

Powered by



To view map legend click here [Legend](#)

Site Details:

WATER LANE,
LITTLEHAMPTON

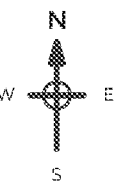
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Report Ref: HMD-154-3204225
Grid Ref: 507440, 104551

Map Name: County Series

Map date: 1938-1943

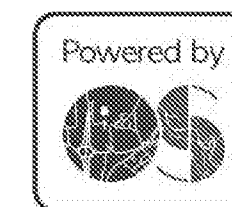
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Printed at: 1:10,560



Surveyed 1875
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1875
Revised 1943
Edition N/A
Copyright N/A
Levelled N/A

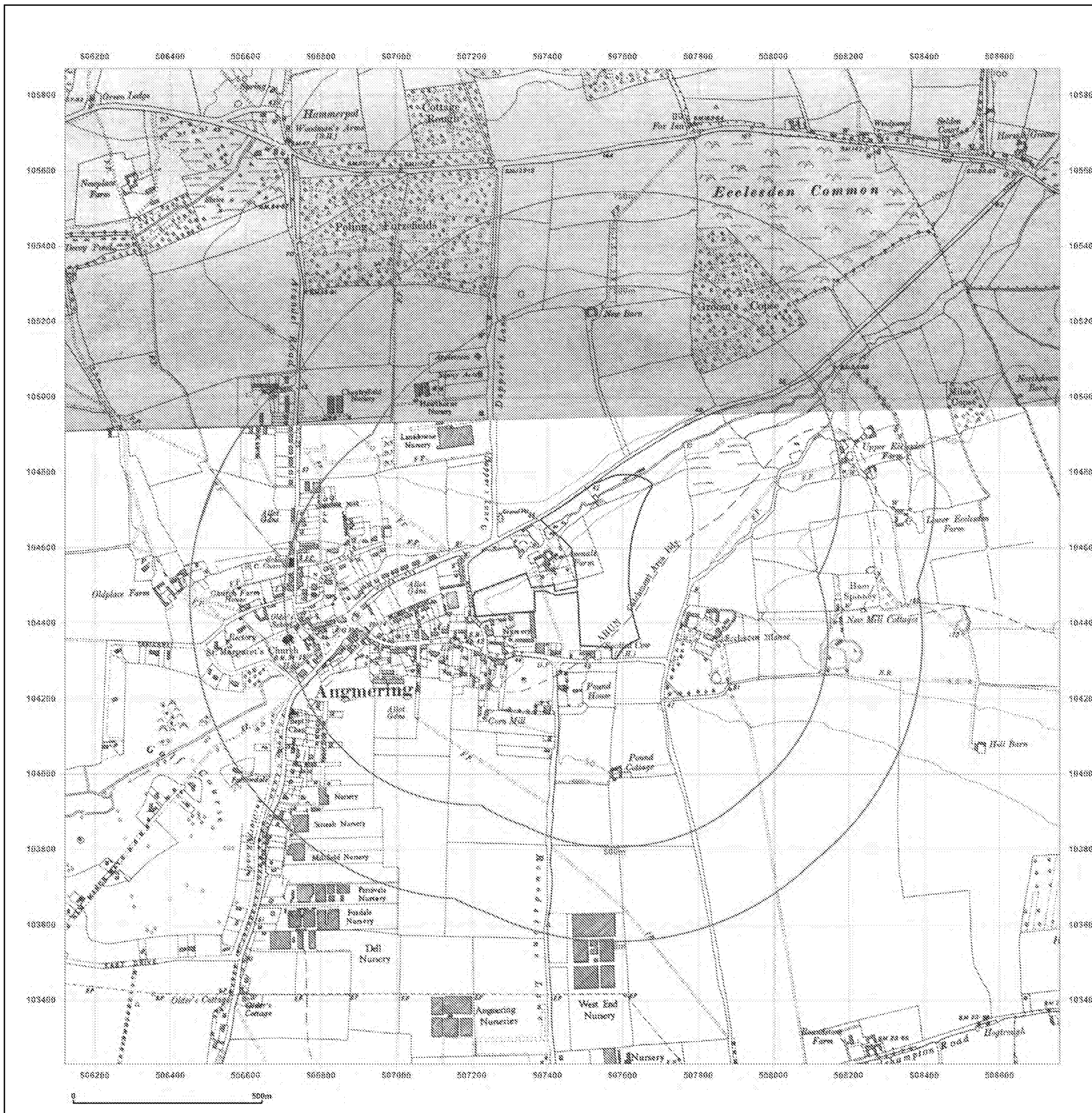


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Production date: 01 August 2016

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Site Details:

WATER LANE,
LITTLEHAMPTON

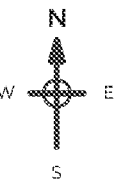
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Report Ref: HMD-154-3204225
Grid Ref: 507440, 104551

Map Name: Provisional

Map date: 1957

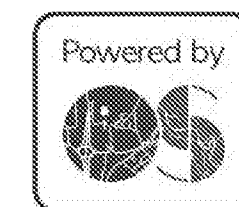
Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled N/A

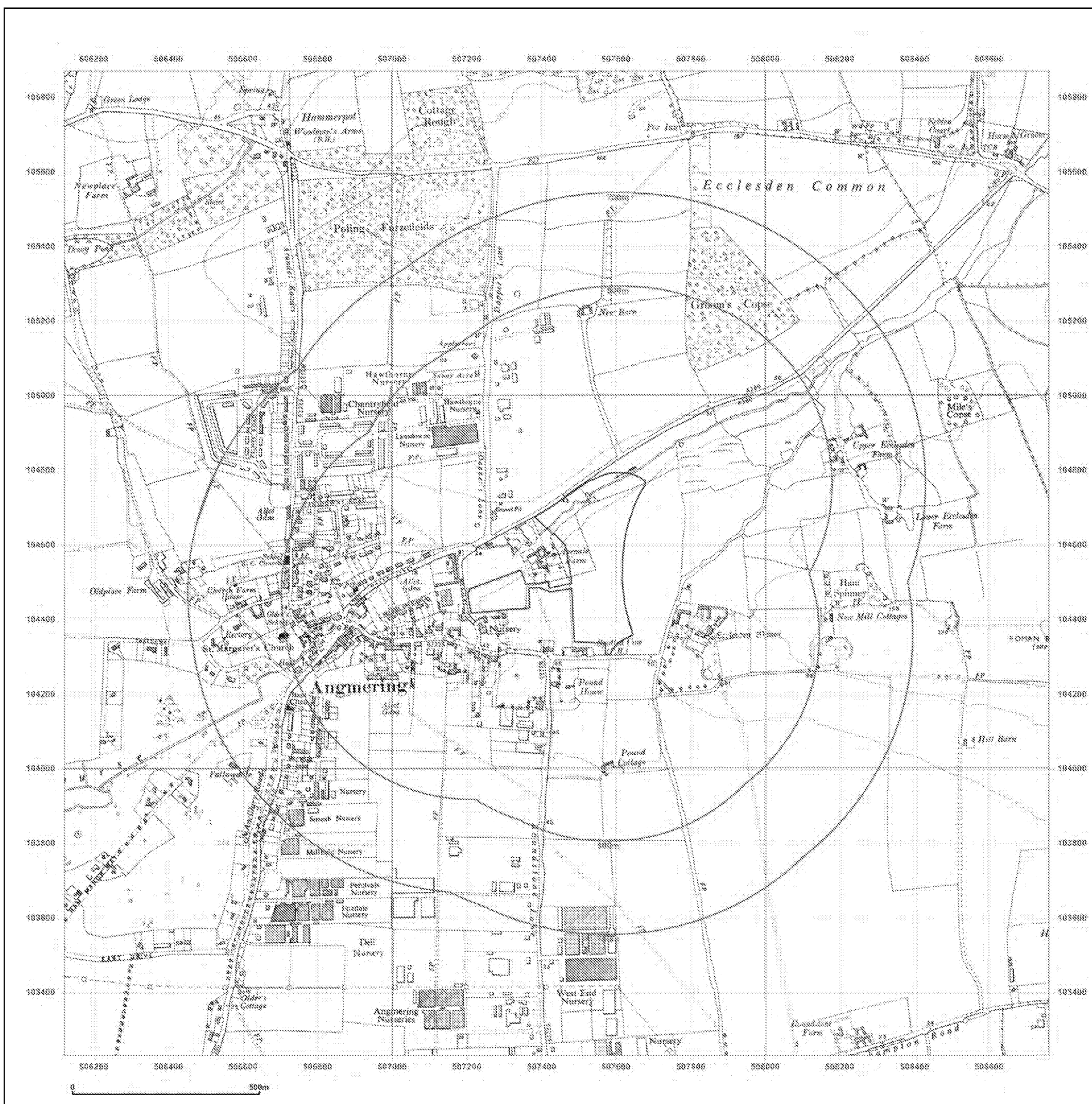


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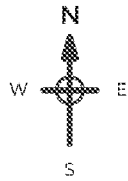
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Site Details:
WATER LANE,
LITTLEHAMPTON

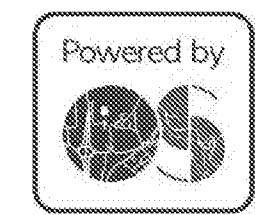
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Report Ref: HMD-154-3204225
Grid Ref: 507440, 104551

Map Name: National Grid
Map date: 1974-1976
Scale: 1:10,000
Printed at: 1:10,000



Surveyed 1972
Revised 1976
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1873
Revised 1974
Edition N/A
Copyright N/A
Levelled N/A



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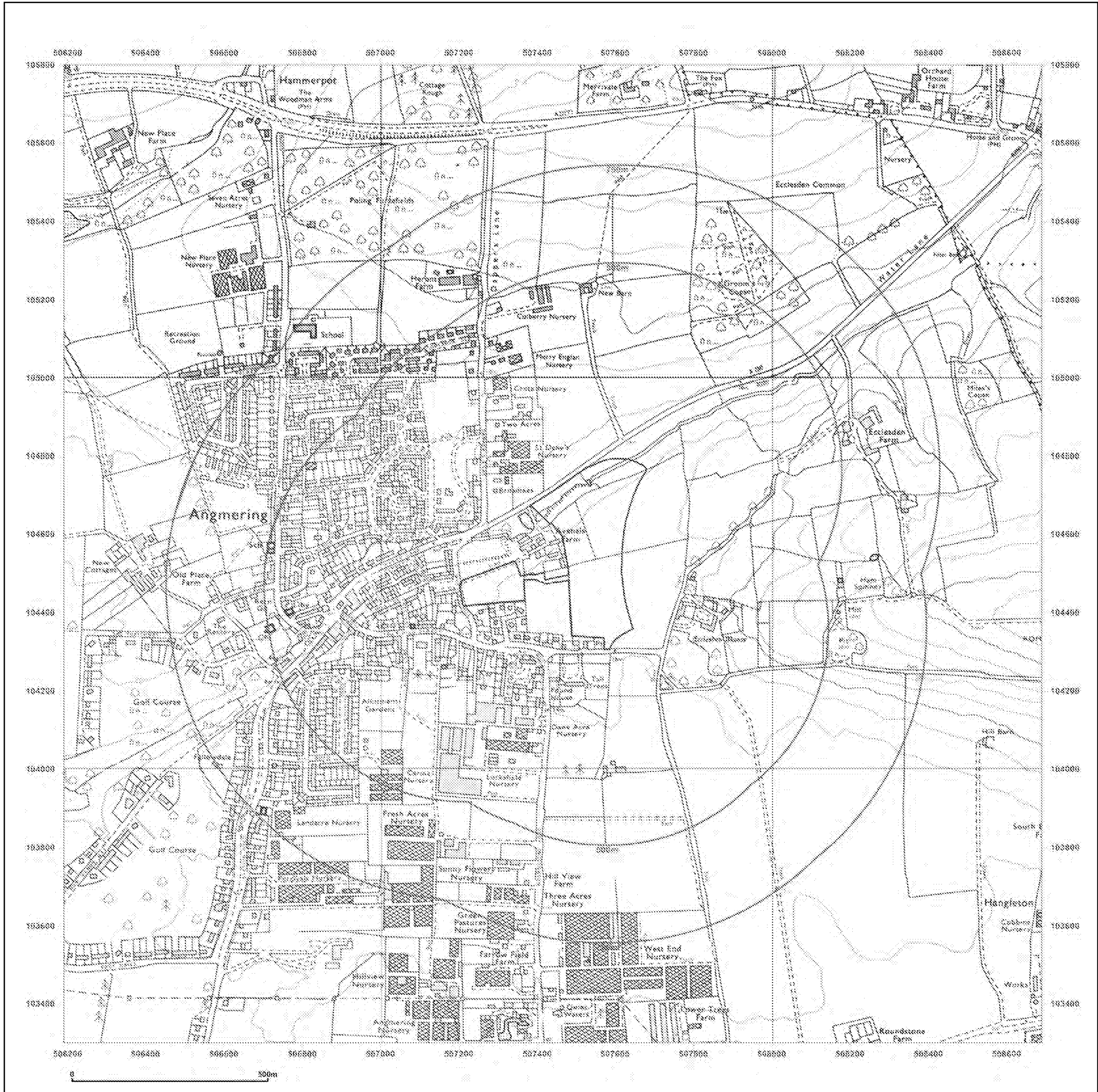
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Production date: 01 August 2016

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Site Details:

WATER LANE,
LITTLEHAMPTON

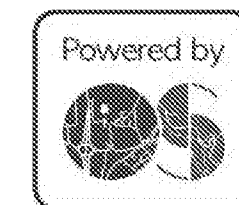
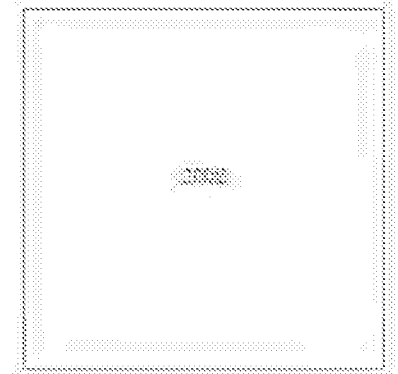
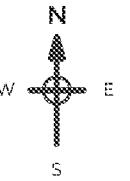
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Report Ref: HMD-154-3204225
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Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000

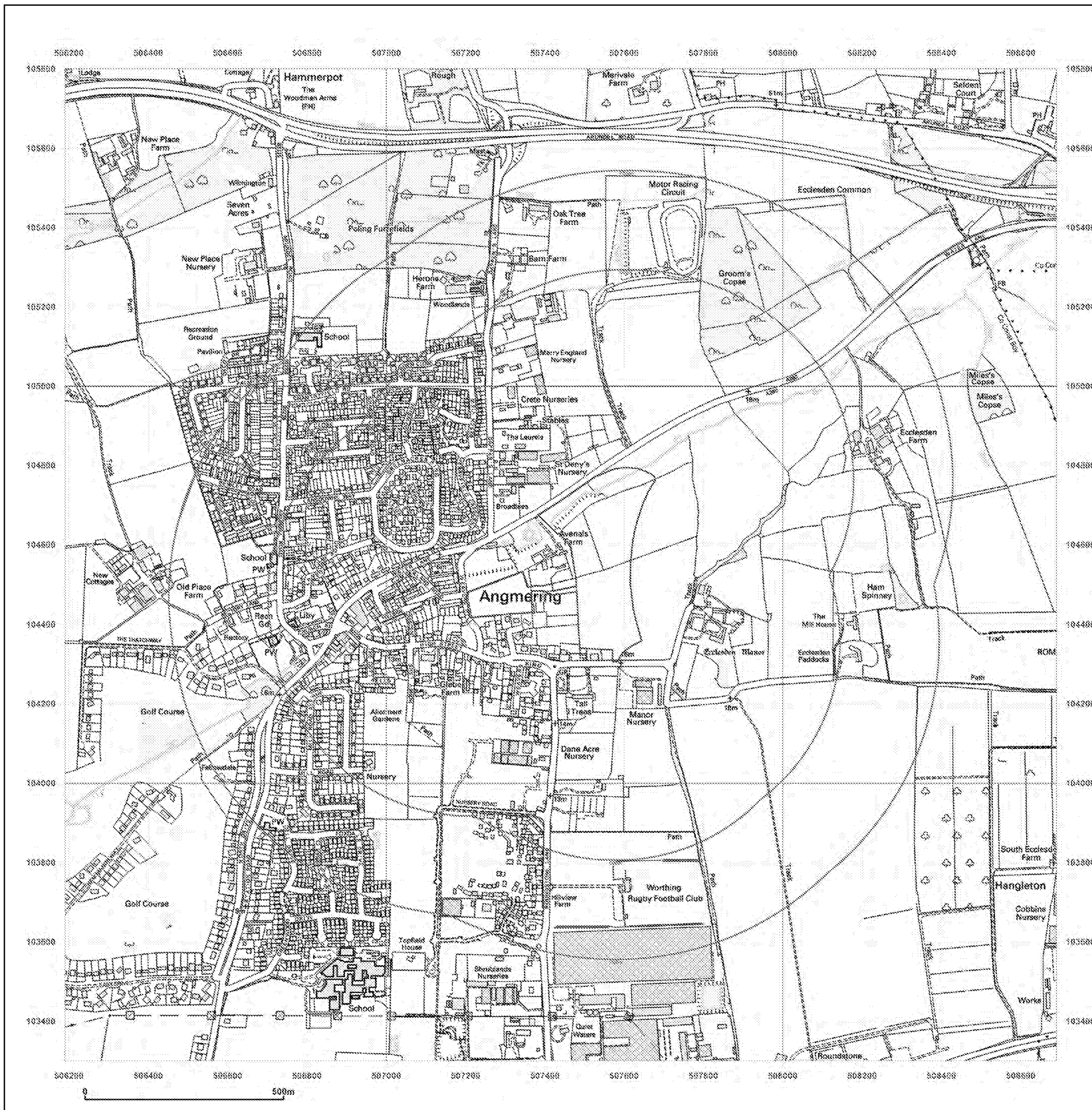


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Site Details:

WATER LANE,
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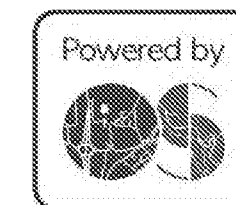
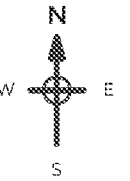
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Report Ref: HMD-154-3204225
Grid Ref: 507440, 104551

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



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Site Details:

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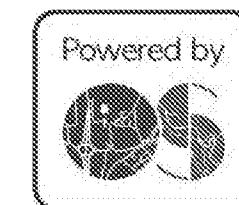
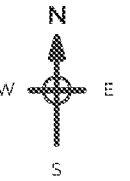
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Report Ref: HMD-154-3204225
Grid Ref: 507440, 104551

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000



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Production date: 01 August 2016

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APPENDIX 3

- Exploratory Hole Logs
- BGS Borehole Logs

Project Name

Water Lane

Project No.

19495

Co-ords

-

Hole Type

WLS

Location: Angmering

Level

-

Scale

1:25

Client: Rydon Homes Ltd & Gleeson Strategic Land

Dates: 04/09/2015

Logged By

Rachael Guild

Well	Water Strike	Samples & In Situ Testing			Depth in metres (thickness)	Legend	Stratum Description	
		Depth (m)	Type	Results				
		0.20	D,J		0.15		Dark brown clayey sand with common rootlets	
					(0.40)		Dark brown and orange brown clayey SAND with rare fine angular to subrounded flint gravels.	
					0.55			
					0.70		Dark brown and orangey brown clayey SAND with common fine to coarse angular to subrounded flint gravels and occasional subangular flint cobbles.	
		1.00	CPT	N=12 (1,2,3,3,3,3)	(0.40)		Soft dark brown and orange brown sandy CLAY with rare coarse rounded and subrounded flint gravels.	1
		1.30	D,J		1.10		Firm medium strength light brown / grey slightly sandy CLAY with rare fine to medium angular to subrounded flint gravels.	
					1.25		Dark brown clayey SAND with occasional fine to medium angular to subrounded flint gravels.	
					1.45		Grey, moist, sandy CLAY with common fine to coarse subangular to subrounded flint gravels.	
					1.60		Firm medium strength, becoming soft low strength orange and grey moist sandy CLAY with very common fine to coarse angular to rounded flint gravels and occasional angular to subangular flint cobbles.	2
		2.00	CPT	N=7 (3,3,2,2,2,1)	(0.65)			
					2.25		Orange and grey coarse wet clayey SAND with occasional fine to medium angular to subangular flint gravels	
					2.40		Soft low strength, becoming firm medium strength grey CLAY.	
		2.70	D,J		(0.60)			
		3.00	CPT	N=13 (2,2,2,3,3,5)	3.00		End of Window Sample at 3.00 m	3
								4

Remarks:

Prior to the intrusive ground investigation the location was scanned using a cable avoidance tool.

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
SPT - in-situ standard penetration test
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

Project Name

Water Lane

Project No.

19495

Co-ords

-

Hole Type

WLS

Location: Angmering

Level

-

Scale

1:25

Client: Rydon Homes Ltd & Gleeson Strategic Land

Dates: 04/09/2015

Logged By

Rachael Guild

Well	Water Strike	Samples & In Situ Testing			Depth in metres (thickness)	Legend	Stratum Description	
		Depth (m)	Type	Results				
		0.30	D,J		(0.30)		Red & dark brown clayey sand, with common rootlets.	
					0.30			
					(0.30)		Soft orange and grey CLAY with common fine to coarse angular to subangular flint gravels and occasional angular and subangular flint cobbles.	
					0.60		Soft orange and grey CLAY with rare rounded and subrounded flint cobbles.	
		1.00	CPT	N=4 (1,1,1,1,1,1)	0.85		Soft low strength grey with specks of orange CLAY with rare fine to medium angular to subrounded flint gravels	-1
					(1.05)			
		2.00	CPT	N=7 (1,1,2,1,2,2)	1.90		Soft low strength, becoming firm medium strength bluish grey CLAY with dark brown specks.	-2
					(1.10)			
		3.00	CPT	N=15 (2,3,3,3,4,5)	3.00		End of Window Sample at 3.00 m	-3
								-4

Remarks: Prior to the intrusive ground investigation the location was scanned using a cable avoidance tool.

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
SPT - in-situ standard penetration test
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

Project Name

Water Lane

Project No.

19495

Co-ords

-

Hole Type

WLS

Location: Angmering

Level

-

Scale

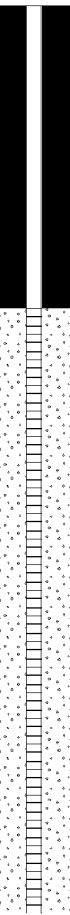
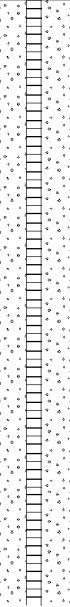
1:25

Client: Rydon Homes Ltd & Gleeson Strategic Land

Dates: 04/09/2015

Logged By

Rachael Guild

Well	Water Strike	Samples & In Situ Testing			Depth in metres (thickness)	Legend	Stratum Description	
		Depth (m)	Type	Results				
					(0.30)		Dark brown clayey sand with common rootlets	
					0.30			
		0.55	D,J		0.55		Dark brown clayey SAND with common fine to coarse angular to rounded flint gravels and occasional flint cobbles.	
					(0.75)			
		1.00	CPT	N=9 (3,3,2,2,3)			Loose orange brown sandy GRAVEL with some dark brown sandy clay. Gravel is angular to rounded fine to coarse flint. Common flint cobbles.	1
		1.30	D,J		1.30		Firm medium strength orange and grey sandy CLAY.	
					(1.70)			
		2.00	CPT	N=12 (2,3,3,2,3,4)				2
		3.00	CPT	N=26 (4,5,6,6,6,8)	3.00		End of Window Sample at 3.00 m	3
								
								4

Remarks: Prior to the intrusive ground investigation the location was scanned using a cable avoidance tool.

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
SPT - in-situ standard penetration test
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

Project Name

Water Lane

Project No.

19495

Co-ords

-

Hole Type

WLS

Location: Angmering

Level

-

Scale

1:25

Client: Rydon Homes Ltd & Gleeson Strategic Land

Dates: 04/09/2015

Logged By

Rachael Guild

Well	Water Strike	Samples & In Situ Testing			Depth in metres (thickness)	Legend	Stratum Description	
		Depth (m)	Type	Results				
					0.20		Dark brown, slightly sandy clay with common rootlets and occasional medium to coarse angular to subangular flint gravels.	
					(0.55)		Yellow / orange slightly clayey fine SAND with occasional fine to coarse angular to subrounded flint gravels.	
		1.00	CPT	N=16 (5,5,4,4,4,4)	(0.85)		Medium dense orange brown sandy GRAVEL. Gravel is angular to subrounded fine to coarse flint. Locally small amounts of orange/ brown clay.	1
		2.00	CPT	N=11 (4,5,3,3,3,2)	(1.00)		Medium dense orange brown sandy GRAVEL. Gravel is angular to subrounded fine to medium flint. Locally some brown and orange brown clay with depth.	2
		3.00	CPT	N=20 (2,3,4,5,5,6)	3.00		Medium dense white/yellow coarse gravelly SAND with common fine to coarse angular to subrounded flint gravels and occasional flint cobbles.	3
							End of Window Sample at 3.00 m	4

Remarks: Prior to the intrusive ground investigation the location was scanned using a cable avoidance tool.

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
SPT - in-situ standard penetration test
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample



Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

Plant:

Co-ords: -

Trialpit No

MTP118

Sheet 1 of 1

Project Name

Water Lane

Project No.

19495

Dimensions (m):

2.20

Date

03/09/2015

Location: Angmering

Depth (m)

3.00

0.60

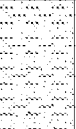
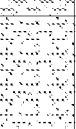
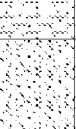
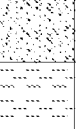
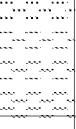
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1:25

Client: Rydon Homes Ltd & Gleeson Strategic Land

Logged By

Troy Randall

Samples & In Situ Testing			Water Strike	Depth in metres (thickness)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.30	D,J			(0.50)		Dry and friable brown slightly sandy slightly gravelly CLAY with frequent rootlets. Sand is fine to medium. Gravel is angular to very angular fine to coarse flint and occasional brick. (MADE GROUND)	
				0.50		Firm to stiff orange mottled grey slightly sandy CLAY. Sand is fine to coarse. (HEAD DEPOSITS)	
1.00	B			(0.90)			1
				1.40		Soft to firm light grey very gravelly CLAY with cobble content. Gravel is angular to subrounded fine to coarse flint. Cobbles of angular flint. (HEAD DEPOSITS)	
				(0.50)			
				1.90		Orange gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint. (RIVER TERRACE DEPOSITS)	2
				(0.50)			
				2.40		Firm grey CLAY. (LONDON CLAY FORMATION) Below 2.40mbgl: occasional claystone.	
				(0.60)			
				3.00		Trialpit Complete at 3.00 m	3
							4

Remarks: Prior to the intrusive ground investigation the location was scanned using a cable avoidance tool. Upon completion the location was backfilled with arisings.

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample



Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

Plant:

Co-ords: -

Trialpit No

MTP119

Sheet 1 of 1

Project Name

Water Lane

Project No.

19495

Dimensions (m):

2.20

Date

03/09/2015

Location: Angmering

Depth (m)

2.50

0.60

Scale

1:25

Client: Rydon Homes Ltd & Gleeson Strategic Land

Logged By

Troy Randall

Samples & In Situ Testing			Water Strike	Depth in metres (thickness)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.60	D,J			(0.40)		Dry and friable to very soft brown slightly gravelly CLAY with rootlets. Gravel is angular to subrounded fine to coarse flint. (TOPSOIL)	
				0.40		Orange clayey slightly sandy GRAVEL with cobble content. Sand is fine to medium. Gravel is angular to very angular fine to coarse flint. Cobbles of subangular flint. (RIVER TERRACE DEPOSITS)	
				(0.60)			
				1.00		Firm orange mottled brown sandy CLAY. Sand is fine to coarse. (LAMBETH GROUP)	1
				(1.50)			
				2.50		Trialpit Complete at 2.50 m	2
							3
							4

Remarks: Prior to the intrusive ground investigation the location was scanned using a cable avoidance tool. Upon completion the location was backfilled with arisings.

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample



Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

Plant:

Co-ords: -

Trialpit No
MTP120
Sheet 1 of 1

Project Name

Water Lane

Project No.

19495

Dimensions (m):

2.20

Location: Angmering

Depth (m)

2.90

0.70

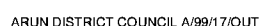
Date
03/09/2015

Scale
1:25

Client: Rydon Homes Ltd & Gleeson Strategic Land

Logged By
Troy Randall

Samples & In Situ Testing			Water Strike	Depth in metres (thickness)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.60	D,J			(1.20)		Soft light brown very sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is angular to subrounded fine to medium flint. (MADE GROUND)	1
				1.20		Soft greenish black slightly sandy slightly gravelly CLAY with cobble content. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint, brick and concrete. Cobbles of angular brick and concrete. (MADE GROUND) Between 1.20mbgl and 2.90mbgl: organic odour.	
2.30	D,J			(1.70)			2
2.80	B			2.90		Trialpit Complete at 2.90 m	3
							4
Remarks: Prior to the intrusive ground investigation the location was scanned using a cable avoidance tool. Upon completion the location was backfilled with arisings.						IVN - in-situ hand vane IPP - in-situ pocket penetrometer PID - in-situ photoionization detector	D - small disturbed sample (tub) J - amber glass jar (250ml) V - amber glass jar (60ml) B - bulk disturbed sample





Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

Plant:

Co-ords: -

Trialpit No

MTP122

Sheet 1 of 1

Project Name

Water Lane

Project No.

19495

Dimensions (m):

2.20

Location: Angmering

Depth (m)

2.50

0.60

Date

04/09/2015

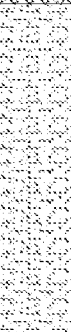
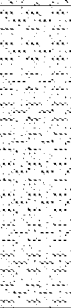
Scale

1:25

Client: Rydon Homes Ltd & Gleeson Strategic Land

Logged By

Troy Randall

Samples & In Situ Testing			Water Strike	Depth in metres (thickness)	Legend	Stratum Description	
Depth (m)	Type	Results					
1.50	D			(0.40)		Grass over dry and friable brown slightly sandy slightly gravelly CLAY with moderate cobble content and rootlets. Sand is fine to coarse. Gravel is subangular to very angular fine to coarse flint. Cobbles of subangular flint. (TOPSOIL)	1
				0.40		Soft to firm brownish orange very gravelly slightly sandy CLAY with cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint. Cobbles of angular flint. (HEAD DEPOSITS)	
2.50	B			(1.10)		Soft to firm brownish orange mottled grey sandy CLAY. Sand is fine to coarse. (LAMBETH GROUP)	2
				1.50			
				(1.00)		Trialpit Complete at 2.50 m	3
				2.50			
							4

Remarks: Prior to the intrusive ground investigation the location was scanned using a cable avoidance tool. Upon completion the location was backfilled with arisings.

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample



Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

Plant:

Co-ords: -

Trialpit No

MTP123

Sheet 1 of 1

Project Name

Water Lane

Project No.

19495

Dimensions (m):

2.30

Depth (m)

2.70

0.70

Date

04/09/2015

Scale

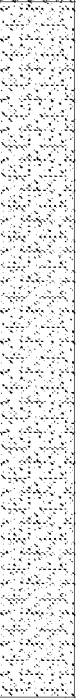
1:25

Client:

Rydon Homes Ltd & Gleeson Strategic Land

Logged By

Troy Randall

Samples & In Situ Testing			Water Strike	Depth in metres (thickness)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.30	D,J			(0.40) 0.40		Grass over dry and friable brown slightly sandy slightly gravelly CLAY with moderate cobble content and rootlets. Sand is fine to coarse. Gravel is subangular to very angular fine to coarse flint. Cobbles of subangular flint. (MADE GROUND)	
1.20	D			(2.30) 2.70		Orangish brown clayey sandy GRAVEL with cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint. Cobbles of angular flint. (RIVER TERRACE DEPOSITS)	1 2 3 4
						Trialpit Complete at 2.70 m	

Remarks: Prior to the intrusive ground investigation the location was scanned using a cable avoidance tool. Upon completion the location was backfilled with arisings.

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample



Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

Plant:

Co-ords: -

Trialpit No
MTP124
Sheet 1 of 1

Project Name

Water Lane

Project No.

19495

Dimensions (m):

2.20

Depth (m)

3.10

0.60

Date

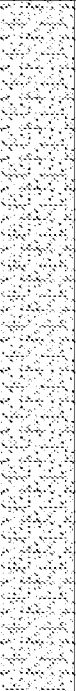
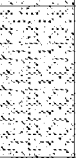
04/09/2015

Scale

1:25

Client: Rydon Homes Ltd & Gleeson Strategic Land

Logged By
Troy Randall

Samples & In Situ Testing			Water Strike	Depth in metres (thickness)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.80	D,J			(0.30) 0.30		Dry and friable brown gravelly CLAY. Gravel is angular to subrounded fine to coarse flint and brick. (MADE GROUND)	1
2.00	D			(2.30)		Brownish orange clayey sandy GRAVEL. Sand is fine to coarse. Gravel is very angular to well rounded fine to coarse flint. Cobbles of angular flint. (RIVER TERRACE DEPOSITS)	2
3.00	B			2.60 (0.50) 3.10		Soft orangish brown very sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to medium flint. (RIVER TERRACE DEPOSITS)	3
Trialpit Complete at 3.10 m							4

Remarks: Prior to the intrusive ground investigation the location was scanned using a cable avoidance tool. Upon completion the location was backfilled with arisings.

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample



Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

Plant:

Co-ords: -

Trialpit No
MSA103
Sheet 1 of 1

Project Name

Water Lane

Project No.

19495

Dimensions (m):

1.90

Date

08/09/2015

Location: Angmering

Depth (m)

2.10

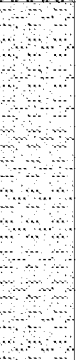
0.60

Scale

1:25

Client: Rydon Homes Ltd & Gleeson Strategic Land

Logged By
Troy Randall

Samples & In Situ Testing			Water Strike	Depth in metres (thickness)	Legend	Stratum Description	
Depth (m)	Type	Results					
				(0.90)		Grass over dry and friable brown slightly gravelly CLAY with rootlets. Gravel is angular to subangular fine to coarse flint. (MADE GROUND) Between 0.50mbgl and 0.90mbgl: cobble content.	
				0.90		Soft to firm brown mottled orange slightly sandy CLAY. Sand is fine to coarse. (LAMBETH GROUP)	1
				(1.20)			
				2.10			2
							3
							4

Trialpit Complete at 2.10 m

Remarks: Prior to the intrusive ground investigation the location was scanned using a cable avoidance tool. Upon completion the location was backfilled with arisings. Please note soakaway testing was undertaken in this location.

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

Polibase 3.1 (Bla 426.48) Standard Trialpit Log v2 dated 27th Nov 03



Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

Plant:

Co-ords: -

Trialpit No
MSA104
Sheet 1 of 1

Project Name

Water Lane

Project No.

19495

Dimensions (m):

2.20

Date

08/09/2015

Location: Angmering

Depth (m)

1.90

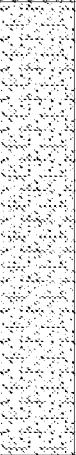
0.50

Scale

1:25

Client: Rydon Homes Ltd & Gleeson Strategic Land

Logged By
Troy Randall

Samples & In Situ Testing			Water Strike	Depth in metres (thickness)	Legend	Stratum Description	
Depth (m)	Type	Results					
				(0.40)		Grass over dry and friable brown slightly gravelly CLAY with rootlets. Gravel is angular to well rounded fine to coarse flint and brick. (MADE GROUND)	
				0.40			
				(1.50)		Brown clayey sandy GRAVEL with cobble content. Sand is fine to coarse. Gravel is angular to well rounded fine to coarse flint. Cobbles of angular flint. (RIVER TERRACE DEPOSITS)	1
				1.90			
						Trialpit Complete at 1.90 m	2
							3
							4

Remarks: Prior to the intrusive ground investigation the location was scanned using a cable avoidance tool. Upon completion the location was backfilled with arisings. Please note soakaway testing was undertaken in this location.

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

317
20

TP 072 043

ANEMERING

TP 00/106

ANEMERING GOTTAGE. Bed well. Cleaned out Dec. 1903 by Duke & Oskeno
Depth $156\frac{1}{2}$ ft., with $8\frac{1}{2}$ ft. of water. Fissure 18 inches from
the bottom yielding about 1000 gallons per hour. i.RWL 148'65.

6" Sussex 63 SE/64.

Exact site not determined, but probably on south side of High Street
about half way between Roundstone Lane and Station Road. OD 46

S. Bucken
27.2.71Estimated classification

Drift (Valley gravel)	}	156 $\frac{1}{2}$
Upper Chalk		

MH
5/4/73DATA Bank

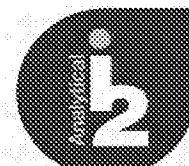


APPENDIX 4

- Soil Chemistry
- Laboratory Analysis Certificates



4841



Environmental Science

Siobhan Jackson

Merebrook
Suite 2B
East Mill
Bridgefoot
Belper
Derbyshire
DE56 2UA

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

Analytical Report Number : 15-78431-B

Replaces Analytical Report Number : 15-78431, issue no. 1

Project / Site name:	Water Lane Angmering	Samples received on:	07/09/2015
Your job number:	19495	Samples instructed on:	07/09/2015
Your order number:	15-S2-FDO-LABS	Analysis completed by:	14/09/2015
Report Issue Number:	2	Report issued on:	03/08/2016
Samples Analysed:	9 soil samples		

Signed:

Dr Irma Doyle
Senior Account Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Analytical Report Number: 15-78431-B

Project / Site name: Water Lane Angmering

Your Order No: 15-S2-FDO-LABS

Lab Sample Number	483520	483521	483522	483538	483539
Sample Reference	MWS116	MWS117	MWS118	TP118	TP120
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.20	0.30	0.55	0.30	0.60
Date Sampled	02/09/2015	02/09/2015	02/09/2015	02/09/2015	02/09/2015
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	11	25
Total mass of sample received	kg	0.001	NONE	1.1	0.79

General Inorganics

pH	pH Units	N/A	MCERTS	7.7	6.6	6.4	6.0	6.4
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (Soil Equivalent)	g/kg	0.0025	MCERTS	0.012	0.19	0.018	0.028	0.016
Water Soluble Sulphate as SO ₄ (2:1)	mg/kg	2.5	MCERTS	11	190	18	28	16
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0057	0.093	0.0091	0.014	0.0078
Sulphide	mg/kg	1	MCERTS	< 1.0	1.4	< 1.0	< 1.0	< 1.0
Organic Matter	%	0.1	MCERTS	1.3	7.2	1.3	2.9	1.9

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	0.54	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	0.12	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	2.1	< 0.10	0.70	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	2.0	< 0.10	0.65	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	0.82	< 0.10	0.30	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	1.3	< 0.05	0.47	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.97	< 0.10	0.38	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.73	< 0.10	0.28	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	0.76	< 0.10	0.33	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	9.26	< 1.60	3.11	< 1.60
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.0	11	6.4	8.7	8.0
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	25	31	20	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	8.6	17	15	6.8	11
Lead (aqua regia extractable)	mg/kg	1	MCERTS	26	58	18	24	29
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	15	29	22	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	2.0	1.9	1.9
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	51	73	41	42	50

Analytical Report Number: 15-78431-B

Project / Site name: Water Lane Angmering

Your Order No: 15-S2-FDO-LABS

Lab Sample Number				483520	483521	483522	483538	483539
Sample Reference				MWS116	MWS117	MWS118	TP118	TP120
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.30	0.55	0.30	0.60
Date Sampled				02/09/2015	02/09/2015	02/09/2015	02/09/2015	02/09/2015
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic > EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic > EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic > EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic > EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic > EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic > EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic > EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic > EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic > EC12 - EC16	mg/kg	2	MCERTS	< 2.0	2.7	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic > EC16 - EC21	mg/kg	10	MCERTS	< 10	14	< 10	< 10	< 10
TPH-CWG - Aromatic > EC21 - EC35	mg/kg	10	MCERTS	< 10	59	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	76	< 10	< 10	< 10

Analytical Report Number: 15-78431-B

Project / Site name: Water Lane Angmering

Your Order No: 15-S2-FDO-LABS

Lab Sample Number				483540	483541	483542	483543	
Sample Reference				TP120	TP121	TP123	TP124	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				2.30	0.40	0.30	0.80	
Date Sampled				02/09/2015	02/09/2015	02/09/2015	02/09/2015	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	14	11	19	12	
Total mass of sample received	kg	0.001	NONE	1.1	1.1	1.0	1.1	

General Inorganics

pH	pH Units	N/A	MCERTS	7.8	6.6	7.1	7.3	
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Water Soluble Sulphate (Soil Equivalent)	g/kg	0.0025	MCERTS	0.87	0.012	0.020	0.013	
Water Soluble Sulphate as SO ₄ (2:1)	mg/kg	2.5	MCERTS	870	12	20	13	
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.43	0.0061	0.010	0.0064	
Sulphide	mg/kg	1	MCERTS	1.3	< 1.0	< 1.0	< 1.0	
Organic Matter	%	0.1	MCERTS	1.6	2.4	4.2	1.5	

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.9	6.4	7.5	10	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	28	22	22	32	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	16	15	13	18	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	70	33	29	22	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	19	17	37	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	2.8	< 1.0	< 1.0	< 1.0	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	76	50	61	65	

Analytical Report Number: 15-78431-B

Project / Site name: Water Lane Angmering

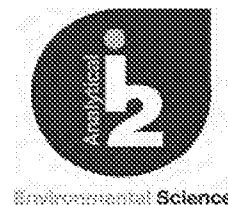
Your Order No: 15-S2-FDO-LABS

Lab Sample Number				483540	483541	483542	483543	
Sample Reference				TP120	TP121	TP123	TP124	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				2.30	0.40	0.30	0.80	
Date Sampled				02/09/2015	02/09/2015	02/09/2015	02/09/2015	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
o-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	

Petroleum Hydrocarbons

TPH-CWG - Aliphatic > EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aliphatic > EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aliphatic > EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic > EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	
TPH-CWG - Aliphatic > EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	
TPH-CWG - Aliphatic > EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	

TPH-CWG - Aromatic > EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aromatic > EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aromatic > EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aromatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic > EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	
TPH-CWG - Aromatic > EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic > EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	



Analytical Report Number : 15-78431-B

Project / Site name: Water Lane Angmering

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
483520	MWS116	None Supplied	0.20	Brown clay and loam with vegetation.
483521	MWS117	None Supplied	0.30	Brown loam and clay.
483522	MWS118	None Supplied	0.55	Brown clay and sand with gravel.
483538	TP118	None Supplied	0.30	Brown loam and sand with gravel.
483539	TP120	None Supplied	0.60	Brown loam and sand with gravel.
483540	TP120	None Supplied	2.30	Brown clay and sand.
483541	TP121	None Supplied	0.40	Brown loam and clay.
483542	TP123	None Supplied	0.30	Brown loam and sand.
483543	TP124	None Supplied	0.80	Brown loam and sand.

Analytical Report Number : 15-78431-B

Project / Site name: Water Lane Angmering

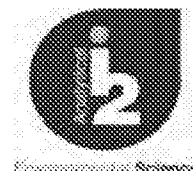
Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

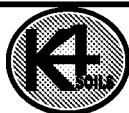
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
MWS116		S	15-78431	483520	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
MWS116		S	15-78431	483520	b	TPHCWG (Soil)	L076-PL	b
MWS117		S	15-78431	483521	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
MWS117		S	15-78431	483521	b	TPHCWG (Soil)	L076-PL	b
MWS118		S	15-78431	483522	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
MWS118		S	15-78431	483522	b	TPHCWG (Soil)	L076-PL	b
TP118		S	15-78431	483538	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
TP118		S	15-78431	483538	b	TPHCWG (Soil)	L076-PL	b
TP120		S	15-78431	483539	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
TP120		S	15-78431	483539	b	TPHCWG (Soil)	L076-PL	b
TP120		S	15-78431	483540	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
TP120		S	15-78431	483540	b	TPHCWG (Soil)	L076-PL	b
TP121		S	15-78431	483541	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
TP121		S	15-78431	483541	b	TPHCWG (Soil)	L076-PL	b
TP123		S	15-78431	483542	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
TP123		S	15-78431	483542	b	TPHCWG (Soil)	L076-PL	b
TP124		S	15-78431	483543	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
TP124		S	15-78431	483543	b	TPHCWG (Soil)	L076-PL	b



APPENDIX 5 ▪ Geotechnical Laboratory Certificates



Summary of Test Results

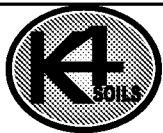
Job No. 19472	Project Name Water Lane	Programme	
		Samples received	08/09/2015
Project No. 19495	Client Idom Merebrook Ltd	Schedule received	09/09/2015
		Project started	09/09/2015
		Testing Started	21/09/2015

Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top	Base	Type							
TP101	1.	2.50		B	Brown gravelly slightly sandy silty CLAY (gravel is fmc and sub-angular to sub-rounded)	8.7	14	48	25	23	
TP104	1.	3.00		B	Brown, orange brown and pale grey CLAY	30	100	58	24	34	
TP110	1.	2.70		B	Dark grey and orange brown CLAY with rare fmc gravel	33	95	77	26	51	
TP112	1.	3.00		B	Orange brown and pale grey CLAY with sandy patches	34	100	64	26	38	
TP115	1.	1.50		B	Pale grey and orange brown CLAY with sandy patches	31	100	67	27	40	
TP117	1.	3.00		B	Orange brown and pale grey CLAY with sandy patches	27	100	59	25	34	
TP118	1	1.00		B	Brown and pale grey CLAY with sandy patches	30	100	41	20	21	
TP122	1	2.50		B	Brown CLAY with sandy patches and rare fm gravel	36	98	73	26	47	
TP124	1	3.00		B	Brown slightly gravelly slightly sandy CLAY (gravel is fm and sub-angular)	29	95	72	25	47	

 2519	Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0	Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU	Checked and Approved Initials J.P Date: 25/09/2015

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

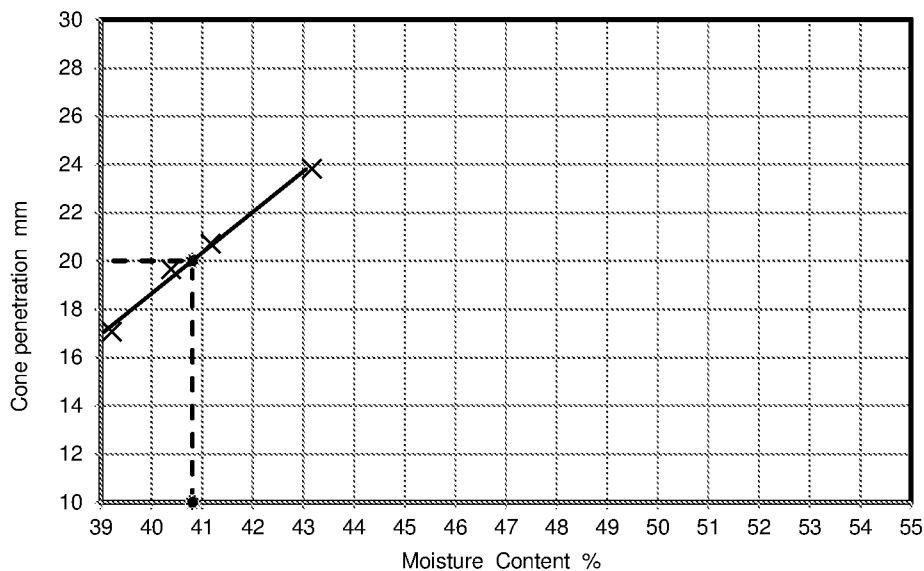
MSF-5-R1(a) -Rev. 0



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No.	19472
Borehole/Pit No.	TP118
Sample No.	1
Depth m	1.00
Sample Type	B
Samples received	
Schedules received	09/09/2015
Project Started	09/09/2015
Date Tested	

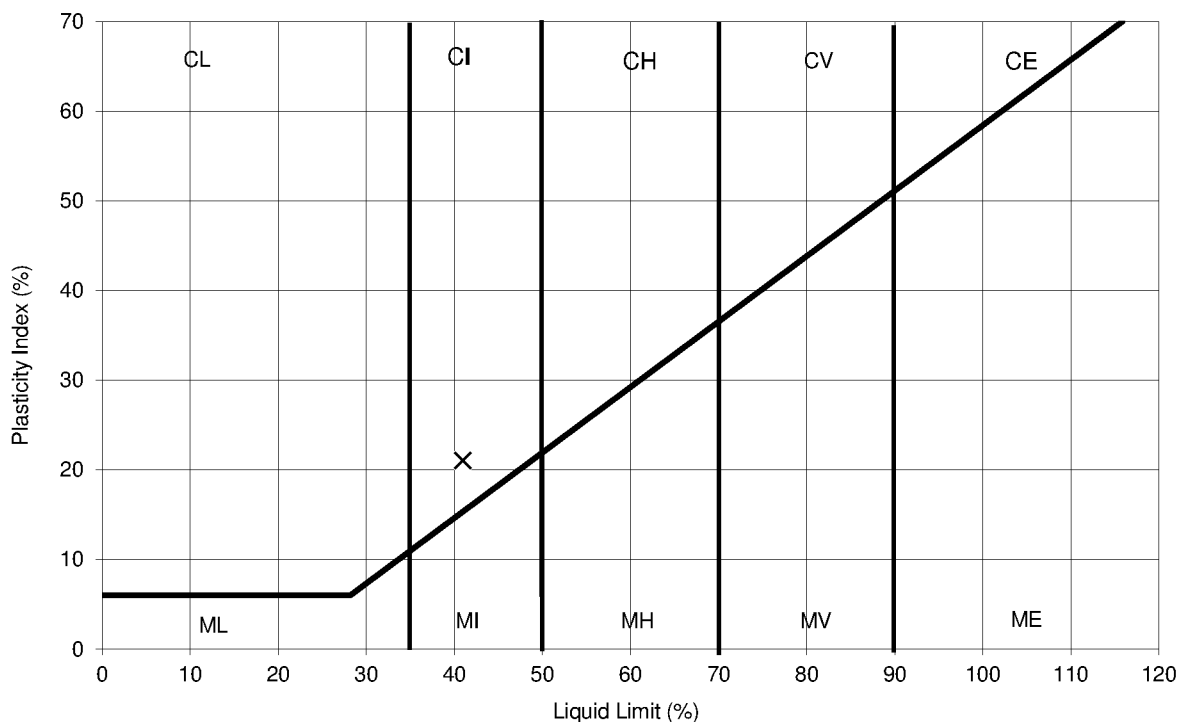
Site Name	Water Lane		
Project No.	19495	Client	Idom Merebrook Ltd
Soil Description	Brown and pale grey CLAY with sandy patches		



NATURAL MOISTURE CONTENT	30	%
% PASSING 425µm SIEVE	100	%
LIQUID LIMIT	41	%
PLASTIC LIMIT	20	%
PLASTICITY INDEX	21	%

Remarks

PLASTICITY INDEX



TEST METHOD

BS1377: Part 2 :Clause 4.4 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU

Tel: 01923 711 288 Email: James@k4soils.com

Checked and Approved

Initials: J.P

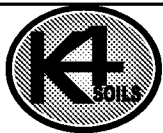
Date: 25/09/2015

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5 R2 (Rev.0)



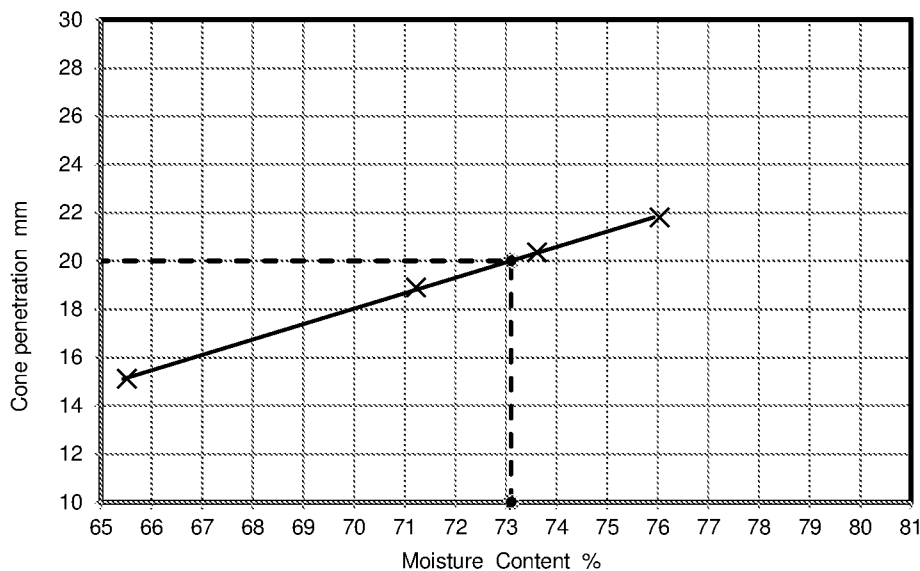
2519



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No.	19472
Borehole/Pit No.	TP122
Sample No.	1
Depth m	2.50
Sample Type	B
Samples received	08/09/2015
Schedules received	09/09/2015
Project Started	09/09/2015
Date Tested	

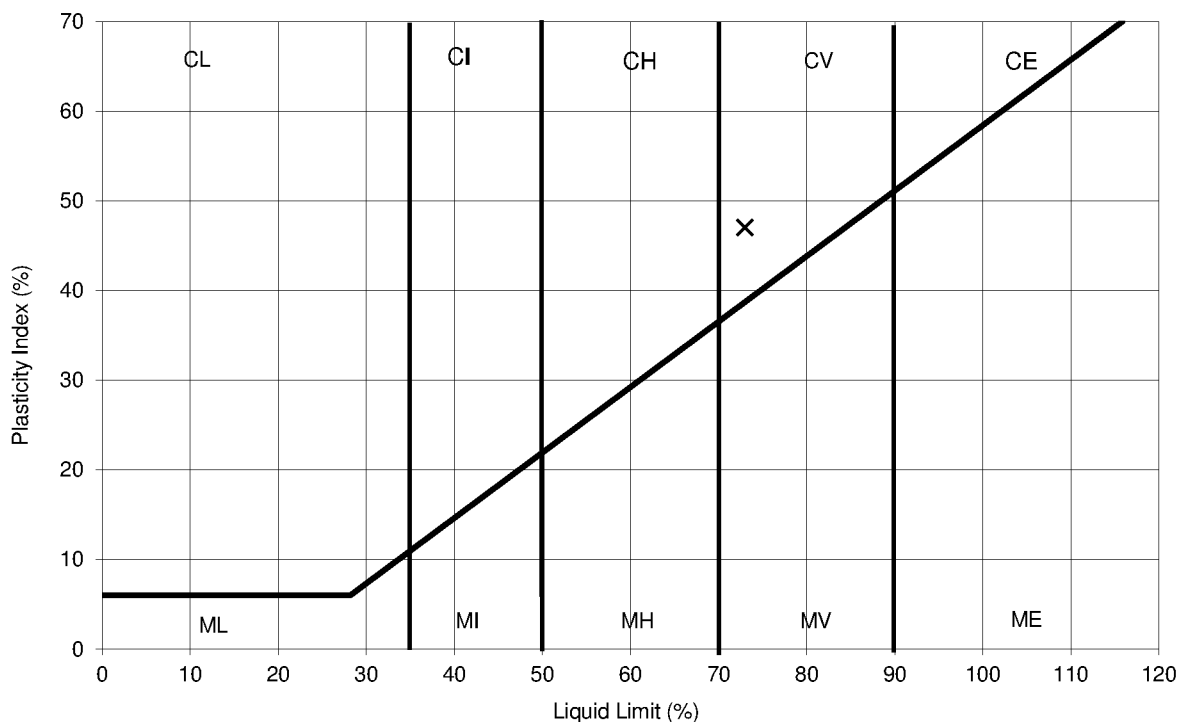
Site Name	Water Lane		
Project No.	19495	Client	Idom Merebrook Ltd
Soil Description	Brown CLAY with sandy patches and rare fm gravel		



NATURAL MOISTURE CONTENT	36	%
% PASSING 425µm SIEVE	98	%
LIQUID LIMIT	73	%
PLASTIC LIMIT	26	%
PLASTICITY INDEX	47	%

Remarks

PLASTICITY INDEX



TEST METHOD

BS1377: Part 2 :Clause 4.4 : 1990 Determination of the liquid limit by the cone penetrometer method
 BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index
 BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying
 Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU
 Tel: 01923 711 288 Email: James@k4soils.com

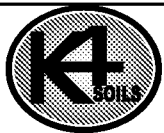
Checked and Approved

Initials: J.P
 Date: 25/09/2015

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5 R2 (Rev.0)



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No.

19472

Borehole/Pit No.

TP124

Site Name

Water Lane

Sample No.

1

Project No.

19495

Client

Idom Merebrook Ltd

Depth m

3.00

Soil Description

Brown slightly gravelly slightly sandy CLAY (gravel is fm and sub-angular)

Sample Type

B

Samples received

08/09/2015

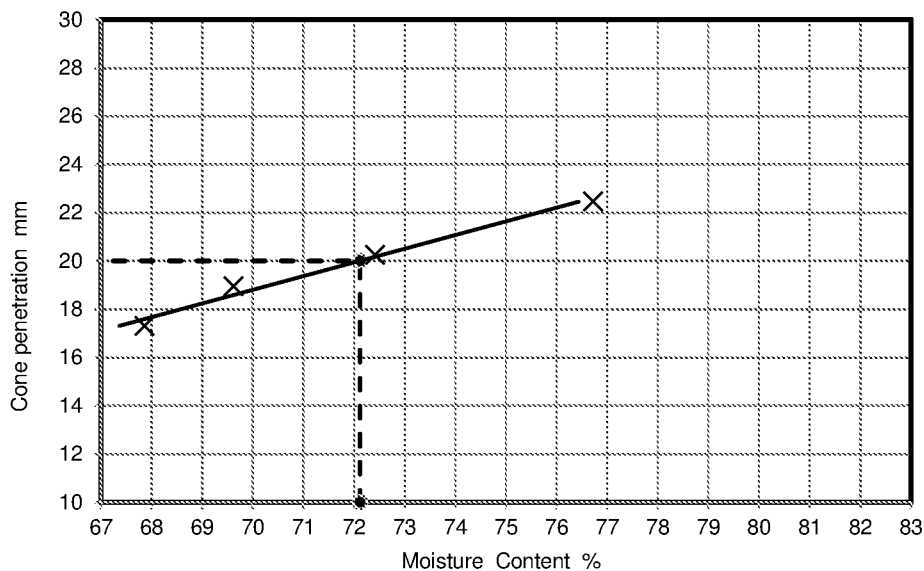
Schedules received

09/09/2015

Project Started

09/09/2015

Date Tested



NATURAL MOISTURE CONTENT

29

%

% PASSING 425µm SIEVE

95

%

LIQUID LIMIT

72

%

PLASTIC LIMIT

25

%

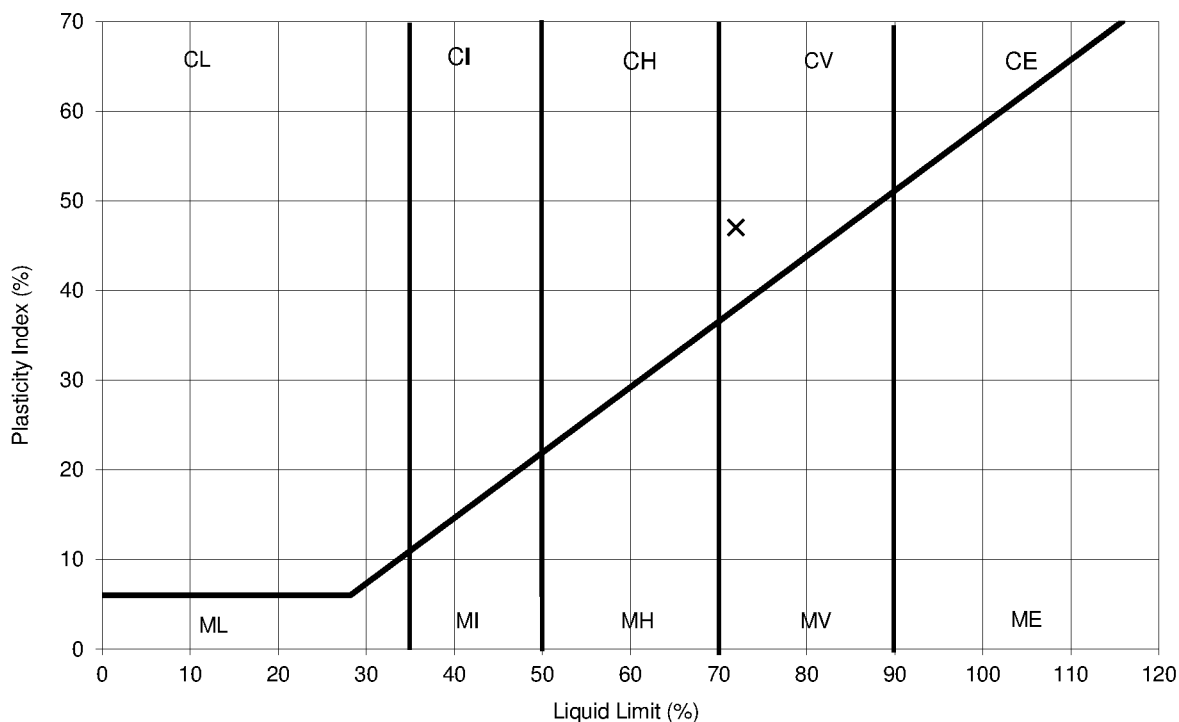
PLASTICITY INDEX

47

%

Remarks

PLASTICITY INDEX



TEST METHOD

BS1377: Part 2 :Clause 4.4 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU

Tel: 01923 711 288 Email: James@k4soils.com

Checked and Approved

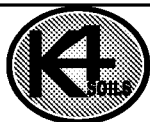
Initials: J.P

Date: 25/09/2015

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5 R2 (Rev.0)



PARTICLE SIZE DISTRIBUTION

Job Ref 19472

Borehole/Pit No. TP124

Site Name Water Lane

Sample No. 1

Project No. 19495

Client

Idom Merebrook Ltd

Depth 3.00 m

Soil Description

Brown slightly gravelly slightly sandy CLAY (gravel is fm and sub-angular)

Sample Type B

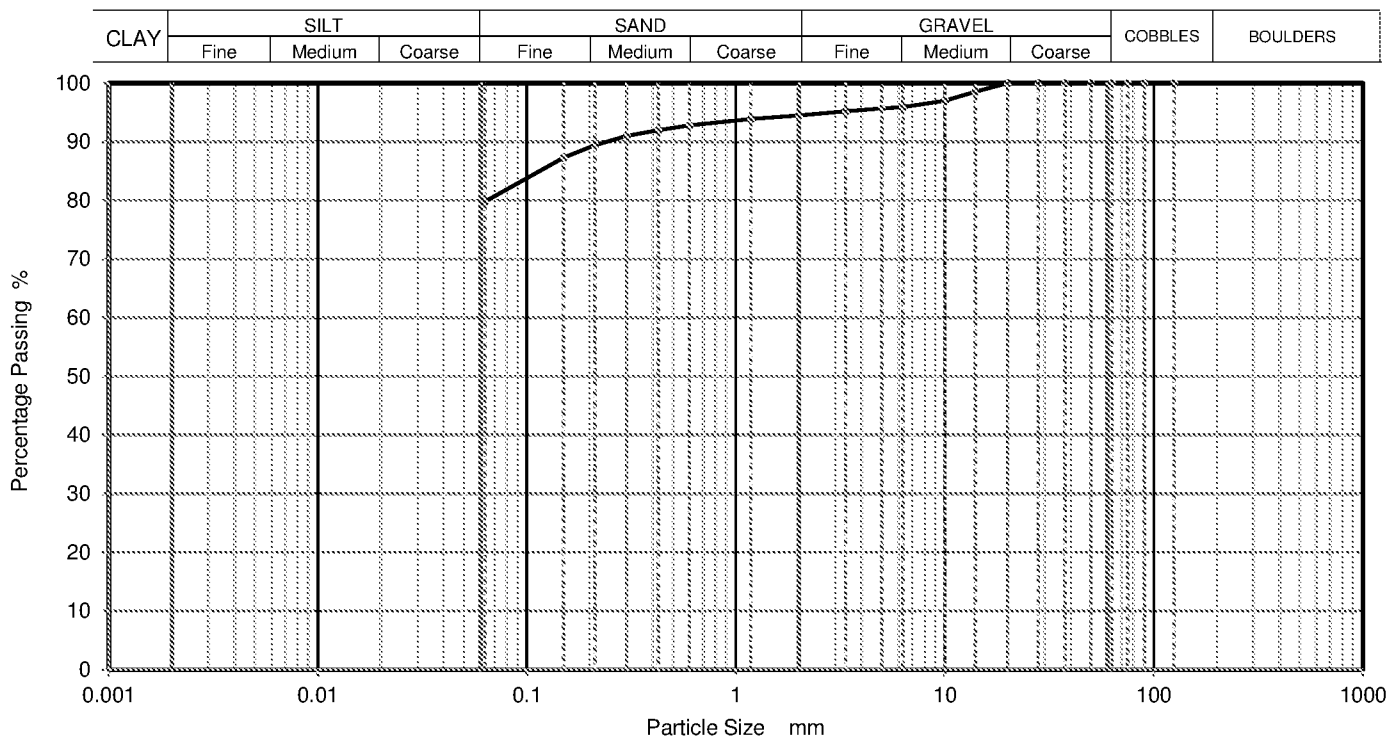
Samples received 08/09/2015

Schedules received 09/09/2015

Test Method BS1377:Part 2: 1990, clause 9.0

Project started 09/09/2015

Date tested 23/09/2015



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	97		
6.3	96		
5	96		
3.35	95		
2	95		
1.18	94		
0.6	93		
0.425	92		
0.3	91		
0.212	89		
0.15	87		
0.063	80		

Dry Mass of sample, g 171

Sample Proportions	% dry mass
Very coarse	0
Gravel	6
Sand	15
Fines <0.063mm	80

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below



K4 Soils Laboratory
Unit 8, Olds Close, Watford, Herts, WD18 9RU

Email: james@k4soils.com

Tel: 01923 711288

Checked and Approved

Initials: J.P

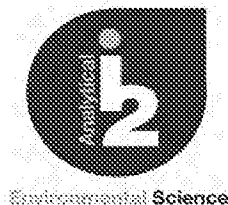
Date: 25/09/2015

MSF-5-R3 (Rev.0)

					Sulphate Content (Gravimetric Method) for 2:1 Soil: Water Extract and pH Value - Summary of Results Tested in accordance with BS1377 : Part 3 : 1990, clause 5.3 and clause 9						
Job No. 19472		Project Name Water Lane							Programme Samples received 08/09/2015 Schedule received 09/09/2015		
Project No. 19495		Client Idom Merebrook Ltd							Project started 09/09/2015 Testing Started 14/09/2015		
Hole No.	Sample				Soil description	Dry Mass passing 2mm %	SO3 Content g/l	SO4 Content g/l	pH	Remarks	
	Ref	Top	Base	Type							
TP101	1	2.50		B	Brown gravelly slightly sandy silty CLAY (gravel is fmc and sub-angular to sub-rounded)	40	0.20	0.24	7.80		
TP104	1	3.00		B	Brown, orange brown and pale grey CLAY	100	0.30	0.36	7.62		
TP110	1	2.70		B	Dark grey and orange brown CLAY with rare fmc gravel	98	0.99	1.19	7.16		
TP112	1	3.00		B	Orange brown and pale grey CLAY with sandy patches	100	0.23	0.28	7.30		
TP115	1	1.50		B	Pale grey and orange brown CLAY with sandy patches	100	0.25	0.30	7.65		
TP117	1	3.00		B	Orange brown and pale grey CLAY with sandy patches	100	0.29	0.34	7.50		
TP118	1	1.00		B	Brown and pale grey CLAY with sandy patches	100	0.30	0.37	7.92		
TP122	1	2.50		B	Brown CLAY with sandy patches and rare fm gravel	97	0.25	0.30	7.02		
TP124	1	3.00		B	Brown slightly gravelly slightly sandy CLAY (gravel is fm and sub-angular)	95	0.22	0.26	7.86		
										Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com	Checked and Approved Initials J.P Date: 25/09/2015
2519										Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)	MSF-5-R29 (Rev. 0)



APPENDIX 6 ▪ Groundwater Laboratory Certificates

**Siobhan Jackson**

Merebrook
Suite 2B
East Mill
Bridgefoot
Belper
Derbyshire
DE56 2UA

t: 01773 829988
f: 01773 829393
e: sjackson@merebrook.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 15-79934-A

Replaces Analytical Report Number : 15-79934, issue no. 1

Project / Site name:	Water Lane	Samples received on:	05/10/2015
Your job number:	19495	Samples instructed on:	05/10/2015
Your order number:	15-S2-FDO-LABS	Analysis completed by:	09/10/2015
Report Issue Number:	2	Report issued on:	03/08/2016
Samples Analysed:	1 water sample		

Signed:

Dr Claire Stone
Quality Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.



Analytical Report Number: 15-79934-A

Project / Site name: Water Lane

Your Order No: 15-S2-FDO-LABS

Lab Sample Number				492225				
Sample Reference				MWS118				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				01/10/2015				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	7.3				
Total Cyanide	µg/l	10	ISO 17025	< 10				
Sulphate as SO ₄	µg/l	45	ISO 17025	108000				
Sulphide	µg/l	5	NONE	< 5.0				
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	20.5				

Total Phenols

Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10				
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Speciated PAHs

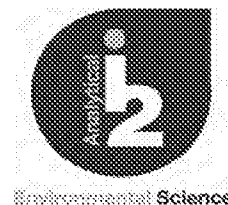
Naphthalene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01				
Fluorene	µg/l	0.01	ISO 17025	< 0.01				
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01				
Anthracene	µg/l	0.01	ISO 17025	< 0.01				
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Pyrene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Chrysene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01				
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01				
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01				

Total PAH

Total EPA-16 PAHs	µg/l	0.2	ISO 17025	< 0.20				
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Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	0.15	ISO 17025	9.79				
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.03				
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0				
Chromium (dissolved)	µg/l	0.2	ISO 17025	1.0				
Copper (dissolved)	µg/l	0.5	ISO 17025	4.3				
Lead (dissolved)	µg/l	0.2	ISO 17025	0.5				
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05				
Nickel (dissolved)	µg/l	0.5	ISO 17025	12				
Selenium (dissolved)	µg/l	0.6	ISO 17025	7.3				
Zinc (dissolved)	µg/l	0.5	ISO 17025	13				



Analytical Report Number: 15-79934-A

Project / Site name: Water Lane

Your Order No: 15-S2-FDO-LABS

Lab Sample Number				492225				
Sample Reference				MWS118				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				01/10/2015				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

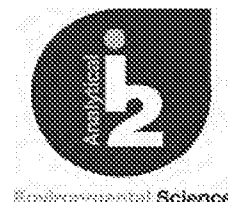
Benzene	µg/l	1	ISO 17025	< 1.0				
Toluene	µg/l	1	ISO 17025	< 1.0				
Ethylbenzene	µg/l	1	ISO 17025	< 1.0				
p & m-xylene	µg/l	1	ISO 17025	< 1.0				
o-xylene	µg/l	1	ISO 17025	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10				

TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10				

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 15-79934-A

Project / Site name: Water Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
pH in water	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L070-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Sulphide in water	Determination of sulphide in water by ion selective electrode.	In-house method	L029-PL	W	NONE
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample Deviation Report



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test name	test ref	Test Deviation code
MWS118		W	15-79934	492225	c	pH in water	L005-PL	c



APPENDIX 7

- Field Monitoring Records
- Groundwater Level Data
- Hazardous Soil Gas Data

GAS MONITORING RECORD



Location Reference	Time	Flow and Pressure Measurements				Gas Measurements						VOC Measurements		Dip Measurements		Comments	
		Flow		Atmospheric Pressure	Differential Pressure	Methane	Methane LEL	Carbon Dioxide	Oxygen	Carbon Monoxide	Hydrogen Sulphide	Hexane	PID	Depth to Water	Depth to Base		
		max	steady														
		l hr ⁻¹		mb	Pa	%	%	%	%	ppm	ppm	%	ppm	m	m		
MWS118	-	<0.1	<0.1	1018	0	<0.1	<0.1	5.6	15.6	-	nr	-	nr	nr	2.45	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
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Weather:		Technical difficulties with dip meter -unable to measure water levels. Weather - Dry with low wind.				nr = not recorded			Gas Analyser		PID		Site:			Water Lane, Angmering	
						Model:			GFM436		-		Project Number:			19495	
						Serial Number:			12228		-		Monitored By:			Troy Randall	
						Date of Last Calibration:			04/06/2015		-		Date:			10/09/2015	

GAS MONITORING RECORD



Location Reference	Time	Flow and Pressure Measurements				Gas Measurements						VOC Measurements		Dip Measurements		Comments
		Flow		Atmospheric Pressure	Differential Pressure	Methane	Methane LEL	Carbon Dioxide	Oxygen	Carbon Monoxide	Hydrogen Sulphide	Hexane	PID	Depth to Water	Depth to Base	
		max	steady													
		l hr ⁻¹		mb	Pa	%	%	%	%	ppm	ppm	%	ppm	m	m	
MWS118	12:30	0.7	0	984	0	0	0	4	15.8	0	0	0.012	nr	Dry	2.51	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather:		Overcast and Drizzle				nr = not recorded			Gas Analyser		PID		Site:		Water Lane, Angmering	
						Model:			GFM436		-		Project Number:		19495	
						Serial Number:			12228		-		Monitored By:		RLG	
						Date of Last Calibration:			04/06/2015		-		Date:		17/09/2015	

GAS MONITORING RECORD



Location Reference	Time	Flow and Pressure Measurements				Gas Measurements						VOC Measurements		Dip Measurements		Comments
		Flow		Atmospheric Pressure	Differential Pressure	Methane	Methane LEL	Carbon Dioxide	Oxygen	Carbon Monoxide	Hydrogen Sulphide	Hexane	PID	Depth to Water	Depth to Base	
		max	steady													
		l hr ⁻¹		mb	Pa	%	%	%	%	ppm	ppm	%	ppm	m	m	
MWS118	12:20	0	0	1027	0	0	0	7	13.6	0	0	0.014	nr	1.02	2.43	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather:		Warm Sunny				nr = not recorded			Gas Analyser		PID		Site:		Water Lane, Angmering	
						Model:			GFM436		-		Project Number:		19495	
						Serial Number:			12228		-		Monitored By:		RLG	
						Date of Last Calibration:			04/06/2015		-		Date:		02/10/2015	



APPENDIX 8 ▪ Gas Risk Assessment

MODIFIED WILSON AND CARD GAS CHARACTERISTIC SITUATION

SITE: Water Lane, Angmering

JOB NUMBER: 19495

19/10/2015

Carbon Dioxide			Methane		
Maximum Gas Concentration	7.00	%	Maximum Gas Concentration	0.10	%
Maximum Measured Steady Flow	0.10	L hr ⁻¹	Maximum Measured Peak Flow	0.70	L hr ⁻¹
Gas Screening Value	0.0070	L hr ⁻¹	Gas Screening value	0.0007	L hr ⁻¹
Characteristic Situation	1		Characteristic Situation	1	

carbon dioxide concentration greater than 5% consider Characteristic Situation 2

worst case carbon dioxide or methane characteristic situation value defines overall characteristic situation for the site

Modified Wilson and Card Classification

Typical Scope of Gas Protection Measures

Characteristic Situation	Risk Classification	Gas Screening Value Threshold (L hr ⁻¹)	Additional Factors	Typical Source of Generation	Number of Levels of Protection	Residential	Number of Levels of Protection	Office/Commercial/Industrial
						Typical Scope of Protective Measures		Typical Scope of Protective Measures
1	very low risk	<0.07	typically methane not to exceed 1% and/or carbon dioxide 5% otherwise consider increase to situation 2	natural soils with low organic content; 'typical' made ground	none	no special precautions	none	no special precautions
2	low risk	<0.7	borehole air flow rate not to exceed 70 L hr ⁻¹ otherwise consider increase to situation 3	natural soils with high peat/organic content; 'typical' made ground	2	a) reinforced concrete cast in situ floor slab (suspended, non suspended or raft) with at least 1200 g DPM and underfloor venting b) beam and block or pre-cast concrete and 2000 g DPM or reinforced gas membrane and underfloor venting all joints and penetrations sealed	1 to 2	a) reinforced concrete cast in situ floor slab (suspended, non suspended or raft) with at least 1200 g DPM b) beam and block or pre-cast concrete slab and minimum 2000 g DPM or reinforced gas membrane c) possibly underfloor venting or pressurisation in combination with a) and b) depending on use all joints and penetrations sealed
3	moderate risk	<3.5		old landfill, inert waste, mineworking flooded	2	all types of floor slab as above all joints and penetrations sealed, proprietary gas resistant membrane and passively ventilated or positively pressurised underfloor sub-space	1 to 2	all types of floor slab as above all joints and penetrations sealed; minimum 2000g/reinforced gas proof membrane and passively ventilated underfloor sub-space or positively pressurised underfloor sub-space
4	moderate to high risk	<15	quantitative risk assessment required to evaluate scope of protective measures	mineworking susceptible to flooding, completed landfill	3	all types of floor slab as above all joints and penetrations sealed, proprietary gas resistant membrane and passively ventilated underfloor sub-space or positively pressurised underfloor sub-space, oversite capping or blinding and in-ground venting layer	2 to 3	all types of floor slab as above all joints and penetrations sealed; proprietary gas resistant membrane and passively ventilated or positively pressurised underfloor sub-space with monitoring facility
5	high risk	<70		mineworking unflooded inactive with shallow workings near surface	4	reinforced concrete cast in situ floor slab (suspended, non-suspended or raft); all joints and penetrations sealed; proprietary gas resistant membrane and ventilated or positively pressurised underfloor sub-space, oversite capping and in-ground venting layer and in-ground venting wells or barriers	3 to 4	reinforced concrete cast in situ floor slab (suspended, non-suspended or raft); all joints and penetrations sealed; proprietary gas resistant membrane and passively ventilated or positively pressurised underfloor sub-space with monitoring facility; and in-ground venting wells or barriers
6	very high risk	>70		recent landfill site	5	not suitable unless gas regime is reduced first and quantitative risk assessment carried out to assess design of protection measures in conjunction with foundation design	4 to 5	reinforced concrete cast in situ floor slab (suspended, non-suspended or raft); all joints and penetrations sealed; proprietary gas resistant membrane and actively ventilated or positively pressurised underfloor sub-space with monitoring facility with monitoring; and in-ground venting wells and reduction of gas regime

NHBC TRAFFIC LIGHT GAS CHARACTERISTIC SITUATION

SITE: Water Lane, Angmering

JOB NUMBER: 19495

19/10/2015

Carbon Dioxide				Methane					
Maximum Gas Concentration	7.00	%	carbon dioxide concentration greater than 5% consider Amber 1	Maximum Gas Concentration	0.10	%			
Maximum Measured Steady Flow	0.10	L hr ⁻¹		Maximum Measured Peak Flow	0.70	L hr ⁻¹			
Gas Screening Value	0.007	L hr ⁻¹		Gas Screening Value	0.0007	L hr ⁻¹			
Characteristic Situation	Green			Characteristic Situation	Green				
worst case carbon dioxide or methane characteristic situation defines overall characteristic situation for the site									

NHBC Classification
Protection Measures

Characteristic Situation	Carbon Dioxide		Methane		Identified Gas Regime	Protection Measures Required
	Typical Maximum Concentration (%v/v)	Gas Screening Value (L hr ⁻¹)	Typical Maximum Concentration (%v/v)	Gas Screening Value (L hr ⁻¹)		
Green					negligible	Ground gas protection measures are not required
	5	0.78	1	0.16		
Amber 1					low to intermediate	Low-level ground gas protection measures are required, using a membrane and ventilated sub-floor void that creates a permeability contrast to limit the ingress of gas into buildings. Gas protection measures are to be installed as prescribed in BRE 414. Ventilation of the sub-floor void should be designed to provide a minimum of one complete volume change per 24 hours
	10	1.56	5	0.63		
Amber 2					intermediate to high	High-level ground gas protection measures are required, creating a permeability contrast to prevent ingress of gas into buildings. Gas protection measures are to be installed as prescribed in BRE 414. Membranes used should always be fitted by a specialist contractor and should be fully certified (see Appendix E). As with Amber 1, ventilation of the sub-floor void should be designed to provide a minimum of one complete volume change per 24 hours.
	30	3.10	20	1.56		
Red					high	Standard residential housing is not normally acceptable without further Ground Gas Risk Assessment and/or possible remedial mitigation measures to reduce/remove the source of the ground gases. In certain circumstances, active protection methods could be applied, but only when there is a legal agreement assuring the management and maintenance of the system for the life of the property.



APPENDIX 9 ▪ Soakage Test Results

**DETERMINATION OF SOIL INFILTRATION RATE IN
ACCORDANCE WITH BRE DIGEST 365**

GENERAL INFORMATION					
Site Name:	Water Lane, Angmering			Job No:	19495
Engineer:	Troy Randall	Date:	08/09/2015	Weather:	Dry

TEST PIT DETAILS							
Trial Pit Number:	SA103		Test 1 of 1				
Length (m):	1.9	Width (m):	0.6	Depth (m):	2.1		
Depth to Groundwater (m):	N/A						
Time Filling Commenced:			Time Filling Completed:				
Depth to Water at Start of Test:	0.4						
Effective Depths:	75%:	0.83	50%:	1.25	25%:	1.68	

NOTE: Soakage to at least 25% effective depth is required in order to calculate infiltration rate. If infiltration rates are slow extrapolation maybe required to determine time at which 25% effective depth would be achieved.

[illegible]

DETERMINATION OF SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365

GENERAL INFORMATION

Site Name:	Water Lane, Angmering				Job No:	19495
Engineer:	Troy Randall	Date:	08/09/2015	Weather:	Dry	

TEST PIT DETAILS

Trial Pit Number:		SA104		Test 1 of 2					
Length (m):		2.2	Width (m):		0.5		Depth (m):		1.9
Depth to Groundwater (m):			N/A						
Time Filling Commenced:					Time Filling Completed:				
Depth to Water at Start of Test:			0.42						
Effective Depths:			75%:		0.79	50%:	1.16	25%:	1.53

NOTE: Soakage to at least 25% effective depth is required in order to calculate infiltration rate. If infiltration rates are slow extrapolation maybe required to determine time at which 25% effective depth would be achieved.

TEST PIT RESULTS

[illegible]

DETERMINATION OF SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365

GENERAL INFORMATION

Site Name:	Water Lane, Angmering			Job No:	19495
Engineer:	Troy Randall	Date:	8/9/2015	Weather:	Dry

TEST PIT DETAILS

Trial Pit Number:		SA104		Test 2 of 2			
Length (m):		2.2	Width (m):		0.5	Depth (m): 1.9	
Depth to Groundwater (m):		N/A					
Time Filling Commenced:				Time Filling Completed:			
Depth to Water at Start of Test:		0.42					
Effective Depths:		75%:		0.79	50%:	1.16	25%: 1.53

NOTE: Soakage to at least 25% effective depth is required in order to calculate infiltration rate. If infiltration rates are slow extrapolation maybe required to determine time at which 25% effective depth would be achieved.

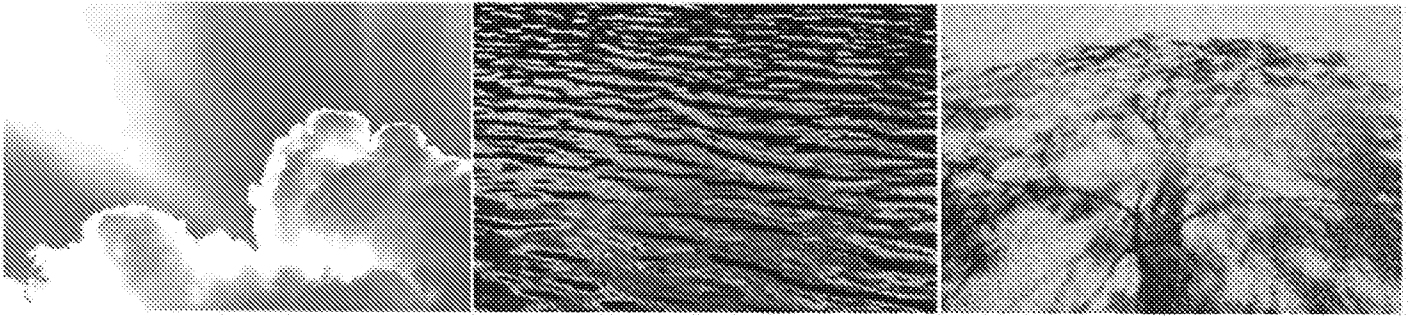
TEST PIT RESULTS

[illegible]



APPENDIX 10 ■ Soakage Test Assessment – Southern Testing (2014)

Soakage Test Report



Desk Studies | Risk Assessments | Site Investigations | Geotechnical | Contamination Investigations | Remediation Design and Validation

Site: Weavers Hill, Angmering

Client: Rydon Homes Ltd.

Report Date: 04th June 2014

Project Reference: P0791

Southern Testing Head Office
East Grinstead

ST Consult Midlands
Northampton

ST Consult North West
Warrington

ST Consult South West
Swindon



ET/20036

EN/1500705

EN/1500706

B FIELDWORK

5 General Site Description

The site comprises a broadly rectangular agricultural field, currently used as grazing. The site is relatively flat and level, although there is a steep rise up from Weaver's Hill into the site about 1.5m high. The site is bounded to the south by the gardens of adjacent properties in Weaver's Hill and The Avenals, to the north by agricultural fields, to the east by a riding stables and garden to a substantial house and to the west by the road Weaver's Hill.

6 Geology

The British Geological Survey Map for the area indicates that the site geology consists of Head or River Terrace over Chalk. The River Terrace is indicated over the eastern part of the site, with the Head shown over the western part.

7 Soils as Found

The soils encountered are described in detail in the attached exploratory hole logs (Appendix A), but in general comprised a covering of topsoil over gravelly clay becoming chalk and flint gravels in a clayey or silty matrix. A summary is given below.

Depth	Thickness	Soil Type	Description
0.3-0.55m	0.3-0.55m	Topsoil	
0.3/0.55 to 0.7/0.9m	0.4-0.6m	Clay	Firm, gravelly CLAY
2.8/3.0m	2.0/2.4m+	Gravel	Generally chalk and flint gravel, locally silty and clayey

8 Soakage Test Method

Soakage Tests after BRE365 (1991)

The BRE365 paper on soakaway design allows for the design of trench soakaways as well as traditional square and circular soakaways.

The test to measure the soil infiltration rate is carried out in pits which are excavated to the full depth of the proposed soakaway. The trial pits are filled and allowed to drain to empty or near empty, three times, on the same day or on consecutive days.

The pit is considered full when the water level is the same as the proposed inlet invert. The time for the water level to fall from $\frac{3}{4}$ full to $\frac{1}{4}$ full is obtained and the soil infiltration rate is obtained from the following formula:

TP5	3.0	11.86	2.0×10^{-4}	2 nd Filling
TP5	3.0	9.39	1.57×10^{-4}	3 rd Filling
TP6	3.0	9.36	1.56×10^{-4}	1 st Filling
TP6	3.0	7.45	1.24×10^{-4}	2 nd Filling
TP6	3.0	6.41	1.07×10^{-4}	3 rd Filling

These results indicate good soakage capacity over the majority of the site but do show some variation, with the better results coming from the pits excavated in the east of the site. The design rate is a matter for the drainage engineer, however, based on the provisional layout provided (see Fig 1) the following rates could be considered:

Plots 1-5 (area 1) – 0.6 l/m²/min (1×10^{-5} m/s) – (TP1)

Plots 6-23 (area 2) – 15 l/m²/min (2.5×10^{-4} m/s) – (TP's 2, 3 and 5)

Plots 24-27 (area 3) – 3 l/m²/min (5×10^{-5} m/s) – (TP6)

These rates are based on the average rate achieved in each area with a factor of safety of 2 applied.

As with all soakaways situated on chalk strata, sufficient distance should be provided from buildings and other settlement sensitive structures. A distance of 10m should be provided. Where this is not possible, some increased risk of structural damage must be accepted in the event of collapse settlement of solution features etc.