



Geo-Environmental

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

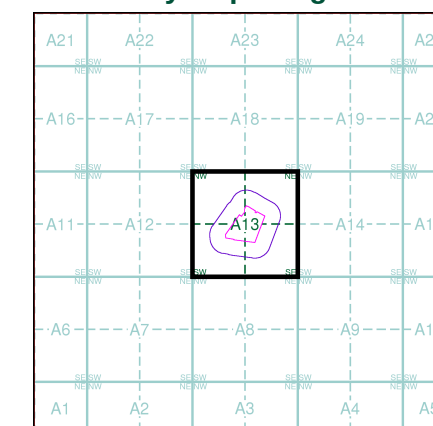
Geological

- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Site Sensitivity Map - Segment A13



Order Details

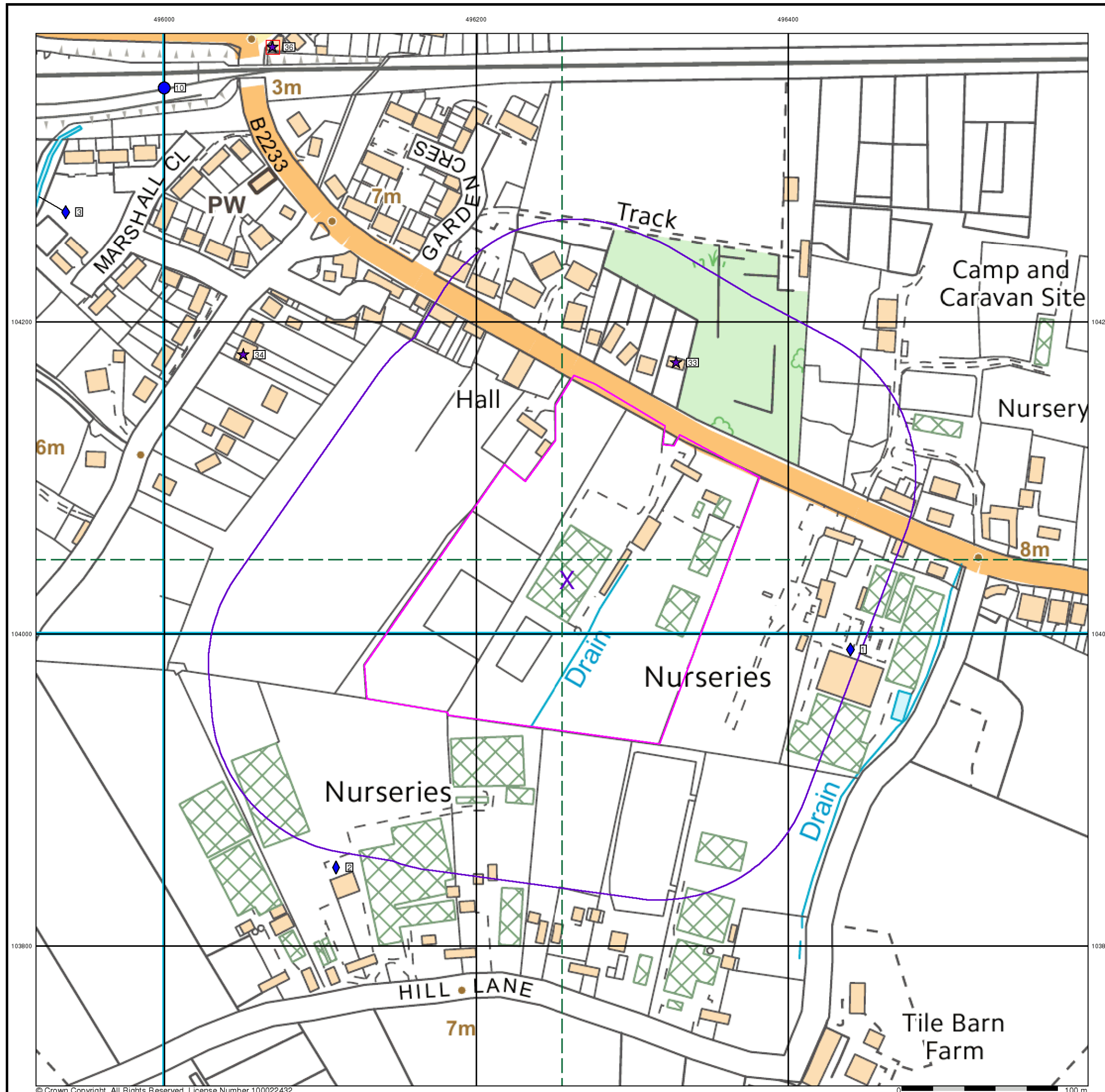
Order Number: 70253525_1_1
Customer Ref: GE10423
National Grid Reference: 496260, 104030
Slice: A
Site Area (Ha): 3.5

Site Details

Angels Nursery, Yapton Road, Barnham, BOGNOR REGIS,
West Sussex, PO22 0AY



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk





General

- Specified Site
 Specified Buffer(s)
 Bearing Reference Point
 Map ID

Agency and Hydrological

- | | | | |
|---|--|---|--|
|  | Contaminated Land Register Entry or Notice (Location) |  | BGS Recorded Landfill Site (Location) |
|  | Contaminated Land Register Entry or Notice |  | BGS Recorded Landfill Site |
|  | Discharge Consent |  | EA Historic Landfill (Buffered Point) |
|  | Enforcement or Prohibition Notice |  | EA Historic Landfill (Polygon) |
|  | Integrated Pollution Control |  | Integrated Pollution Control Registered Waste Site |
|  | Integrated Pollution Prevention Control |  | Licensed Waste Management Facility (Landfill Boundary) |
|  | Local Authority Recorded Pollution Prevention and Control |  | Licensed Waste Management Facility (Location) |
|  | Local Authority Pollution Prevention and Control |  | Local Authority Recorded Landfill Site (Location) |
|  | Local Authority Pollution Prevention and Control Enforcement |  | Local Authority Recorded Landfill Site |
|  | Pollution Incident to Controlled Waters |  | Registered Landfill Site |
|  | Prosecution Relating to Authorised Processes |  | Registered Landfill Site (Location) |
|  | Prosecution Relating to Controlled Waters |  | Registered Landfill Site (Point Buffered to 100m) |
|  | Registered Radioactive Substance |  | Registered Landfill Site (Point Buffered to 250m) |
|  | River Network or Water Feature |  | Registered Waste Transfer Site (Location) |
|  | River Quality Sampling Point |  | Registered Waste Transfer Site |
|  | Substantiated Pollution Incident Register |  | Registered Waste Treatment or Disposal Site (Location) |
|  | Water Abstraction |  | Registered Waste Treatment or Disposal Site |
|  | Water Industry Act Referral | | |

Waste

-  BGS Recorded Landfill Site (Location)
-  BGS Recorded Landfill Site
-  EA Historic Landfill (Buffered Point)
-  EA Historic Landfill (Polygon)
-  Integrated Pollution Control Registered Waste Site
-  Licensed Waste Management Facility (Landfill Boundary)
-  Licensed Waste Management Facility (Location)
-  Local Authority Recorded Landfill Site (Location)
-  Local Authority Recorded Landfill Site
-  Registered Landfill Site
-  Registered Landfill Site (Location)
-  Registered Landfill Site (Point Buffered to 100m)
-  Registered Landfill Site (Point Buffered to 250m)
-  Registered Waste Transfer Site (Location)
-  Registered Waste Transfer Site
-  Registered Waste Treatment or Disposal Site (Location)
-  Registered Waste Treatment or Disposal Site

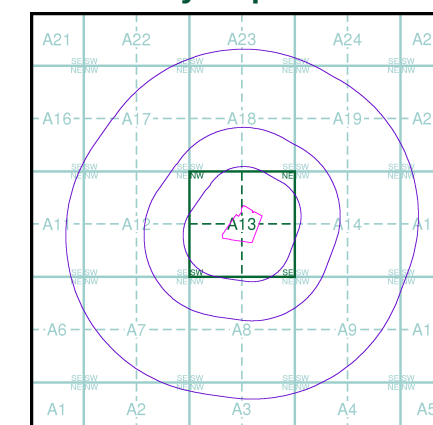
Geological

- BGS Recorded Mineral Site

Industrial Land Use

- ★ Contemporary Trade Directory Entry
- ★ Fuel Station Entry
- ✖ Planning Hazardous Substance Consent
- ✖ Planning Hazardous Substance Enforcement

Site Sensitivity Map - Slice A



Order Details

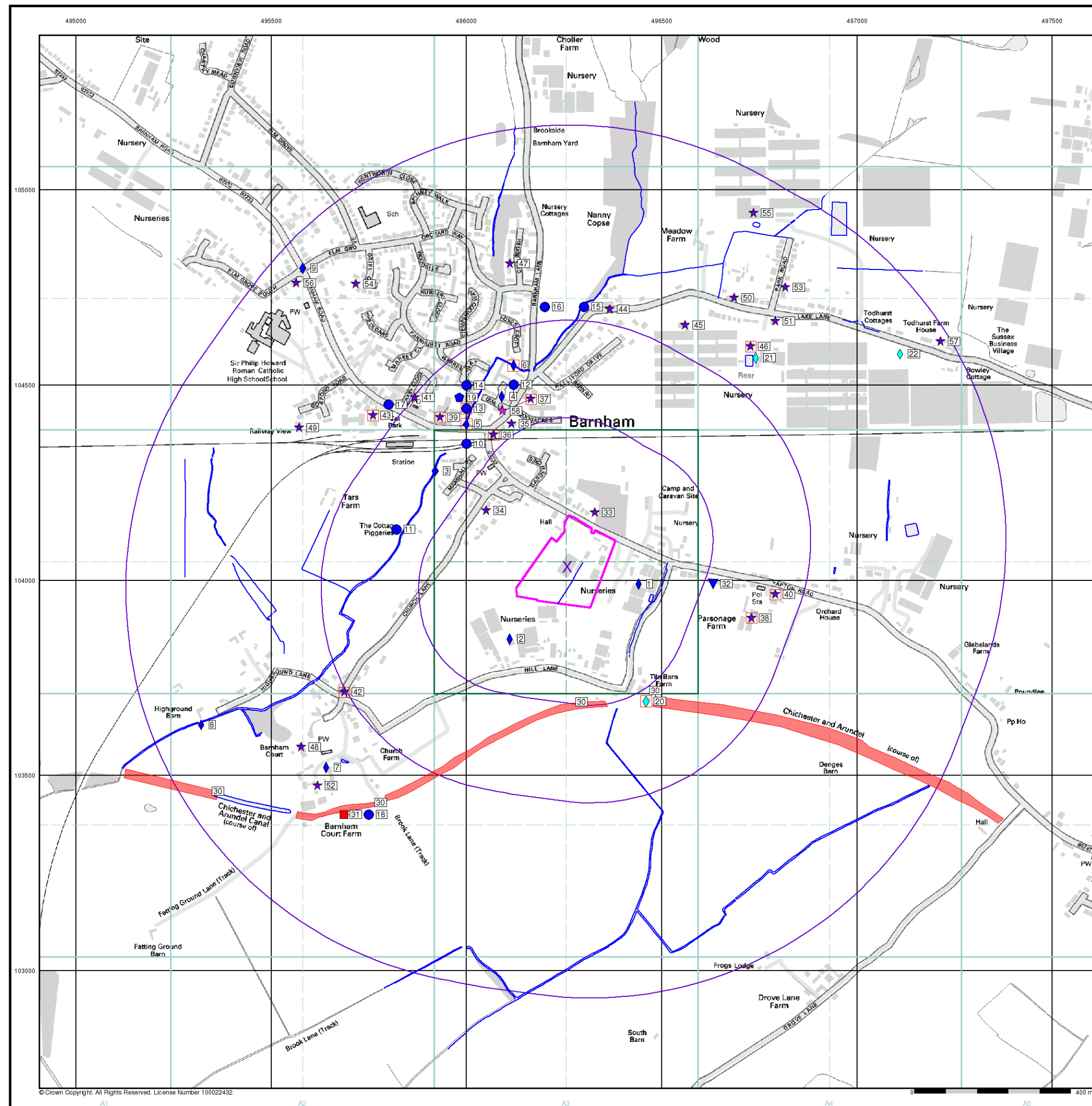
Order Number:	70253525_1_1
Customer Ref:	GE10423
National Grid Reference:	496260, 104030
Slice:	A
Site Area (Ha):	3.5
Search Buffer (m):	1000

Site Details

Angels Nursery, Yapton Road, Barnham, BOGNOR REGIS,
West Sussex, PO22 0AY



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Geo-Environmental

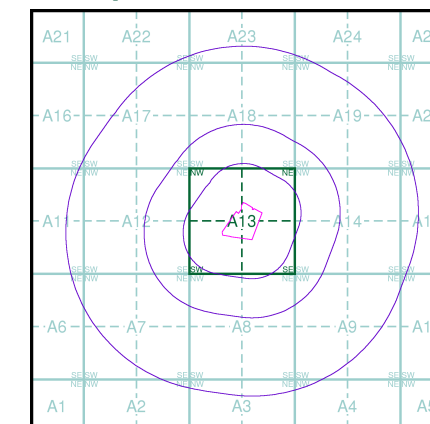
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A



Order Details

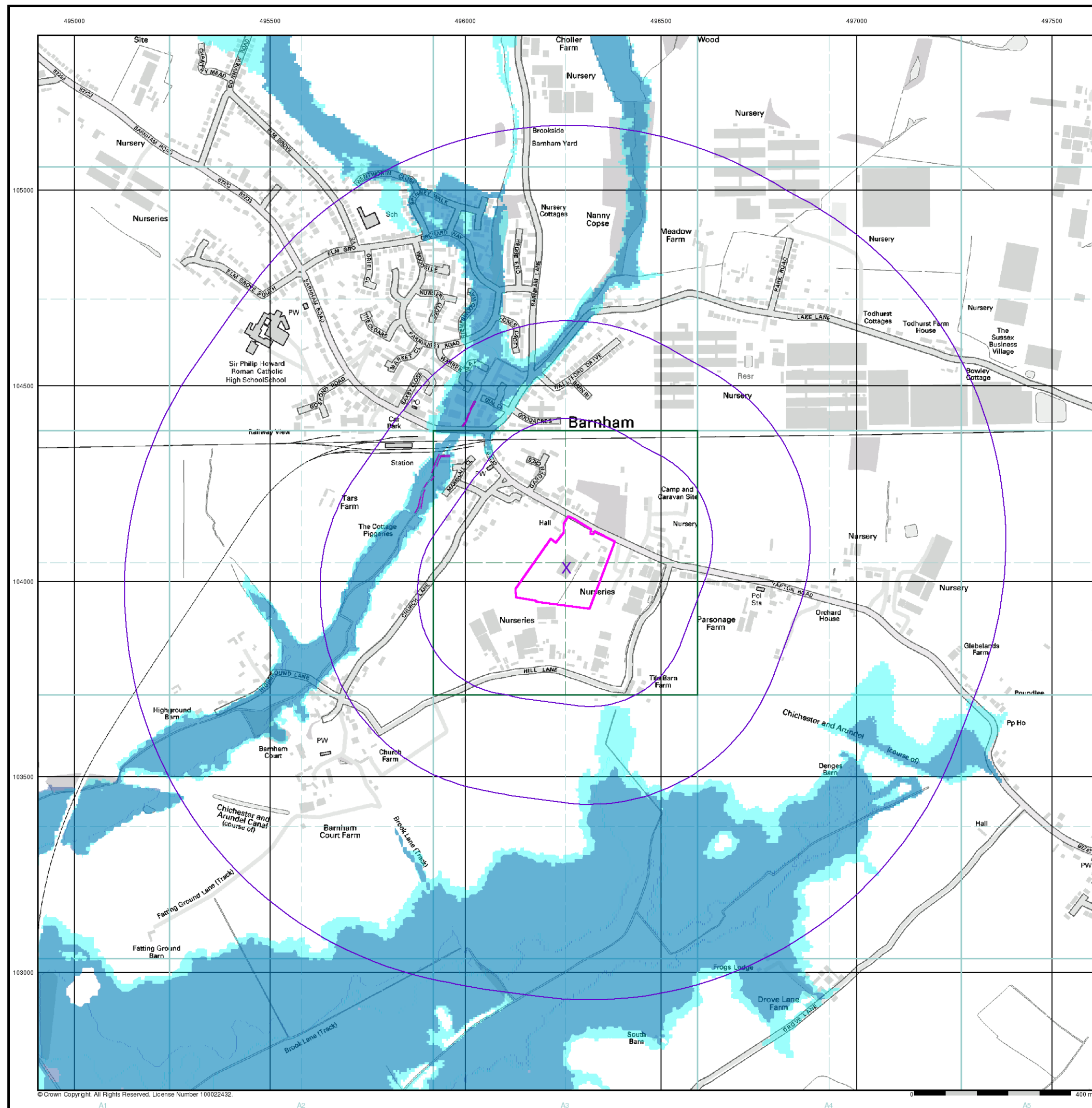
Order Number: 70253525_1_1
Customer Ref: GE10423
National Grid Reference: 496260, 104030
Slice: A
Site Area (Ha): 3.5
Search Buffer (m): 1000

Site Details

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General

- Specified Site
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- Bearing Reference Point
- Map ID
- Several of Type at Location

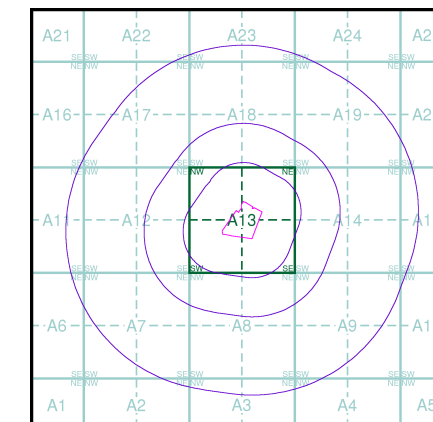
Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice A



Order Details

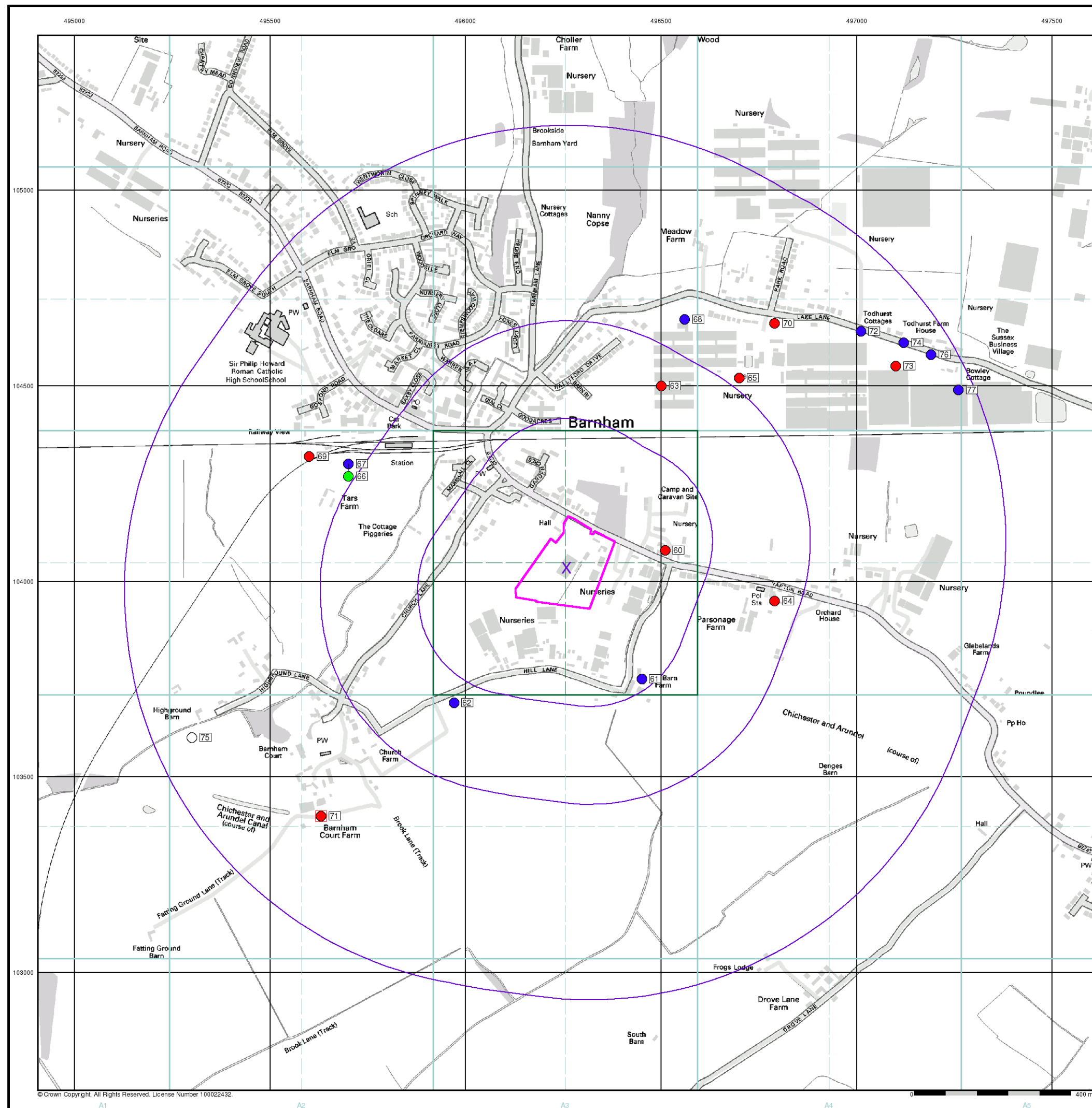
Order Number: 70253525_1_1
Customer Ref: GE10423
National Grid Reference: 496260, 104030
Slice: A
Site Area (Ha): 3.5
Search Buffer (m): 1000

Site Details

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Geo-Environmental

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID

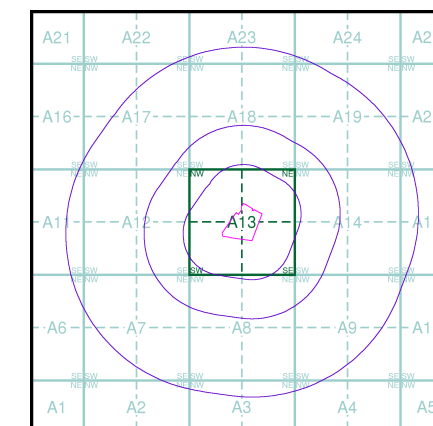
Detailed River Network Data

- | | |
|--------------------------|-------------------------------------|
| Primary River | Extended Culvert (greater than 50m) |
| Secondary River | Underground River (inferred) |
| Tertiary River | Underground River (local knowledge) |
| Canal | Downstream of High Water Mark |
| Canal Tunnel | Downstream of Seaward Extension |
| Undefined River | Not assigned River feature |
| Lake/Reservoir | |
| Offline Drainage Feature | |

Contours (height in metres)

- Standard Contour 105 100 95
- Master Contour
- Spot Height 167.3
- MLW Mean Low Water
- MHW Mean High Water

EAN/RW Detailed River Network Map - Slice A



Order Details

Order Number: 70253525_1_1
Customer Ref: GE10423
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Slice: A
Site Area (Ha): 3.5
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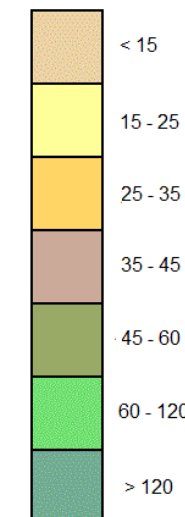
Geo-Environmental

General

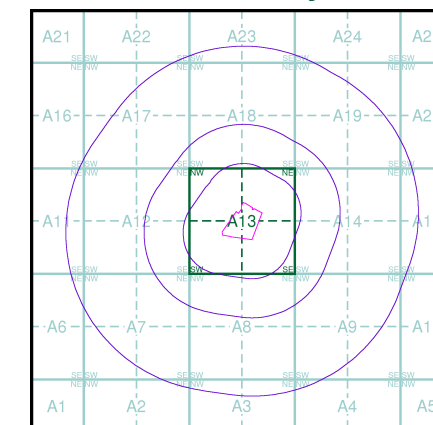
Specified Site Specified Buffer(s) Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg



Estimated Soil Chemistry Arsenic - Slice A



Order Details

Order Details: 70253525_1_1
Customer Ref: GE10423
National Grid Reference: 496260, 104030
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Site Area (Ha): 3.5
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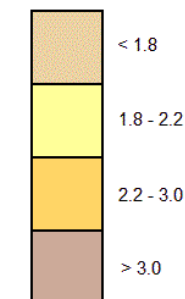
Geo-Environmental

General

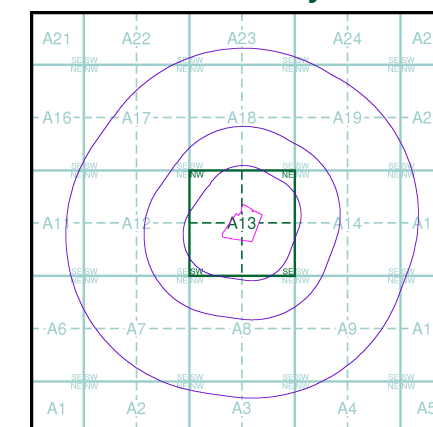
Specified Site Specified Buffer(s) Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg



Estimated Soil Chemistry Cadmium - Slice A



Order Details

Order Details: 70253525_1_1
Customer Ref: GE10423
National Grid Reference: 496260, 104030
Slice: A
Site Area (Ha): 3.5
Search Buffer (m): 1000

Site Details

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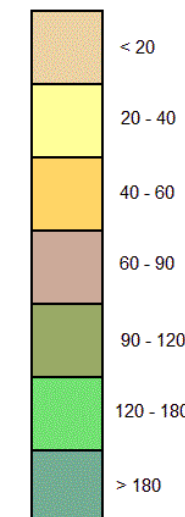
Geo-Environmental

General

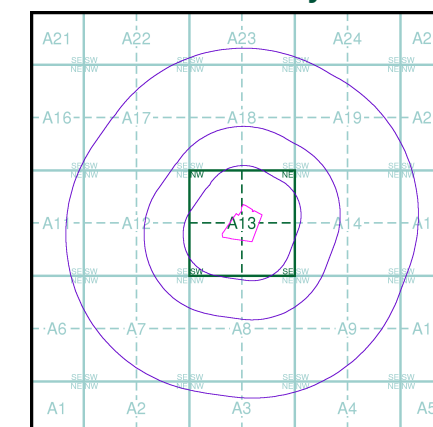
Specified Site Specified Buffer(s) Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg



Estimated Soil Chemistry Chromium - Slice A



Order Details

Order Details: 70253525_1_1
Customer Ref: GE10423
National Grid Reference: 496260, 104030
Slice: A
Site Area (Ha): 3.5
Search Buffer (m): 1000

Site Details

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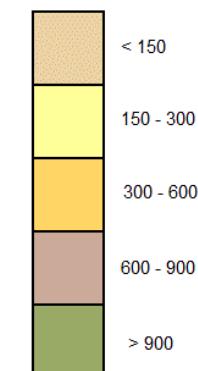
Geo-Environmental

General

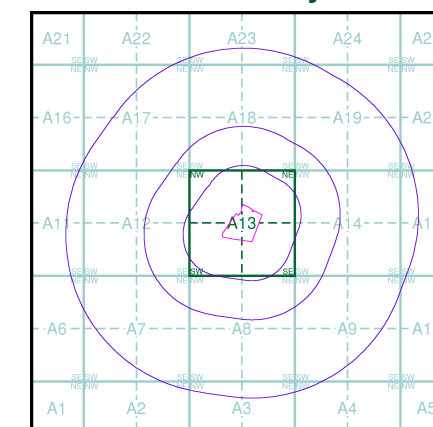
Specified Site Specified Buffer(s) Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg



Estimated Soil Chemistry Lead - Slice A



Order Details

Order Details: 70253525_1_1
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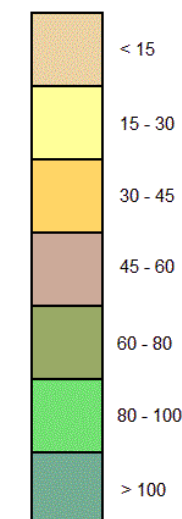
Geo-Environmental

General

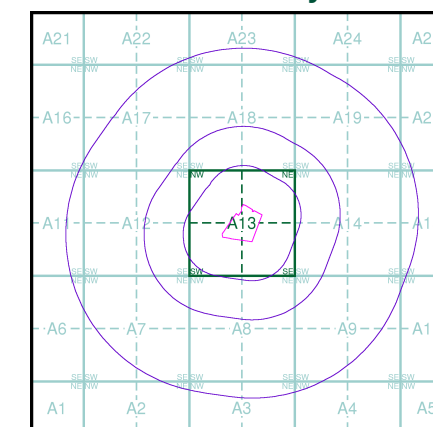
Specified Site Specified Buffer(s) Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg



Estimated Soil Chemistry Nickel - Slice A



Order Details

Order Details: 70253525_1_1
Customer Ref: GE10423
National Grid Reference: 496260, 104030
Slice: A
Site Area (Ha): 3.5
Search Buffer (m): 1000

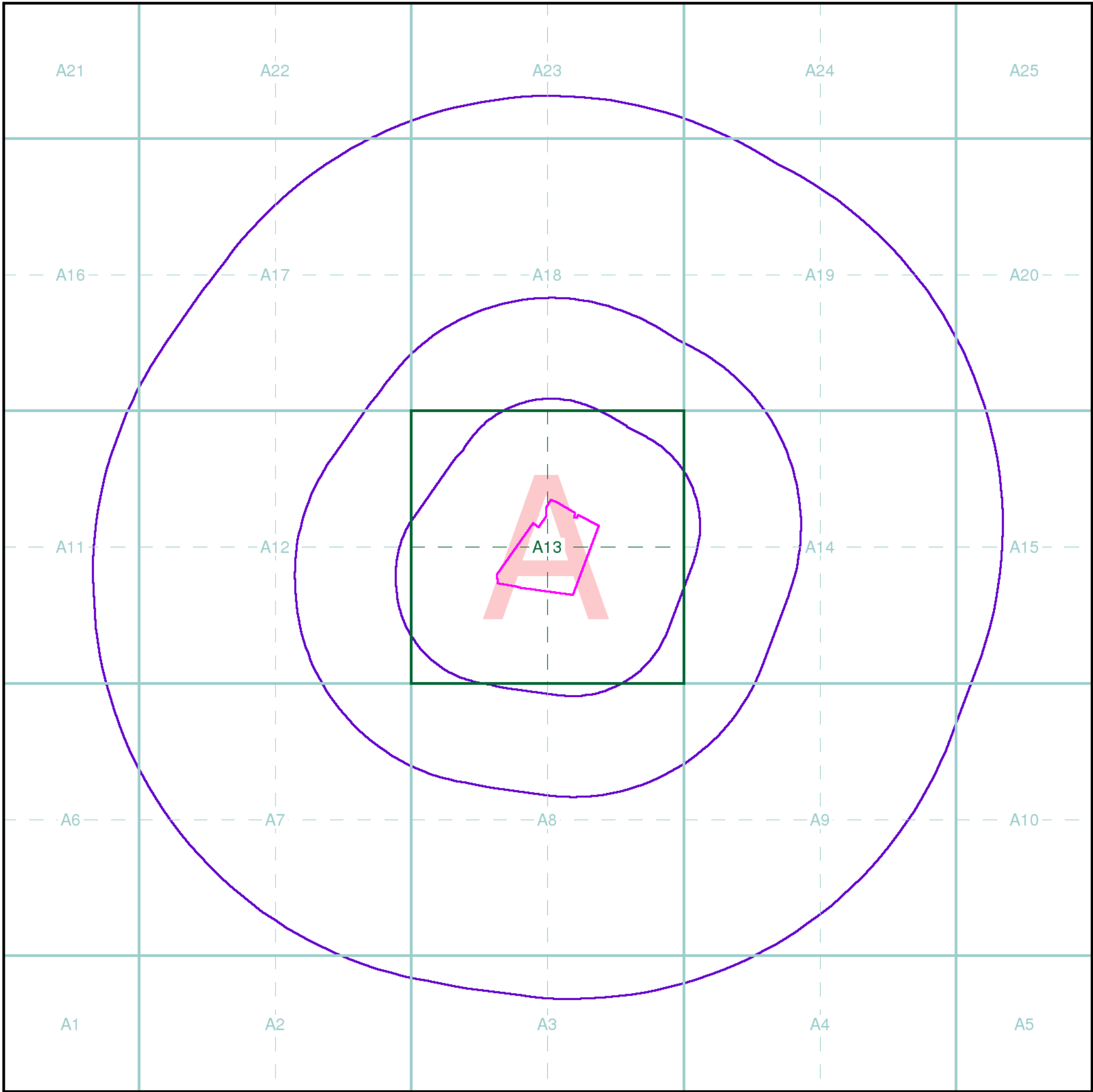
Site Details

Angels Nursery, Yapton Road, Barnham, BOGNOR REGIS,
West Sussex, PO22 0AY



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Geo-Environmental Index Map

For ease of identification, your site and buffer have been split into Slices, Segments and Quadrants. These are illustrated on the Index Map opposite and explained further below.

Slice
Each slice represents a 1:10,000 plot area (2.7km x 2.7km) for your site and buffer. A large site and buffer may be made up of several slices (represented by a red outline), that are referenced by letters of the alphabet, starting from the bottom left corner of the slice "grid". This grid does not relate to National Grid lines but is designed to give best fit over the site and buffer.

Segment
A segment represents a 1:2,500 plot area. Segments that have plot files associated with them are shown in dark green, others in light blue. These are numbered from the bottom left hand corner within each slice.

Quadrant
A quadrant is a quarter of a segment. These are labelled as NW, NE, SW, SE and are referenced in the datasheet to allow features to be quickly located on plots. Therefore a feature that has a quadrant reference of A7NW will be in Slice A, Segment 7 and the NW Quadrant.

A selection of organisations who provide data within this report:



Envirocheck reports are compiled from 136 different sources of data.

Client Details

Ms J Oak, Geo Environmental Services Ltd, Unit 7
Danworth Farm, Cuckfield Road, Hurstpierpoint, West
Sussex, BN6 9GL

Order Details

Order Number: 70253525_1_1
Customer Ref: GE10423
National Grid Reference: 496260, 104030
Site Area (Ha): 3.5
Search Buffer (m): 1000

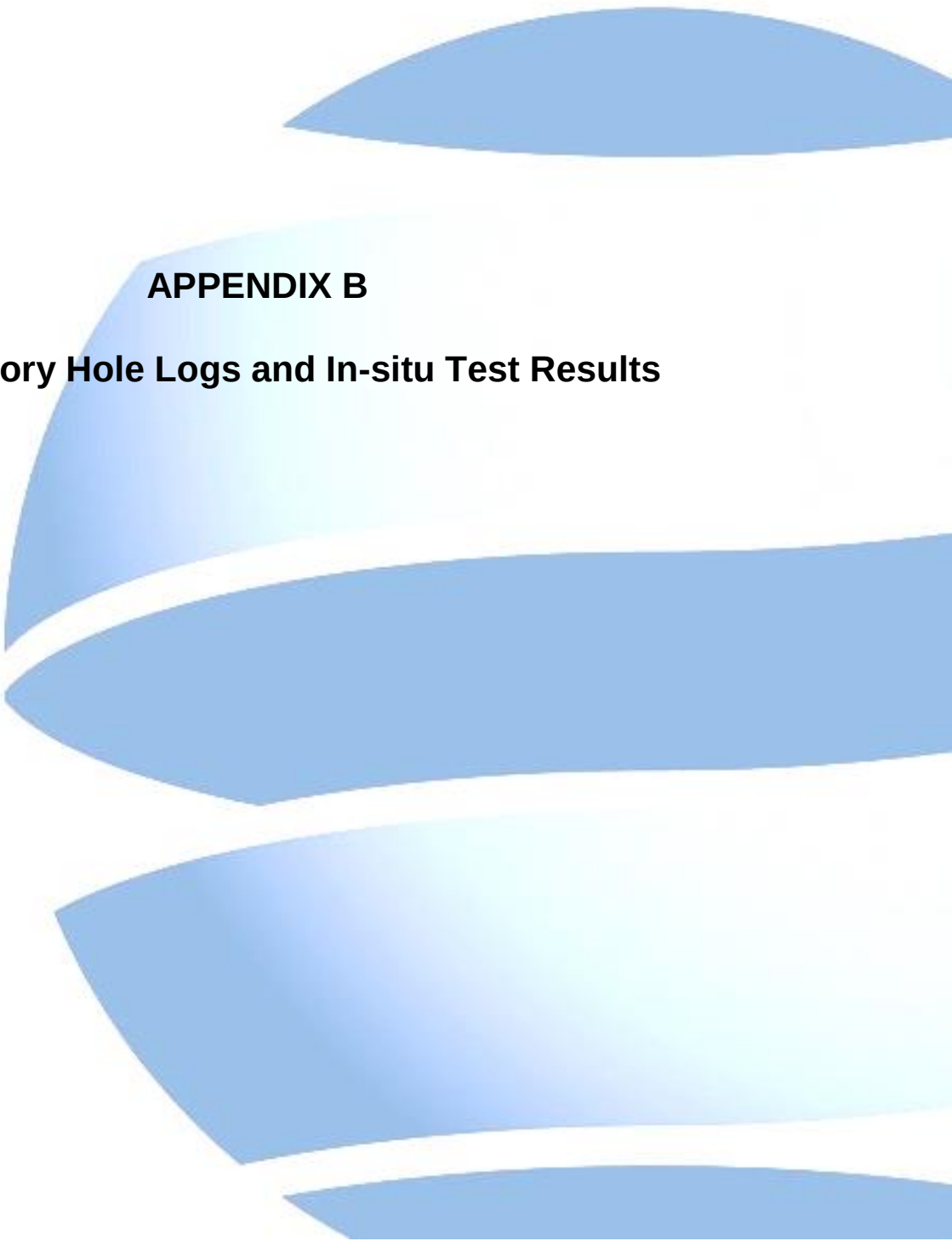
Site Details

Angels Nursery, Yapton Road, Barnham, BOGNOR REGIS,
West Sussex, PO22 0AY

Full Terms and Conditions can be found on the following link:
<http://www.landmarkinfo.co.uk/Terms/Show/515>



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APPENDIX B

Exploratory Hole Logs and In-situ Test Results



Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environmental www.gesl.net

Trial Pit Log

Trial Pit No

TP1

Sheet 1 of 1

Project Name: Angels Nursery, Barnham

Project No.
GE10423

Co-ords: 496302.03 - 103942.95
Level: 9.10

Date
22/06/2015

Location: Yapton Road, Barnham, West Sussex, PO22 0AY

Dimensions
(m):



Scale
1:25

Client: Lovell Partnerships Ltd

Depth
3.00

Logged
JO

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES		0.25	8.85		Grass overlying soft black silty sandy clay with frequent roots (<3mm) and rare medium, sub-angular to angular flint gravel. TOPSOIL	
	0.50 0.50 0.50	D ES PP	PP=1.75kg/cm2				Firm to stiff reddish brown to brown sandy CLAY with frequent fine to medium gravel, rare ferruginous inclusions and rare roots (<1mm) down to 1.0m bgl. Gravel is sub-angular to sub-rounded flint. RIVER TERRACE DEPOSITS	1
	1.00 1.00	D PP	PP=2.5kg/cm2					
	1.50 1.50	D PP	PP=2kg/cm2					
	2.00	D		1.90	7.20		Light brown silty medium SAND with rare coarse gravel. Gravel is rounded flint. RIVER TERRACE DEPOSITS	2
	2.50	D						
	3.00	D		3.00	6.10		End of Pit at 3.00m	3
								4
								5
Water Strike		Remarks		Water strike at 2.85m bgl. Collapsing from 1.90m bgl. Backfilled with arisings.				
Depth Strike		Stability		Unstable from 1.90m bgl.				





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environmental www.gesl.net

Trial Pit Log

Trial Pit No

TP2

Sheet 1 of 1

Project Name: Angels Nursery, Barnham

Project No.
GE10423

Co-ords: 496154.56 - 103967.74
Level: 8.70

Date
22/06/2015

Location: Yapton Road, Barnham, West Sussex, PO22 0AY

Dimensions
(m):



Scale
1:25

Client: Lovell Partnerships Ltd

Depth
3.00

Logged
JO

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES		0.30	8.40		Grass overlying soft light brown sandy silty clay with frequent roots (<1mm). TOPSOIL	
	0.50 0.50	D PP	PP=1.5kg/cm2				Firm orangish brown to light brown sandy CLAY with rare fine to medium gravel and occasional roots (<1mm) down to 1.1m bgl. Gravel is sub-rounded to rounded flint. RIVER TERRACE DEPOSITS	
	1.00 1.00	D PP	PP=1.25kg/cm2					1
	1.50 1.50	D PP	PP=1.25kg/cm2	1.80	6.90			
	2.00	D					Light brown silty medium SAND with frequent ferruginous inclusions. RIVER TERRACE DEPOSITS	2
	2.50	D						
	3.00	D		3.00	5.70		End of Pit at 3.00m	3
								4
								5
Water Strike		Remarks		Water strike at 2.90m bgl. Collapsing from 1.80m bgl. Backfilled with arisings.				
Depth Strike		Stability		Unstable from 1.80m bgl.				





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environmental www.gesl.net

Trial Pit Log

Trial Pit No

TP3

Sheet 1 of 1

Project Name: Angels Nursery, Barnham

Project No.
GE10423

Co-ords: 496189.38 - 104026.05
Level: 9.30

Date
22/06/2015

Location: Yapton Road, Barnham, West Sussex, PO22 0AY

Dimensions
(m):



Scale
1:25

Client: Lovell Partnerships Ltd

Depth
3.00

Logged
JO

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES		0.30	9.00		Grass overlying soft brown silty sandy clay with frequent roots (<2mm). TOPSOIL	
	0.50 0.50	D PP	PP=1.5kg/cm2				Firm brown to reddish brown sandy silty CLAY with occasional fine to coarse gravel and ferruginous inclusions. Gravel is sub-angular to angular flint. RIVER TERRACE DEPOSITS	1
	1.00 1.00	D PP	PP=1.5kg/cm2					
	1.50 1.50	D PP	PP=1.25kg/cm2	1.70	7.60		Light brown silty medium SAND with occasional ferruginous staining. RIVER TERRACE DEPOSITS	2
	2.00	D						
	2.50	D						
	3.00	D		3.00	6.30		End of Pit at 3.00m	3
								4
								5
Water Strike		Remarks		Water strike at 2.95m bgl. Collapsing from 1.70m bgl. Backfilled with arisings.				
Depth Strike		Stability		Unstable from 1.70m bgl.				



Trial Pit Log

Project Name: Angels Nursery, Barnham

Project No.	GE10423
-------------	---------

Co-ords: 496224.61 - 104062.88
Level: 9.40

Date
22/06/2015

Location: Yapton Road, Barnham, West Sussex, PO22 0AY

Dimensions (m):

Scale
1:25

Client: Lovell Partnerships Ltd

Depth
2.60

Logged
JO

[illegible]



Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environmental www.gesl.net

Trial Pit Log

Trial Pit No
TP5
Sheet 1 of 1

Project Name: Angels Nursery, Barnham

Project No.
GE10423

Co-ords: 496294.33 - 104001.98
Level: 8.90

Date
22/06/2015

Location: Yapton Road, Barnham, West Sussex, PO22 0AY

Dimensions
(m):



Scale
1:25

Client: Lovell Partnerships Ltd

Depth
3.00

Logged
JO

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES		0.30	8.60		Grass overlying soft black silty sandy clay with frequent roots (<3mm) and rare medium, sub-angular to angular flint gravel. TOPSOIL	
	0.50 0.50 0.50	D ES PP	PP=2.5kg/cm2				Firm brown silty sandy CLAY with occasional roots (<1mm). RIVER TERRACE DEPOSITS	
	1.00 1.00	D PP	PP=3.25kg/cm2	0.95	7.95		Firm to stiff reddish brown sandy slightly silty CLAY with occasional fine to medium gravel and rare ferruginous inclusions. Gravel is sub-angular to sub-rounded flint. RIVER TERRACE DEPOSITS	1
	1.50	D		1.40	7.50		Orangish brown becoming light brown clayey medium SAND. RIVER TERRACE DEPOSITS	
	2.00	D						2
	2.50	D						
	3.00	D		3.00	5.90		End of Pit at 3.00m	3
								4
								5
Water Strike		Remarks		Water strike at 2.85m bgl. Collapsing from 1.40m bgl. Backfilled with arisings.				
Depth Strike		Stability		Unstable from 1.40m bgl.				





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environmental www.gesl.net

Trial Pit Log

Trial Pit No
TP6
Sheet 1 of 1

Project Name: Angels Nursery, Barnham

Project No.
GE10423

Co-ords: 496308.20 - 104120.59
Level: 9.00

Date
22/06/2015

Location: Yapton Road, Barnham, West Sussex, PO22 0AY

Dimensions
(m):



Scale
1:25

Client: Lovell Partnerships Ltd

Depth
2.70

Logged
JO

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES					Grass overlying firm brown sandy clay with frequent roots (<3mm), brick, concrete and cast iron fragments, rare nails and pockets of black clay with decaying roots. MADE GROUND	
	0.50 0.50	ES PP	PP=0.5kg/cm2					
	1.00 1.00	D PP	PP=1.5kg/cm2	0.95	8.05		Firm orangish brown very sandy CLAY with frequent fine to medium gravel. Gravel is sub-angular to sub-rounded flint. RIVER TERRACE DEPOSITS	1
	1.50	D		1.30	7.70		Orangish brown to reddish clayey gravelly medium SAND with rare fine to medium gravel. Sub-angular to sub-rounded flint. RIVER TERRACE DEPOSITS	
	2.00	D		1.70	7.30		Orangish brown occasionally grey mottled medium to coarse SAND with rare coarse gravel. Gravel is rounded flint. RIVER TERRACE DEPOSITS	2
	2.50	D						
				2.70	6.30		End of Pit at 2.70m	3
								4
								5
Water Strike		Remarks		Water strike at 2.70m bgl. Collapsing from 1.30m bgl. Backfilled with arisings.				
Depth Strike		Stability		Unstable from 1.30m bgl.				





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environmental www.gesl.net

Trial Pit Log

Trial Pit No

TP7

Sheet 1 of 1

Project Name: Angels Nursery, Barnham

Project No.
GE10423

Co-ords: 496269.93 - 104146.26
Level: 8.90

Date
22/06/2015

Location: Yapton Road, Barnham, West Sussex, PO22 0AY

Dimensions
(m):



Scale
1:25

Client: Lovell Partnerships Ltd

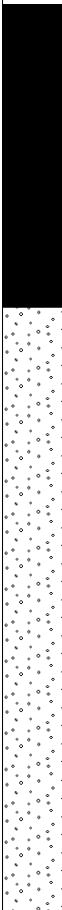
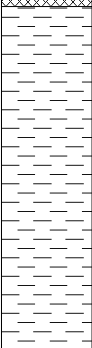
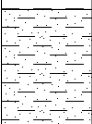
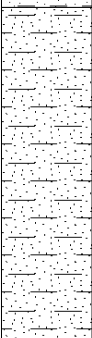
Depth
2.80

Logged
JO

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES					Dark brown sandy clay with frequent roots (<3mm). TOPSOIL	
	0.50 0.50 0.50	D ES PP	PP=2.5kg/cm2	0.45	8.45		Firm orangish brown light brown mottled sandy CLAY. RIVER TERRACE DEPOSITS	
	1.00 1.00	D PP	PP=2kg/cm2	0.90	8.00		Firm orangish brown very sandy CLAY with frequent fine gravel and frequent ferruginous inclusions. Gravel is sub-angular to sub-rounded flint. RIVER TERRACE DEPOSITS	1
	1.50	D		1.40	7.50		Reddish brown clayey gravelly medium SAND with rare fine to coarse gravel. Gravel is sub-rounded to rounded flint. RIVER TERRACE DEPOSITS	
	2.00	D		1.80	7.10		Brown occasionally light brown mottled medium to coarse SAND. RIVER TERRACE DEPOSITS	2
	2.50	D						
	2.80	D		2.80	6.10		End of Pit at 2.80m	3
								4
								5
Water Strike		Remarks		Water strike at 2.65m bgl. Collapsing from 1.40m bgl. Backfilled with arisings.				
Depth Strike		Stability		Unstable from 1.40m bgl.				



 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS1	
Project Name: Angels Nursery, Barnham		Project No. GE10423		Co-ords: 496219E - 103959N		Hole Type WS	
Location: Yapton Road, Barnham, West Sussex, PO22 0AY				Level: 9.20		Scale 1:25	
Client: Lovell Partnerships Ltd				Dates: 22/06/2015		Logged By AB	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.30	8.90	 Soft brown silty sandy clay with rare brick fragments, occasional roots (<1mm) and rare fine to medium, sub-angular flint gravel. MADE GROUND	1	
	0.50 0.50	ES PP	4.0kg/cm2	 Firm orangish brown CLAY with occasional becoming rare fine gravel. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS					
	1.00 1.00	D PP	2.0kg/cm2						
	1.50 1.50	D PP	2.0kg/cm2	1.50	7.70	 Firm orangish brown sandy CLAY with occasional fine to medium gravel. Gravel is sub-angular flint, sand is medium grained. RIVER TERRACE DEPOSITS			
	2.00	D		1.90	7.30	 Brown silty fine SAND. RIVER TERRACE DEPOSITS	2		
	2.50	D							
		3.00	D		3.00	6.20	End of Borehole at 3.00m	3	
								4	
								5	

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		2.00	2.00				

Water strike at 2.0m bgl. Standpipe installed to 3.0m bgl. No recovery between 3.0m bgl and 4.0m bgl due to collapsing sand.

Borehole Log

Borehole No.

WS2

Sheet 1 of 1

Project Name: Angels Nursery, Barnham

Project No.	GE10423
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Co-ords: 496253E - 104013N

Hole Type	WS
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Location: Yapton Road, Barnham, West Sussex, PO22 0AY

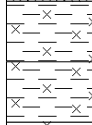
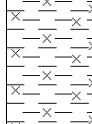
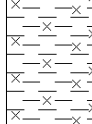
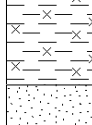
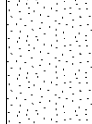
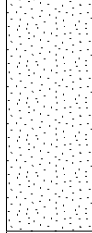
Level: 9.30

Scale
1:25

Client: Lovell Partnerships Ltd

Dates: 22/06/2015

Logged By
AB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	ES		0.20	9.10		Light brown clayey silt with frequent roots (<1mm) and occasional medium, sub-angular flint gravel. TOPSOIL
		0.50	ES		0.40	8.90		Light grey brown slightly sandy CLAY with occasional roots (<1mm), glass fragments, occasional medium gravel and decaying roots. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS
					0.60	8.70		Dark to light brown slightly sandy CLAY. RIVER TERRACE DEPOSITS
		1.00	D					Brown to orangish brown slightly sandy CLAY with occasional ferruginous inclusions. RIVER TERRACE DEPOSITS
		1.50	D					
		2.00	D					Light yellowish brown to brown silty medium to fine SAND. RIVER TERRACE DEPOSITS
		2.50	D					
		3.00	D		3.00	6.30		
								End of Borehole at 3.00m
Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks		
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to			
		2.40	0.00			Water strike at 2.4m bgl. No recovery between 3.0m bgl and 4.0m bgl due to collapsing sand. Collapsed to 2.34m bgl.		



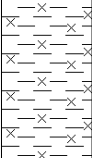
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS4 Sheet 1 of 1	
Project Name: Angels Nursery, Barnham		Project No. GE10423		Co-ords: 496288E - 104067N		Hole Type WS	
Location: Yapton Road, Barnham, West Sussex, PO22 0AY				Level: 9.30		Scale 1:25	
Client: Lovell Partnerships Ltd				Dates: 22/06/2015		Logged By AB	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.20	ES		0.25	9.05		Light greyish brown slightly sandy CLAY with frequent roots (<1mm) and occasional fine to medium, sub-angular flint gravel. TOPSOIL		
		0.50	PP	2.5kg/cm2					Light greyish brown sandy CLAY with occasional fine to medium gravel and carbonaceous inclusions. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS	
		1.00	D		1.00	8.30			Light grey and orangish brown slightly sandy CLAY with rare fine gravel and occasional carbonaceous inclusions. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS	1
		1.00	ES	1.0kg/cm2						
		1.00	PP							
		1.50	D							
		1.50	PP	2.0kg/cm2						
		2.00	D		2.00	7.30			Brown medium to coarse SAND with occasional fine gravel. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS	2
		2.00	PP	2.0kg/cm2	2.15	7.15			Brown slightly clayey silty fine SAND. RIVER TERRACE DEPOSITS	
		2.50	D							
	3.00	D		3.00	6.30			End of Borehole at 3.00m	3	
									4	
									5	

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
		2.00	2.00			Water strike at 2.0m bgl. Standpipe installed to 3.0m bgl. No recovery between 3.0m bgl and 4.0m bgl due to collapsing sand.



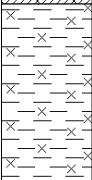
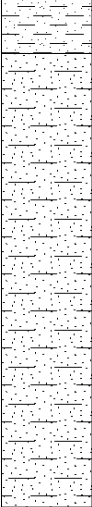
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS5 Sheet 1 of 1	
Project Name: Angels Nursery, Barnham		Project No. GE10423		Co-ords: 496331E - 104038N		Hole Type WS	
Location: Yapton Road, Barnham, West Sussex, PO22 0AY				Level: 8.70		Scale 1:25	
Client: Lovell Partnerships Ltd				Dates: 22/06/2015		Logged By AB	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES	3.0kg/cm2	0.25	8.45	 Dark brown clayey silt with frequent roots (<2mm) with occasional glass fragments, carbonaceous inclusions and medium, sub-angular to angular flint gravel. MADE GROUND		
		0.50 0.50	ES PP		0.45	8.25	 Light greyish brown slightly clayey silt with occasional fine gravel. Gravel is angular flint. RIVER TERRACE DEPOSITS		
		1.00 1.00	D PP	2.0kg/cm2	1.00 1.10	7.70 7.60	 Greyish brown to orange brown slightly sandy CLAY with rare cobbles (60mm) of flint. RIVER TERRACE DEPOSITS		
		1.50	D				 Light greyish brown clayey medium to coarse SAND with occasional fine gravel. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS		
		2.00	D				 Brown slightly clayey medium SAND. RIVER TERRACE DEPOSITS		
		2.50	D		2.30	6.40	 Orangish brown occasionally reddish thinly bedded medium SAND. RIVER TERRACE DEPOSITS		
		3.00	D		3.00	5.70			
							End of Borehole at 3.00m		

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
		2.00	2.00			Water strike at 2.0m bgl. No recovery between 3.0m bgl and 4.0m bgl due to collapsing sand. Collapsed to 2.0m bgl.



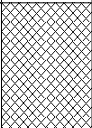
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS6 Sheet 1 of 1	
Project Name: Angels Nursery, Barnham		Project No. GE10423		Co-ords: 496254E - 104100N		Hole Type WS	
Location: Yapton Road, Barnham, West Sussex, PO22 0AY				Level: 9.10		Scale 1:25	
Client: Lovell Partnerships Ltd				Dates: 22/06/2015		Logged By AB	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES				Soft brown to greyish brown slightly sandy CLAY with occasional roots (<1mm), carbonaceous inclusions and fine sub-angular flint gravel. TOPSOIL		
		0.50 0.50	ES PP	1.5kg/cm2	0.50	8.60		Soft greyish brown to brown slightly sandy CLAY with frequent fine gravel. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS	
		1.00 1.00	D PP	1.5kg/cm2	1.10	8.00		Soft yellowing brown to orange-brown sandy CLAY with rare fine gravel. Gravel is sub-angular flint, sand is fine-grained. RIVER TERRACE DEPOSITS	
		1.20	PP	4.5kg/cm2					
		1.50	D		1.50	7.60		Brown slightly clayey medium to fine SAND. RIVER TERRACE DEPOSITS	
		2.00	D						
	2.50	D							
		3.00	D		3.00	6.10	End of Borehole at 3.00m		

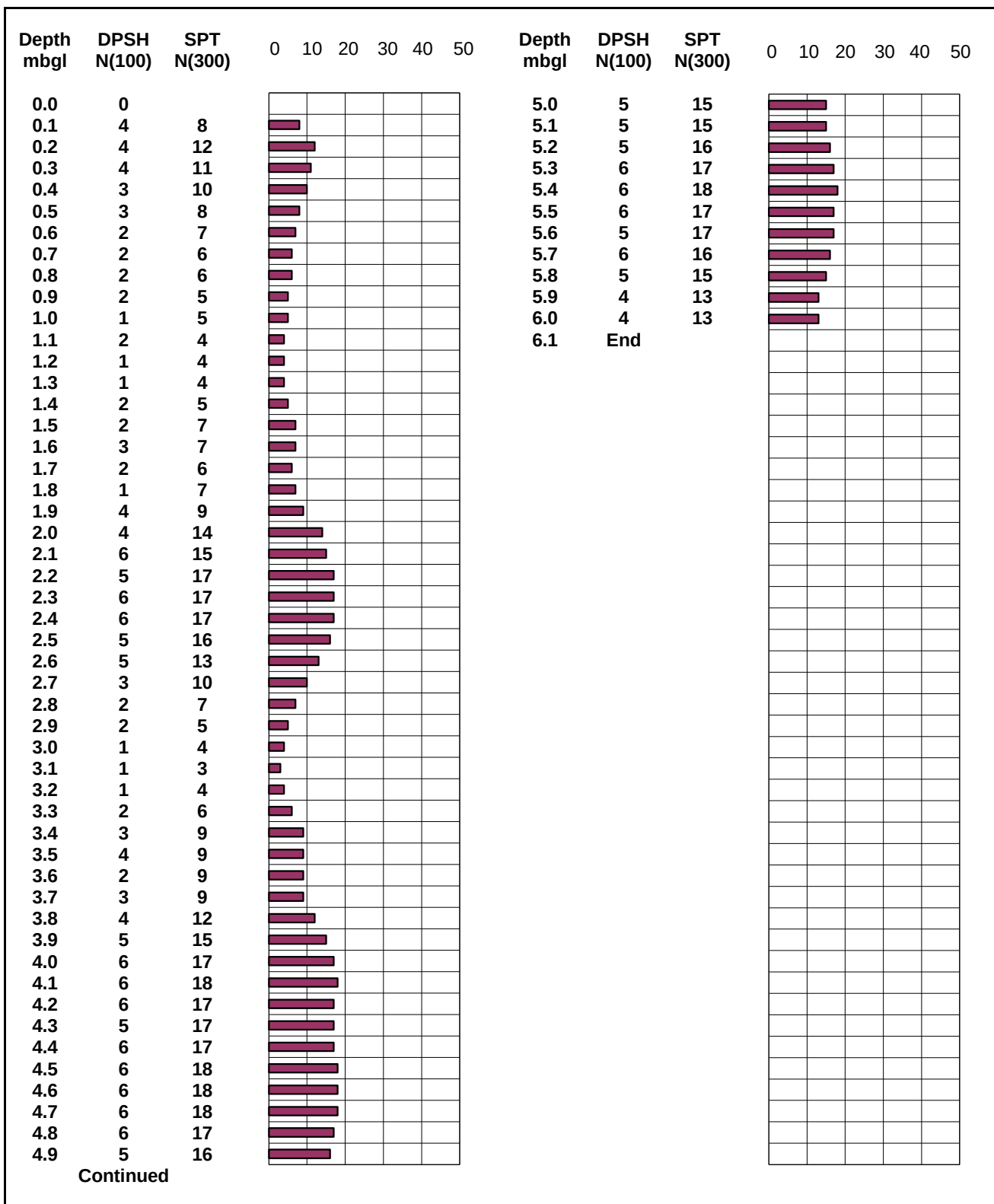
Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
		2.00	2.00			Water strike at 2.0m bgl. No recovery between 3.0m bgl and 4.0m bgl due to collapsing sand.



 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS7 Sheet 1 of 1	
Project Name: Angels Nursery, Barnham		Project No. GE10423		Co-ords: 496366E - 104089N		Hole Type WS	
Location: Yapton Road, Barnham, West Sussex, PO22 0AY				Level: 8.40		Scale 1:25	
Client: Lovell Partnerships Ltd				Dates: 22/06/2015		Logged By AB	

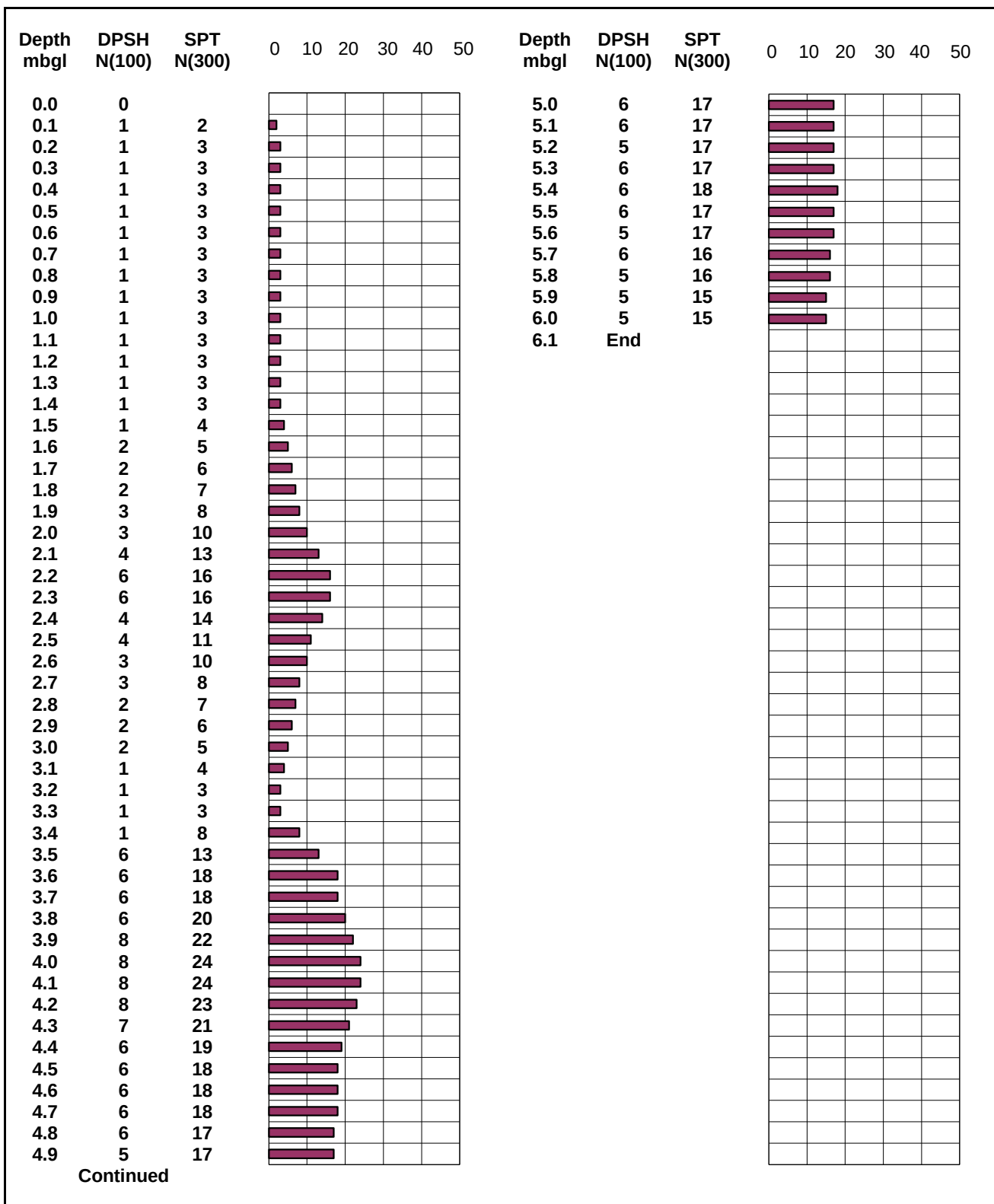
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES	4.5kg/cm2			 Brown slightly clayey silt with occasional roots (<1mm), carbonaceous inclusions, brick fragments and fine, sub-angular flint gravel. MADE GROUND		
		0.50	ES		0.45	7.95	 Orangish brown slightly sandy CLAY with occasional roots (<2mm).		
	0.50	PP	0.60		7.80	 RIVER TERRACE DEPOSITS			
				0.85	7.55	 Light grey and orangish brown sandy CLAY with occasional fine gravel. Gravel is sub-angular flint, sand is medium to coarse-grained. RIVER TERRACE DEPOSITS			
		1.00	D			 Orangish brown slightly clayey silty fine SAND. RIVER TERRACE DEPOSITS	1		
		1.50	D						
		2.00	D					2	
		2.50	D						
		3.00	D		2.80	5.60	 Brown silty medium to fine SAND with frequent fine gravel. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS		
					3.00	5.40	End of Borehole at 3.00m	3	
								4	
								5	

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		2.00	2.00			Water strike at 2.0m bgl. Standpipe installed to 2.0m bgl. No recovery between 3.0m bgl and 4.0m bgl due to collapsing sand. Collapsed to 2.0m bgl.	



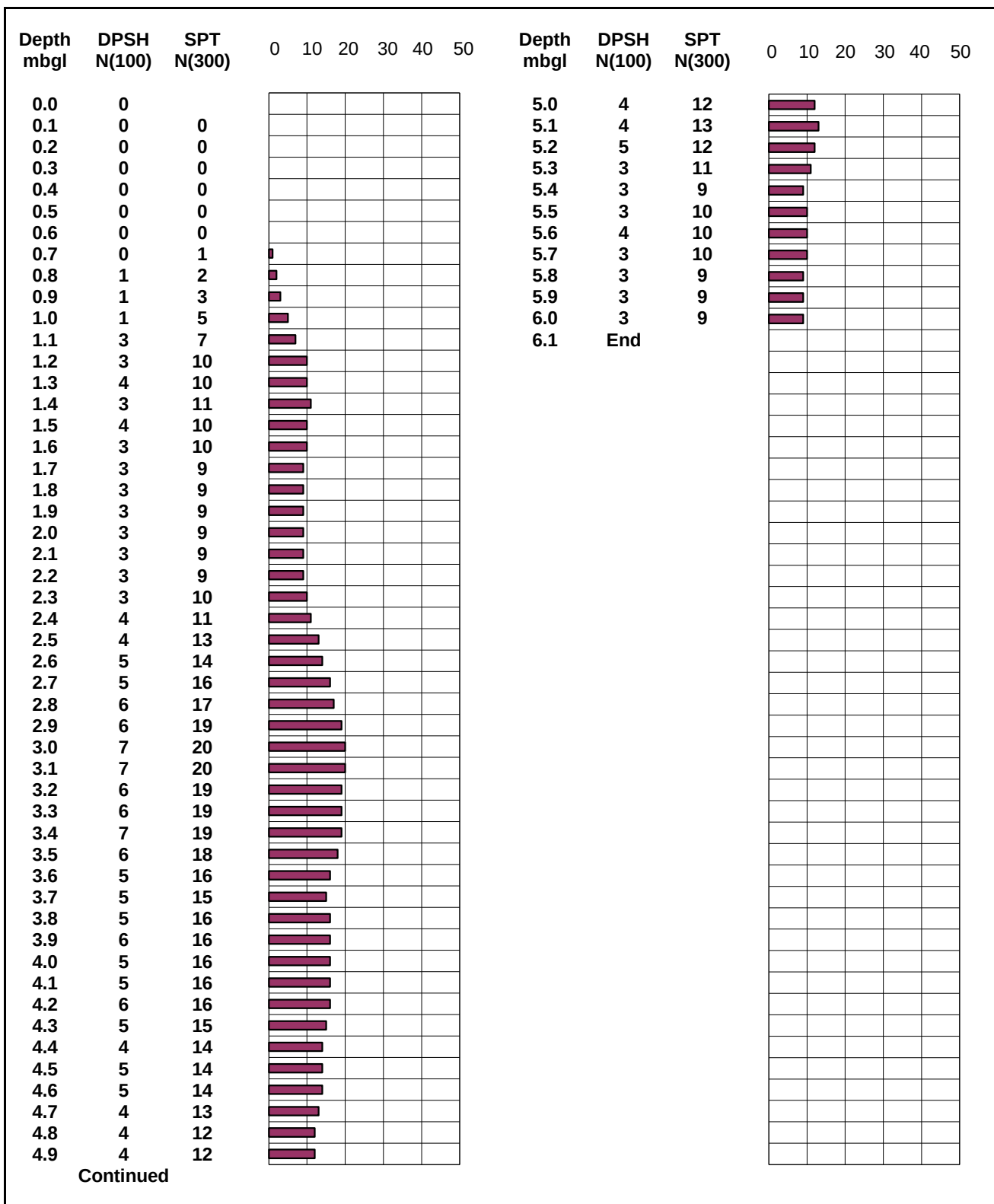
Note: DPSH'N' and SPT'N' directly correlate. SPT'N'(300) calculated as sum of DPSH'N' over 300mm

Project:	Angels Nursery, Barnham			Title:	DYNAMIC PROBE LOG DP1
Client:	Lovell Partnerships Ltd			Geo-Environmental Services Ltd Unit 7, Danworth Farm, Cuckfield Road, Hurstpierpoint, West Sussex, BN6 9GL E: mail@gesl.net T: 01273 832972	
Ref No:	GE10423	Rev:	V1		
Drawn:	JO	Date:			
Figure:	n/a	Scale:	Not To Scale		



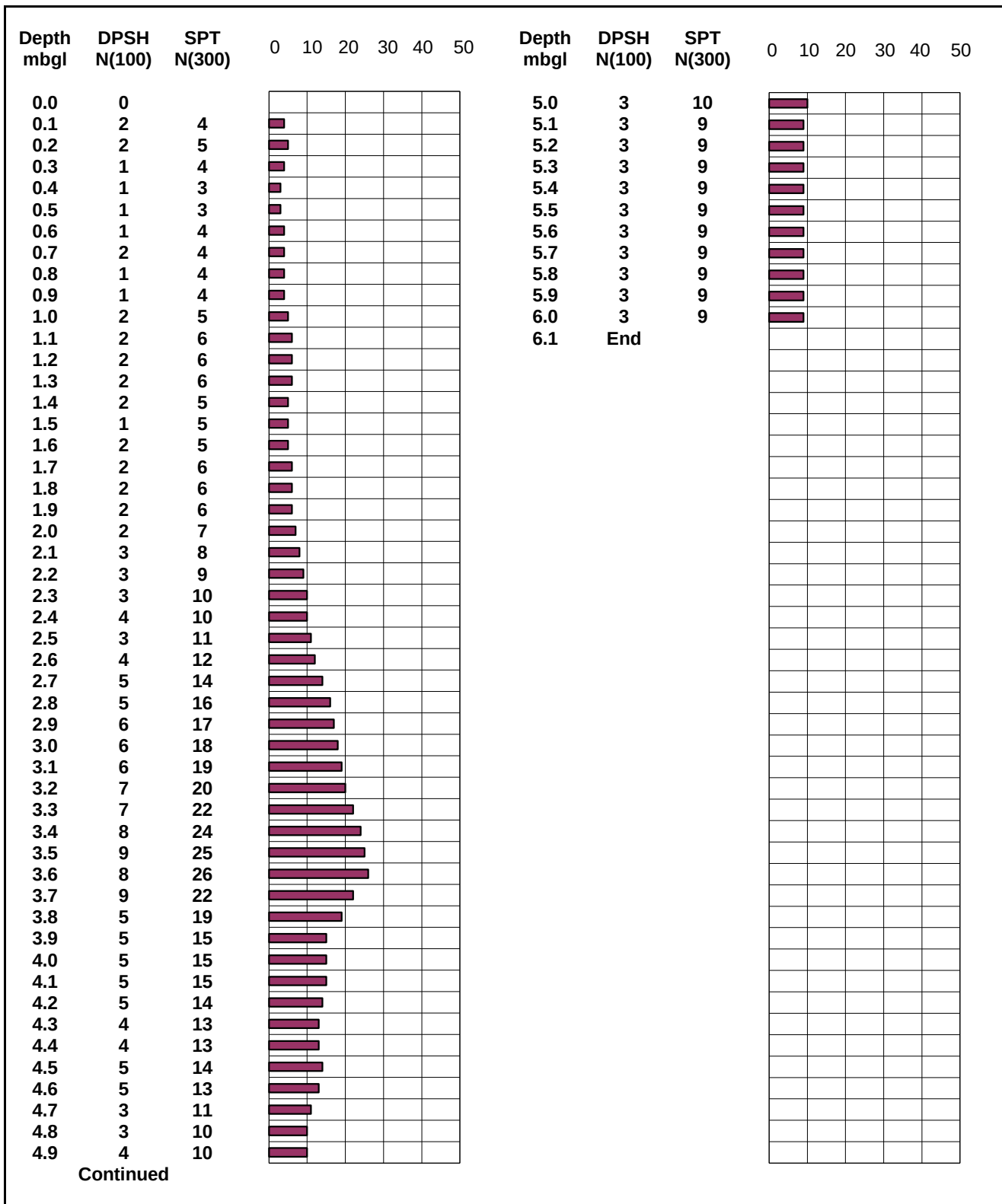
Note: DPSH'N' and SPT'N' directly correlate. SPT'N'(300) calculated as sum of DPSH'N' over 300mm

Project:	Angels Nursery, Barnham			Title:	DYNAMIC PROBE LOG DP2
Client:	Lovell Partnerships Ltd			Geo-Environmental Services Ltd Unit 7, Danworth Farm, Cuckfield Road, Hurstpierpoint, West Sussex, BN6 9GL E: mail@gesl.net T: 01273 832972	
Ref No:	GE10423	Rev:	V1		
Drawn:	JO	Date:			
Figure:	n/a	Scale:	Not To Scale		



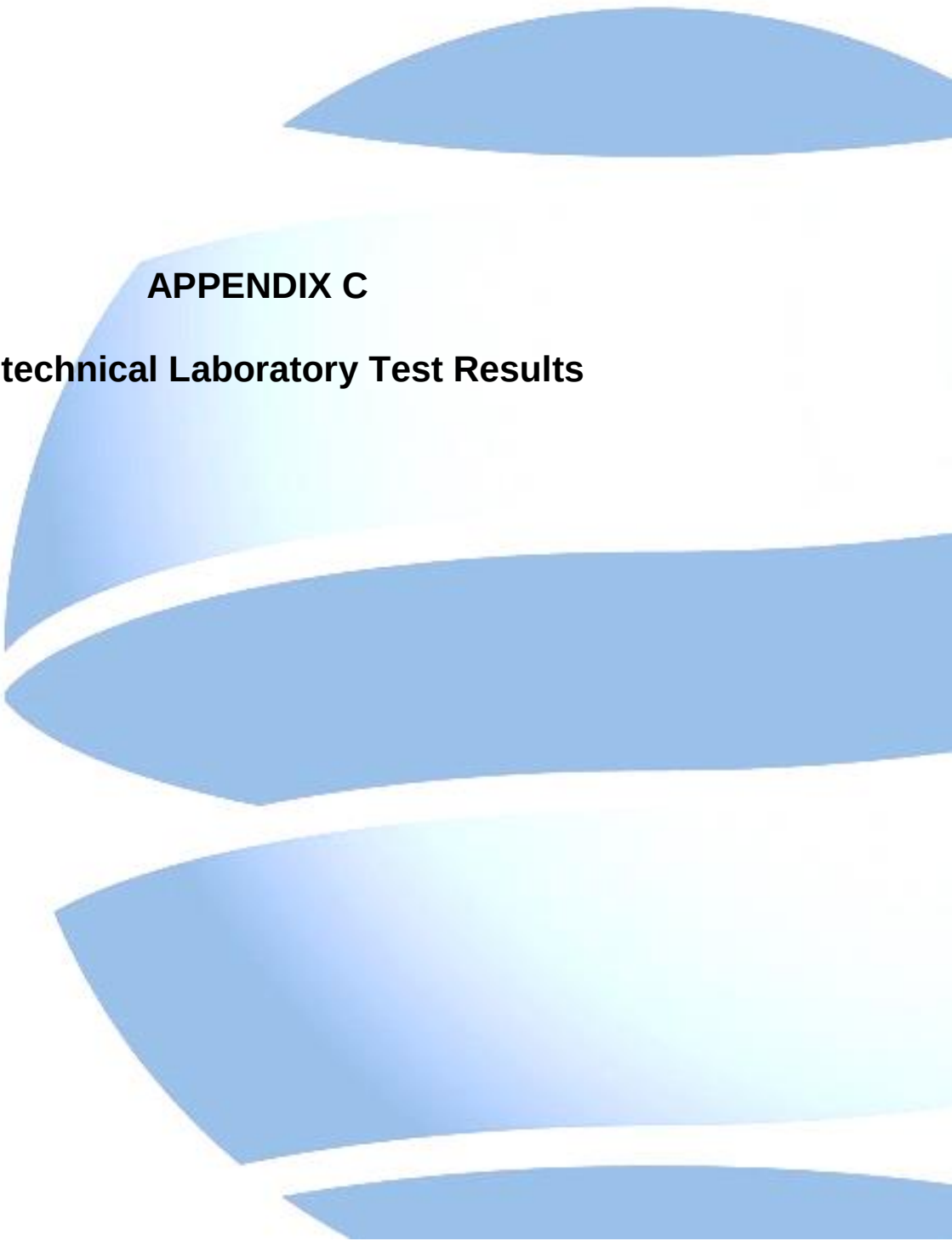
Note: DPSH'N' and SPT'N' directly correlate. SPT'N'(300) calculated as sum of DPSH'N' over 300mm

Project:	Angels Nursery, Barnham			Title:	DYNAMIC PROBE LOG DP6
Client:	Lovell Partnerships Ltd			Geo-Environmental Services Ltd Unit 7, Danworth Farm, Cuckfield Road, Hurstpierpoint, West Sussex, BN6 9GL E: mail@gesl.net T: 01273 832972	
Ref No:	GE10423	Rev:	V1		
Drawn:	JO	Date:			
Figure:	n/a	Scale:	Not To Scale		



Note: DPSH'N' and SPT'N' directly correlate. SPT'N'(300) calculated as sum of DPSH'N' over 300mm

Project:	Angels Nursery, Barnham			Title:	DYNAMIC PROBE LOG DP7
Client:	Lovell Partnerships Ltd			Geo-Environmental Services Ltd Unit 7, Danworth Farm, Cuckfield Road, Hurstpierpoint, West Sussex, BN6 9GL E: mail@gesl.net T: 01273 832972	
Ref No:	GE10423	Rev:	V1		
Drawn:	JO	Date:			
Figure:	n/a	Scale:	Not To Scale		



APPENDIX C

Geotechnical Laboratory Test Results



Summary of Classification Test Results

Job No. 19116	Project Name Angels Nursery, Barnham	Programme	
		Samples received	29/06/2015
Project No. GE10423	Client GESL	Schedule received	30/06/2015
		Project started	30/06/2015
		Testing Started	13/07/2015

Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top	Base	Type							
TP1	4	1.00		D	Brown and orange slightly gravelly slightly sandy silty CLAY (gravel is fm and sub-angular)	20	89	42	20	22	
TP1	5	1.50		D	Brown slightly gravelly silty CLAY (gravel is fine and angular)	21					
TP2	2	0.50		D	Brown with occasional orange mottling slightly gravelly slightly sandy silty CLAY (gravel is fine and sub-angular)	23	98	41	20	21	
TP2	3	1.00		D	Brown slightly sandy silty CLAY with occasional fine rootlets	23					
TP2	4	1.50		D	Brown silty CLAY	24					
TP3	2	0.50		D	Brown slightly sandy silty CLAY	22					
TP3	3	1.00		D	Brown with occasional orange mottling slightly gravelly slightly sandy silty CLAY and occasional rootlets (gravel is fine and sub-angular)	23	98	46	21	25	
TP3	4	1.50		D	Brown slightly sandy silty CLAY	22					
TP4	3	0.50		D	Brownish grey slightly gravelly slightly sandy silty CLAY with occasional fine brick fragments and rootlets (gravel is fm and sub-angular to rounded)	24	80	41	22	19	
TP4	4	1.00		D	Brown slightly sandy silty CLAY	21					
TP5	3	0.50		D	Brown with occasional orange mottling slightly sandy slightly gravelly silty CLAY and occasional rootlets (gravel is fine and sub-angular)	21	98	45	21	24	
TP5	4	1.00		D	Brown slightly sandy silty CLAY	20					

 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 Tel: 01923 711 288 Email: James@k4soils.com	Checked and Approved Initials K.P Date: 16/07/2015
	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)		MSF-5-R1(a) -Rev. 0



Summary of Classification Test Results

Job No. 19116	Project Name Angels Nursery, Barnham	Programme	
		Samples received	29/06/2015
Project No. GE10423	Client GESL	Schedule received	30/06/2015
		Project started	30/06/2015
		Testing Started	13/07/2015

Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top	Base	Type							
TP6	3	1.00		D	Brown and orange gravelly sandy silty CLAY (gravel is fmc and sub-angular to rounded)	20	63	28	14	14	
TP7	3	0.50		D	Brown slightly gravelly slightly sandy silty CLAY (gravel is fine and sub-angular)	21	97	41	19	22	
TP7	4	1.00		D	Brown slightly gravelly sandy CLAY (gravel is fm and angular)	16					
WS1	3	1.00		D	Brown slightly gravelly slightly sandy silty CLAY (gravel is fm and sub-angular)	22	95	40	19	21	
WS1	4	1.50		D	Light brown gravelly sandy CLAY (gravel is fmc and rounded to angular)	12					
WS4	3	1.00		D	Light grey brown silty CLAY with occasional fine rootlets	22					
WS4	4	1.50		D	Brown, pale grey and occasional orange slightly sandy silty CLAY	24	100	38	19	19	
WS6	3	1.00		D	Brown, orangey brown and pale grey slightly gravelly sandy silty CLAY (gravel is fine and sub-angular)	14	92	33	17	16	

 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 Tel: 01923 711 288 Email: James@k4soils.com	Checked and Approved Initials K.P Date: 16/07/2015
	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)		MSF-5-R1(a) -Rev. 0



PARTICLE SIZE DISTRIBUTION

Job Ref 19116

Borehole/Pit No. TP4

Site Name Angels Nursery, Barnham

Sample No. 6

Project No. GE10423

Client

GESL

Depth 2.00 m

Soil Description

Light brown silty fine SAND with rare fm and angular gravel

Sample Type D

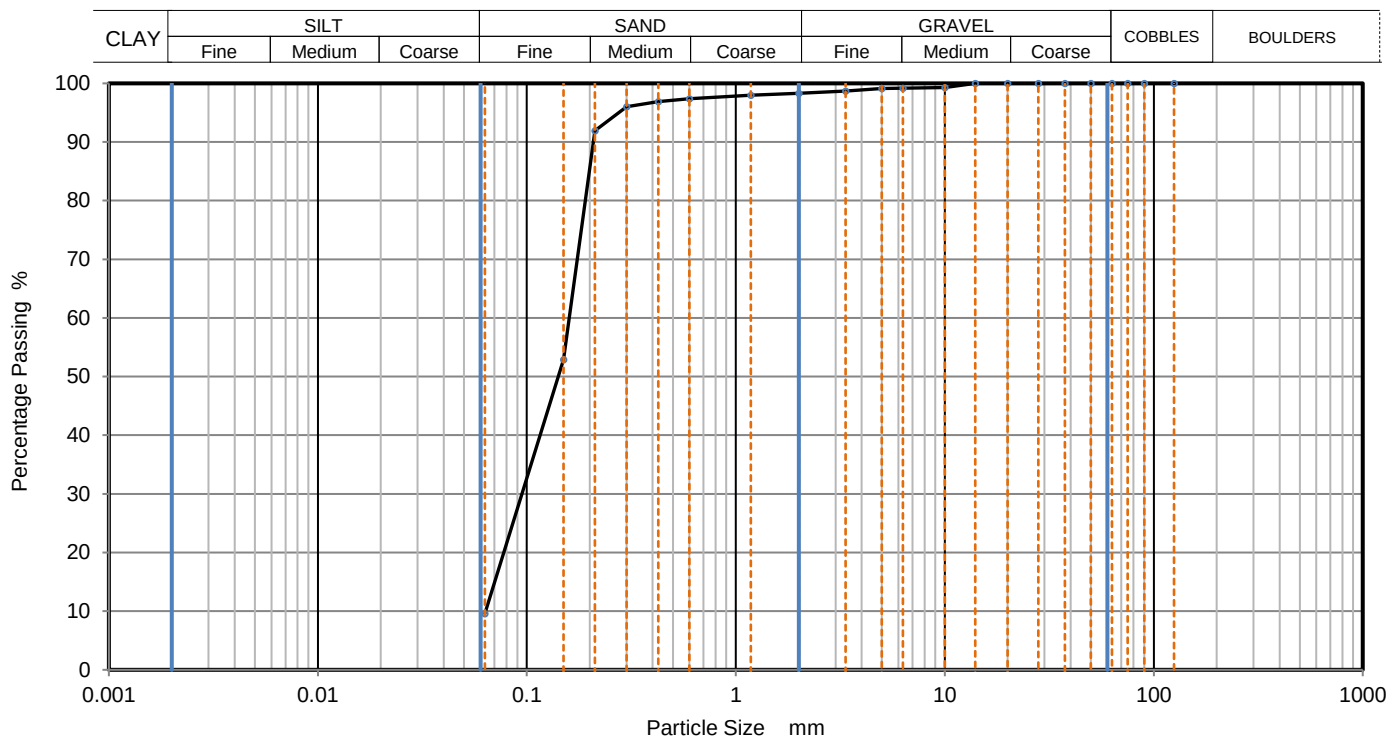
Samples received 29/06/2015

Schedules received 30/06/2015

Test Method BS1377:Part 2: 1990, clause 9.0

Project started 30/06/2015

Date tested 14/07/2015



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	100		
10	99		
6.3	99		
5	99		
3.35	99		
2	98		
1.18	98		
0.6	97		
0.425	97		
0.3	96		
0.212	92		
0.15	53		
0.063	10		

Dry Mass of sample, g 560

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	89
Fines <0.063mm	10

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	2.5
Curvature Coefficient	0.89

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: K.P

Date: 16/07/2015



PARTICLE SIZE DISTRIBUTION

Job Ref 19116

Borehole/Pit No. TP5

Site Name Angels Nursery, Barnham

Sample No. 7

Project No. GE10423 Client GESL

Depth 2.50 m

Soil Description Orange brown clayey SAND

Sample Type D

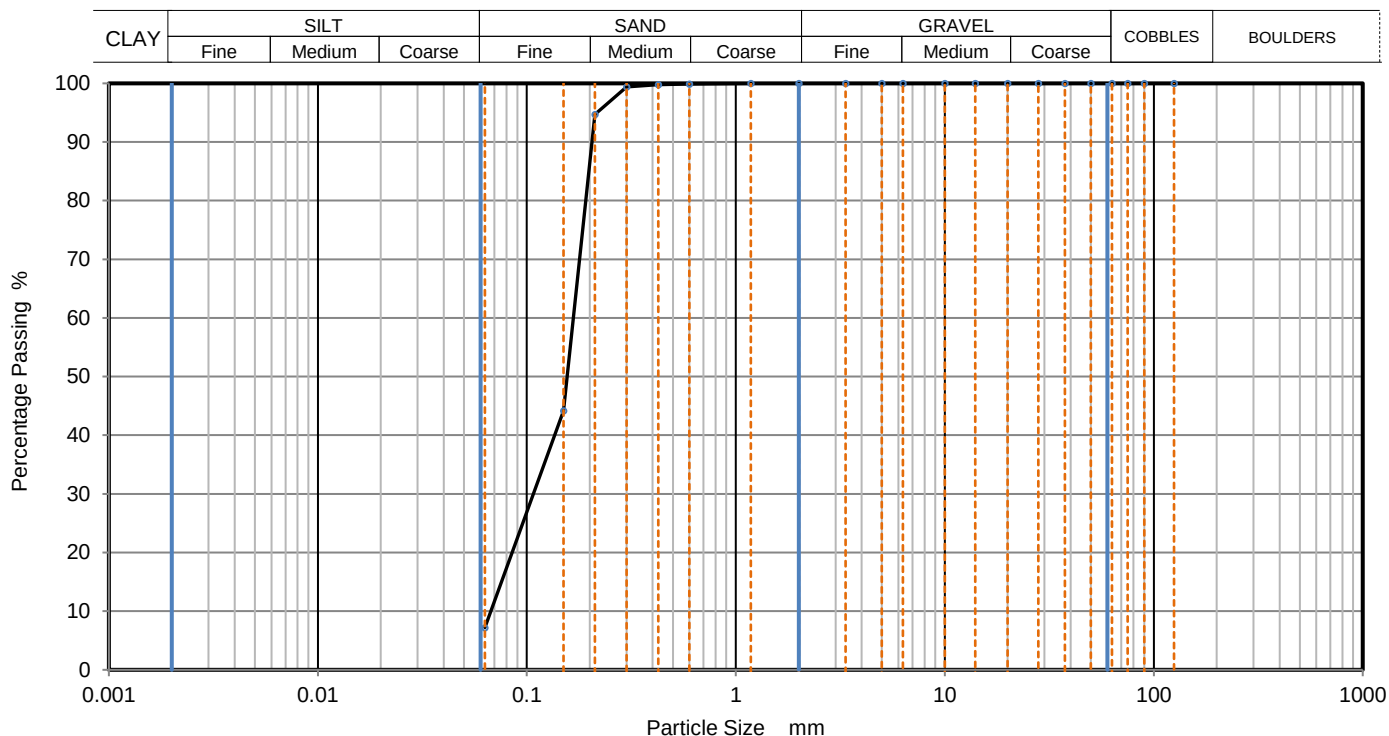
Samples received 29/06/2015

Schedules received 30/06/2015

Test Method BS1377:Part 2: 1990, clause 9.0

Project started 30/06/2015

Date tested 14/07/2015



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	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	95		
0.15	44		
0.063	7		

Dry Mass of sample, g 387

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	93
Fines <0.063mm	7

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	2.5
Curvature Coefficient	1

Remarks
Preparation and testing in accordance with BS1377 unless noted below



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Unit 8, Olds Close, Watford, Herts, WD18 9RU

Email: james@k4soils.com
Tel: 01923 711288

Checked and Approved

Initials: K.P

Date: 16/07/2015



PARTICLE SIZE DISTRIBUTION

Job Ref 19116

Borehole/Pit No. TP6

Site Name Angels Nursery, Barnham

Sample No. 4

Project No. GE10423

Client

GESL

Depth 1.50 m

Soil Description

Orangish brown clayey gravelly SAND (gravel is fm and sub-rounded to sub-angular)

Sample Type D

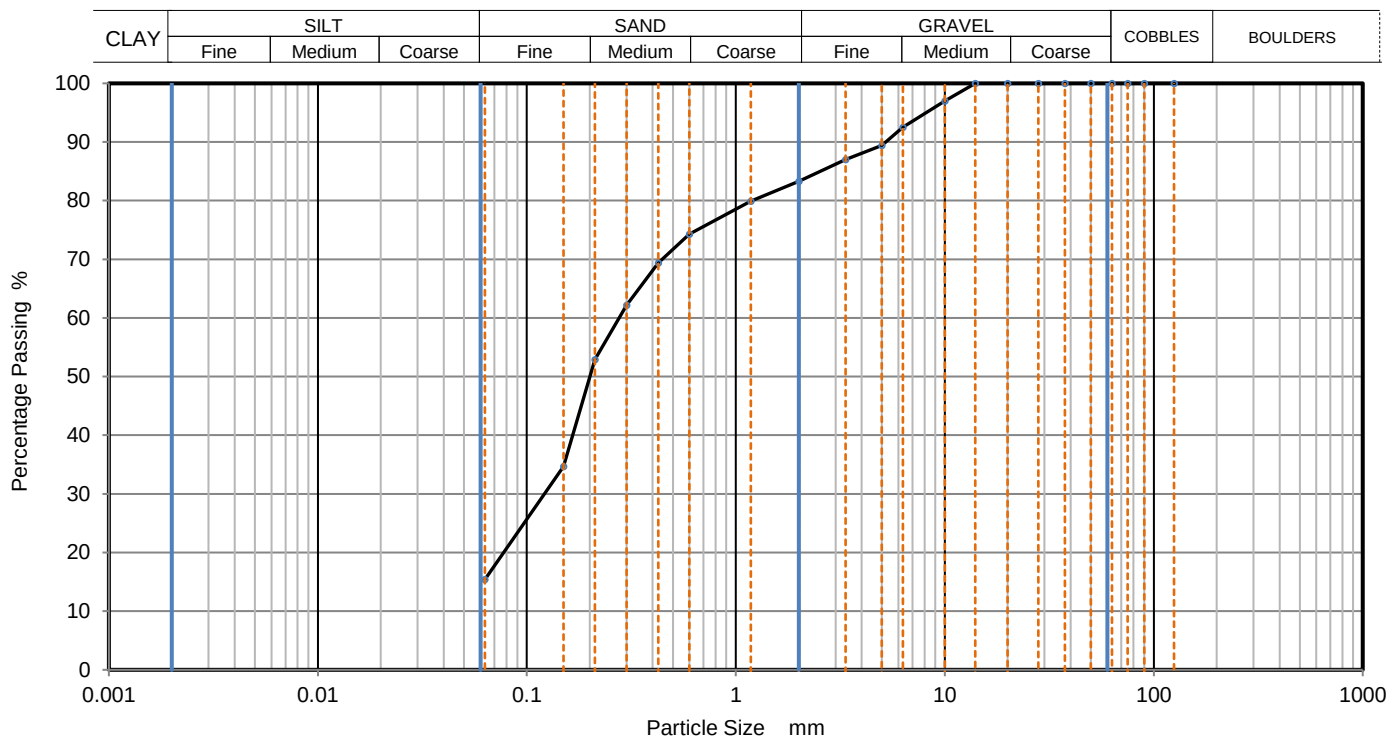
Samples received 29/06/2015

Schedules received 30/06/2015

Test Method BS1377:Part 2: 1990, clause 9.0

Project started 30/06/2015

Date tested 14/07/2015



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	100		
10	97		
6.3	93		
5	89		
3.35	87		
2	83		
1.18	80		
0.6	74		
0.425	69		
0.3	62		
0.212	53		
0.15	35		
0.063	15		

Dry Mass of sample, g 390

Sample Proportions	% dry mass
Very coarse	0
Gravel	17
Sand	68
Fines <0.063mm	15

Grading Analysis	
D100	mm
D60	mm 0.276
D30	mm 0.122
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below



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Checked and Approved

Initials: K.P

Date: 16/07/2015



PARTICLE SIZE DISTRIBUTION

Job Ref 19116

Borehole/Pit No. TP7

Site Name Angels Nursery, Barnham

Sample No. 5

Project No. GE10423

Client

GESL

Depth 1.50 m

Soil Description

Orange brown gravelly clayey SAND (gravel is fm and sub-rounded to sub-angular)

Sample Type D

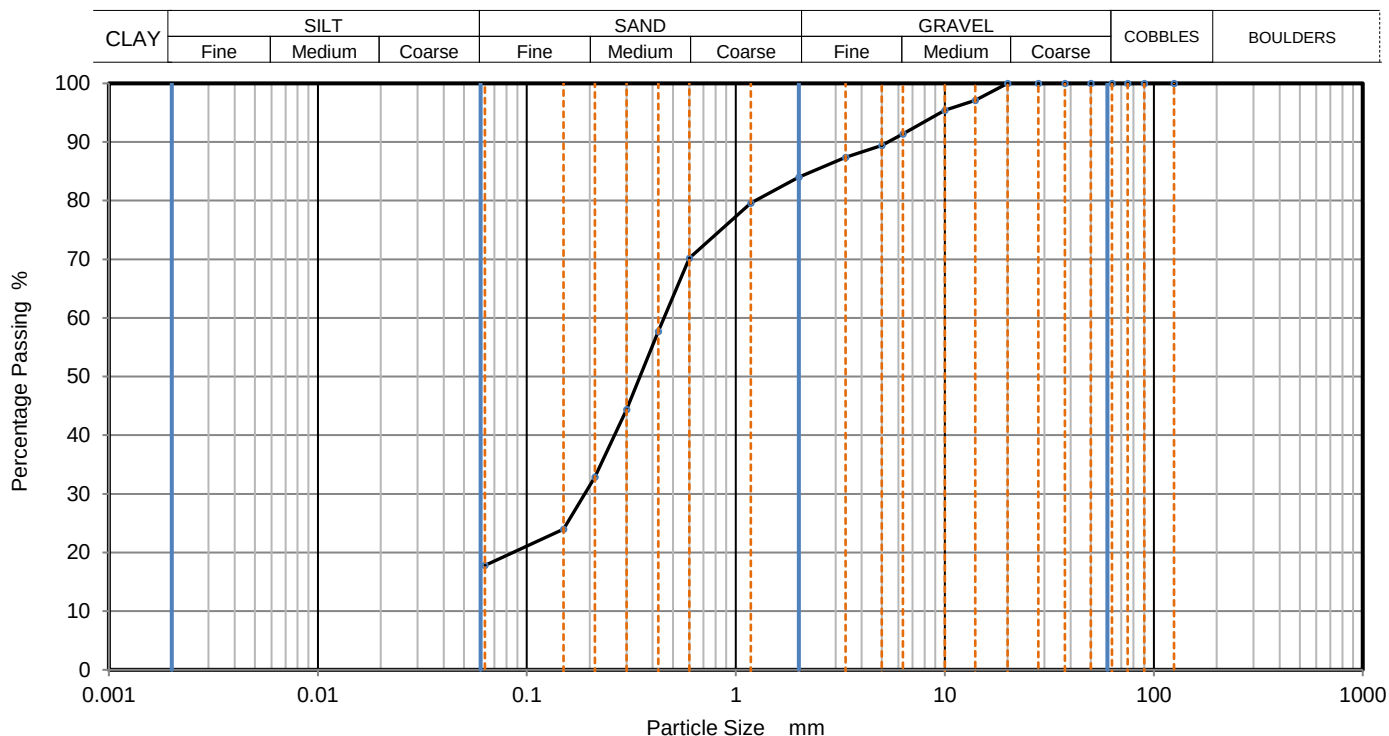
Samples received 29/06/2015

Schedules received 30/06/2015

Test Method BS1377:Part 2: 1990, clause 9.0

Project started 30/06/2015

Date tested 14/07/2015



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	97		
10	95		
6.3	91		
5	89		
3.35	87		
2	84		
1.18	80		
0.6	70		
0.425	58		
0.3	44		
0.212	33		
0.15	24		
0.063	18		

Dry Mass of sample, g 653

Sample Proportions	% dry mass
Very coarse	0
Gravel	16
Sand	66
Fines <0.063mm	18

Grading Analysis	
D100	mm
D60	mm 0.453
D30	mm 0.189
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below



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Checked and Approved

Initials: K.P

Date: 16/07/2015



PARTICLE SIZE DISTRIBUTION

Job Ref 19116

Borehole/Pit No. WS1

Site Name Angels Nursery, Barnham

Sample No. 5

Project No. GE10423

Client

GESL

Depth 2.00 m

Soil Description

Orange brown silty fine SAND

Sample Type D

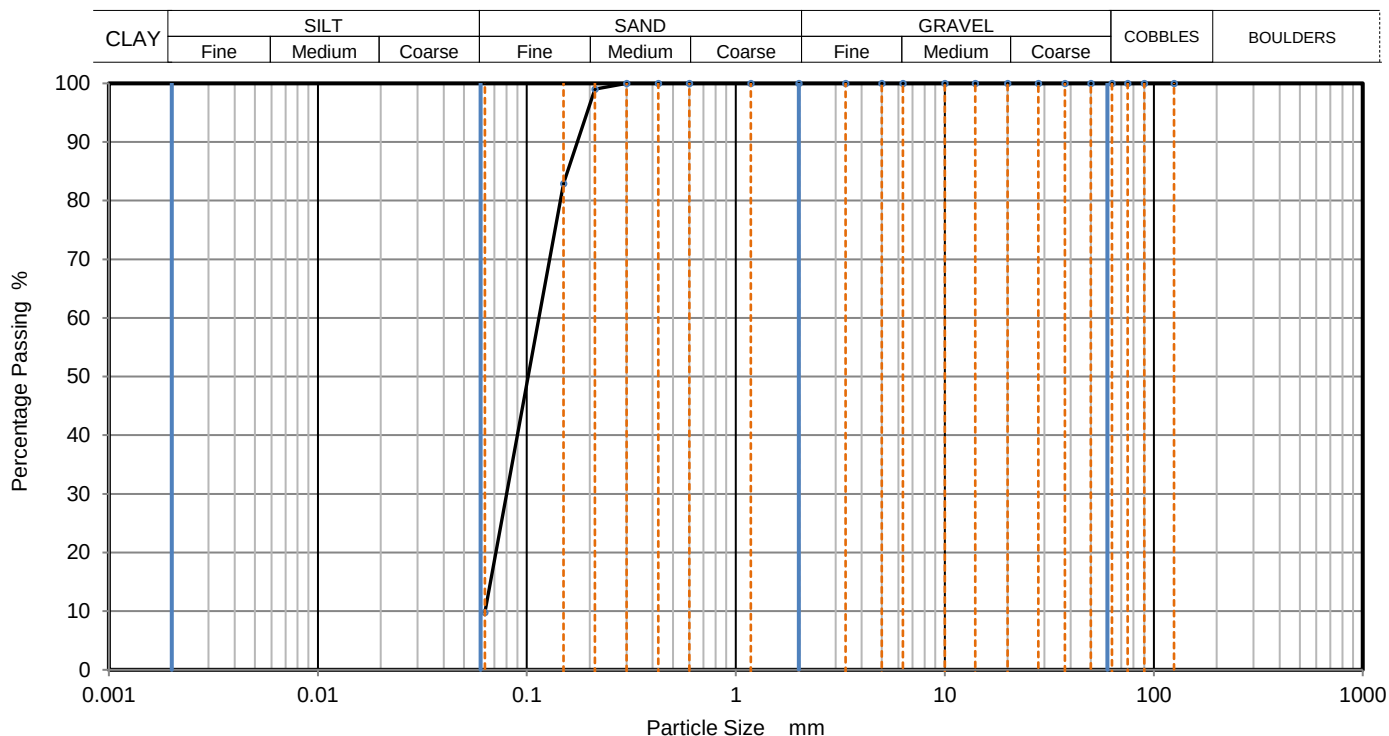
Samples received 29/06/2015

Schedules received 30/06/2015

Test Method BS1377:Part 2: 1990, clause 9.0

Project started 30/06/2015

Date tested 14/07/2015



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	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	99		
0.15	83		
0.063	10		

Dry Mass of sample, g 301

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	90
Fines <0.063mm	10

Grading Analysis	
D100	mm
D60	mm 0.114
D30	mm 0.08
D10	mm 0.0631
Uniformity Coefficient	1.8
Curvature Coefficient	0.89

Remarks

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Checked and Approved

Initials: K.P

Date: 16/07/2015



PARTICLE SIZE DISTRIBUTION

Job Ref 19116

Borehole/Pit No. WS4

Site Name Angels Nursery, Barnham

Sample No. 7

Project No. GE10423 Client GESL

Depth 3.00 m

Soil Description Light brown slightly clayey silty SAND

Sample Type D

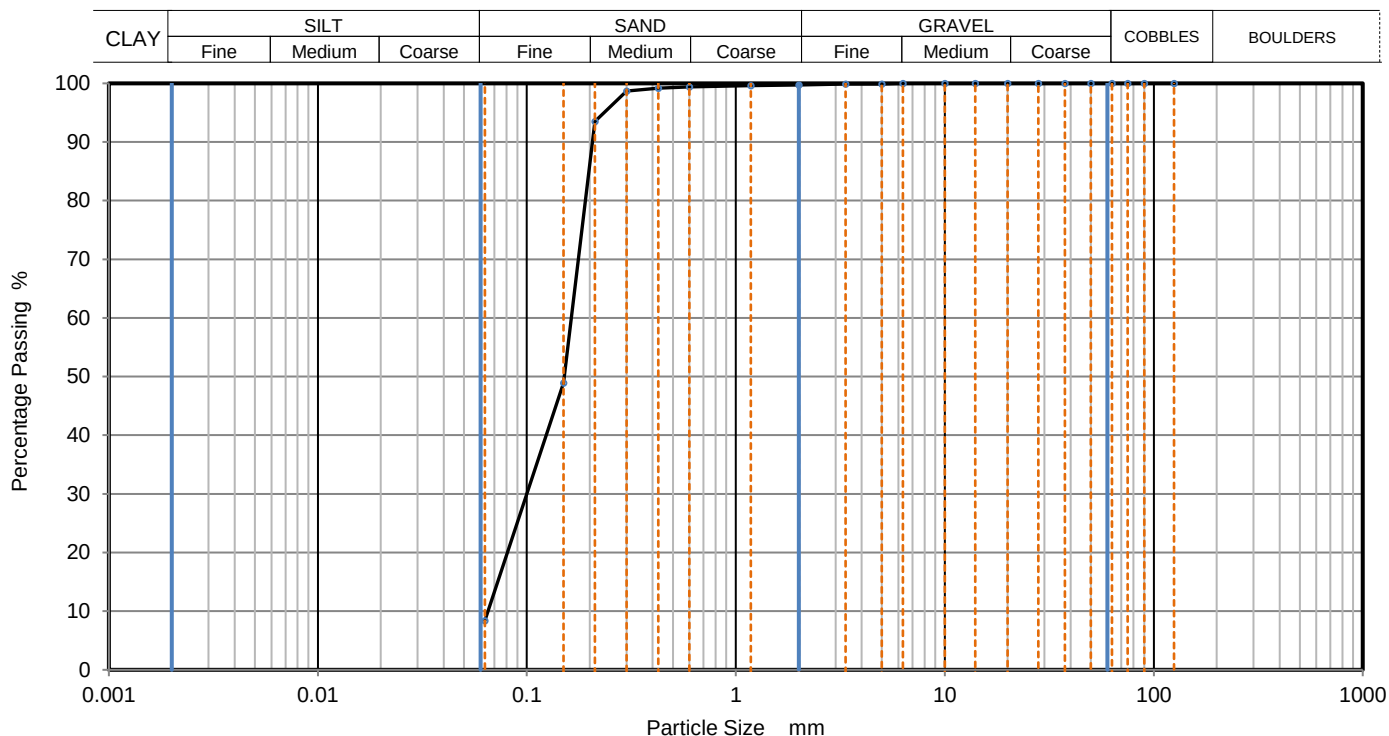
Samples received 29/06/2015

Schedules received 30/06/2015

Test Method BS1377:Part 2: 1990, clause 9.0

Project started 30/06/2015

Date tested 14/07/2015



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	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	94		
0.15	49		
0.063	8		

Dry Mass of sample, g 215

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	91
Fines <0.063mm	8

Grading Analysis	
D100	mm
D60	mm 0.163
D30	mm 0.1
D10	mm 0.0651
Uniformity Coefficient	2.5
Curvature Coefficient	0.94

Remarks

Preparation and testing in accordance with BS1377 unless noted below



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Email: james@k4soils.com

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Checked and Approved

Initials: K.P

Date: 16/07/2015

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

MSF-5-R3 (Rev.0)



PARTICLE SIZE DISTRIBUTION

Job Ref 19116

Borehole/Pit No. WS7

Site Name Angels Nursery, Barnham

Sample No. 4

Project No. GE10423 Client GESL

Depth 1.50 m

Soil Description Orange brown slightly clayey silty fine SAND

Sample Type D

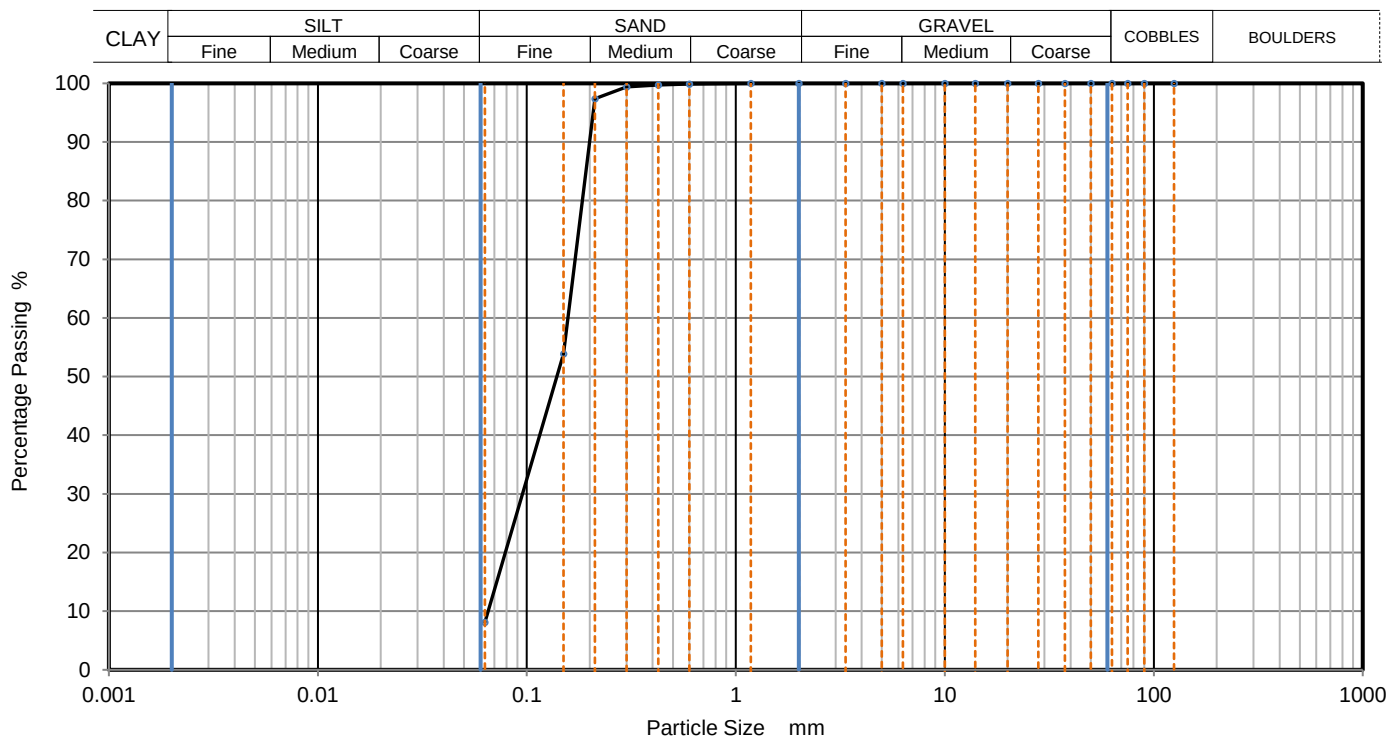
Samples received 29/06/2015

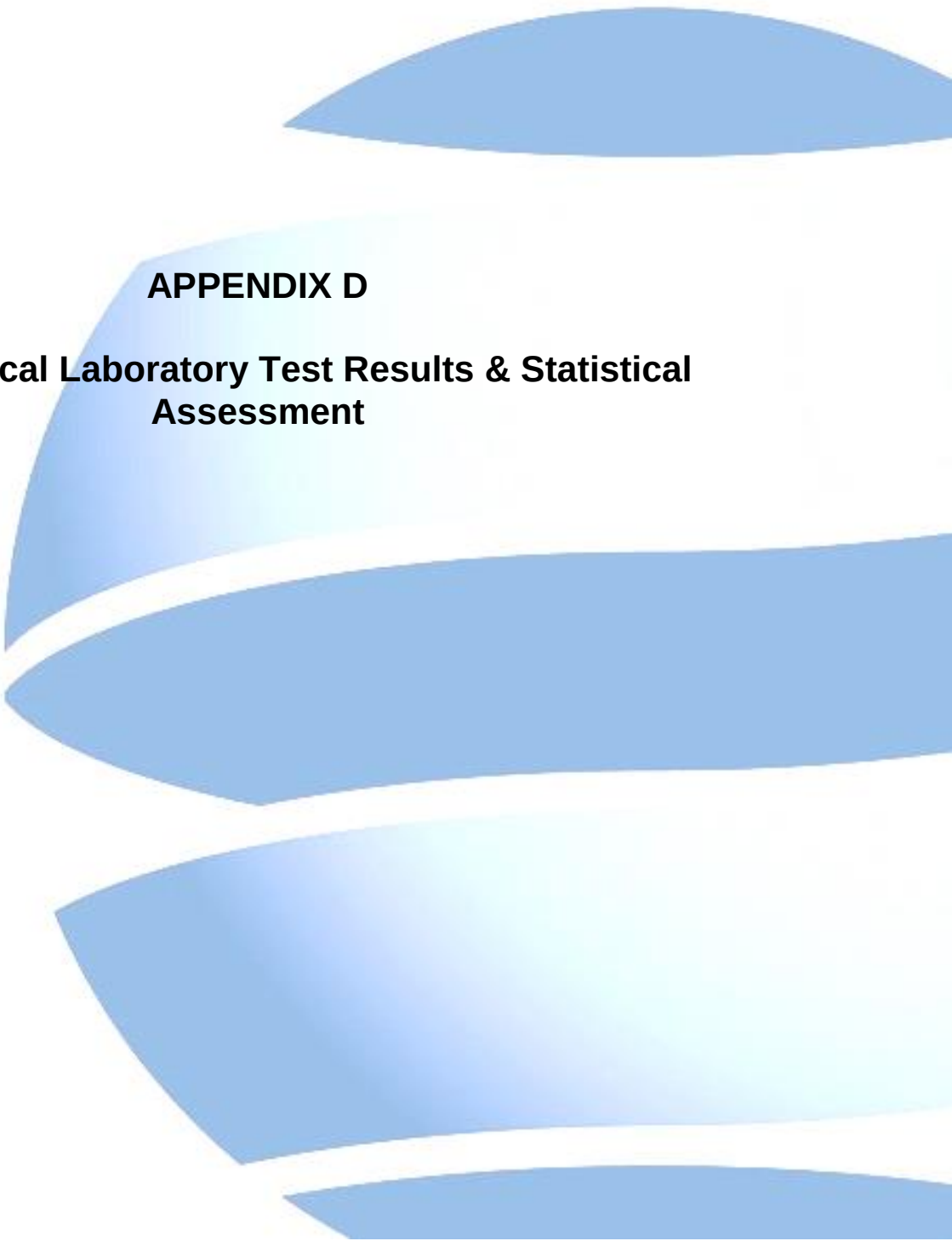
Schedules received 30/06/2015

Test Method BS1377:Part 2: 1990, clause 9.0

Project started 30/06/2015

Date tested 14/07/2015





APPENDIX D

Geochemical Laboratory Test Results & Statistical Assessment



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THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 15-02604

Issue: 1

Date of Issue: 01/07/2015

Contact: Justyna Oak

Customer Details: GESL
Unit 7
Danworth Farm
Hurstpierpoint
West Sussex

Quotation No: Q14-00021

Order No: 3625

Customer Reference: GE10423

Date Received: 23/06/2015

Date Approved: 01/07/2015

Details: Angels Nursery, Barnham

Approved by:

John Wilson, Operations Manager

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



Sample Summary

Report No.: 15-02604

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
31721	TP1 0.20	22/06/2015	25/06/2015	Silty loam	
31722	TP1 0.50	22/06/2015	25/06/2015	Silty loam	
31723	TP2 0.20	22/06/2015	25/06/2015	Silty loam	
31724	TP3 0.20	22/06/2015	25/06/2015	Silty loam	
31725	TP4 0.20	22/06/2015	25/06/2015	Silty loam	
31726	TP4 0.50	22/06/2015	25/06/2015	Silty loam	
31727	TP5 0.20	22/06/2015	25/06/2015	Silty loam	
31728	TP5 0.50	22/06/2015	25/06/2015		
31729	TP6 0.20	22/06/2015	25/06/2015	Silty loam	
31730	TP6 0.50	22/06/2015	25/06/2015	Silty loam	
31731	TP7 0.20	22/06/2015	25/06/2015	Silty loam	
31732	TP7 0.50	22/06/2015	25/06/2015	Silty loam	
31733	WS1 0.20	22/06/2015	25/06/2015	Silty loam	
31734	WS1 0.50	22/06/2015	25/06/2015		
31735	WS2 0.20	22/06/2015	25/06/2015	Silty loam	
31736	WS2 0.50	22/06/2015	25/06/2015	Silty loam	
31737	WS6 0.20	22/06/2015	25/06/2015	Silty loam	
31738	WS6 0.50	22/06/2015	25/06/2015	Silty loam	
31739	WS7 0.20	22/06/2015	25/06/2015	Silty loam	
31740	WS7 0.50	22/06/2015	25/06/2015	Silty loam	

Results Summary

Report No.: 15-02604

ELAB Reference	31721	31722	31723	31724	31725	31726
Customer Reference						
Sample ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	TP1	TP1	TP2	TP3	TP4	TP4
Sample Depth (m)	0.20	0.50	0.20	0.20	0.20	0.50
Sampling Date	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015

Determinand	Codes	Units	LOD						
Metals									
Arsenic	M	mg/kg	1	10.9	8.4	9.4	10.8	12.2	9.3
Barium	M	mg/kg	10	65.7	51.9	49.3	52.5	80.2	65.5
Beryllium	U	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	M	mg/kg	5	21.1	20.4	19.7	18.6	25.7	23.8
Copper	M	mg/kg	5	21.2	17.4	33.7	18.8	27.3	20.6
Lead	M	mg/kg	5	34.2	15.9	19.2	30.6	48.8	29.6
Mercury	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel	M	mg/kg	5	12.9	12.3	13.5	11.6	18.0	17.5
Selenium	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium	M	mg/kg	5	26.0	27.1	26.8	25.9	30.9	30.9
Zinc	M	mg/kg	45	91.6	48.8	73.2	62.1	167	108
Anions									
Water Soluble Chloride	M	mg/kg	40	< 40	< 40	< 40	< 40	< 40	< 40
Water Soluble Sulphate	M	g/l	0.02	0.02	< 0.02	< 0.02	< 0.02	0.02	0.04
Inorganics									
Elemental Sulphur	N	mg/kg	20	< 20	< 20	< 20	< 20	< 20	< 20
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Total Sulphide	N	mg/kg	2	< 2	< 2	< 2	< 2	< 2	< 2
Total Cyanide	M	mg/kg	1	1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Acid Soluble Sulphate (SO4)	U	%SO4	0.02	0.04	0.03	0.04	0.05	0.05	0.04
Water Soluble Boron	N	mg/kg	0.5	2.5	1.3	0.8	0.6	1.0	0.7
Miscellaneous									
pH	M	units	0.1	7.7	8.0	5.8	5.9	7.1	7.6
Total Organic Carbon	N	%	0.01	1.2	0.32	0.63	1.2	1.2	0.52
Phenols									
Total Phenols	N	mg/kg	6	< 6	< 6	< 6	< 6	< 6	< 6
Polyaromatic hydrocarbons									
Naphthalene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo (a) anthracene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo (b) fluoranthene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo (k) fluoranthene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo (a) pyrene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno (1,2,3-cd) pyrene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzo(a,h)anthracene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(ghi)perylene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH(16)	M	mg/kg	2	< 2	< 2	< 2	< 2	< 2	3
BTEX									
Benzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Toluene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Ethylbenzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Xylenes	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0

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Results Summary

Report No.: 15-02604

ELAB Reference	31721	31722	31723	31724	31725	31726
Customer Reference						
Sample ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	TP1	TP1	TP2	TP3	TP4	TP4
Sample Depth (m)	0.20	0.50	0.20	0.20	0.20	0.50
Sampling Date	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015

Determinand	Codes	Units	LOD						
TPH CWG									
>C5-C6 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C6-C8 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C35-C40 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C5-C7 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C7-C8 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	1.5	< 1.0	< 1.0
>C35-C40 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total (>C5-C40) Ali/Aro	N	mg/kg	1	< 1.0	< 1.0	< 1.0	1.5	< 1.0	< 1.0
OrganoChlorine Pesticides									
alpha-HCH	M	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
beta-HCH	M	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
gamma-HCH	M	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
delta-HCH	N	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
Heptachlor	N	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
Aldrin	M	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
Heptachlor expoxide	N	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
trans-Chlordane	N	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
alpha cis-Chlordane	N	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
p,p-DDE	M	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
Dieldrin	M	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
Endrin	N	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
p,p-DDD	M	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
Endosulfan II	N	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
Endrin aldehyde	N	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
p,p-DDT	M	ug/kg	10	< 10	n/t	n/t	< 10	14	n/t
Endosulphan sulphate	M	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
Methoxychlor	N	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t
Endrin ketone	N	ug/kg	10	< 10	n/t	n/t	< 10	< 10	n/t

Results Summary

Report No.: 15-02604

ELAB Reference	31727	31729	31730	31731	31732	31733
Customer Reference						
Sample ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	TP5	TP6	TP6	TP7	TP7	WS1
Sample Depth (m)	0.20	0.20	0.50	0.20	0.50	0.20
Sampling Date	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015

Determinand	Codes	Units	LOD						
Metals									
Arsenic	M	mg/kg	1	10.8	9.0	10.2	11.1	15.0	11.0
Barium	M	mg/kg	10	57.6	63.8	80.1	75.7	81.3	56.3
Beryllium	U	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	1.0	< 1.0
Cadmium	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	M	mg/kg	5	22.2	23.3	27.0	26.7	28.3	20.0
Copper	M	mg/kg	5	20.6	16.5	28.9	20.9	18.5	19.0
Lead	M	mg/kg	5	32.6	18.3	35.3	23.1	13.3	21.2
Mercury	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel	M	mg/kg	5	12.8	14.5	18.5	20.0	27.3	14.7
Selenium	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.0
Vanadium	M	mg/kg	5	25.8	29.6	35.2	35.3	40.0	28.1
Zinc	M	mg/kg	45	107	85.7	115	76.6	55.5	63.4
Anions									
Water Soluble Chloride	M	mg/kg	40	< 40	< 40	< 40	< 40	< 40	< 40
Water Soluble Sulphate	M	g/l	0.02	< 0.02	< 0.02	0.02	0.02	< 0.02	< 0.02
Inorganics									
Elemental Sulphur	N	mg/kg	20	< 20	< 20	< 20	< 20	< 20	< 20
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Total Sulphide	N	mg/kg	2	< 2	< 2	< 2	< 2	< 2	< 2
Total Cyanide	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Acid Soluble Sulphate (SO4)	U	%SO4	0.02	0.06	0.05	0.02	0.03	0.02	0.04
Water Soluble Boron	N	mg/kg	0.5	0.9	< 0.5	0.5	0.5	< 0.5	0.9
Miscellaneous									
pH	M	units	0.1	7.3	7.3	7.5	7.3	7.1	6.5
Total Organic Carbon	N	%	0.01	1.4	0.39	0.62	0.46	0.15	0.53
Phenols									
Total Phenols	N	mg/kg	6	< 6	< 6	< 6	< 6	< 6	< 6
Polyaromatic hydrocarbons									
Naphthalene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo (a) anthracene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo (b) fluoranthene	M	mg/kg	0.5	< 0.5	0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo (k) fluoranthene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo (a) pyrene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno (1,2,3-cd) pyrene	M	mg/kg	0.5	< 0.5	0.8	0.5	< 0.5	< 0.5	< 0.5
Dibenzo(a,h)anthracene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(ghi)perylene	M	mg/kg	0.5	< 0.5	0.9	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH(16)	M	mg/kg	2	< 2	5	3	< 2	< 2	< 2
BTEX									
Benzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Toluene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Ethylbenzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Xylenes	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0

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Results Summary

Report No.: 15-02604

ELAB Reference	31727	31729	31730	31731	31732	31733
Customer Reference						
Sample ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	TP5	TP6	TP6	TP7	TP7	WS1
Sample Depth (m)	0.20	0.20	0.50	0.20	0.50	0.20
Sampling Date	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015

Determinand	Codes	Units	LOD						
TPH CWG									
>C5-C6 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C6-C8 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aliphatic	N	mg/kg	1	< 1.0	3.5	< 1.0	1.8	< 1.0	< 1.0
>C35-C40 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C5-C7 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C7-C8 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aromatic	N	mg/kg	1	< 1.0	4.3	< 1.0	4.7	< 1.0	< 1.0
>C35-C40 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total (>C5-C40) Ali/Aro	N	mg/kg	1	< 1.0	7.7	< 1.0	6.5	< 1.0	< 1.0
OrganoChlorine Pesticides									
alpha-HCH	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
beta_HCH	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
gamma-HCH	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
delta-HCH	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
Heptachlor	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
Aldrin	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
Heptachlor expoxide	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
trans-Chlordane	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
alpha cis-Chlordane	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
p,p-DDE	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
Dieldrin	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
Endrin	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
p,p-DDD	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
Endosulfan II	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
Endrin aldehyde	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
p,p-DDT	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
Endosulphan sulphate	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
Methoxychlor	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t
Endrin ketone	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t

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Results Summary

Report No.: 15-02604

ELAB Reference	31735	31736	31737	31738	31739	31740
Customer Reference						
Sample ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	WS2	WS2	WS6	WS6	WS7	WS7
Sample Depth (m)	0.20	0.50	0.20	0.50	0.20	0.50
Sampling Date	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015

Determinand	Codes	Units	LOD						
Metals									
Arsenic	M	mg/kg	1	10.5	9.8	9.2	10.9	14.3	13.2
Barium	M	mg/kg	10	68.5	53.4	66.8	67.1	209	82.5
Beryllium	U	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	1.2	< 1.0
Cadmium	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.8	< 0.5
Chromium	M	mg/kg	5	20.2	19.6	21.7	22.3	25.0	25.8
Copper	M	mg/kg	5	26.6	17.5	19.8	19.9	44.7	21.4
Lead	M	mg/kg	5	35.5	17.9	28.7	38.4	114	23.8
Mercury	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel	M	mg/kg	5	15.8	13.5	15.8	19.1	21.9	21.7
Selenium	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	1.4	< 1.0
Vanadium	M	mg/kg	5	27.4	27.4	29.2	31.3	37.0	35.7
Zinc	M	mg/kg	45	98.4	65.6	86.9	62.4	406	71.2
Anions									
Water Soluble Chloride	M	mg/kg	40	< 40	< 40	< 40	< 40	< 40	< 40
Water Soluble Sulphate	M	g/l	0.02	< 0.02	0.03	< 0.02	< 0.02	< 0.02	< 0.02
Inorganics									
Elemental Sulphur	N	mg/kg	20	< 20	< 20	< 20	< 20	< 20	< 20
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Total Sulphide	N	mg/kg	2	< 2	< 2	< 2	< 2	< 2	< 2
Total Cyanide	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Acid Soluble Sulphate (SO4)	U	%SO4	0.02	0.03	0.05	0.04	0.02	0.07	0.04
Water Soluble Boron	N	mg/kg	0.5	0.8	0.8	0.5	< 0.5	1.0	0.7
Miscellaneous									
pH	M	units	0.1	6.8	7.3	7.4	7.1	6.7	7.4
Total Organic Carbon	N	%	0.01	0.77	0.42	0.54	0.33	4.6	0.54
Phenols									
Total Phenols	N	mg/kg	6	< 6	< 6	< 6	< 6	< 6	< 6
Polyaromatic hydrocarbons									
Naphthalene	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	M	mg/kg	0.5	< 0.5	< 0.5	1.5	< 0.5	< 0.5	< 0.5
Acenaphthene	M	mg/kg	0.5	< 0.5	< 0.5	1.8	< 0.5	< 0.5	< 0.5
Fluorene	M	mg/kg	0.5	< 0.5	< 0.5	1.6	< 0.5	< 0.5	< 0.5
Phenanthrene	M	mg/kg	0.5	< 0.5	< 0.5	25.5	< 0.5	< 0.5	< 0.5
Anthracene	M	mg/kg	0.5	< 0.5	< 0.5	7.4	< 0.5	< 0.5	< 0.5
Fluoranthene	M	mg/kg	0.5	< 0.5	< 0.5	51.8	< 0.5	0.9	< 0.5
Pyrene	M	mg/kg	0.5	< 0.5	< 0.5	47.4	< 0.5	0.8	< 0.5
Benzo (a) anthracene	M	mg/kg	0.5	< 0.5	< 0.5	28.3	< 0.5	0.5	< 0.5
Chrysene	M	mg/kg	0.5	< 0.5	< 0.5	27.8	< 0.5	0.6	< 0.5
Benzo (b) fluoranthene	M	mg/kg	0.5	< 0.5	< 0.5	23.2	< 0.5	0.5	< 0.5
Benzo (k) fluoranthene	M	mg/kg	0.5	< 0.5	< 0.5	22.2	< 0.5	0.5	< 0.5
Benzo (a) pyrene	M	mg/kg	0.5	< 0.5	< 0.5	28.3	< 0.5	0.6	< 0.5
Indeno (1,2,3-cd) pyrene	M	mg/kg	0.5	0.6	< 0.5	19.5	< 0.5	0.8	< 0.5
Dibenzo(a,h)anthracene	M	mg/kg	0.5	< 0.5	< 0.5	4.9	< 0.5	< 0.5	< 0.5
Benzo(ghi)perylene	M	mg/kg	0.5	< 0.5	< 0.5	17.3	< 0.5	0.6	< 0.5
Total PAH(16)	M	mg/kg	2	4	< 2	309	< 2	7	< 2
BTEX									
Benzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Toluene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Ethylbenzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Xylenes	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0

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Results Summary

Report No.: 15-02604

ELAB Reference	31735	31736	31737	31738	31739	31740
Customer Reference						
Sample ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	WS2	WS2	WS6	WS6	WS7	WS7
Sample Depth (m)	0.20	0.50	0.20	0.50	0.20	0.50
Sampling Date	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015

Determinand	Codes	Units	LOD						
TPH CWG									
>C5-C6 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C6-C8 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aliphatic	N	mg/kg	1	< 1.0	1.5	< 1.0	< 1.0	< 1.0	< 1.0
>C35-C40 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C5-C7 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C7-C8 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	1.6	< 1.0
>C35-C40 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total (>C5-C40) Ali/Aro	N	mg/kg	1	< 1.0	1.5	< 1.0	< 1.0	1.6	< 1.0
OrganoChlorine Pesticides									
alpha-HCH	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
beta_HCH	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
gamma-HCH	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
delta-HCH	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Heptachlor	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Aldrin	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Heptachlor expoxide	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
trans-Chlordane	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
alpha cis-Chlordane	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
p,p-DDE	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Dieldrin	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Endrin	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
p,p-DDD	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Endosulfan II	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Endrin aldehyde	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
p,p-DDT	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Endosulphan sulphate	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Methoxychlor	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Endrin ketone	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t



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Results Summary

Report No.: 15-02604

Asbestos Qualitative Results

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

Elab No	Depth (m)	Clients Reference	Description of Sample Matrix #	Result
31721	0.20	TP1	Silty loam	No asbestos detected
31722	0.50	TP1	Silty loam	No asbestos detected
31723	0.20	TP2	Silty loam	No asbestos detected
31724	0.20	TP3	Silty loam	No asbestos detected
31725	0.20	TP4	Silty loam	No asbestos detected
31726	0.50	TP4	Silty loam	No asbestos detected
31727	0.20	TP5	Silty loam	No asbestos detected
31729	0.20	TP6	Silty loam	No asbestos detected
31730	0.50	TP6	Silty loam	No asbestos detected
31731	0.20	TP7	Silty loam	No asbestos detected
31732	0.50	TP7	Silty loam	No asbestos detected
31733	0.20	WS1	Silty loam	No asbestos detected
31735	0.20	WS2	Silty loam	No asbestos detected
31736	0.50	WS2	Silty loam	No asbestos detected
31737	0.20	WS6	Silty loam	No asbestos detected
31738	0.50	WS6	Silty loam	No asbestos detected
31739	0.20	WS7	Silty loam	No asbestos detected
31740	0.50	WS7	Silty loam	No asbestos detected

Method Summary

Report No.: 15-02604

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Sulphide	N	As submitted sample	26/06/2015	109	Colorimetry
Hexavalent chromium	N	As submitted sample	26/06/2015	110	Colorimetry
pH	M	Air dried sample	29/06/2015	113	Electromeric
Acid Soluble Sulphate	U	Air dried sample	29/06/2015	115	Ion Chromatography
Aqua regia extractable metals	M	Air dried sample	29/06/2015	118	ICPMS
Phenols in solids	M	As submitted sample	26/06/2015	121	HPLC
Elemental Sulphur	N	Air dried sample	27/06/2015	122	HPLC
Polyaromatic hydrocarbons (GC-FID)	M	As submitted sample	26/06/2015	133	GC-FID
Water soluble anions	M	Air dried sample	27/06/2015	172	Ion Chromatography
Organochlorine Pesticides in solids	M	As submitted sample	30/06/2015	173	GC-MS
BTEX in solids	M	As submitted sample	29/06/2015	181	GC-MS
Water soluble boron	N	Air dried sample	29/06/2015	202	Colorimetry
Total cyanide	M	As submitted sample	26/06/2015	204	Colorimetry
Total organic carbon/Total sulphur	N	Air dried sample	29/06/2015	210	IR
Aliphatic hydrocarbons in soil	N	As submitted sample	26/06/2015	214	GC-FID
Aliphatic/Aromatic hydrocarbons in soil	N	As submitted sample	30/06/2015	214	GC-FID
Aromatic hydrocarbons in soil	N	As submitted sample	26/06/2015	214	GC-FID
Low range Aliphatic hydrocarbons soil	N	As submitted sample	29/06/2015	214	GC-MS
Low range Aromatic hydrocarbons soil	N	As submitted sample	29/06/2015	214	GC-MS
Asbestos identification	U	As submitted sample	26/06/2015	PMAN	Microscopy

Tests marked N are not UKAS accredited

Report Information

Report No.: 15-02604

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Soil sample results are expressed on an air dried basis

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

Deviation Codes

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

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

Sample Retention and Disposal

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

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

Charges may apply to extended sample storage



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THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 15-02661

Issue: 1

Date of Issue: 07/07/2015

Contact: Justyna Oak

Customer Details: GESL
Unit 7
Danworth Farm
Hurstpierpoint
West Sussex

Quotation No: Q14-00021

Order No: 3630

Customer Reference: GE10423

Date Received: 29/06/2015

Date Approved: 07/07/2015

Details: Angels Nursery, Barnham

Approved by:

John Wilson, Operations Manager

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



Sample Summary

Report No.: 15-02661

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
32159	WS4 0.20	29/06/2015	29/06/2015	Silty loam	
32160	WS5 0.20	29/06/2015	29/06/2015	Silty loam	
32161	HP1 0.20	29/06/2015	29/06/2015	Silty loam	
32162	HP2 0.20	29/06/2015	29/06/2015	Silty loam	
32163	HP3 0.20	29/06/2015	29/06/2015	Silty loam	

Results Summary

Report No.: 15-02661

ELAB Reference	32159	32160	32161	32162	32163
Customer Reference					
Sample ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	WS4	WS5	HP1	HP2	HP3
Sample Depth (m)	0.20	0.20	0.20	0.20	0.20
Sampling Date	29/06/2015	29/06/2015	29/06/2015	29/06/2015	29/06/2015

Determinand	Codes	Units	LOD					
Metals								
Arsenic	M	mg/kg	1	7.7	7.7	n/t	n/t	n/t
Barium	M	mg/kg	10	58.4	69.0	n/t	n/t	n/t
Beryllium	U	mg/kg	1	< 1.0	< 1.0	n/t	n/t	n/t
Cadmium	M	mg/kg	0.5	< 0.5	< 0.5	n/t	n/t	n/t
Chromium	M	mg/kg	5	20.1	20.6	n/t	n/t	n/t
Copper	M	mg/kg	5	17.0	24.7	n/t	n/t	n/t
Lead	M	mg/kg	5	19.7	50.7	n/t	n/t	n/t
Mercury	M	mg/kg	0.5	< 0.5	< 0.5	n/t	n/t	n/t
Nickel	M	mg/kg	5	14.4	14.0	n/t	n/t	n/t
Selenium	M	mg/kg	1	< 1.0	< 1.0	n/t	n/t	n/t
Vanadium	M	mg/kg	5	26.9	24.9	n/t	n/t	n/t
Zinc	M	mg/kg	45	55.6	107	n/t	n/t	n/t
Anions								
Water Soluble Chloride	M	mg/kg	40	< 40	49	n/t	n/t	n/t
Water Soluble Sulphate	M	g/l	0.02	0.02	0.03	n/t	n/t	n/t
Inorganics								
Elemental Sulphur	N	mg/kg	20	< 20	< 20	n/t	n/t	n/t
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	< 0.8	n/t	n/t	n/t
Total Sulphide	N	mg/kg	2	< 2	< 2	n/t	n/t	n/t
Total Cyanide	M	mg/kg	1	< 1.0	1.1	n/t	n/t	n/t
Acid Soluble Sulphate (SO4)	U	%SO4	0.02	0.02	0.04	n/t	n/t	n/t
Water Soluble Boron	N	mg/kg	0.5	0.6	1.9	n/t	n/t	n/t
Miscellaneous								
Acid Neutralisation Capacity	N	mol/kg	0.1	n/t	n/t	0.1	< 0.1	< 0.1
Loss On Ignition (450°C)	M	%	0.01	n/t	n/t	3.35	2.56	4.75
pH	M	units	0.1	7.7	7.8	11.4	8.3	8.1
Total Organic Carbon	N	%	0.01	0.39	2.3	0.93	0.53	1.4
Phenols								
Total Phenols	N	mg/kg	6	< 6	< 6	n/t	n/t	n/t
Polyaromatic hydrocarbons								
Naphthalene	M	mg/kg	0.1	< 0.1	< 0.5	n/t	n/t	n/t
Acenaphthylene	M	mg/kg	0.1	< 0.1	< 0.5	n/t	n/t	n/t
Acenaphthene	M	mg/kg	0.1	< 0.1	< 0.5	n/t	n/t	n/t
Fluorene	M	mg/kg	0.1	< 0.1	< 0.5	n/t	n/t	n/t
Phenanthrene	M	mg/kg	0.1	< 0.1	< 0.5	n/t	n/t	n/t
Anthracene	M	mg/kg	0.1	< 0.1	< 0.5	n/t	n/t	n/t
Fluoranthene	M	mg/kg	0.1	< 0.1	< 0.5	n/t	n/t	n/t
Pyrene	M	mg/kg	0.1	< 0.1	< 0.5	n/t	n/t	n/t
Benzo (a) anthracene	M	mg/kg	0.1	< 0.1	< 0.5	n/t	n/t	n/t
Chrysene	M	mg/kg	0.1	0.3	0.9	n/t	n/t	n/t
Benzo (b) fluoranthene	M	mg/kg	0.1	< 0.1	< 0.5	n/t	n/t	n/t
Benzo (k) fluoranthene	M	mg/kg	0.1	< 0.1	< 0.5	n/t	n/t	n/t
Benzo (a) pyrene	M	mg/kg	0.1	< 0.1	< 0.5	n/t	n/t	n/t
Indeno (1,2,3-cd) pyrene	M	mg/kg	0.1	< 0.1	< 0.5	n/t	n/t	n/t
Dibenzo(a,h)anthracene	M	mg/kg	0.1	< 0.1	< 0.5	n/t	n/t	n/t
Benzo(ghi)perylene	M	mg/kg	0.1	0.2	< 0.5	n/t	n/t	n/t
Total PAH(16)	M	mg/kg	0.4	< 0.4	4	n/t	n/t	n/t
Total PAH (Including Coronene)	N	mg/kg	2	n/t	n/t	19	5	< 2

Tests marked N are not UKAS accredited.

The Environmental Laboratory Ltd. Reg. No. 3882193

Results Summary

Report No.: 15-02661

ELAB Reference	32159	32160	32161	32162	32163
Customer Reference					
Sample ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	WS4	WS5	HP1	HP2	HP3
Sample Depth (m)	0.20	0.20	0.20	0.20	0.20
Sampling Date	29/06/2015	29/06/2015	29/06/2015	29/06/2015	29/06/2015

Determinand	Codes	Units	LOD					
BTEX								
Benzene	M	ug/kg	10	< 10.0	< 10.0	n/t	n/t	n/t
Toluene	M	ug/kg	10	< 10.0	< 10.0	n/t	n/t	n/t
Ethylbenzene	M	ug/kg	10	< 10.0	< 10.0	n/t	n/t	n/t
Xylenes	M	ug/kg	10	< 10.0	< 10.0	n/t	n/t	n/t
Total BTEX	M	mg/kg	0.01	n/t	n/t	< 0.01	< 0.01	< 0.01
TPH CWG								
>C5-C6 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	n/t	n/t	n/t
>C6-C8 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	n/t	n/t	n/t
>C8-C10 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	n/t	n/t	n/t
>C10-C12 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	n/t	n/t	n/t
>C12-C16 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	n/t	n/t	n/t
>C16-C21 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	n/t	n/t	n/t
>C21-C35 Aliphatic	N	mg/kg	1	1.9	4.6	n/t	n/t	n/t
>C35-C40 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	n/t	n/t	n/t
>C5-C7 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	n/t	n/t	n/t
>C7-C8 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	n/t	n/t	n/t
>C8-C10 Aromatic	N	mg/kg	1	< 1.0	< 1.0	n/t	n/t	n/t
>C10-C12 Aromatic	N	mg/kg	1	< 1.0	< 1.0	n/t	n/t	n/t
>C12-C16 Aromatic	N	mg/kg	1	< 1.0	< 1.0	n/t	n/t	n/t
>C16-C21 Aromatic	N	mg/kg	1	< 1.0	< 1.0	n/t	n/t	n/t
>C21-C35 Aromatic	N	mg/kg	1	< 1.0	1.4	n/t	n/t	n/t
>C35-C40 Aromatic	N	mg/kg	1	< 1.0	< 1.0	n/t	n/t	n/t
Total (>C5-C40) Ali/Aro	N	mg/kg	1	1.9	6.0	n/t	n/t	n/t
Total Petroleum Hydrocarbons								
Mineral Oil	U	mg/kg	5	n/t	n/t	700	294	< 5
PCB (ICES 7 congeners)								
PCB (Total of 7 Congeners)	M	mg/kg	0.03	n/t	n/t	< 0.03	< 0.03	< 0.03
OrganoChlorine Pesticides								
alpha-HCH	M	ug/kg	10	n/t	< 10	n/t	n/t	n/t
beta_HCH	M	ug/kg	10	n/t	< 10	n/t	n/t	n/t
gamma-HCH	M	ug/kg	10	n/t	< 10	n/t	n/t	n/t
delta-HCH	N	ug/kg	10	n/t	< 10	n/t	n/t	n/t
Heptachlor	N	ug/kg	10	n/t	< 10	n/t	n/t	n/t
Aldrin	M	ug/kg	10	n/t	< 10	n/t	n/t	n/t
Heptachlor expoxide	N	ug/kg	10	n/t	< 10	n/t	n/t	n/t
trans-Chlordane	N	ug/kg	10	n/t	< 10	n/t	n/t	n/t
alpha cis-Chlordane	N	ug/kg	10	n/t	< 10	n/t	n/t	n/t
p,p-DDE	M	ug/kg	10	n/t	< 10	n/t	n/t	n/t
Dieldrin	M	ug/kg	10	n/t	< 10	n/t	n/t	n/t
Endrin	N	ug/kg	10	n/t	< 10	n/t	n/t	n/t
p,p-DDD	M	ug/kg	10	n/t	< 10	n/t	n/t	n/t
Endosulfan II	N	ug/kg	10	n/t	< 10	n/t	n/t	n/t
Endrin aldehyde	N	ug/kg	10	n/t	< 10	n/t	n/t	n/t
p,p-DDT	M	ug/kg	10	n/t	< 10	n/t	n/t	n/t
Endosulphan sulphate	M	ug/kg	10	n/t	< 10	n/t	n/t	n/t
Methoxychlor	N	ug/kg	10	n/t	< 10	n/t	n/t	n/t
Endrin ketone	N	ug/kg	10	n/t	< 10	n/t	n/t	n/t

Tests marked N are not UKAS accredited.

The Environmental Laboratory Ltd. Reg. No. 3882193

Results Summary

Report No.: 15-02661

2683

WAC Analysis

Elab Ref:	32163					Landfill Waste Acceptance Criteria Limits		
Sample Date:	29/06/2015					Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	HP3							
Depth:	0.2							
Site:	Angels Nursery, Barnham							
Determinand		Code	Units					
Total Organic Carbon		N	%		1.40	3	5	6
Loss on Ignition		M	%		4.8	--	--	10
Total BTEX		M	mg/kg		< 0.01	6	--	--
Total PCBs (7 congeners)		M	mg/kg		< 0.03	1	--	--
TPH Total WAC		M	mg/kg		< 5	500	--	--
Total (of 17) PAHs		N	mg/kg		< 2	100	--	--
pH		M			8.1	--	>6	--
Acid Neutralisation Capacity		N	mol/kg		< 0.1	--	To evaluate	To evaluate

Eluate Analysis

			2:1	8:1	10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
			mg/l	mg/l	mg/kg			
Arsenic		N	0.005	< 0.005	< 0.05	0.5	2	25
Barium		N	0.017	0.006	0.07	20	100	300
Cadmium		N	< 0.001	< 0.001	< 0.01	0.04	1	5
Chromium		N	< 0.005	< 0.005	< 0.05	0.5	10	70
Copper		N	0.014	0.006	0.07	2	50	100
Mercury		N	< 0.005	< 0.005	< 0.01	0.01	0.2	2
Molybdenum		N	< 0.005	< 0.005	< 0.05	0.5	10	30
Nickel		N	0.004	0.002	< 0.05	0.4	10	40
Lead		N	< 0.001	< 0.001	< 0.05	0.5	10	50
Antimony		N	< 0.005	< 0.005	< 0.05	0.06	0.7	5
Selenium		N	< 0.005	< 0.005	< 0.05	0.1	0.5	7
Zinc		N	0.008	0.006	0.06	4	50	200
Chloride		N	6.000	< 5	< 50	800	15000	25000
Fluoride		N	< 1	< 1	< 10	10	150	500
Sulphate		N	5.000	4.000	36.90	1000	20000	50000
Total Dissolved Solids		N	210.000	< 10	194.00	4000	60000	100000
Phenol Index		N	< 0.01	< 0.01	< 0.10	1	-	-
Dissolved Organic Carbon		N	28.000	12.700	142.00	500	800	1000

Leach Test Information

Eluent Volume (ml)		N	163	1400				
pH		N	8.6	7.5				
Conductivity (uS/cm)		N	317	158				
Temperature (°C)		N	20	19				

Solid Information

Dry mass of test portion (g)			177					
Moisture (%)			16.6					

Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ELAB cannot be held responsible for any discrepancies with current legislation

Results Summary

Report No.: 15-02661

2683

WAC Analysis

Elab Ref:	32162					Landfill Waste Acceptance Criteria Limits		
Sample Date:	29/06/2015					Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	HP2							
Depth:	0.2							
Site:	Angels Nursery, Barnham							
Determinand		Code	Units					
Total Organic Carbon		N	%		0.53	3	5	6
Loss on Ignition		M	%		2.6	--	--	10
Total BTEX		M	mg/kg		< 0.01	6	--	--
Total PCBs (7 congeners)		M	mg/kg		< 0.03	1	--	--
TPH Total WAC		M	mg/kg		294	500	--	--
Total (of 17) PAHs		N	mg/kg		5.0	100	--	--
pH		M			8.3	--	>6	--
Acid Neutralisation Capacity		N	mol/kg		< 0.1	--	To evaluate	To evaluate

Eluate Analysis

			2:1	8:1	10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
			mg/l	mg/l	mg/kg			
Arsenic		N	< 0.005	< 0.005	< 0.05	0.5	2	25
Barium		N	0.018	< 0.005	< 0.05	20	100	300
Cadmium		N	< 0.001	< 0.001	< 0.01	0.04	1	5
Chromium		N	< 0.005	< 0.005	< 0.05	0.5	10	70
Copper		N	0.044	0.007	0.11	2	50	100
Mercury		N	< 0.005	< 0.005	< 0.01	0.01	0.2	2
Molybdenum		N	0.014	< 0.005	< 0.05	0.5	10	30
Nickel		N	0.005	0.002	< 0.05	0.4	10	40
Lead		N	< 0.001	< 0.001	< 0.05	0.5	10	50
Antimony		N	< 0.005	< 0.005	< 0.05	0.06	0.7	5
Selenium		N	< 0.005	< 0.005	< 0.05	0.1	0.5	7
Zinc		N	0.006	< 0.005	< 0.05	4	50	200
Chloride		N	9.000	< 5	< 50	800	15000	25000
Fluoride		N	< 1	< 1	< 10	10	150	500
Sulphate		N	11.000	3.000	41.40	1000	20000	50000
Total Dissolved Solids		N	380.000	< 10	399.00	4000	60000	100000
Phenol Index		N	< 0.01	< 0.01	< 0.10	1	-	-
Dissolved Organic Carbon		N	95.900	12.300	211.00	500	800	1000

Leach Test Information

Eluent Volume (ml)		N	185	1400				
pH		N	8.1	7.5				
Conductivity (uS/cm)		N	309	110				
Temperature (°C)		N	21	19				

Solid Information

Dry mass of test portion (g)			176					
Moisture (%)			7.8					

Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ELAB cannot be held responsible for any discrepancies with current legislation

Results Summary

Report No.: 15-02661

2683

WAC Analysis

Elab Ref:	32161					Landfill Waste Acceptance Criteria Limits		
Sample Date:	29/06/2015					Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	HP1							
Depth:	0.2							
Site:	Angels Nursery, Barnham							
Determinand		Code	Units					
Total Organic Carbon		N	%		0.93	3	5	6
Loss on Ignition		M	%		3.4	--	--	10
Total BTEX		M	mg/kg		< 0.01	6	--	--
Total PCBs (7 congeners)		M	mg/kg		< 0.03	1	--	--
TPH Total WAC		M	mg/kg		700	500	--	--
Total (of 17) PAHs		N	mg/kg		19.0	100	--	--
pH		M			11.4	--	>6	--
Acid Neutralisation Capacity		N	mol/kg		0.1	--	To evaluate	To evaluate

Eluate Analysis

			2:1	8:1	10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
			mg/l	mg/l	mg/kg			
Arsenic		N	0.006	< 0.005	< 0.05	0.5	2	25
Barium		N	0.014	0.006	0.07	20	100	300
Cadmium		N	< 0.001	< 0.001	< 0.01	0.04	1	5
Chromium		N	< 0.005	< 0.005	< 0.05	0.5	10	70
Copper		N	0.014	0.008	0.08	2	50	100
Mercury		N	< 0.005	< 0.005	< 0.01	0.01	0.2	2
Molybdenum		N	0.013	< 0.005	< 0.05	0.5	10	30
Nickel		N	0.004	0.002	< 0.05	0.4	10	40
Lead		N	< 0.001	< 0.001	< 0.05	0.5	10	50
Antimony		N	< 0.005	< 0.005	< 0.05	0.06	0.7	5
Selenium		N	< 0.005	< 0.005	< 0.05	0.1	0.5	7
Zinc		N	0.006	< 0.005	< 0.05	4	50	200
Chloride		N	8.000	< 5	< 50	800	15000	25000
Fluoride		N	< 1	< 1	< 10	10	150	500
Sulphate		N	26.000	5.000	71.50	1000	20000	50000
Total Dissolved Solids		N	180.000	< 10	216.00	4000	60000	100000
Phenol Index		N	< 0.01	< 0.01	< 0.10	1	-	-
Dissolved Organic Carbon		N	25.900	8.350	105.00	500	800	1000

Leach Test Information

Eluent Volume (ml)		N	210	1390				
pH		N	7.7	7.4				
Conductivity (uS/cm)		N	287	134				
Temperature (°C)		N	21	19				

Solid Information

Dry mass of test portion (g)			175					
Moisture (%)			7.9					

Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ELAB cannot be held responsible for any discrepancies with current legislation



Unit A2, Windmill Road, Ponswood Industrial Estate, St Leonards on Sea, East Sussex, TN38 9BY
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Results Summary

Report No.: 15-02661

Asbestos Qualitative Results

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

Elab No	Depth (m)	Clients Reference	Description of Sample Matrix #	Result
32159	0.20	WS4	Silty loam	No asbestos detected
32160	0.20	WS5	Silty loam	No asbestos detected

Method Summary

Report No.: 15-02661

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Anions in 2:1 WAC	N		06/07/2015		
DOC in 2:1 WAC	N		07/07/2015		
Metals by ICP in 2:1 WAC	N		06/07/2015		
Phenols in 2:1 WAC	N		07/07/2015		
Polyaromatic hydrocarbons in solids	N	As submitted sample	02/07/2015		GC-FID
Sulphide	N	As submitted sample	01/07/2015	109	Colorimetry
Hexavalent chromium	N	As submitted sample	01/07/2015	110	Colorimetry
pH	M	Air dried sample	01/07/2015	113	Electromeric
Acid Soluble Sulphate	U	Air dried sample	02/07/2015	115	Ion Chromatography
Total Petroleum Hydrocarbons in solids	U	As submitted sample	01/07/2015	117	GC-FID
Aqua regia extractable metals	M	Air dried sample	01/07/2015	118	ICPMS
PCB (ICES 7 congeners)	M	Air dried sample	03/07/2015	120	GC-MS
Phenols in solids	M	As submitted sample	01/07/2015	121	HPLC
Elemental Sulphur	N	Air dried sample	01/07/2015	122	HPLC
Loss on ignition at 450 deg C	M	Air dried sample	02/07/2015	129	Gravimetry
Polyaromatic hydrocarbons (GC-FID)	M	As submitted sample	01/07/2015	133	GC-FID
Water soluble anions	M	Air dried sample	01/07/2015	172	Ion Chromatography
Organochlorine Pesticides in solids	M	As submitted sample	01/07/2015	173	GC-MS
BTEX in solids	M	As submitted sample	02/07/2015	181	GC-MS
Water soluble boron	N	Air dried sample	01/07/2015	202	Colorimetry
Total cyanide	M	As submitted sample	01/07/2015	204	Colorimetry
Total organic carbon/Total sulphur	N	Air dried sample	02/07/2015	210	IR
Aliphatic hydrocarbons in soil	N	As submitted sample	01/07/2015	214	GC-FID
Aliphatic/Aromatic hydrocarbons in soil	N	As submitted sample	02/07/2015	214	GC-FID
Aromatic hydrocarbons in soil	N	As submitted sample	01/07/2015	214	GC-FID
Low range Aliphatic hydrocarbons soil	N	As submitted sample	02/07/2015	214	GC-MS
Low range Aromatic hydrocarbons soil	N	As submitted sample	02/07/2015	214	GC-MS
Acid neutralisation capacity	N	Air dried sample	02/07/2015	737	
Asbestos identification	U	As submitted sample	02/07/2015	PMAN	Microscopy

Leachate

Tests marked N are not UKAS accredited

Report Information

Report No.: 15-02661

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Soil sample results are expressed on an air dried basis

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

Deviation Codes

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

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

Sample Retention and Disposal

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

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

Charges may apply to extended sample storage

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Report generated	13-Jul-15	 Environment Agency
Report title	Angels Nursery, Barnham	
Created by	Justyna Oak at Geo-Environmental	
RESULTS		



		Assessment Criterion (mg kg ⁻¹)			Ratio of ADE to HCV			Saturation Limit (mg kg ⁻¹)	50% rule?	
		oral	inhalation	combined	oral	inhalation	combined		Oral	Inhal
1	Arsenic	3.24E+01	8.50E+01	NR	1.00	0.38	NR	NR	No	No
2	Cadmium	5.45E+00	2.97E+01	5.17E+00	0.91	0.10	1.00	NR	Yes	Yes
3	Chromium III	1.95E+04	3.55E+03	3.01E+03	0.15	0.85	1.00	NR	No	No
4	Mercury, inorganic	1.81E+02	2.55E+03	1.69E+02	0.93	0.07	1.00	NR	No	No
5	Nickel	5.31E+02	1.27E+02	NR	0.14	1.00	NR	NR	Yes	Yes
6	Copper	7.81E+03	1.04E+04	5.20E+03	0.50	0.50	1.00	NR	Yes	No
7	Zinc	1.94E+04	2.55E+07	1.94E+04	1.00	0.00	1.00	NR	Yes	No
8	Selenium	3.50E+02	NR	NR	1.00	NR	NR	NR	Yes	No
9	Chromium VI	4.89E+01	NR	NR	1.00	NR	NR	NR	Yes	No
10	Barium	1.33E+03	NR	NR	1.00	NR	NR	NR	Yes	No
11	Beryllium	1.48E+02	5.10E+01	4.12E+01	0.19	0.81	1.00	NR	Yes	No
12	Vanadium	1.18E+02	6.08E+02	1.07E+02	0.90	0.10	1.00	NR	Yes	Yes
13	Phenol	4.67E+02	3.90E+02	2.13E+02	0.45	0.54	1.00	4.62E+04 (vap)	No	No
14	Acenaphthylene	1.62E+02	3.28E+03	1.54E+02	0.95	0.05	1.00	7.87E+01 (sol)	No	No
15	Acenaphthene	1.99E+02	3.72E+03	1.89E+02	0.95	0.05	1.00	5.20E+01 (sol)	No	No
16	Flourene	1.54E+02	4.07E+03	1.49E+02	0.96	0.04	1.00	2.81E+01 (sol)	No	No
17	Phenanthrene	8.51E+01	4.61E+03	8.36E+01	0.98	0.02	1.00	3.26E+01 (sol)	No	No
18	Anthracene	2.10E+03	9.67E+04	2.06E+03	0.98	0.02	1.00	1.06E+00 (vap)	No	No
19	Flouranthene	2.40E+02	2.72E+04	2.38E+02	0.99	0.01	1.00	1.71E+01 (vap)	No	No
20	Pyrene	5.24E+02	6.38E+04	5.20E+02	0.99	0.01	1.00	1.98E+00 (vap)	No	No

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	Soil Distribution				Media Concentrations													
	Sorbed	Dissolved	Vapour	Total	Soil	Soil gas	Indoor Dust	Outdoor dust at 0.8m	Outdoor dust at 1.6m	Indoor Vapour	Outdoor vapour at 0.8m	Outdoor vapour at 1.6m	Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
	%	%	%	%	mg kg ⁻¹	mg m ⁻³	mg kg ⁻¹	mg m ⁻³	mg m ⁻³	mg m ⁻³	mg m ⁻³	mg m ⁻³	mg kg ⁻¹ FW	mg kg ⁻¹ FW	mg kg ⁻¹ FW	mg kg ⁻¹ FW	mg kg ⁻¹ FW	mg kg ⁻¹ FW
1 Arsenic	99.9	0.1	0.0	100.0	3.24E+01	NR	1.62E+01	1.38E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-02	1.30E-02	7.45E-03	1.07E-02	6.48E-03	3.56E-02
2 Cadmium	99.6	0.4	0.0	100.0	5.17E+00	NR	2.59E+00	2.20E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.69E-01	1.50E-01	1.60E-01	8.28E-02	1.60E-02	7.24E-03
3 Chromium III	100.0	0.0	0.0	100.0	3.01E+03	NR	1.50E+03	1.28E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.66E-03	9.29E-03	1.89E-02	5.23E-03	1.50E-02	1.42E-02
4 Mercury, inorganic	99.9	0.1	0.0	100.0	1.69E+02	NR	8.43E+01	7.18E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.41E-01	1.16E+00	7.25E-01	1.69E-01	1.86E-01	1.69E-01
5 Nickel	99.9	0.1	0.0	100.0	1.27E+02	NR	6.37E+01	5.42E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.84E-01	5.48E-01	2.42E-01	3.19E-01	3.19E-01	4.33E-01
6 Copper	99.6	0.4	0.0	100.0	5.20E+03	NR	2.60E+03	2.21E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E+01	1.10E+01	2.25E+01	7.03E+00	1.78E+01	1.68E+01
7 Zinc	98.9	1.1	0.0	100.0	1.94E+04	NR	9.69E+03	8.25E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E+02	1.08E+02	2.20E+02	1.61E+02	1.74E+02	1.64E+02
8 Selenium	99.2	0.8	0.0	100.0	3.50E+02	NR	1.75E+02	1.49E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.78E+00	1.27E+00	2.91E-01	9.49E-01	1.05E+00	1.05E+00
9 Chromium VI	97.8	2.2	0.0	100.0	4.89E+01	NR	2.45E+01	2.08E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.39E-04	5.04E-04	1.03E-03	2.55E-01	2.44E-03	6.91E-01
10 Barium	#####	#DIV/0!	0.0	#DIV/0!	1.33E+03	NR	6.64E+02	5.66E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
11 Beryllium	100.0	0.0	0.0	100.0	4.12E+01	NR	2.06E+01	1.75E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.77E-02	5.09E-03	1.04E-02	2.87E-03	8.21E-03	7.76E-03
12 Vanadium	96.8	3.2	0.0	100.0	1.07E+02	NR	5.34E+01	4.55E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.33E+00	1.43E+00	2.92E-01	8.06E-02	2.31E-01	2.18E-01
13 Phenol	51.8	48.2	0.0	100.0	2.13E+02	2.12E+00	1.06E+02	9.05E-08	0.00E+00	1.83E-03	9.19E-05	0.00E+00	2.01E+02	5.67E+02	2.17E+02	0.00E+00	0.00E+00	4.10E+02
14 Acenaphthylene	95.9	4.1	0.0	100.0	1.54E+02	8.84E+00	7.71E+01	6.56E-08	0.00E+00	3.04E-03	1.81E-05	0.00E+00	8.95E+01	1.24E+02	3.09E+01	0.00E+00	0.00E+00	1.74E+01
15 Acenaphthene	96.8	3.2	0.0	100.0	1.89E+02	1.13E+01	9.43E+01	8.03E-08	0.00E+00	3.28E-03	1.98E-05	0.00E+00	8.95E+01	1.23E+02	3.41E+01	0.00E+00	0.00E+00	1.45E+01
16 Flourene	97.3	2.7	0.0	100.0	1.49E+02	4.05E+00	7.44E+01	6.33E-08	0.00E+00	1.57E-03	1.34E-05	0.00E+00	6.07E+01	8.34E+01	2.39E+01	0.00E+00	0.00E+00	8.46E+00
17 Phenanthrene	98.6	1.4	0.0	100.0	8.36E+01	4.11E-01	4.18E+01	3.56E-08	0.00E+00	2.42E-04	5.15E-06	0.00E+00	1.84E+01	2.62E+01	9.29E+00	0.00E+00	0.00E+00	1.46E+00
18 Anthracene	98.6	1.4	0.0	100.0	2.06E+03	1.25E+01	1.03E+03	8.75E-07	0.00E+00	6.83E-03	1.26E-04	0.00E+00	4.41E+02	6.30E+02	2.24E+02	0.00E+00	0.00E+00	3.52E+01
19 Flouranthene	99.6	0.4	0.0	100.0	2.38E+02	1.57E-01	1.19E+02	1.01E-07	0.00E+00	1.11E-04	7.80E-06	0.00E+00	1.31E+01	2.41E+01	1.27E+01	0.00E+00	0.00E+00	4.05E-01
20 Pyrene	99.5	0.5	0.0	100.0	5.20E+02	3.45E-01	2.80E+02	2.21E-07	0.00E+00	2.50E-04	1.82E-05	0.00E+00	3.31E+01	5.91E+01	3.04E+01	0.00E+00	0.00E+00	1.10E+00

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	Average Daily Exposure (mg kg ⁻¹ bw day ⁻¹)							Distribution by Pathway (%)							
	Direct soil ingestion	Consumption of homegrown produce and attached soil	Dermal contact with soil and dust	Inhalation of dust	Inhalation of vapour	Background (oral)	Background (inhalation)	Direct soil ingestion	Consumption of homegrown produce and attached soil	Dermal contact with soil and dust	Inhalation of dust	Inhalation of vapour (indoor)	Inhalation of vapour (outdoor)	Background (oral)	Background (inhalation)
1 Arsenic	2.40E-04	2.27E-05	3.70E-05	7.62E-07	0.00E+00	0.00E+00	0.00E+00	79.89	7.54	12.31	0.25	0.00	0.00	0.00	0.00
2 Cadmium	3.84E-05	1.32E-04	1.97E-07	1.22E-07	0.00E+00	7.54E-04	1.21E-06	11.21	38.70	0.06	0.04	0.00	0.00	49.96	0.04
3 Chromium III	2.23E-02	2.69E-04	0.00E+00	7.08E-05	0.00E+00	3.39E-03	1.64E-05	85.63	1.03	0.00	0.27	0.00	0.00	13.01	0.06
4 Mercury, inorganic	1.25E-03	5.64E-04	0.00E+00	3.97E-06	0.00E+00	5.63E-05	0.00E+00	66.71	30.08	0.00	0.21	0.00	0.00	3.00	0.00
5 Nickel	9.45E-04	4.66E-04	2.43E-05	3.00E-06	0.00E+00	7.31E-03	3.64E-06	32.77	16.18	0.84	0.10	0.00	0.00	49.90	0.10
6 Copper	3.86E-02	1.47E-02	0.00E+00	1.22E-04	0.00E+00	3.94E-01	4.12E-05	36.15	13.78	0.00	0.11	0.00	0.00	49.92	0.04
7 Zinc	1.44E-01	1.56E-01	0.00E+00	4.56E-04	0.00E+00	1.52E+00	1.45E-04	23.95	26.00	0.00	0.08	0.00	0.00	49.95	0.02
8 Selenium	2.60E-03	1.82E-03	0.00E+00	8.24E-06	0.00E+00	1.97E-03	3.64E-06	40.59	28.46	0.00	0.13	0.00	0.00	30.82	0.00
9 Chromium VI	3.63E-04	2.60E-04	0.00E+00	1.15E-06	0.00E+00	3.77E-04	0.00E+00	36.29	26.02	0.00	0.00	0.00	0.00	37.70	0.00
10 Barium	9.86E-03	1.13E-04	0.00E+00	3.13E-05	0.00E+00	4.77E-02	6.06E-02	49.28	0.57	0.00	0.16	0.00	0.00	50.00	0.00
11 Beryllium	3.06E-04	1.61E-05	0.00E+00	9.70E-07	0.00E+00	8.44E-04	0.00E+00	47.43	2.49	0.00	0.15	0.00	0.00	49.92	0.00
12 Vanadium	7.93E-04	7.49E-04	0.00E+00	2.52E-06	0.00E+00	1.29E-03	3.88E-05	27.91	26.36	0.00	0.09	0.00	0.00	45.56	0.09
13 Phenol	1.58E-03	3.08E-01	2.43E-03	5.00E-06	1.69E-03	1.97E-02	2.42E-03	0.47	91.71	0.72	0.00	0.50	0.00	5.87	0.72
14 Acenaphthylene	1.14E-03	5.53E-02	7.64E-04	3.63E-06	2.81E-03	7.88E-06	6.67E-07	1.91	92.11	1.27	0.01	4.69	0.00	0.01	0.00
15 Acenaphthene	1.40E-03	5.46E-02	9.34E-04	4.44E-06	3.03E-03	5.51E-05	1.52E-06	2.33	90.95	1.56	0.01	5.05	0.00	0.09	0.00
16 Fluorene	1.10E-03	3.67E-02	7.37E-04	3.50E-06	1.46E-03	3.32E-05	5.82E-06	2.76	91.65	1.84	0.01	3.64	0.00	0.08	0.01
17 Phenanthrene	6.20E-04	1.12E-02	4.14E-04	1.97E-06	2.24E-04	8.66E-05	3.14E-05	4.95	89.00	3.30	0.02	1.79	0.00	0.69	0.25
18 Anthracene	1.52E-02	2.68E-01	1.02E-02	4.84E-05	6.33E-03	4.50E-06	2.49E-06	5.08	89.40	3.39	0.02	2.11	0.00	0.00	0.00
19 Fluoranthene	1.76E-03	9.43E-03	1.18E-03	5.59E-06	1.03E-04	1.97E-05	5.09E-06	14.09	75.43	9.41	0.04	0.82	0.00	0.16	0.04
20 Pyrene	3.86E-03	2.33E-02	2.58E-03	1.22E-05	2.32E-04	1.97E-05	3.94E-06	12.86	77.66	8.59	0.04	0.77	0.00	0.07	0.01

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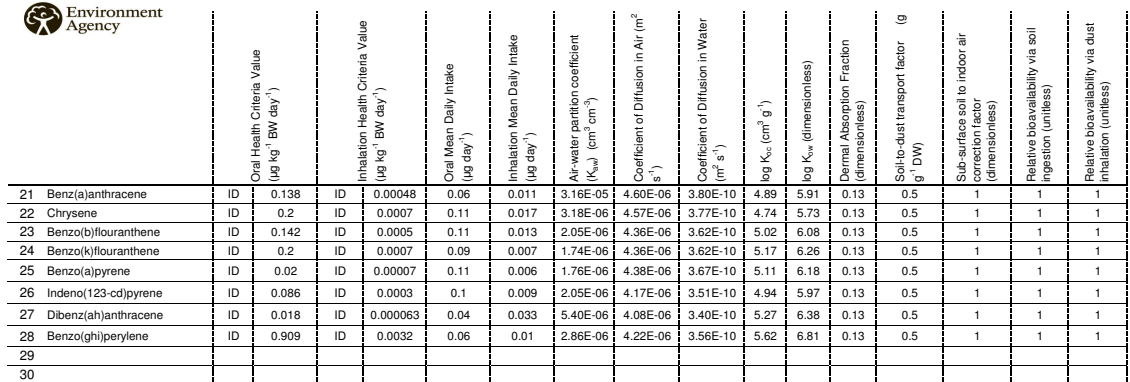
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Environment Agency		Oral Health Criteria Value ($\mu\text{g kg}^{-1}$ BW day ⁻¹)		Inhalation Health Criteria Value ($\mu\text{g kg}^{-1}$ BW day ⁻¹)		Oral Mean Daily Intake ($\mu\text{g day}^{-1}$)		Inhalation Mean Daily Intake ($\mu\text{g day}^{-1}$)		Air-water partition coefficient (K_{aw}) ($\text{cm}^3 \text{cm}^{-3}$)		Coefficient of Diffusion in Air ($\text{m}^2 \text{s}^{-1}$)		Coefficient of Diffusion in Water ($\text{m}^2 \text{s}^{-1}$)		$\log K_{ow}$ ($\text{cm}^3 \text{g}^{-1}$)		$\log K_{ow}$ (dimensionless)		Dermal Absorption Fraction (dimensionless)		Soil-to-dust transport factor (g DW)		Sub-surface soil to indoor air correction factor (dimensionless)		Relative bioavailability via soil ingestion (unless)		Relative bioavailability via dust inhalation (unless)		
1	Arsenic	ID	0.3	ID	0.002	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
2	Cadmium	TDI	0.36	TDI	0.0014	13.4	0.02	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
3	Chromium III	TDI	150	TDI	0.1	60.2	0.27	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
4	Mercury, inorganic	TDI	2	TDI	0.06	1	0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
5	Nickel	TDI	12	TDI	0.006	130	0.06	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
6	Copper	TDI	160	TDI	0.286	7000	0.68	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
7	Zinc	TDI	600	TDI	600	27000	2.4	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
8	Selenium	TDI	6.4	NR	0	35	0.06	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
9	Chromium VI	TDI	1	NR	0	6.7	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
10	Barium	TDI	20	NR	0	847	1000	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
11	Beryllium	TDI	2	ID	0.0012	15	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
12	Vanadium	TDI	3	TDI	0.0286	23	0.64	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
13	Phenol	TDI	700	TDI	10	350	40	8.35E-06	7.90E-06	6.36E-10	1.92	1.48	0.3	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	Acenaphthylene	TDI	60	TDI	60	0.14	0.011	5.68E-04	5.97E-06	4.82E-10	3.26	3.91	0.13	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	Acenaphthene	TDI	60	TDI	60	0.98	0.025	7.59E-04	5.85E-06	4.70E-10	3.37	4.03	0.13	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	Flourene	TDI	40	TDI	40	0.59	0.096	4.12E-04	5.58E-06	4.47E-10	3.45	4.13	0.13	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	Phenanthrene	TDI	12.5	TDI	12.5	1.54	0.518	1.43E-04	5.34E-06	4.32E-10	3.74	4.5	0.13	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	Anthracene	TDI	300	TDI	300	0.08	0.041	1.81E-04	5.36E-06	4.36E-10	3.75	4.5	0.13	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	Flouranthene	TDI	12.5	TDI	12.5	0.35	0.084	6.29E-05	5.01E-06	4.11E-10	4.26	5.13	0.13	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	Pyrene	TDI	30	TDI	30	0.35	0.065	5.64E-05	5.01E-06	4.15E-10	4.21	5.08	0.13	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1



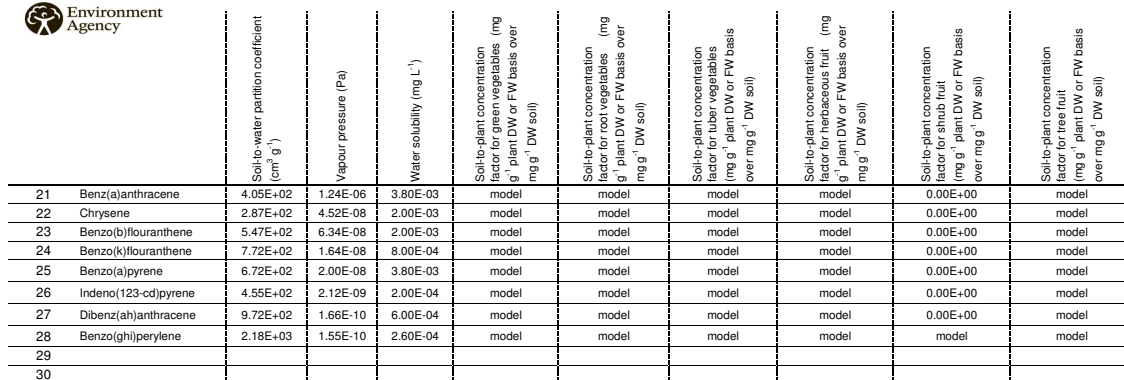
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		Soil-to-water partition coefficient (cm ³ g ⁻¹)	Vapour pressure (Pa)	Water solubility (mg L ⁻¹)	Soil-to-plant concentration factor for green vegetables (mg g ⁻¹ plant DW or FW basis over mg g ⁻¹ DW soil)	Soil-to-plant concentration factor for root vegetables (mg g ⁻¹ plant DW or FW basis over mg g ⁻¹ DW soil)	Soil-to-plant concentration factor for tuber vegetables (mg g ⁻¹ plant DW or FW basis over mg g ⁻¹ DW soil)	Soil-to-plant concentration factor for herbaceous fruit (mg g ⁻¹ plant DW or FW basis over mg g ⁻¹ DW soil)	Soil-to-plant concentration factor for shrub fruit (mg g ⁻¹ plant DW or FW basis over mg g ⁻¹ DW soil)	Soil-to-plant concentration factor for tree fruit (mg g ⁻¹ plant DW or FW basis over mg g ⁻¹ DW soil)
1	Arsenic	5.00E+02	NR	1.25E+06	0.00043 fw	0.0004 fw	0.00023 fw	0.00033 fw	0.0002 fw	0.0011 fw
2	Cadmium	1.00E+02	NR	1.62E+06	0.052 fw	0.029 fw	0.031 fw	0.016 fw	0.0031 fw	0.0014 fw
3	Chromium III	4.80E+03	NR	5.85E+05	0.00003 dw	0.00003 dw	0.00003 dw	0.00003 dw	0.00003 dw	0.00003 dw
4	Mercury, inorganic	5.00E+02	NR	7.40E+04	0.0038 fw	0.0069 fw	0.0043 fw	0.001 fw	0.0011 fw	0.001 fw
5	Nickel	5.00E+02	NR	2.50E+06	0.0038 fw	0.0043 fw	0.0019 fw	0.0025 fw	0.0025 fw	0.0034 fw
6	Copper	1.00E+02	NR	1.38E+06	0.0206 dw	0.0206 dw	0.0206 dw	0.0233 dw	0.0206 dw	0.0206 dw
7	Zinc	3.80E+01	NR	4.32E+06	0.054 dw	0.054 dw	0.054 dw	0.143 dw	0.054 dw	0.054 dw
8	Selenium	5.00E+01	NR	2.17E+06	0.0108 fw	0.00364 fw	0.00083 fw	0.00271 fw	0.003 fw	0.003 fw
9	Chromium VI	1.80E+01	NR	2.30E+06	0.0002 dw	0.0001 dw	0.0001 dw	0.09 dw	0.0003 dw	0.09 dw
10	Barium	0.00E+00	NR	8.00E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
11	Beryllium	1.70E+03	NR	1.66E+06	0.007 dw	0.0012 dw	0.0012 dw	0.0012 dw	0.0012 dw	0.0012 dw
12	Vanadium	1.26E+01	NR	2.11E+05	0.13 dw	0.13 dw	0.013 dw	0.013 dw	0.013 dw	0.013 dw
13	Phenol	4.34E-01	1.15E+01	8.41E+04	model	model	model	0.00E+00	0.00E+00	model
14	Acenaphthylene	9.50E+00	7.08E-02	7.95E+00	model	model	model	model	model	model
15	Acenaphthene	1.22E+01	7.37E-02	4.11E+00	model	model	model	model	model	model
16	Flourene	1.47E+01	1.56E-02	1.86E+00	model	model	model	model	model	model
17	Phenanthrene	2.87E+01	2.82E-03	1.12E+00	model	model	model	model	model	model
18	Anthracene	2.94E+01	8.49E-05	5.60E-02	model	model	model	model	model	model
19	Flouranthene	9.50E+01	1.31E-04	2.30E-01	model	model	model	model	model	model
20	Pyrene	8.47E+01	1.53E-05	1.30E-01	model	model	model	model	model	model



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Report generated 13/07/2015

Report title Angels Nursery, Barnham

Created by Justyna Oak at Geo-Environmental

**Environment
Agency**

BASIC SETTINGS

Land Use Residential with homegrown produce

Building Semi-detached house

Receptor Female (res)

Start age class 1

End age class 6

Exposure Duration 6 years

Soil Silt loam

Exposure Pathways

Direct soil and dust ingestion ☒

Consumption of homegrown produce ☒

Soil attached to homegrown produce ☒

Dermal contact with indoor dust ☒

Dermal contact with soil ☒

Inhalation of indoor dust ☒

Inhalation of soil dust ☒

Inhalation of indoor vapour ☒

Inhalation of outdoor vapour ☒



Land Use Residential with homegrown produce

Age Class	Exposure Frequencies (days yr ⁻¹)					
	Direct soil ingestion	Consumption of homegrown produce	Dermal contact with indoor dust	Dermal contact with soil	Inhalation of dust and vapour, indoor	Inhalation of dust and vapour, outdoor
1	180	180	180	180	365	365
2	365	365	365	365	365	365
3	365	365	365	365	365	365
4	365	365	365	365	365	365
5	365	365	365	365	365	365
6	365	365	365	365	365	365
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0
13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0
17	0	0	0	0	0	0
18	0	0	0	0	0	0

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Receptor Female (res)

Age Class	Body weight (kg)	Body height (m)	Inhalation rate (m ³ day ⁻¹)	Max exposed skin factor			Consumption rates (g FW kg ⁻¹ BW day ⁻¹)					
				Indoor (m ² m ⁻²)	Outdoor (m ² m ⁻²)	Total skin area (m ²)	Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
1	5.60	0.7	8.5	0.32	0.26	3.43E-01	7.12	10.69	16.03	1.83	2.23	3.82
2	9.80	0.8	13.3	0.33	0.26	4.84E-01	6.85	3.30	5.46	3.96	0.54	11.96
3	12.70	0.9	12.7	0.32	0.25	5.82E-01	6.85	3.30	5.46	3.96	0.54	11.96
4	15.10	0.9	12.2	0.35	0.28	6.36E-01	6.85	3.30	5.46	3.96	0.54	11.96
5	16.90	1.0	12.2	0.35	0.28	7.04E-01	3.74	1.77	3.38	1.85	0.16	4.26
6	19.70	1.1	12.2	0.33	0.26	7.94E-01	3.74	1.77	3.38	1.85	0.16	4.26
7	22.10	1.2	12.4	0.22	0.15	8.73E-01	3.74	1.77	3.38	1.85	0.16	4.26
8	25.30	1.2	12.4	0.22	0.15	9.36E-01	3.74	1.77	3.38	1.85	0.16	4.26
9	27.50	1.3	12.4	0.22	0.15	1.01E+00	3.74	1.77	3.38	1.85	0.16	4.26
10	31.40	1.3	12.4	0.22	0.15	1.08E+00	3.74	1.77	3.38	1.85	0.16	4.26
11	35.70	1.4	12.4	0.22	0.14	1.19E+00	3.74	1.77	3.38	1.85	0.16	4.26
12	41.30	1.4	13.4	0.22	0.14	1.29E+00	3.74	1.77	3.38	1.85	0.16	4.26
13	47.20	1.5	13.4	0.22	0.14	1.42E+00	3.74	1.77	3.38	1.85	0.16	4.26
14	51.20	1.6	13.4	0.22	0.14	1.52E+00	3.74	1.77	3.38	1.85	0.16	4.26
15	56.70	1.6	13.4	0.21	0.14	1.60E+00	3.74	1.77	3.38	1.85	0.16	4.26
16	59.00	1.6	13.4	0.21	0.14	1.63E+00	3.74	1.77	3.38	1.85	0.16	4.26
17	70.00	1.6	14.8	0.33	0.27	1.78E+00	2.94	1.40	1.79	1.61	0.22	2.97
18	70.90	1.6	12.0	0.33	0.27	1.80E+00	2.94	1.40	1.79	1.61	0.22	2.97

**Building** Semi-detached house**Soil** Silt loam

Building footprint (m ²)	4.30E+01
Living space air exchange rate (hr ⁻¹)	5.00E-01
Living space height (above ground, m)	4.80E+00
Living space height (below ground, m)	0.00E+00
Pressure difference (soil to enclosed space, Pa)	3.10E+00
Foundation thickness (m)	1.50E-01
Floor crack area (cm ²)	5.25E+02
Dust loading factor (µg m ⁻³)	5.00E+01

Porosity, Total (cm ³ cm ⁻³)	5.80E-01
Porosity, Air-Filled (cm ³ cm ⁻³)	1.40E-01
Porosity, Water-Filled (cm ³ cm ⁻³)	4.40E-01
Residual soil water content (cm ³ cm ⁻³)	1.80E-01
Saturated hydraulic conductivity (cm s ⁻¹)	1.58E-03
van Genuchten shape parameter <i>m</i> (dimensionless)	3.08E-01
Bulk density (g cm ⁻³)	1.09E+00
Threshold value of wind speed at 10m (m s ⁻¹)	7.20E+00
Empirical function (F _x) for dust model (dimensionless)	1.22E+00
Ambient soil temperature (K)	2.83E+02
Soil pH	7.20E+00
Soil Organic Matter content (%)	9.00E-01
Fraction of organic carbon (g g ⁻¹)	5.22E-03
Effective total fluid saturation (unitless)	6.50E-01
Intrinsic soil permeability (cm ²)	2.11E-08
Relative soil air permeability (unitless)	4.97E-01
Effective air permeability (cm ²)	1.05E-08

**Soil - Vapour Model**

Depth to top of source (no building) (cm)	0
Depth to top of source (beneath building) (cm)	65
Default soil gas ingress rate?	Yes
Soil gas ingress rate ($\text{cm}^3 \text{s}^{-1}$)	2.50E+01
Building ventilation rate ($\text{cm}^3 \text{s}^{-1}$)	2.87E+04
Averaging time surface emissions (yr)	6
Finite vapour source model?	No
Thickness of contaminated layer (cm)	200

Air Dispersion Model

Mean annual windspeed at 10m (m s^{-1})	5.00
Air dispersion factor at height of 0.8m *	2400.00
Air dispersion factor at height of 1.6m *	0.00
Fraction of site cover ($\text{m}^2 \text{m}^{-2}$)	0.75

* Air dispersion factor in $\text{g m}^{-2} \text{s}^{-1}$ per kg m^{-3} **Soil - Plant Model**

	Dry weight conversion factor	Homegrown fraction		Soil loading factor	Preparation correction factor
	g DW g^{-1} FW	Average	High		
		dimensionless		g g^{-1} DW	dimensionless
Green vegetables	0.096	0.05	0.33	1.00E-03	2.00E-01
Root vegetables	0.103	0.06	0.40	1.00E-03	1.00E+00
Tuber vegetables	0.210	0.02	0.13	1.00E-03	1.00E+00
Herbaceous fruit	0.058	0.06	0.40	1.00E-03	6.00E-01
Shrub fruit	0.166	0.09	0.60	1.00E-03	6.00E-01
Tree fruit	0.157	0.04	0.27	1.00E-03	6.00E-01

Gardener type Average

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Report title	Angels Nursery, Barnham	
Created by	Justyna Oak at Geo-Environmental Services Ltd	
 Environment Agency		
RESULTS		

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			Soil Distribution					Media Concentrations												
			Sorbed	Dissolved	Vapour	Total	Soil	Soil gas	Indoor Dust	Outdoor dust at 0.8m	Outdoor dust at 1.6m	Indoor Vapour	Outdoor vapour at 0.8m	Outdoor vapour at 1.6m	Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
			%	%	%	%	mg kg ⁻¹	mg m ⁻³	mg kg ⁻¹	mg m ⁻³	mg m ⁻³	mg m ⁻³	mg m ⁻³	mg m ⁻³	mg kg ⁻¹ FW	mg kg ⁻¹ FW	mg kg ⁻¹ FW	mg kg ⁻¹ FW	mg kg ⁻¹ FW	mg kg ⁻¹ FW
1	Ar >EC5-EC7	45.7	52.3	1.9	100.0	8.23E+01	1.24E+04	4.11E+01	3.50E-08	0.00E+00	1.26E-01	2.23E-04	0.00E+00	1.43E+02	4.24E+02	1.04E+02	0.00E+00	0.00E+00	2.45E+02	
2	Ar >EC7-EC8	71.8	27.2	1.0	100.0	1.33E+02	1.03E+04	6.67E+01	5.68E-08	0.00E+00	9.48E-02	2.45E-04	0.00E+00	2.12E+02	4.03E+02	9.49E+01	0.00E+00	0.00E+00	2.13E+02	
3	Ar >EC8-EC10	95.0	4.6	0.4	100.0	4.25E+01	1.24E+03	2.13E+01	1.81E-08	0.00E+00	1.40E-02	5.39E-05	0.00E+00	2.53E+01	3.54E+01	9.15E+00	0.00E+00	0.00E+00	6.81E+00	
4	Ar >EC10-EC12	96.9	3.0	0.1	100.0	6.98E+01	3.73E+02	3.49E+01	2.97E-08	0.00E+00	4.38E-03	3.87E-05	0.00E+00	2.99E+01	4.09E+01	1.16E+01	0.00E+00	0.00E+00	5.63E+00	
5	Ar >EC12-EC16	98.5	1.5	0.0	100.0	1.27E+02	6.02E+01	6.34E+01	5.40E-08	0.00E+00	8.72E-04	2.37E-05	0.00E+00	3.03E+01	4.18E+01	1.56E+01	0.00E+00	0.00E+00	3.32E+00	
6	Ar >EC16-EC21	99.5	0.5	0.0	100.0	2.28E+02	2.14E+00	1.14E+02	9.72E-08	0.00E+00	9.79E-05	1.41E-05	0.00E+00	1.86E+01	2.91E+01	1.74E+01	0.00E+00	0.00E+00	9.14E-01	
7	Ar >EC21-EC35	99.9	0.1	0.0	100.0	8.58E+02	3.24E-02	4.29E+02	3.65E-07	0.00E+00	2.72E-06	1.66E-05	0.00E+00	3.31E+00	1.29E+01	1.93E+01	0.00E+00	0.00E+00	2.95E-02	
8	Ar >EC35-EC44	99.9	0.1	0.0	100.0	8.58E+02	3.24E-02	4.29E+02	3.65E-07	0.00E+00	2.72E-06	1.66E-05	0.00E+00	3.31E+00	1.29E+01	1.93E+01	0.00E+00	0.00E+00	2.95E-02	
9																				
10	Al EC5-EC6	57.8	5.5	36.7	100.0	8.43E+01	2.41E+05	4.22E+01	3.59E-08	0.00E+00	2.69E+00	1.05E-03	0.00E+00	7.23E+01	1.07E+02	1.75E+01	0.00E+00	0.00E+00	2.15E+01	
11	Al >EC6-EC8	83.5	1.7	14.8	100.0	2.10E+02	2.41E+05	1.05E+02	8.94E-08	0.00E+00	2.69E+00	1.66E-03	0.00E+00	6.40E+01	8.73E+01	2.50E+01	0.00E+00	0.00E+00	7.60E+00	
12	Al >EC8-EC9	96.5	0.2	3.3	100.0	5.47E+01	1.39E+04	2.74E+01	2.33E-08	0.00E+00	1.55E-01	2.03E-04	0.00E+00	1.73E+00	3.37E+00	2.85E+00	0.00E+00	0.00E+00	4.51E-02	
13	Al >EC10-EC12	99.3	0.0	0.7	100.0	2.69E+02	1.38E+04	1.35E+02	1.15E-07	0.00E+00	1.53E-01	4.49E-04	0.00E+00	3.37E-01	2.14E+00	3.67E+00	0.00E+00	0.00E+00	1.74E-03	
14	Al >EC12-EC16	99.9	0.0	0.1	100.0	1.92E+03	1.17E+04	9.62E+02	8.19E-07	0.00E+00	1.31E-01	1.11E-03	0.00E+00	2.98E-03	6.86E-01	1.44E+00	0.00E+00	0.00E+00	8.17E-07	
15	Al >EC16-EC35	100.0	0.0	0.0	100.0	8.84E+04	3.15E+04	4.42E+04	3.76E-05	0.00E+00	3.51E-01	1.23E-02	0.00E+00	9.95E-08	2.94E-01	6.27E-01	0.00E+00	0.00E+00	5.82E-14	
16	Al >EC35-EC44	100.0	0.0	0.0	100.0	8.84E+04	3.15E+04	4.42E+04	3.76E-05	0.00E+00	3.51E-01	1.23E-02	0.00E+00	9.95E-08	2.94E-01	6.27E-01	0.00E+00	0.00E+00	5.82E-14	
17																				
18																				
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 Environment Agency					
	Oral Health Criteria Value ($\mu\text{g kg}^{-1} \text{ BW day}^{-1}$)		Inhalation Health Criteria Value ($\mu\text{g kg}^{-1} \text{ BW day}^{-1}$)		Oral Mean Daily Intake ($\mu\text{g day}^{-1}$)
					Inhalation Mean Daily Intake ($\mu\text{g day}^{-1}$)
					Air-water partition coefficient (K_{aw}) ($\text{cm}^3 \text{ cm}^{-3}$)
					Coefficient of Diffusion in Air ($\text{m}^2 \text{ s}^{-1}$)
					Coefficient of Diffusion in Water ($\text{m}^2 \text{ s}^{-1}$)
					$\log K_{ow}$ ($\text{cm}^3 \text{ g}^{-1}$)
					$\log K_{ow}$ (dimensionless)
					Dermal Absorption Fraction (dimensionless)
					Soil-to-dust transport factor ($\text{g g}^{-1} \text{ DW}$)
					Sub-surface soil to indoor air correction factor (dimensionless)
					Relative bioavailability via soil ingestion (unitless)
					Relative bioavailability via dust inhalation (unitless)
21					
22					
23					
24					
25					
26					
27					
28					
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CLEA Software Version 1.06

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Report generated 13/07/2015

Report title Angels Nursery, Barnham

Created by Justyna Oak at Geo-Environmental Services Ltd

**BASIC SETTINGS**

Land Use Residential with homegrown produce

Building Semi-detached house

Receptor Female (res)

Soil Silt loam

Start age class 1

End age class 6

Exposure Duration 6 years

Exposure Pathways

Direct soil and dust ingestion ☒

Consumption of homegrown produce ☒

Soil attached to homegrown produce ☒

Dermal contact with indoor dust ☒

Dermal contact with soil ☒

Inhalation of indoor dust ☒

Inhalation of soil dust ☒

Inhalation of indoor vapour ☒

Inhalation of outdoor vapour ☒



Land Use Residential with homegrown produce

Age Class	Exposure Frequencies (days yr ⁻¹)						Occupation Periods (hr day ⁻¹)		Soil to skin adherence factors (mg cm ²)		Direct soil ingestion rate (g day ⁻¹)
	Direct soil ingestion	Consumption of homegrown produce	Dermal contact with indoor dust	Dermal contact with soil	Inhalation of dust and vapour, indoor	Inhalation of dust and vapour, outdoor	Indoors	Outdoors	Indoor	Outdoor	
1	180	180	180	180	365	365	23.0	1.0	0.06	1.00	0.10
2	365	365	365	365	365	365	23.0	1.0	0.06	1.00	0.10
3	365	365	365	365	365	365	23.0	1.0	0.06	1.00	0.10
4	365	365	365	365	365	365	23.0	1.0	0.06	1.00	0.10
5	365	365	365	365	365	365	19.0	1.0	0.06	1.00	0.10
6	365	365	365	365	365	365	19.0	1.0	0.06	1.00	0.10
7	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00
8	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00
9	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00
10	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00
11	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00
12	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00
13	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00
14	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00
15	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00
16	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00
17	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00
18	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00



Receptor Female (res)

Age Class	Body weight (kg)	Body height (m)	Inhalation rate (m ³ day ⁻¹)	Max exposed skin factor			Consumption rates (g FW kg ⁻¹ BW day ⁻¹)					
				Indoor (m ² m ⁻²)	Outdoor (m ² m ⁻²)	Total skin area (m ²)	Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
1	5.60	0.7	8.5	0.32	0.26	3.43E-01	7.12	10.69	16.03	1.83	2.23	3.82
2	9.80	0.8	13.3	0.33	0.26	4.84E-01	6.85	3.30	5.46	3.96	0.54	11.96
3	12.70	0.9	12.7	0.32	0.25	5.82E-01	6.85	3.30	5.46	3.96	0.54	11.96
4	15.10	0.9	12.2	0.35	0.28	6.36E-01	6.85	3.30	5.46	3.96	0.54	11.96
5	16.90	1.0	12.2	0.35	0.28	7.04E-01	3.74	1.77	3.38	1.85	0.16	4.26
6	19.70	1.1	12.2	0.33	0.26	7.94E-01	3.74	1.77	3.38	1.85	0.16	4.26
7	22.10	1.2	12.4	0.22	0.15	8.73E-01	3.74	1.77	3.38	1.85	0.16	4.26
8	25.30	1.2	12.4	0.22	0.15	9.36E-01	3.74	1.77	3.38	1.85	0.16	4.26
9	27.50	1.3	12.4	0.22	0.15	1.01E+00	3.74	1.77	3.38	1.85	0.16	4.26
10	31.40	1.3	12.4	0.22	0.15	1.08E+00	3.74	1.77	3.38	1.85	0.16	4.26
11	35.70	1.4	12.4	0.22	0.14	1.19E+00	3.74	1.77	3.38	1.85	0.16	4.26
12	41.30	1.4	13.4	0.22	0.14	1.29E+00	3.74	1.77	3.38	1.85	0.16	4.26
13	47.20	1.5	13.4	0.22	0.14	1.42E+00	3.74	1.77	3.38	1.85	0.16	4.26
14	51.20	1.6	13.4	0.22	0.14	1.52E+00	3.74	1.77	3.38	1.85	0.16	4.26
15	56.70	1.6	13.4	0.21	0.14	1.60E+00	3.74	1.77	3.38	1.85	0.16	4.26
16	59.00	1.6	13.4	0.21	0.14	1.63E+00	3.74	1.77	3.38	1.85	0.16	4.26
17	70.00	1.6	14.8	0.33	0.27	1.78E+00	2.94	1.40	1.79	1.61	0.22	2.97
18	70.90	1.6	12.0	0.33	0.27	1.80E+00	2.94	1.40	1.79	1.61	0.22	2.97

Building Semi-detached house

Building footprint (m ²)	4.30E+01
Living space air exchange rate (hr ⁻¹)	5.00E-01
Living space height (above ground, m)	4.80E+00
Living space height (below ground, m)	0.00E+00
Pressure difference (soil to enclosed space, Pa)	3.10E+00
Foundation thickness (m)	1.50E-01
Floor crack area (cm ²)	5.25E+02
Dust loading factor (µg m ⁻³)	5.00E+01

Soil Silt loam

Porosity, Total (cm ³ cm ⁻³)	5.80E-01
Porosity, Air-Filled (cm ³ cm ⁻³)	1.40E-01
Porosity, Water-Filled (cm ³ cm ⁻³)	4.40E-01
Residual soil water content (cm ³ cm ⁻³)	1.80E-01
Saturated hydraulic conductivity (cm s ⁻¹)	1.58E-03
van Genuchten shape parameter <i>m</i> (dimensionless)	3.08E-01
Bulk density (g cm ⁻³)	1.09E+00
Threshold value of wind speed at 10m (m s ⁻¹)	7.20E+00
Empirical function (F _x) for dust model (dimensionless)	1.22E+00
Ambient soil temperature (K)	2.83E+02
Soil pH	7.20E+00
Soil Organic Matter content (%)	9.00E-01
Fraction of organic carbon (g g ⁻¹)	5.22E-03
Effective total fluid saturation (unitless)	6.50E-01
Intrinsic soil permeability (cm ²)	2.11E-08
Relative soil air permeability (unitless)	4.97E-01
Effective air permeability (cm ²)	1.05E-08

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Report generated 13-Jul-15

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Soil - Vapour Model

Depth to top of source (no building) (cm)	0
Depth to top of source (beneath building) (cm)	65
Default soil gas ingress rate?	Yes
Soil gas ingress rate ($\text{cm}^3 \text{s}^{-1}$)	2.50E+01
Building ventilation rate ($\text{cm}^3 \text{s}^{-1}$)	2.87E+04
Averaging time surface emissions (yr)	6
Finite vapour source model?	No
Thickness of contaminated layer (cm)	200

Air Dispersion Model

Mean annual windspeed at 10m (m s^{-1})	5.00
Air dispersion factor at height of 0.8m *	2400.00
Air dispersion factor at height of 1.6m *	0.00
Fraction of site cover ($\text{m}^2 \text{m}^{-2}$)	0.75

* Air dispersion factor in $\text{g m}^{-2} \text{s}^{-1}$ per kg m^{-3}

Soil - Plant Model

	Dry weight conversion factor	Homegrown fraction		Soil loading factor	Preparation correction factor
	g DW g^{-1} FW	Average	High		
		dimensionless		g g^{-1} DW	dimensionless
Green vegetables	0.096	0.05	0.33	1.00E-03	2.00E-01
Root vegetables	0.103	0.06	0.40	1.00E-03	1.00E+00
Tuber vegetables	0.210	0.02	0.13	1.00E-03	1.00E+00
Herbaceous fruit	0.058	0.06	0.40	1.00E-03	6.00E-01
Shrub fruit	0.166	0.09	0.60	1.00E-03	6.00E-01
Tree fruit	0.157	0.04	0.27	1.00E-03	6.00E-01

Gardener type Average

Client/client ref:
Project ref: GE10423
Site ref: Angels Nursery, Barnham
Data description:
Contaminant(s):
Test scenario: Planning
Date: 0 January 1900
User details:

Client ref: Project ref: GE10423 Site ref: Angels Nursery, Barnham Data description: Contaminant(s): Test scenario: Planning Date: 0 January 1900 User details:		Arsenic (mg/kg)	Barium (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)	Hexavalent Chromium (mg/kg)	Water Soluble Boron (mg/kg)
Critical concentration, C _c		37	1330	41.2	26	3010	2300	200	169	127	350	107	3700	21	290
Notes															
Full dataset size		20	20	20	20	20	20	20	20	20	20	20	20	20	20
Outliers present?		No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	No	Yes
Number of outliers temporarily excluded															0
Number removed by filter		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sample size, n		20	20	20	20	20	20	20	20	20	20	20	20	20	20
Sample mean, $\bar{x}$		10.57	72.73	0.56	0.2775	22.605	22.75	32.54	0.25	16.49	0.57	30.07	100.35	0.4	0.8375
Standard deviation, s		1.96203439	33.7228815	0.18750439	0.12298374	2.90670278	6.83878259	21.7783427	0	4.00182853	0.22501462	4.36783699	77.1192344	5.6953E-17	0.54769253
Number of non-detects		0	0	18	19	0	0	0	20	0	18	0	0	20	3
Set non-detect values to:		Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit
Distribution		Normal	Non-normal	Non-normal	Non-normal	Normal	Non-normal	Non-normal	Single value	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal
Statistical approach		Auto: One-sample t	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: One-sample t	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev

Test scenario:	Planning: is true mean lower than critical concentration ($\mu < C_c$)?				Evidence level required:		95%	Use Normal distribution to test for outliers						
t statistic, t ₀ (or k ₀)	-60.24285502	-166.7319672	-969.2978878	-935.3636364	-4596.285758	-1489.179026	-34.38755178	N/A	-123.4974814	-6944.875275	-78.76700059	-208.7433092	-1.61757E+18	-2361.131377
Upper confidence limit (on true mean concentration, μ)	11.3286125	105.598999	0.74275667	0.39736972	23.7288646	29.4156208	53.7669027	0.25	20.3905	0.78931712	34.3272409	175.516532	0.4	1.37132464
Evidence level	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Base decision on:	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level
Result	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$
Select dataset	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☒ Y

Client/client ref:
Project ref: GE10423
Site ref: Angels Nursery, Barnham
Data description:
Contaminant(s):
Test scenario: Planning
Date: 0 January 1900
User details:

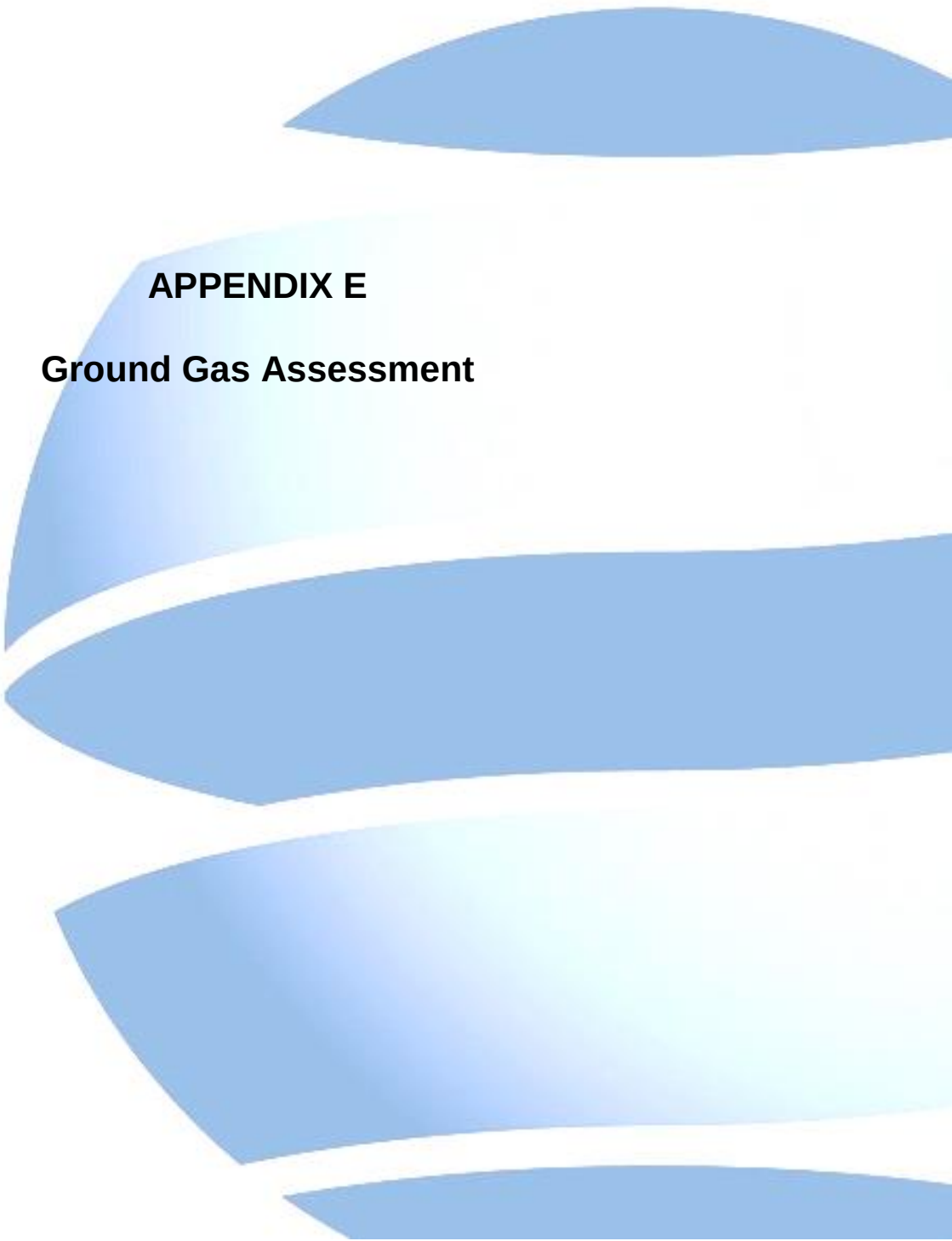
	Naphthalene (mg/kg)	Acenaphthylene (mg/kg)	Acenaphthene (mg/kg)	Fluorene (mg/kg)	Phenanthrene (mg/kg)	Anthracene (mg/kg)	Fluoranthene (mg/kg)	Pyrene (mg/kg)	Benzo (a) anthracene (mg/kg)	Chrysene (mg/kg)	Benzo (b) fluoranthene (mg/kg)	Benzo (k) fluoranthene (mg/kg)	Benzo (a) pyrene (mg/kg)	Indeno (1,2,3- cd) pyrene (mg/kg)	Dibenzo(a,h)a nthracene (mg/kg)	Benzo(ghi)per ylene (mg/kg)
Critical concentration, C _c	1.5	154	189	149	83.6	2060	238	520	3.2	5.9	5.5	8.4	5	3.1	0.76	43.7
Notes																
Full dataset size	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Outliers present?	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of outliers temporarily excluded																0
Number removed by filter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sample size, n	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Sample mean, $\bar{x}$	0.24	0.3025	0.3175	0.3075	1.5025	0.5975	2.85	2.625	1.655	1.68	1.4125	1.35	1.66	1.2875	0.4725	1.15
Standard deviation, s	0.04472136	0.28537833	0.35179053	0.30748342	5.64860195	1.60176506	11.5226664	10.5397805	6.27201176	6.15010483	5.12906771	4.90812967	6.27108234	4.29114373	1.04308185	3.80477539
Number of non-detects	20	19	19	19	19	19	18	18	18	16	17	18	18	15	19	16
Set non-detect values to:	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit
Distribution	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal
Statistical approach	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev

Test scenario:	Planning: is true mean lower than critical concentration ($\mu < C_c$)?		Evidence level required:		95%		Use Normal distribution to test for outliers									
t statistic, t ₀ (or k ₀)	-126	-2408.578547	-2398.625641	-2162.630684	-64.99859347	-5749.861937	-91.2655742	-219.5274686	-1.101632189	-3.068632851	-3.563972395	-6.423741957	-2.381874976	-1.888947781	-1.2326349	-50.01330308
Upper confidence limit (on true mean concentration, μ)	0.28358899	0.58065239	0.660383	0.60719776	7.00807615	2.15870747	14.080906	12.8979073	7.76820088	7.6743807	6.41169681	6.13385305	7.77229499	5.46998954	1.48917042	4.85843633
Evidence level	100%	100%	100%	100%	100%	100%	100%	100%	55%	90%	93%	98%	85%	78%	60%	100%
Base decision on:	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level
Result	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu \approx \geq C_c$	$\mu \approx \geq C_c$	$\mu \approx \geq C_c$	$\mu < C_c$	$\mu \approx \geq C_c$	$\mu \approx \geq C_c$	$\mu \approx \geq C_c$	$\mu < C_c$
Select dataset	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☒ Y

Client/client ref:
Project ref: GE10423
Site ref: Angels Nursery, Barnham
Data description:
Contaminant(s):
Test scenario: Planning
Date: 0 January 1900
User details:

Client/client ref: Project ref: GE10423 Site ref: Angels Nursery, Barnham Data description: Contaminant(s): Test scenario: Planning Date: 0 January 1900 User details:		>C5-C6 Aliphatic (mg/kg)	>C6-C8 Aliphatic (mg/kg)	>C8-C10 Aliphatic (mg/kg)	>C10-C12 Aliphatic (mg/kg)	>C12-C16 Aliphatic (mg/kg)	>C16-C21 Aliphatic (mg/kg)	>C21-C35 Aliphatic (mg/kg)	>C35-C40 Aliphatic (mg/kg)	>C5-C7 Aromatic (mg/kg)	>C7-C8 Aromatic (mg/kg)	>C8-C10 Aromatic (mg/kg)	>C10-C12 Aromatic (mg/kg)	>C12-C16 Aromatic (mg/kg)	>C16-C21 Aromatic (mg/kg)	>C21-C35 Aromatic (mg/kg)	>C35-C40 Aromatic (mg/kg)
Critical concentration, C _c	84.3	210	54.7	269	1920	88400	88400	88400	82.3	133	42.5	69.8	127	228	858	858	
Notes																	
Full dataset size	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
Outliers present?	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	Yes	No
Number of outliers temporarily excluded							0										
Number removed by filter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sample size, n	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Sample mean, $\bar{x}$	0.005	0.005	0.5	0.5	0.5	0.5	1.04	0.5	0.005	0.005	0.5	0.5	0.5	0.5	0.5	1.05	0.5
Standard deviation, s	8.8989E-19	8.8989E-19	0	0	0	0	1.13851242	0	8.8989E-19	8.8989E-19	0	0	0	0	0	1.23650611	0
Number of non-detects	20	20	20	20	20	20	15	20	20	20	20	20	20	20	20	15	20
Set non-detect values to:	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit
Distribution	Non-normal	Non-normal	Single value	Single value	Single value	Single value	Non-normal	Single value	Non-normal	Non-normal	Single value	Single value	Single value	Single value	Single value	Non-normal	Single value
Statistical approach	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev

Test scenario:	Planning: is true mean lower than critical concentration ($\mu < C_c$)?					Evidence level required: 95%		Use Normal distribution to test for outliers								
t statistic, t ₀ (or k ₀)	-4.23622E+20	-1.05532E+21	N/A	N/A	N/A	N/A	-347235.7096	N/A	-4.13571E+20	-6.68362E+20	N/A	N/A	N/A	N/A	-3099.375624	N/A
Upper confidence limit (on true mean concentration, μ)	0.005	0.005	0.5	0.5	0.5	0.5	2.14968464	0.5	0.005	0.005	0.5	0.5	0.5	0.5	2.25519708	0.5
Evidence level	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Base decision on:	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level
Result	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$
Select dataset	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☒ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y	☐ Y



APPENDIX E

Ground Gas Assessment

Project: Angels Nursery, Barnham
 Ref: GE10423
 Client: Lovell Partnerships Ltd

Location	Date	Time (sec)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
										CH ₄	CO ₂	BS8485 & C665		Flow	CH ₄	CO ₂	CH ₄		CO ₂	
												CH ₄	CO ₂				GSV	Conc.	GSV	Conc.
WS1	29/06/15	10	0.0	0.0	21.3	0.0	-	1022	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	29/06/15	20	0.0	0.5	18.9	0.0	-	1022	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	29/06/15	30	0.0	0.5	18.3	0.0	-	1022	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	29/06/15	60	0.0	0.6	18.3	0.0	-	1022	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	29/06/15	120	0.0	0.6	18.3	0.0	-	1022	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	29/06/15	10	0.0	0.0	20.4	0.0	-	1022	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	29/06/15	20	0.0	0.2	19.2	0.0	-	1022	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	29/06/15	30	0.0	0.2	19.1	0.0	-	1022	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	29/06/15	60	0.0	0.2	19.2	0.0	-	1022	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	29/06/15	120	0.0	0.2	19.2	0.0	-	1022	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	29/06/15	10	0.0	0.0	21.1	0.0	-	1022	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	29/06/15	20	0.0	0.0	20.4	0.0	-	1022	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	29/06/15	30	0.0	0.0	20.2	0.0	-	1022	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	29/06/15	60	0.0	0.0	20.0	0.0	-	1022	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	29/06/15	120	0.0	0.0	19.6	0.0	-	1022	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	06/07/15	10	0.0	0.6	18.9	0.0	-	1019	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	06/07/15	20	0.0	0.6	18.4	0.0	-	1019	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	06/07/15	30	0.0	0.7	18.3	0.0	-	1019	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	06/07/15	60	0.0	0.8	18.2	0.0	-	1019	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	06/07/15	120	0.0	0.8	18.0	0.0	-	1019	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	06/07/15	10	0.0	0.0	20.4	0.0	-	1019	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	06/07/15	20	0.0	0.3	18.7	0.0	-	1019	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	06/07/15	30	0.0	0.4	18.2	0.0	-	1019	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	06/07/15	60	0.0	0.4	18.2	0.0	-	1019	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	06/07/15	120	0.0	0.0	18.3	0.0	-	1019	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	06/07/15	10	0.0	0.0	20.9	0.0	-	1019	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	06/07/15	20	0.0	0.0	20.4	0.0	-	1019	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	06/07/15	30	0.0	0.0	20.3	0.0	-	1019	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	06/07/15	60	0.0	0.0	20.2	0.0	-	1019	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	06/07/15	120	0.0	0.0	20.2	0.0	-	1019	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	15/07/15	10	0.0	0.7	20.8	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	15/07/15	20	0.0	1.7	20.2	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	15/07/15	30	0.0	1.8	20.0	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	15/07/15	60	0.0	1.9	19.8	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	15/07/15	120	0.0	1.9	19.8	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	15/07/15	10	0.0	0.7	20.4	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	15/07/15	20	0.0	1.8	19.3	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	15/07/15	30	0.0	2.2	18.9	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	15/07/15	60	0.0	2.2	18.7	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	15/07/15	120	0.0	2.2	18.7	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	15/07/15	10	0.0	0.1	20.6	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	15/07/15	20	0.0	0.5	20.4	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	15/07/15	30	0.0	0.6	20.3	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	15/07/15	60	0.0	0.8	20.2	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	15/07/15	120	0.0	1.0	20.0	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	05/08/15	10	0.0	4.0	15.7	0.0	-	1017	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	05/08/15	20	0.0	3.7	17.8	0.0	-	1017	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	05/08/15	30	0.0	3.7	18.0	0.0	-	1017	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	05/08/15	60	0.0	3.8	18.0	0.0	-	1017	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	05/08/15	120	0.0	3.8	18.1	0.0	-	1017	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	05/08/15	10	0.0	4.1	17.3	0.1	-	1017	Dry	0.000	0.004	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	05/08/15	20	0.0	4.2	16.0	0.1	-	1017	Dry	0.000	0.004	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	05/08/15	30	0.0	4.3	15.5	0.1	-	1017	Dry	0.000	0.004	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN

Project: Angels Nursery, Barnham
 Ref: GE10423
 Client: Lovell Partnerships Ltd

Location	Date	Time (sec)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
										CH ₄	CO ₂	BS8485 & C665		Flow	CH ₄	CO ₂	CH ₄		CO ₂	
												CH ₄	CO ₂				GSV	Conc.	GSV	Conc.
WS4	05/08/15	60	0.0	4.6	14.7	0.1	-	1017	Dry	0.000	0.005	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	05/08/15	120	0.0	4.9	13.6	0.1	-	1017	Dry	0.000	0.005	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	05/08/15	10	0.0	1.1	20.5	0.1	-	1017	Dry	0.000	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	05/08/15	20	0.0	1.4	20.0	0.1	-	1017	Dry	0.000	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	05/08/15	30	0.0	1.5	19.9	0.1	-	1017	Dry	0.000	0.002	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	05/08/15	60	0.0	1.8	19.7	0.1	-	1017	Dry	0.000	0.002	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	05/08/15	120	0.0	2.2	19.3	0.1	-	1017	Dry	0.000	0.002	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	19/08/15	10	0.0	3.3	16.9	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	19/08/15	20	0.0	3.5	17.9	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	19/08/15	30	0.0	3.5	18.0	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	19/08/15	60	0.0	3.6	18.0	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	19/08/15	120	0.0	3.7	17.9	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	19/08/15	10	0.0	0.7	20.3	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	19/08/15	20	0.0	4.5	15.5	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	19/08/15	30	0.0	4.7	14.4	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	19/08/15	60	0.0	4.8	14.0	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	19/08/15	120	0.0	4.9	13.8	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	19/08/15	10	0.0	0.4	20.6	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	19/08/15	20	0.0	0.7	20.2	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	19/08/15	30	0.0	0.7	20.1	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	19/08/15	60	0.0	0.7	20.1	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	19/08/15	120	0.0	0.7	20.1	0.0	-	1016	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	27/08/15	10	0.0	1.0	19.9	0.0	-	1009	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	27/08/15	20	0.0	4.3	17.1	0.0	-	1009	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	27/08/15	30	0.0	4.4	16.7	0.0	-	1009	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	27/08/15	60	0.0	4.5	16.4	0.0	-	1009	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	27/08/15	120	0.0	4.4	16.3	0.0	-	1009	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	27/08/15	10	0.0	0.2	20.2	0.0	-	1009	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	27/08/15	20	0.0	2.6	13.5	0.0	-	1009	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	27/08/15	30	0.0	3.5	12.4	0.0	-	1009	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	27/08/15	60	0.1	4.0	10.7	0.0	-	1009	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS4	27/08/15	120	0.1	4.2	10.5	0.0	-	1009	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	27/08/15	10	0.0	0.2	20.7	0.0	-	1009	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	27/08/15	20	0.0	0.1	20.5	0.0	-	1009	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	27/08/15	30	0.0	0.1	20.5	0.0	-	1009	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	27/08/15	60	0.0	0.0	20.5	0.0	-	1009	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	27/08/15	120	0.0	0.0	20.5	0.0	-	1009	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
Max values			0.1	4.9	21.3	0.1	0.0	1022.0		0.000	0.005	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Min Values			0.0	0.0	10.5	0.0	0.0	1009.0		0.000	0.000	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
BH Flow LoD check			0.1	4.9	21.3	0.1	0.0	1022.0		0.000	0.005	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!