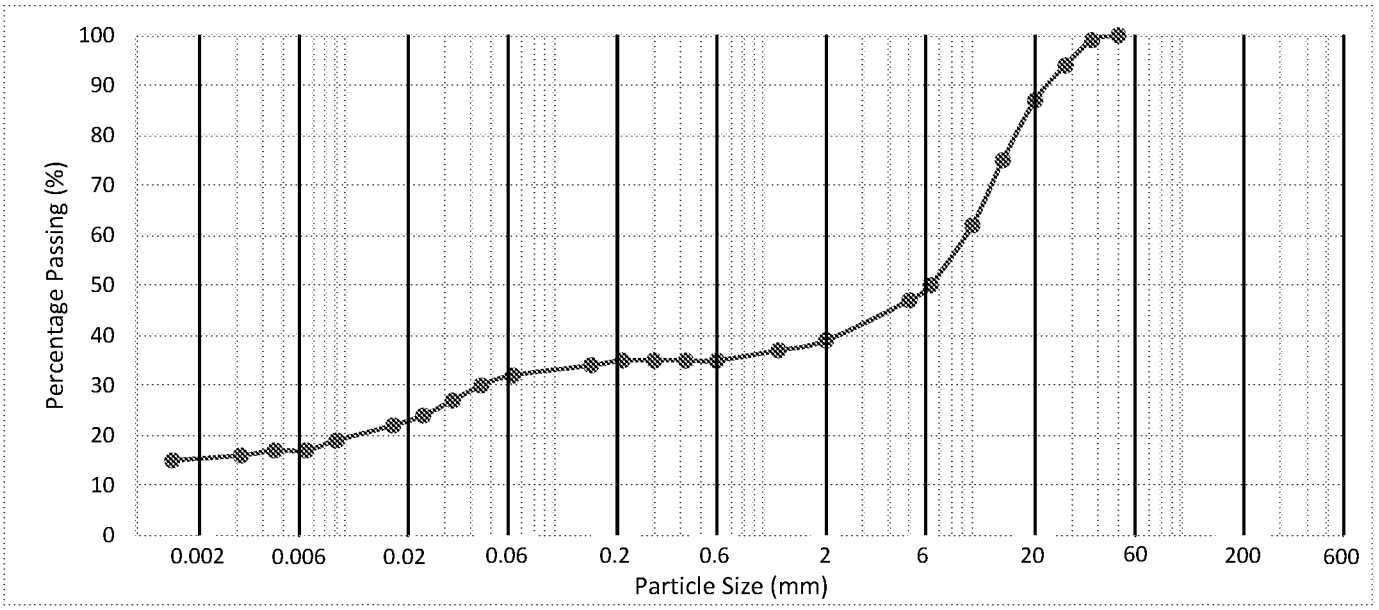
Contract	Hook Lane, Westergate
Serial No.	41499_1

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP01	1.00	B	1	Firm locally soft brown slightly sandy gravelly silty CLAY. Gravel is brown and white angular to subrounded chert	Description based on possible engineering behaviour.

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0447	30	17
	0.0326	27	
	0.0236	24	
	0.0169	22	Clay by Dry Mass (%)
	0.0091	19	
	0.0065	17	
	0.0046	17	15
	0.0032	16	
	0.0015	15	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	39	7
1.18	37	
0.600	35	
0.425	35	
0.300	35	
0.212	35	
0.150	34	
0.063	32	

Fines By Dry Mass (%)	
<0.063mm	32

Sieve Size (mm)	Passing (%)	2mm+ By Dry Mass (%)
300		61
125		
90		
63		
50	100	
37.5	99	
28	94	
20	87	
14	75	
10	62	
6.3	50	
5	47	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part 2: 1990: 9.2,9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 07/10/2022

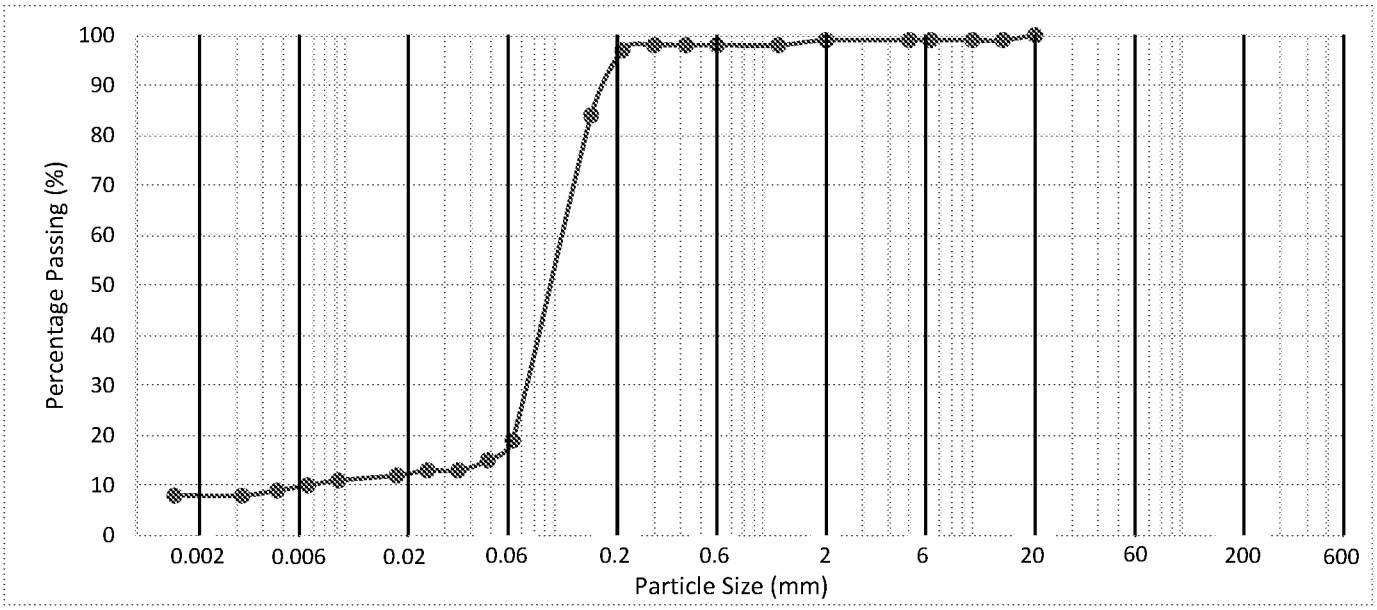
0998

Contract	Hook Lane, Westergate
Serial No.	41499_1

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP07	2.50	B	2	Yellowish brown slightly gravelly clayey silty SAND. Gravel is black, brown and white subangular and subrounded chert	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0479	15	11
	0.0346	13	
	0.0247	13	
	0.0176	12	Clay by Dry Mass (%)
	0.0093	11	
	0.0066	10	
	0.0047	9	8
	0.0032	8	
	0.0015	8	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	80
1.18	98	
0.600	98	
0.425	98	
0.300	98	
0.212	97	
0.150	84	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	2mm+ By Dry Mass (%)
300		1
125		
90		
63		
50		
37.5		
28		
20	100	
14	99	
10	99	
6.3	99	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part 2: 1990: 9.2,9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

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DATE ISSUED: 07/10/2022

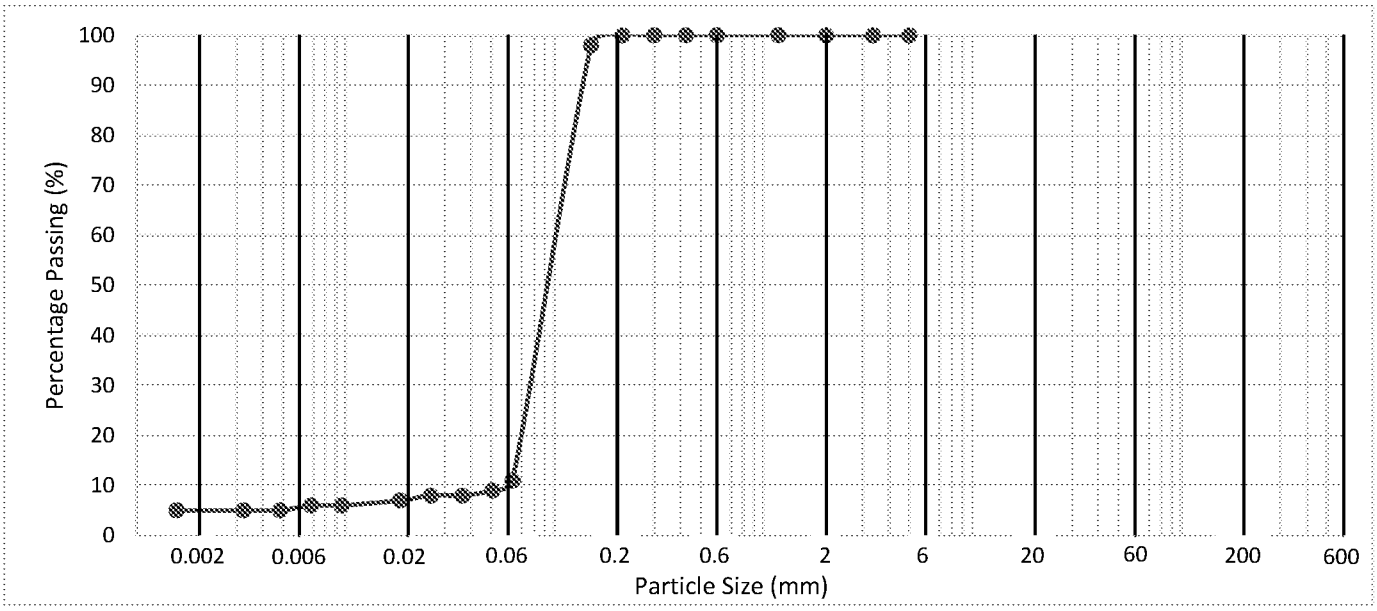
0998

Contract	Hook Lane, Westergate
Serial No.	41499_1

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP08	3.00	B	1	Yellowish brown clayey silty SAND	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0505	9	6
0.0362	8	
0.0257	8	
0.0183	7	Clay by Dry Mass (%)
0.0096	6	
0.0068	6	
0.0049	5	5
0.0033	5	
0.0016	5	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	89
1.18	100	
0.600	100	
0.425	100	
0.300	100	
0.212	100	
0.150	98	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	2mm+ By Dry Mass (%)
300		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5

Method of test: BS1377: Part 2: 1990: 9.2,9.5

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 07/10/2022

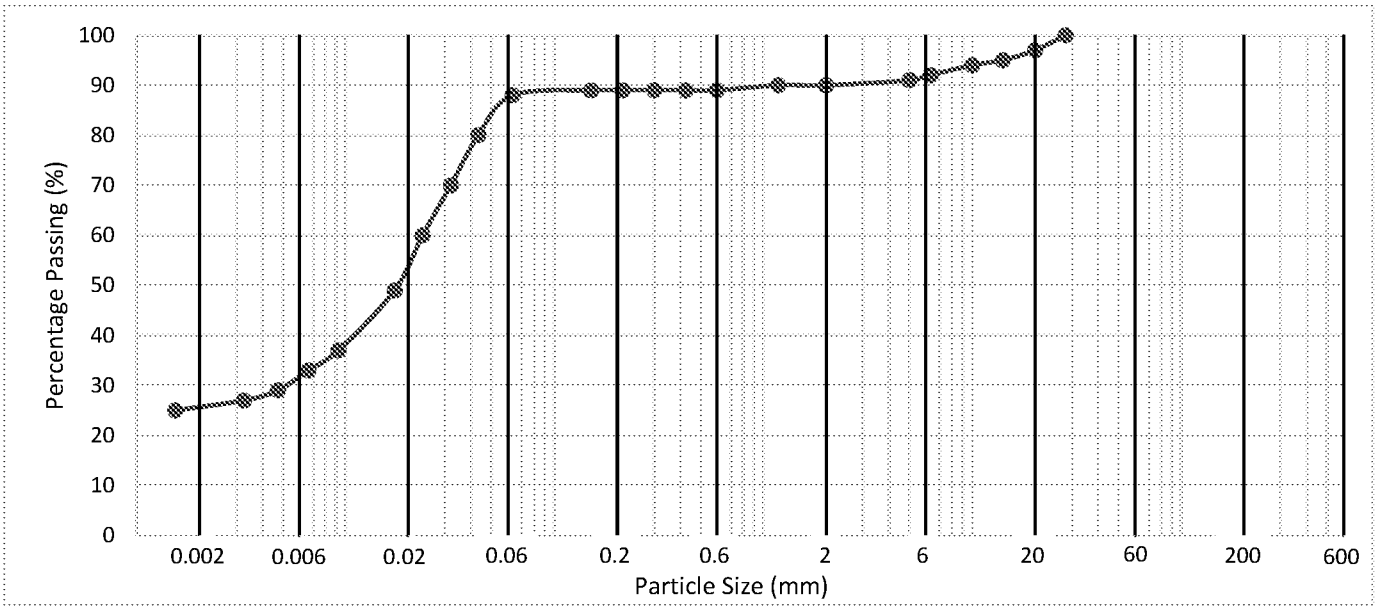
0998

Contract	Hook Lane, Westergate
Serial No.	41499_1

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP09	2.00	B	1	Firm locally soft brown slightly gravelly slightly sandy silty CLAY. Gravel is brown and white angular to subrounded chert	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0432	80	63
	0.0319	70	
	0.0234	60	
	0.0172	49	Clay by Dry Mass (%)
	0.0093	37	
	0.0066	33	
	0.0048	29	25
	0.0033	27	
	0.0015	25	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	90	2
1.18	90	
0.600	89	
0.425	89	
0.300	89	
0.212	89	
0.150	89	
0.063	88	

Fines By Dry Mass (%)	
<0.063mm	88

Sieve Size (mm)	Passing (%)	2mm+ By Dry Mass (%)
300		10
125		
90		
63		
50		
37.5		
28	100	
20	97	
14	95	
10	94	
6.3	92	
5	91	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part 2: 1990: 9.2,9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 03/11/2022

0998

Contract	**Hook Lane, Westergate**
Serial No.	**41499_2**

Client:

BRD Environmental Ltd

BRD Environmental Ltd
Hawthorne Villa
1 Old Parr Road
Banbury
Oxfordshire
OX16 5HT

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG

[redacted]

Website: www.soilpropertytesting.com

Samples Submitted By:

BRD Environmental Ltd

Samples Labelled:

Hook Lane, Westergate

Approved Signatories:

☑ **J.C. Garner B.Eng (Hons) FGS**
Technical Director & Quality Manager

☐ **W. Johnstone**
Materials Lab Manager

[redacted]

Date Received: 23/09/2022

Samples Tested Between: 23/09/2022 **and** 03/11/2022

Remarks:

For the attention of Matt Morgan
Your Reference No: BRD3963

Notes:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
2. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.
4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.
5. The results within this report only relate to the items tested or sampled.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 03/11/2022

0998

Contract	**Hook Lane, Westergate**		
Serial No.	**41499_2**	**Target Date**	01/11/2022
Scheduled By	BRD Environmental Ltd		
Schedule Remarks			

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content (BSEN)	Liquid/Plastic Limits																	Sample Remarks
WS01	D	1	3.70	1	1																	
WS02	D	2	4.00	1	1																	
Totals				**2**	**2**																	**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 03/11/2022

0998

Contract	Hook Lane, Westergate
Serial No.	41499_2

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index	Sample Preparation				Description	Class
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
WS01	3.70	D	1	30.8	74	26	48	0.10	From Natural	0 (A)		24	Firm dark grey CLAY	CV
WS02	4.00	D	2	30.2	78	27	51	0.06	From Natural	0 (A)		24	Stiff fissured dark grey CLAY	CV

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Table Notation: Ret'd 0.425mm: (A) = Assumed, (M) = Measured

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

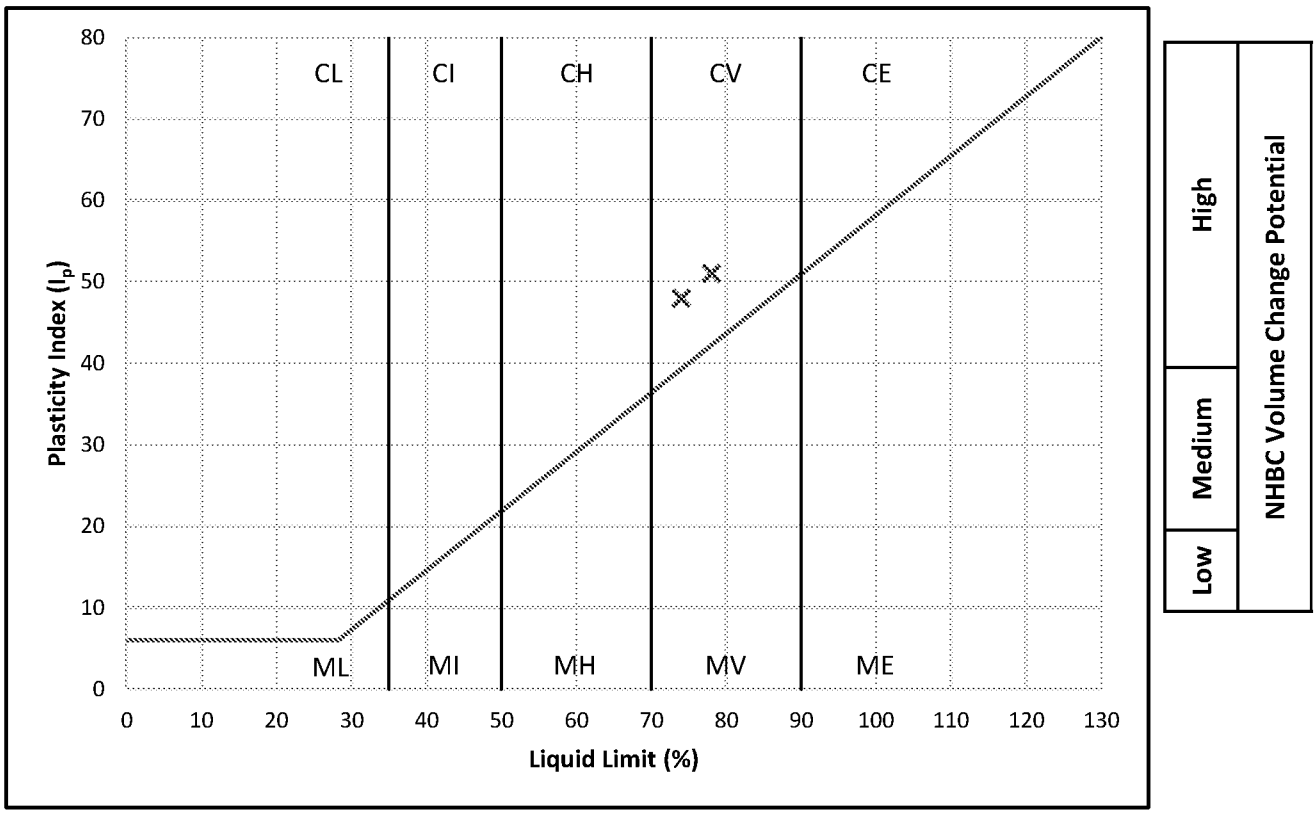
DATE ISSUED: 03/11/2022

0998

Contract	Hook Lane, Westergate
Serial No.	41499_2

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS 1377: Part 2: 1990: 4.2
Method of Test:	BS1377: Part 2: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 03/11/2022

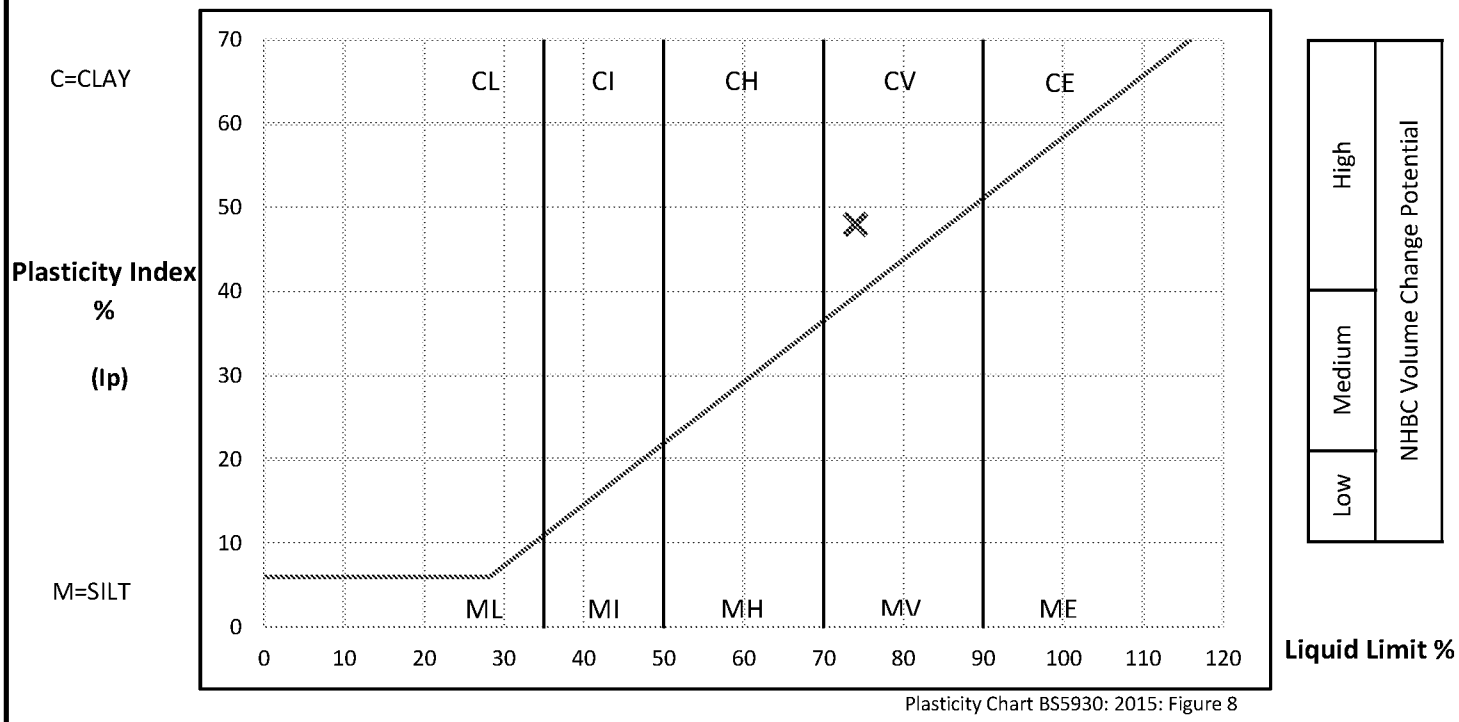
0998

Contract	Hook Lane, Westergate
Serial No.	41499_2

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
WS01	3.70	D	1	30.8	Firm dark grey CLAY	

PREPARATION			Liquid Limit	74 %
Method of preparation		From natural	Plastic Limit	26 %
Sample retained 0.425mm sieve	(Assumed)	0 %	Plasticity Index	48 %
Corrected water content for material passing 0.425mm			Liquidity Index	0.10
Sample retained 2mm sieve	(Assumed)	0 %	NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 03/11/2022

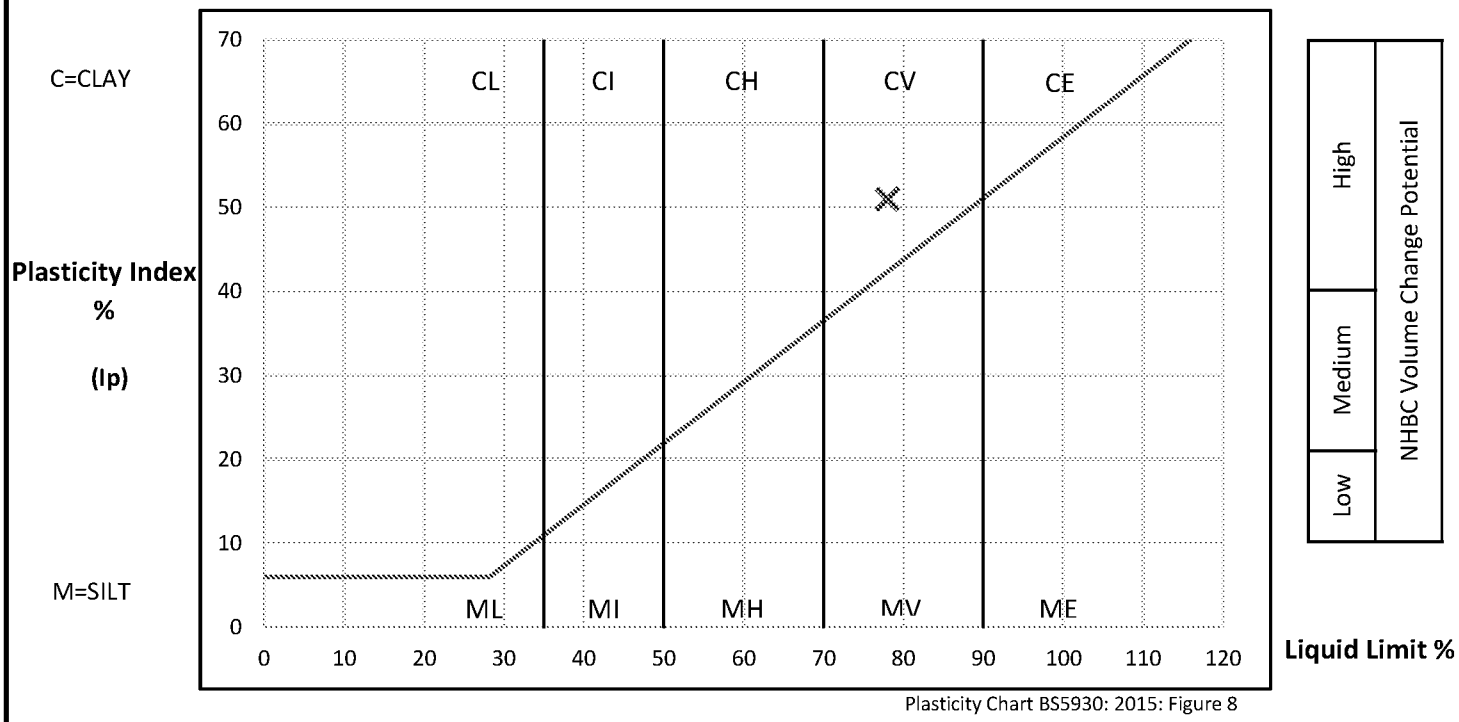
0998

Contract	Hook Lane, Westergate
Serial No.	41499_2

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
WS02	4.00	D	2	30.2	Stiff fissured dark grey CLAY	

PREPARATION			Liquid Limit	78 %
Method of preparation		From natural	Plastic Limit	27 %
Sample retained 0.425mm sieve	(Assumed)	0 %	Plasticity Index	51 %
Corrected water content for material passing 0.425mm			Liquidity Index	0.06
Sample retained 2mm sieve	(Assumed)	0 %	NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

Appendix C – Surface and Foul Water Drainage Strategy & Exceedance Plan

1m2m3m4m5m 10m 15m 20m 25m

SCALE 1-250

N

INDICATIVE ONLY

KEY

- Proposed Private Surface Water Pipe Ø and gradient as stated
- Proposed Private Foul Water Pipe Ø and gradient as stated
- Proposed Surface Water Perforated Pipe Private - Ø and gradient as stated
- Existing Public Foul Water Pipe Ø and gradient as stated
- Existing Public Foul Water Rising Main (Southern Water 3.0m Easement)
- Proposed Surface Water Kerb Drain Marshalls Mini Beany Block, Side Outfall
- Proposed Private Surface Water PPIC 450Ø Internal Diameter
- Proposed Private Surface Water Manhole - Pre-Cast Concrete - Ring Size as Required by Building Regs Part H
- (OP) Proposed Private Orifice Plate Manhole - Pre-Cast Concrete - Ring Size as Required by Building Regs Part H
- (HB) Proposed Private Hydrobrake Manhole - Pre-Cast Concrete - Ring Size as Required by Building Regs Part H
- (CP) Proposed Private Catchpit Manhole - Pre-Cast Concrete - Ring Size as Required by Building Regs Part H
- Proposed Private Foul Water Manhole - Pre-Cast Concrete - Ring Size as Required by Building Regs Part H
- Proposed Permeable Block Paving, Tanked 600mm Deep Type 3 Sub Base
- Proposed PCC Headwall - Specification as Required for Sewer Diameter
- HV Cable Diversion and Easement
- Proposed Geo-Cellular Attenuation Tank
- 3.0m Maintenance Easement Strip
- Tree Root Protection Zones

3m Maintenance Easement Strip as requested by WSCC

FW4.0
CL 11.24
IL 10.04 100Ø

SW2.0
CL 11.20
IL 10.15 150Ø

FW4.1
CL 11.04
IL 9.44 100Ø
IL 9.39 150Ø

Perforated 150Ø @ 1:125

100Ø @ 1:40

150Ø @ 1:133

SW2.1 - Orifice Flow Control
CL 10.84
IL 9.79 150Ø
IL 9.715 225Ø

225Ø @ 1:8

FW1.3
CL 10.81
IL 8.530 150Ø

150Ø @ 1:130

225Ø @ 1:200

SW1.2
CL 10.78
IL 9.005 225Ø

SW1.1 - Orifice Flow Control
CL 10.68
IL 9.055 150Ø
IL 8.98 225Ø

150Ø @ 1:130

Perforated 150Ø @ 1:150

FW1.4
CL 10.42
IL 8.14 150Ø

SW1.0
CL 10.36
IL 9.31 150Ø

FW2.1
CL 10.75
IL 9.31 100Ø
IL 9.26 150Ø

150Ø @ 1:120

FW2.2
CL 10.73
IL 9.03 150Ø

150Ø @ 1:120

FW1.2
CL 10.62
IL 8.905 150Ø

FW1.1
CL 10.71
IL 8.985 150Ø

150Ø @ 1:130

300Ø @ 1:300

150Ø @ 1:100

SW1.3
CL 10.55
IL 8.78 225Ø
IL 8.705 300Ø

FW3.1
CL 10.55
IL 9.15 150Ø

FW3.0
CL 10.67
IL 9.47 150Ø

For continuation see Drawing 1501

Southern Water Public Foul Manhole Ref: 3703 (Details obtained from sewer records, TBC on site)
CL 10.64
IL 7.26

Existing Public Southern Water Pumping Station, exact route of rising main to be surveyed and 3.0m easement applied

Existing Southern Water Public Rising Main (3.0m Easement Either Side) (Details obtained from sewer records, exact location TBC on site)

Foul Water Connection 1
Subject to Foul Capacity Check and Section 106 Connection Agreement from Southern Water
Foul Load = 45 Plots

FW1.5
CL 10.75
IL 7.565 150Ø

150Ø @ 1:130

FW1.5
(Built on existing sewer)
CL 10.59
IL 7.44 150Ø
Ex.IL 7.29 300Ø

Southern Water Public Foul Manhole Ref: 3702 (Details obtained from sewer records, TBC on site)
CL 10.58
IL 7.39

Ex.150Ø

Ex.300Ø

Ex.150Ø

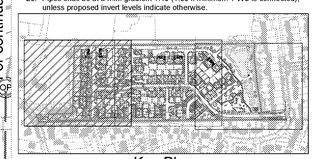
Ex.150Ø

Management Company Land

10.6m

NOTES

1. DO NOT SCALE THIS DRAWING. WORK TO FIGURED DIMENSIONS ONLY. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. This drawing is to be read in conjunction with all relevant Architect's, Engineer's and Specialist's drawings and their respective Specifications.
3. All work to comply with the relevant British Standards, Codes of Practice and the Building Regulations.
4. Any discrepancies between all working drawings, specifications and schedules of all disciplines to be immediately notified to CTP for clarification/correction prior to construction of relevant structure.
5. All private drainage works shall be constructed in accordance with Building Regulations Approved Document H (latest edition)' and BS EN 752.
6. Prior to commencement of the works the contractor shall liaise with all relevant authorities to obtain their requirements, work method approval and where appropriate the intended choice of materials.
7. Refer to topographical survey for details of existing site conditions and bench marks.
8. Prior to commencement of the works the contractor shall liaise with all relevant authorities to locate, protect and where necessary divert all existing services affected by the works.
9. The contractor shall ensure the stability of all excavations is maintained at all times and all excavations shall be kept free of standing water.
10. All works in, or adjacent to, the public highway shall be in accordance with the requirements of the Highway Authority. The contractor shall obtain all necessary licenses required to carry out the works within the public highway.
11. All works to new or existing public sewers shall be to the approval of the local water authority and in accordance with 'Sewerage Sector Guidance' - Latest Edition.
12. Prior to commencement of the works all drainage outfall points, whether existing sewer, drain or watercourse, shall be verified on site by the contractor. If the outfall point is found to be higher or significantly lower than shown on the drawings then the design engineer shall be notified immediately (significant redesign of drainage and levels may be necessary). Prior to commencement of construction on-site the contractor shall install all off-site drainage connections, or satisfy himself that there are no obstructions or other reasons why the drain connections can not be made.
13. All cover levels shown on this drawing are approximate, exact levels of new covers and frames are to be determined on site to match level and profile of finished surface.
14. The construction of all existing chambers, gullies and their covers, gratings and frames to be improved, repaired or replaced as necessary to suit their location within the finished development.
15. All covers, gratings and frames to chambers, gullies, channels etc, shall be of the correct load class to suit their location.
    Load Class A15- Pedestrian areas (not accessible by vehicles)
    Load Class B125- Private drives
    Load Class C250- Basements / parking bays / lightly trafficked roads
    Load Class D400- Main roads
16. All existing chambers, gully channels, pipes and other drainage apparatus shall be protected from damage during the works. The contractor shall take all necessary measures to ensure that no material enters the drains (other than that which they are designed to carry).
17. Refer to site investigation report for existing ground conditions and any special requirements for buried concrete (special requirements for buried concrete shall include all pre-cast and in-situ concrete and mortars). Where appropriate refer to contamination reports for details of chemicals affecting choice of materials and other additional requirements.
18. All pre-cast and in-situ concrete and mortars used in the construction of foul drains and sewers shall be made from sulphate resisting cement.
19. Unless noted otherwise all pipework shall be constructed from 'super strength' vitrified clay to BS 65, BS EN 295 or UPVC to BS EN 1401 bedded and backfilled as per the manufacturer's recommendations and the above listed publications.
20. The contractor's attention is drawn to Diagrams 7 and 8 of 'The Building Regulations Approved Document H' showing details of drains laid below and near to buildings. Where ground beams are used, their level shall be set to avoid clashing with drain connections.
21. Exact location of gullies to be determined on site to suit low points. the contractor shall ensure that all finished surfaces are laid to falls that are sufficient for all surface water to drain without surface ponding.
22. For the exact location of soil pipes, stubstacks, W.C.'s and other drainage connections refer to the large scale architectural building plans.
23. Rainwater downpipes that do not connect directly to an access point, shall be fitted with a rodding access.
24. All drainage channels to be by ACO or similar and to be of a type, size and capacity suitable for their location.
25. Private access fittings, inspection chambers and manholes shall be constructed to the dimensions shown in Tables 11 and 12 of 'The Building Regulations Approved Document H' and from the materials listed in Table 14. Access points, inspection chambers and manholes shall be constructed from products designedrated for the location in which they are to be used. They shall be installed in accordance with the manufacturer's/supplier's recommendations.
26. Prior to commencement of any works the existing drainage must be traced to ensure that no 'live' connections remain, any such connections must be reported to the contract administrator, prior to diversion into the new drains.
27. Pipes at manholes to be soffit to soffit unless noted otherwise.
28. Pipes shall be at a min. gradient 1:40 (1:80 if minimum 1 WC is connected), unless proposed invert levels indicate otherwise.



Key Plan

FOR APPROVAL

P5	Landscape Update	10.12.24	AM	LB
P4	Layout Updated, Ditch Easement Added	29.11.24	SF	LB
P3	Redline Boundary Updated	25.04.24	SP	LB
P2	Landscape Update	19.04.24	SP	LB
P1	Preliminary Issue	10.04.24	SP	LB

Revision | Amendment | Date | Rev'd | Chk'd

Created By: SF | Date Created: April 2024 | Discipline: CIVILS

consulting engineers

Suffolk House 194 High Street
Sevenoaks Kent TN13 1XE UK
t/f: +44 (0)1732 740196
www.ctp-llp.com

Project Title:

Hook Meadows
Westergate

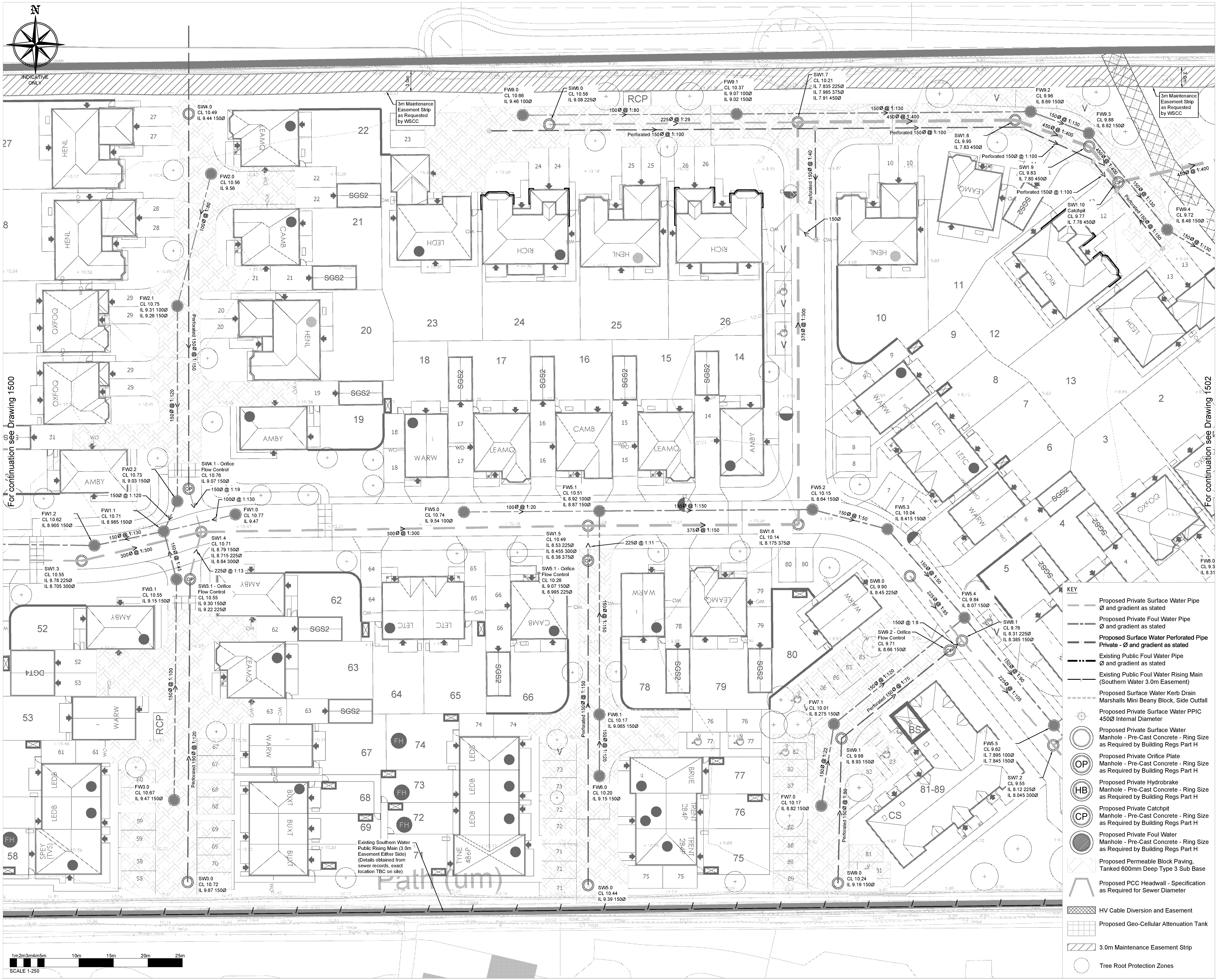
Drawing Title:

Drainage Strategy
Sheet 1

Drawing Number: B0457-1500

Scale: 1:250 @A1 Unless Noted Otherwise

Revision: - P5



NOTES

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3. All work to comply with the relevant British Standards, Codes of Practice and the Building Regulations.
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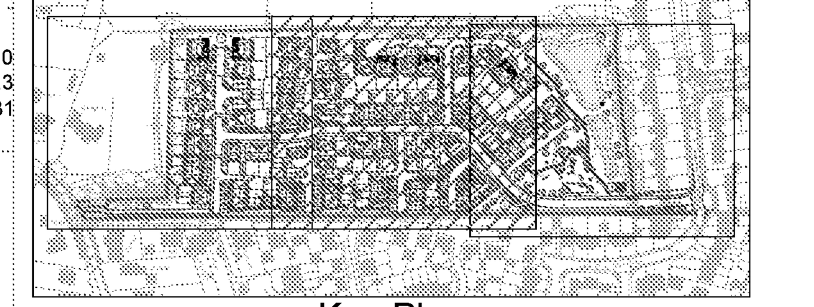
5. All private drainage works shall be constructed in accordance with Building Regulations Approved Document H (latest edition)' and BS EN 752.
6. Prior to commencement of the works the contractor shall liaise with all relevant authorities to obtain their requirements, work method approval and where appropriate the intended choice of materials.
7. Refer to topographical survey for details of existing site conditions and bench marks.
8. Prior to commencement of the works the contractor shall liaise with all relevant authorities to locate, protect and where necessary divert all existing services affected by the works.
9. The contractor shall ensure the stability of all excavations is maintained at all times and all excavations shall be kept free of standing water.
10. All works in, or adjacent to, the public highway shall be in accordance with the requirements of the Highway Authority. The contractor shall obtain all necessary licenses required to carry out the works within the public highway.
11. All works to new or existing public sewers shall be to the approval of the local water authority and in accordance with 'Sewerage Sector Guidance' - Latest Edition.
12. Prior to commencement of the works all drainage outfall points, whether existing sewer, drain or watercourse, shall be verified on site by the contractor. If the outfall point is found to be higher or significantly lower than shown on the drawings then the design engineer shall be notified immediately (significant redesign of drainage and levels may be necessary). Prior to commencement of construction on-site the contractor shall install all off-site drainage connections, or satisfy himself that there are no obstructions or other reasons why the drain connections can not be made.
13. All cover levels shown on this drawing are approximate, exact levels of new covers and frames are to be determined on site to match level and profile of finished surface.
14. The construction of all existing chambers, gullies and their covers, gratings and frames to be improved, repaired or replaced as necessary to suit their location within the finished development.
15. All covers, gratings and frames to chambers, gullies, channels etc, shall be of the correct load class to suit their location.
    Load Class A15- Pedestrian areas (not accessible by vehicles)
    Load Class B125- Private drives
    Load Class C250- Basements / parking bays / lightly trafficked roads
    Load Class D400- Main roads
16. All existing chambers, gully channels, pipes and other drainage apparatus shall be protected from damage during the works. The contractor shall take all necessary measures to ensure that no material enters the drains (other than that which they are designed to carry).
17. Refer to site investigation report for existing ground conditions and any special requirements for buried concrete (special requirements for buried concrete shall include all pre-cast and in-situ concrete and mortars). Where appropriate refer to contamination reports for details of chemicals affecting choice of materials and other additional requirements.
18. All pre-cast and in-situ concrete and mortars used in the construction of foul drains and sewers shall be made from sulphate resisting cement.
19. Unless noted otherwise all pipework shall be constructed from 'super strength' vitrified clay to BS 65, BS EN 295 or UPVC to BS EN 1401 bedded and backfilled as per the manufacturer's recommendations and the above listed publications.
20. The contractor's attention is drawn to Diagrams 7 and 8 of 'The Building Regulations Approved Document H' showing details of drains laid below and near to buildings. Where ground beams are used, their level shall be set to avoid clashing with drain connections.
21. Exact location of gullies to be determined on site to suit low points. the contractor shall ensure that all finished surfaces are laid to falls that are sufficient for all surface water to drain without surface ponding.
22. For the exact location of soil pipes, stubstacks, W.C.'s and other drainage connections refer to the large scale architectural building plans.
23. Rainwater downpipes that do not connect directly to an access point, shall be fitted with a rodding access.
24. All drainage channels to be by ACO or similar and to be of a type, size and capacity suitable for their location.
25. Private access fittings, inspection chambers and manholes shall be constructed to the dimensions shown in Tables 11 and 12 of 'The Building Regulations Approved Document H' and from the materials listed in Table 14. Access points, inspection chambers and manholes shall be constructed from products designed/rated for the location in which they are to be used. They shall be installed in accordance with the manufacturer's/supplier's recommendations.
26. Prior to commencement of any works the existing drainage must be traced to ensure that no 'live' connections remain, any such connections must be reported to the contract administrator, prior to diversion into the new drains.
27. Pipes at manholes to be soffit to soffit unless noted otherwise.
28. Pipes shall be at a min. gradient 1:40 (1:80 if minimum 1 WC is connected), unless proposed invert levels indicate otherwise.



Key Plan

KEY

- Proposed Private Surface Water Pipe Ø and gradient as stated
- Proposed Private Foul Water Pipe Ø and gradient as stated
- Proposed Surface Water Perforated Pipe Private - Ø and gradient as stated
- Existing Public Foul Water Pipe Ø and gradient as stated
- Existing Public Foul Water Rising Main (Southern Water 3.0m Easement)
- Proposed Surface Water Kerb Drain Marshalls Mini Beany Block, Side Outfall
- Proposed Private Surface Water PPIC 450Ø Internal Diameter
- Proposed Private Surface Water Manhole - Pre-Cast Concrete - Ring Size as Required by Building Regs Part H
- OP — Proposed Private Orifice Plate Manhole - Pre-Cast Concrete - Ring Size as Required by Building Regs Part H
- HB — Proposed Private Hydrobrake Manhole - Pre-Cast Concrete - Ring Size as Required by Building Regs Part H
- CP — Proposed Private Catchpit Manhole - Pre-Cast Concrete - Ring Size as Required by Building Regs Part H
- Proposed Private Foul Water Manhole - Pre-Cast Concrete - Ring Size as Required by Building Regs Part H
- Proposed Permeable Block Paving, Tanked 600mm Deep Type 3 Sub Base
- Proposed PCC Headwall - Specification as Required for Sewer Diameter
- HV Cable Diversion and Easement
- Proposed Geo-Cellular Attenuation Tank
- 3.0m Maintenance Easement Strip
- Tree Root Protection Zones

FOR APPROVAL

Revision	Amendments	Date	Rev'd	Chk'd
P5	Landscape Update	10.12.24	AM	LB
P4	Layout Updated, Ditch Easement Added	29.11.24	SF	LB
P3	Redline Boundary Updated	25.04.24	SP	LB
P2	Landscape Update	19.04.24	SP	LB
P1	Preliminary Issue	10.04.24	SP	LB

Created by: SF — Date created: April 2024 — Discipline: CIVILS

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Project Title:

Hook Meadows Westergate

Drawing Title:

Drainage Strategy Sheet 2

Drawing Number: B0457-1501 — Scale: 1:250 @A1 Unless Noted Otherwise — Revision: - P5

NOTES

1. DO NOT SCALE THIS DRAWING.
   WORK TO FIGURED DIMENSIONS ONLY.
   ALL DIMENSIONS ARE IN MILLIMETRES (mm)
   UNLESS NOTED OTHERWISE.
2. This drawing is to be read in conjunction with all relevant Architect's, Engineer's and Specialist's drawings and their respective Specifications.
3. All work to comply with the relevant British Standards, Codes of Practice and the Building Regulations.
4. Any discrepancies between all working drawings, specifications and schedules of all disciplines to be immediately notified to CTP for clarification/correction prior to construction of relevant structure.
5. All private drainage works shall be constructed in accordance with Building Regulations Approved Document H (latest edition)' and BS EN 752.
6. Prior to commencement of the works the contractor shall liaise with all relevant authorities to obtain their requirements, work method approval and where appropriate the intended choice of materials.
7. Refer to topographical survey for details of existing site conditions and bench marks.
8. Prior to commencement of the works the contractor shall liaise with all relevant authorities to locate, protect and where necessary divert all existing services affected by the works.
9. The contractor shall ensure the stability of all excavations is maintained at all times and all excavations shall be kept free of standing water.
10. All works in, or adjacent to, the public highway shall be in accordance with the requirements of the Highway Authority. The contractor shall obtain all necessary licenses required to carry out the works within the public highway.
11. All works to new or existing public sewers shall be to the approval of the local water authority and in accordance with 'Sewerage Sector Guidance' - Latest Edition.
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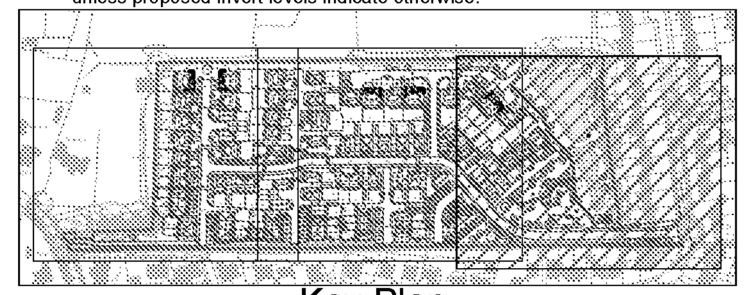

Key Plan

FOR APPROVAL

Revision	Amendments	Date	Rev'd	Chk'd
P6	Landscape Update	10.12.24	AM	LB
P5	Layout Updated, Ditch Easement Added	29.11.24	SF	LB
P4	Revised to suit comments	07.08.24	AM	LB
P3	Redline Boundary Updated & HV Diversion Added	25.04.24	SP	LB
P2	Landscape Update	19.04.24	SP	LB
P1	Preliminary Issue	10.04.24	SP	LB

Created by: SF
Date created: April 2024
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Project Title:

Hook Meadows Westergate

Drawing Title:

Drainage Strategy Sheet 3

Drawing Number: B0457-1502

Scale: 1:250 @A1 Unless Noted Otherwise

Revision: - P6