Appendix F

Geotechnical Test Results

This appendix may not be included in the printed report to reduce the document size, but is included in the digital version.

TEST CERTIFICATE

Determination of Moisture Content

Tested in Accordance with BS 1377-2:1990: Clause 3.2

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

UKAS TESTING 4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	02/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

Test results

Laboratory Reference	Sample Reference	Location	Depth Top [m]	Depth Base [m]	Sample Type	Description	Moisture Content [%]
664000	Not Given	TP03	1.4	Not Given	D	Brown sandy CLAY	19
664001	Not Given	TP05	0.9	Not Given	B	Brown slightly sandy GRAVEL. Gravel is limestone	4.3
664002	Not Given	TP07	1.4	Not Given	D	Yellowish brown sandy CLAY	21
664004	Not Given	TP13	0.6	Not Given	B	Brown gravelly clayey SAND	13
664005	Not Given	TP15	1.1	Not Given	D	Orangish brown slightly gravelly slightly sandy CLAY	15
664007	Not Given	TP101	0.8	Not Given	D	Orangish brown sandy CLAY	22
664009	Not Given	TP105	1.7	Not Given	D	Brown slightly gravelly sandy CLAY	19
664011	Not Given	TP107	0.9	1.1	B	Brown sandy slightly clayey GRAVEL	8.5
664012	Not Given	TP132	0.9	1	B	Brown sandy slightly clayey GRAVEL	9.4
664013	Not Given	TP134	1.4	1.5	B	Brown sandy clayey GRAVEL	13

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

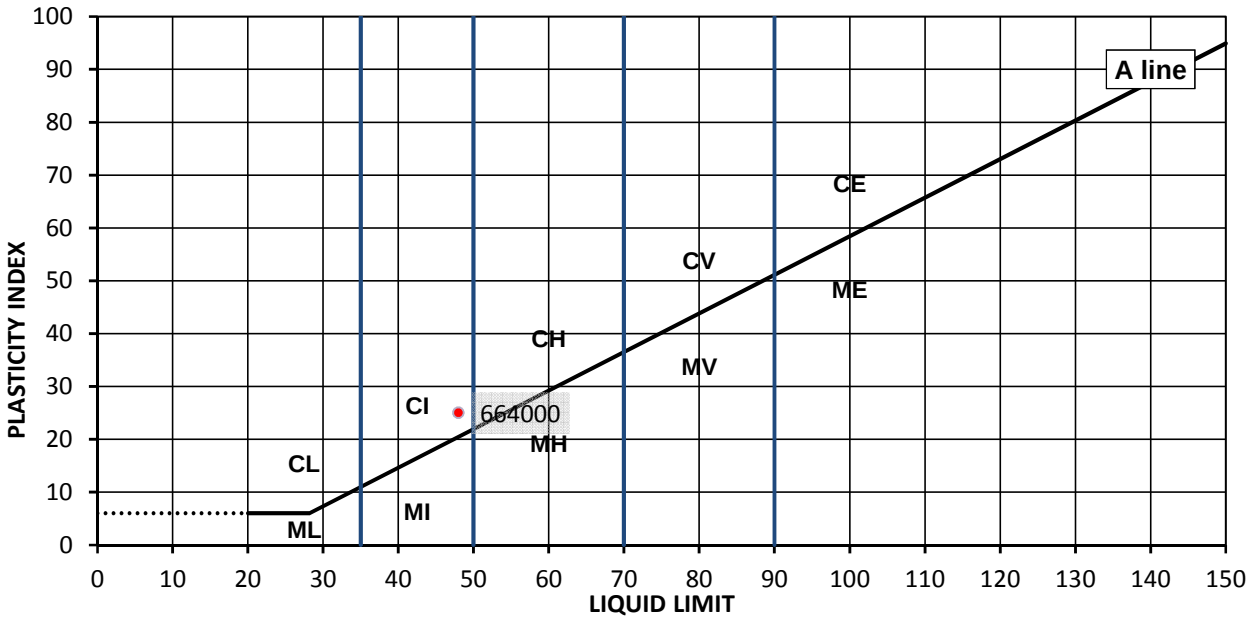
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	02/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664000
Sample Reference: Not Given

Description:	Brown sandy CLAY	Sample Type:	D
Location:	TP03	Depth Top [m]:	1.4
Sample Preparation:	Tested in natural condition	Depth Base [m]:	Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
19	48	23	25	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported:

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

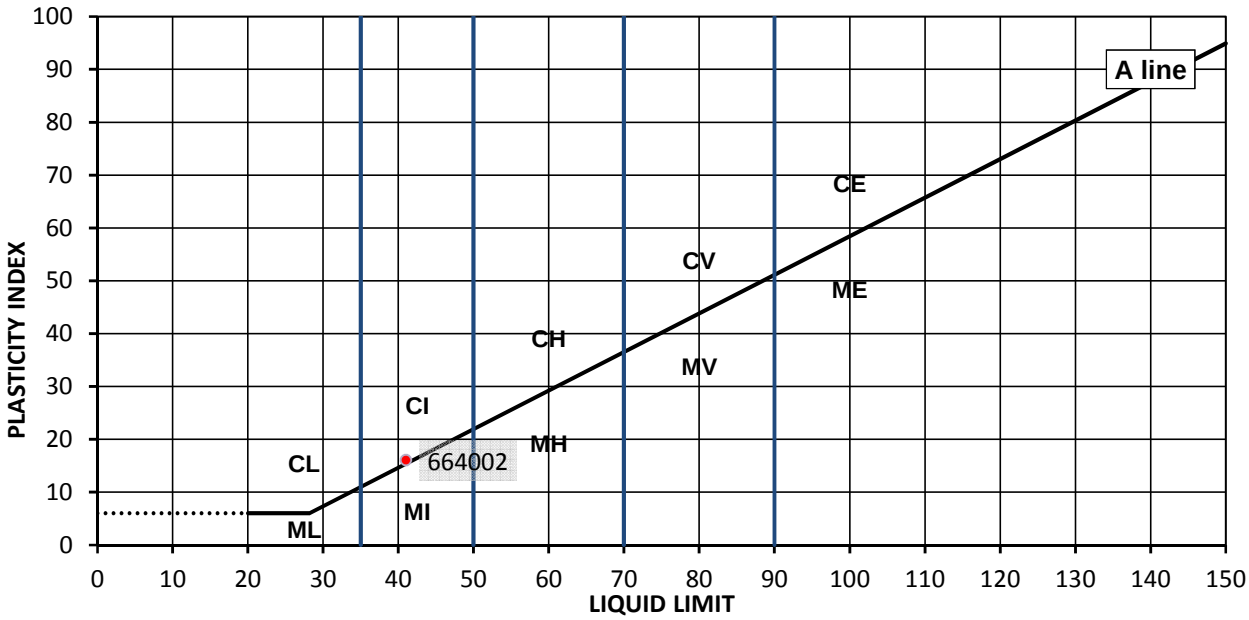
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	03/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664002
Sample Reference: Not Given

Description:	Yellowish brown sandy CLAY	Sample Type:	D
Location:	TP07	Depth Top [m]:	1.4
Sample Preparation:	Tested in natural condition	Depth Base [m]:	Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
21	41	25	16	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported:

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

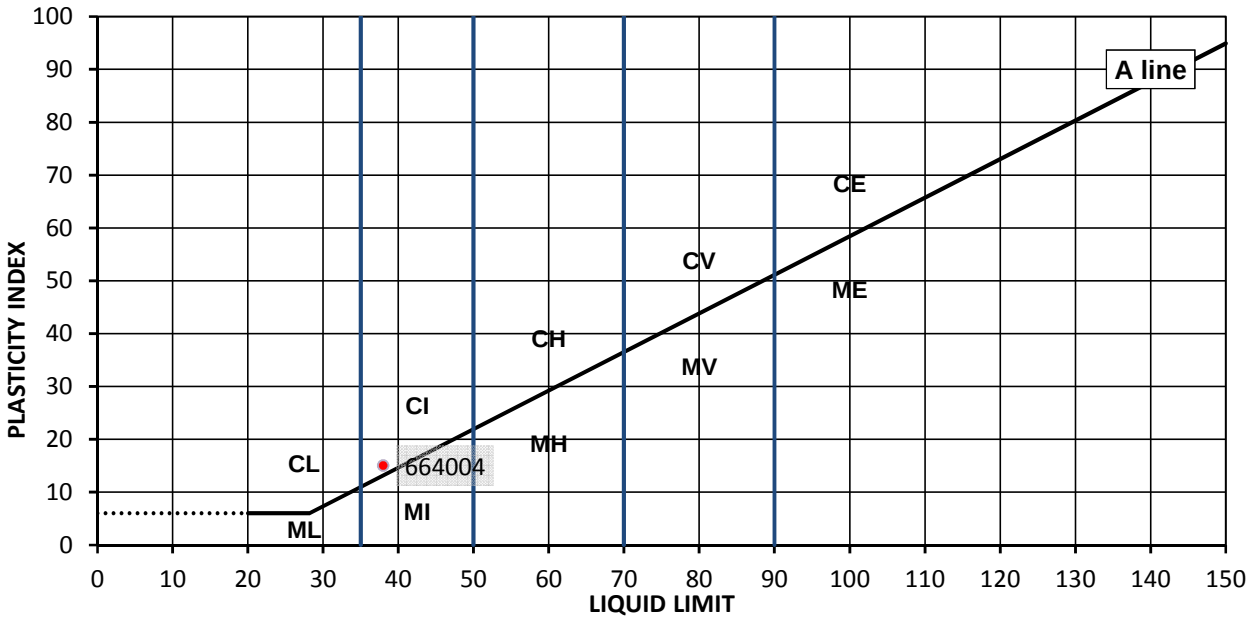
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	03/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664004
Sample Reference: Not Given

Description:	Brown gravelly clayey SAND	Sample Type:	B
Location:	TP13	Depth Top [m]:	0.6
Sample Preparation:	Tested after washing to remove >425um	Depth Base [m]:	Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
13	38	23	15	58



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported:

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	03/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

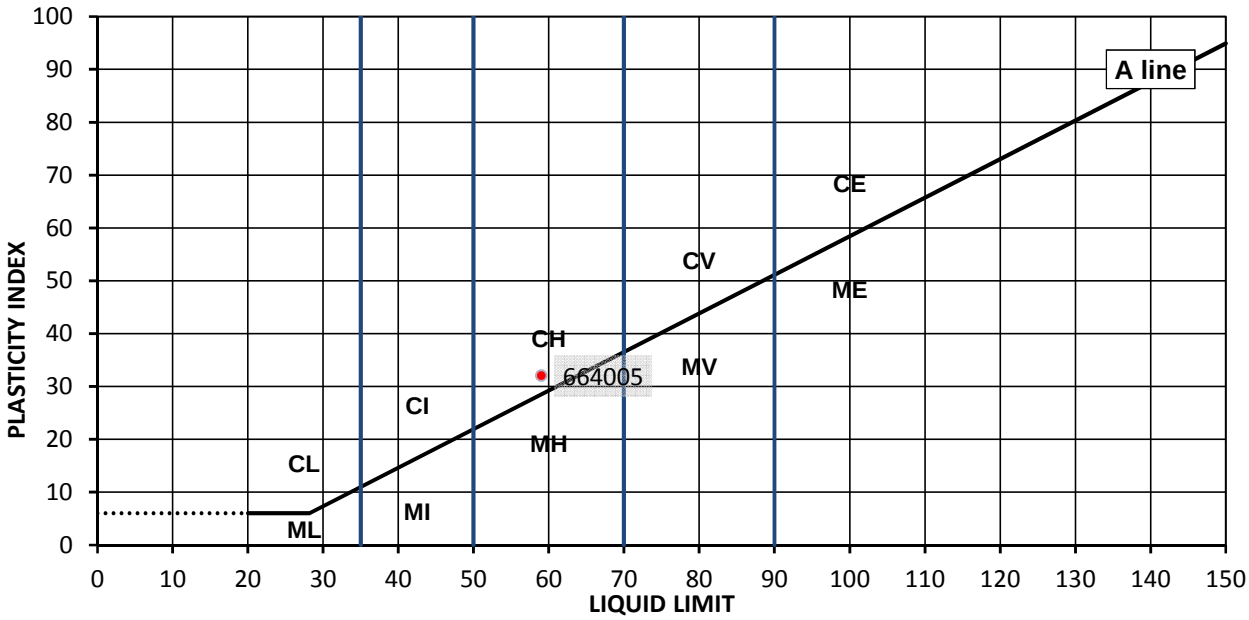
TEST RESULTS

Laboratory Reference: 664005
Sample Reference: Not Given

Description: Orangish brown slightly gravelly slightly sandy CLAY
Location: TP15
Sample Preparation: Tested after >425um removed by hand

Sample Type: D
Depth Top [m]: 1.1
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
15	59	27	32	99



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported:

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

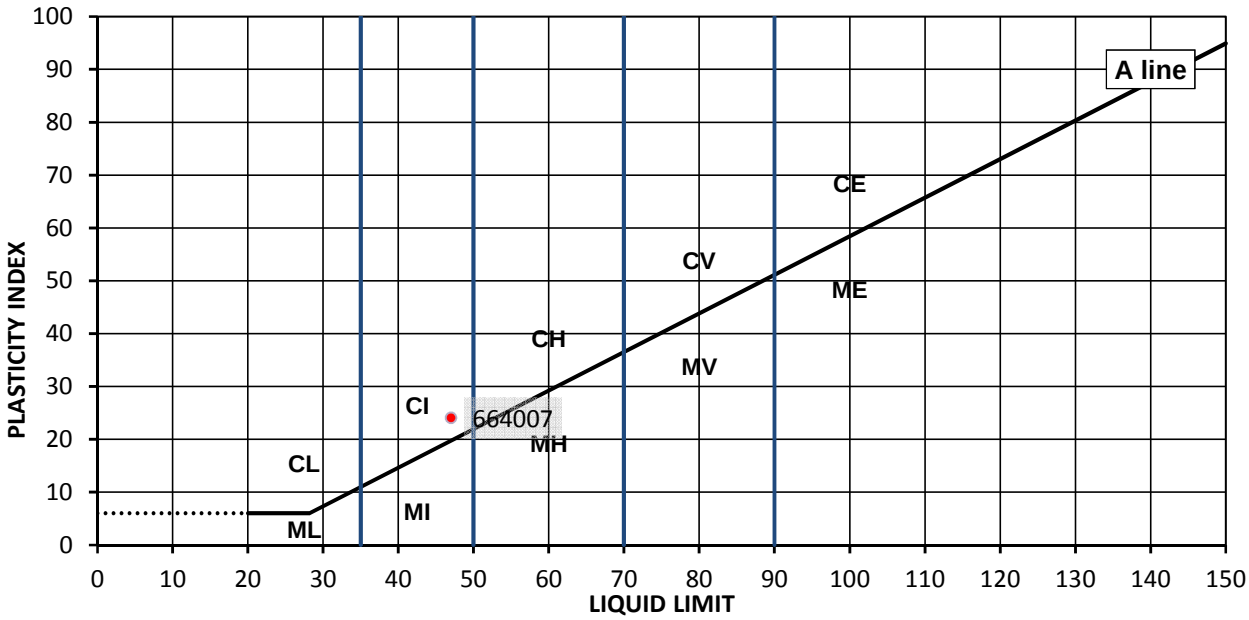
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	02/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664007
Sample Reference: Not Given

Description:	Orangish brown sandy CLAY	Sample Type:	D
Location:	TP101	Depth Top [m]:	0.8
Sample Preparation:	Tested in natural condition	Depth Base [m]:	Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
22	47	23	24	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported:

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

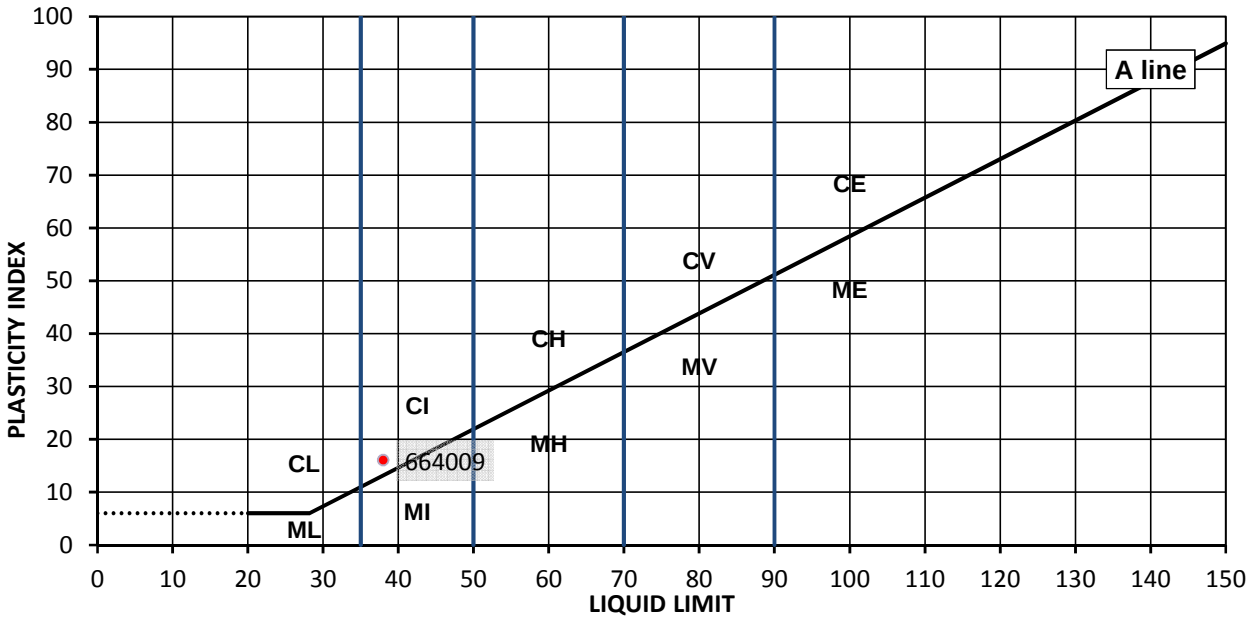
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	03/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664009
Sample Reference: Not Given

Description:	Brown slightly gravelly sandy CLAY	Sample Type:	D
Location:	TP105	Depth Top [m]:	1.7
Sample Preparation:	Tested after >425um removed by hand	Depth Base [m]:	Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
19	38	22	16	90



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported:

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

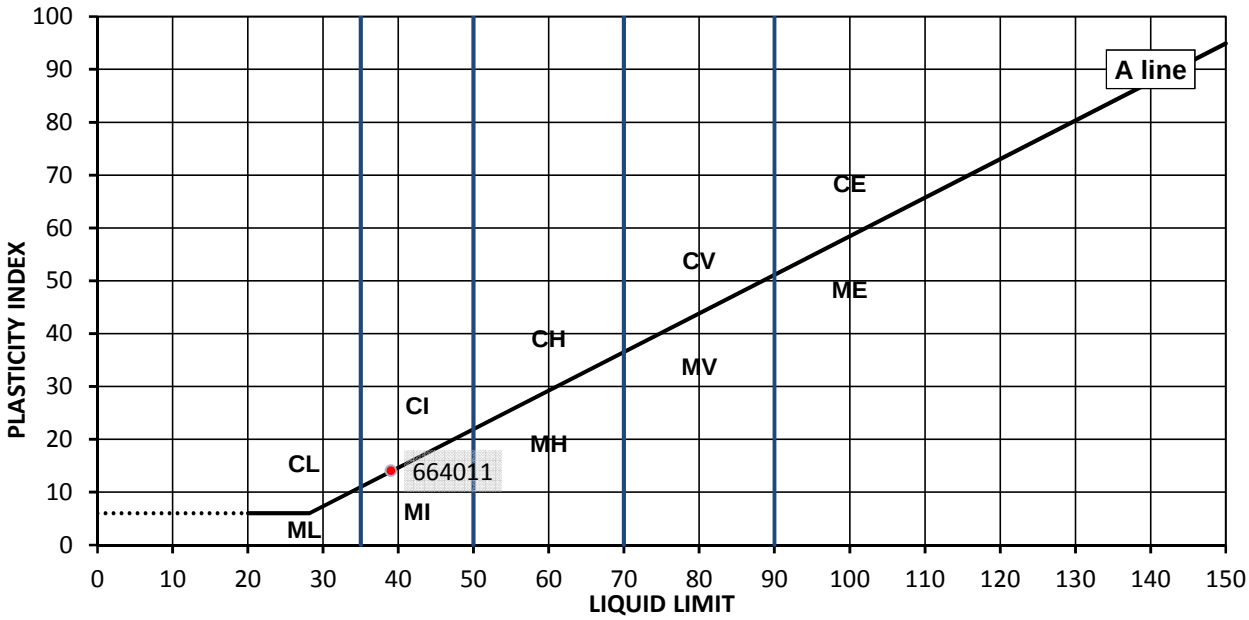
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	03/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664011
Sample Reference: Not Given

Description:	Brown sandy slightly clayey GRAVEL	Sample Type:	B
Location:	TP107	Depth Top [m]:	0.9
Sample Preparation:	Tested after washing to remove >425um	Depth Base [m]:	1.1

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
8.5	39	25	14	28



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported:

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

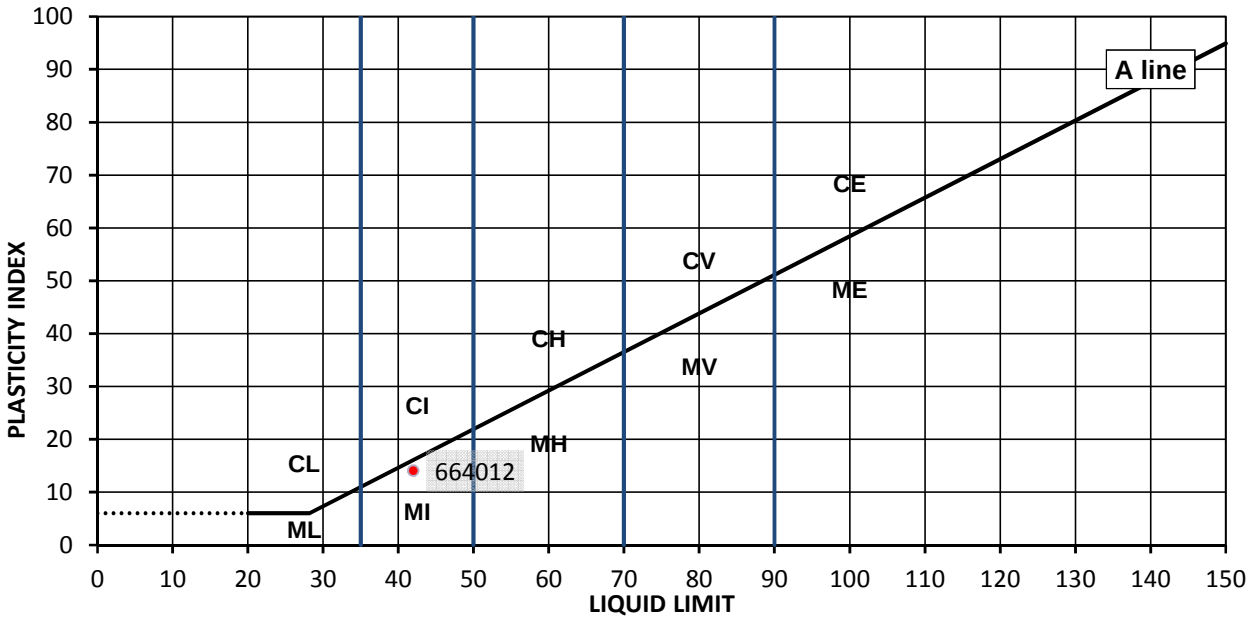
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	08/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664012
Sample Reference: Not Given

Description:	Brown sandy slightly clayey GRAVEL	Sample Type:	B
Location:	TP132	Depth Top [m]:	0.9
Sample Preparation:	Tested after washing to remove >425um	Depth Base [m]:	1

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
9.4	42	28	14	34



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported:

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

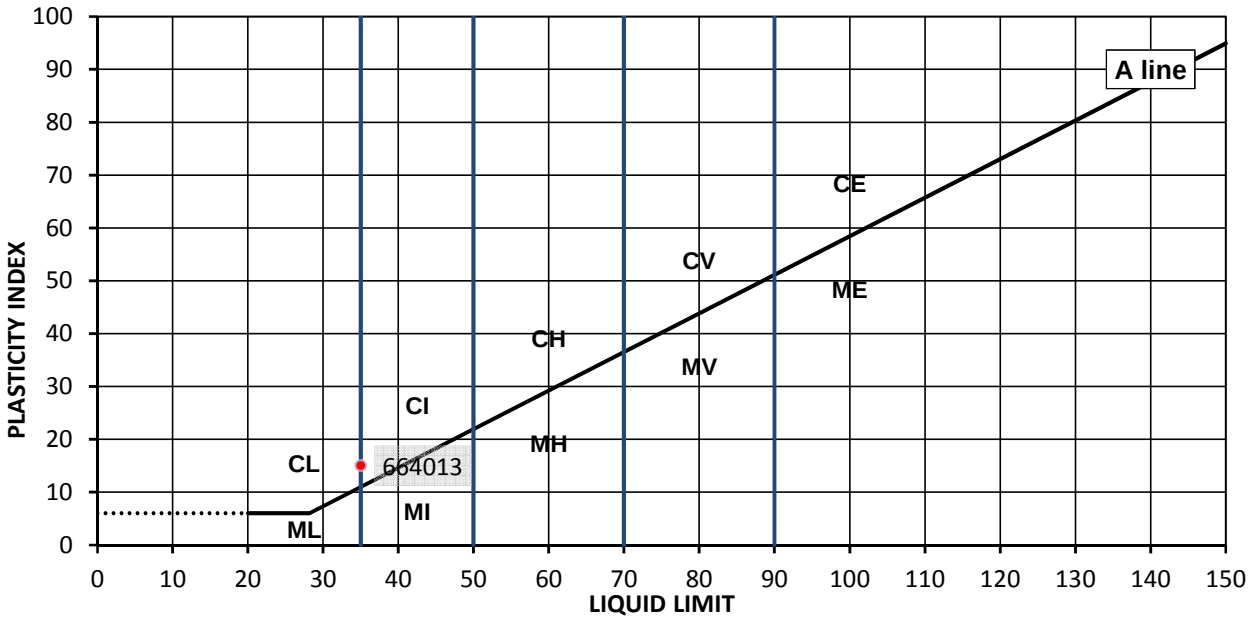
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	08/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664013
Sample Reference: Not Given

Description:	Brown sandy clayey GRAVEL	Sample Type:	B
Location:	TP134	Depth Top [m]:	1.4
Sample Preparation:	Tested after washing to remove >425um	Depth Base [m]:	1.5

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
13	35	20	15	43



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported:

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Summary of Classification Test Results

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

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside
Festival Park
Stoke on Trent
ST1 5RY
Contact: Douglas Mayer
Site Name: Heyford Park - Main Site - Phase 9
Site Address: Not Given

Client Reference: C-04583-C
Job Number: 16-33868
Date Sampled: 02/11/2016
Date Received: 25/11/2016
Date Tested: 30/11/2016
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Soil Description	Density		M/C	Attenberg				PD
		Reference	Top depth [m]	Base depth [m]	Type		bulk Mg/m3	dry Mg/m3	%	% Passing 425um %	LL %	PL %	PI %	Mg/m3
664000	TP03	Not Given	1.40	Not Given	D	Brown sandy CLAY			19	100	48	23	25	
664002	TP07	Not Given	1.40	Not Given	D	Yellowish brown sandy CLAY			21	100	41	25	16	
664007	TP101	Not Given	0.80	Not Given	D	Orangish brown sandy CLAY			22	100	47	23	24	
664009	TP105	Not Given	1.70	Not Given	D	Brown slightly gravelly sandy CLAY			19	90	38	22	16	
664011	TP107	Not Given	0.90	1.10	B	Brown sandy slightly clayey GRAVEL			8.5	28	39	25	14	
664004	TP13	Not Given	0.60	Not Given	B	Brown gravelly clayey SAND			13	58	38	23	15	
664012	TP132	Not Given	0.90	1.00	B	Brown sandy slightly clayey GRAVEL			9.4	34	42	28	14	
664013	TP134	Not Given	1.40	1.50	B	Brown sandy clayey GRAVEL			13	43	35	20	15	
664005	TP15	Not Given	1.10	Not Given	D	Orangish brown slightly gravelly slightly sandy CLAY			15	99	59	27	32	

Comments:

Approved:

[redacted]

Mirosława Pytlik
PL Head of Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager (Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

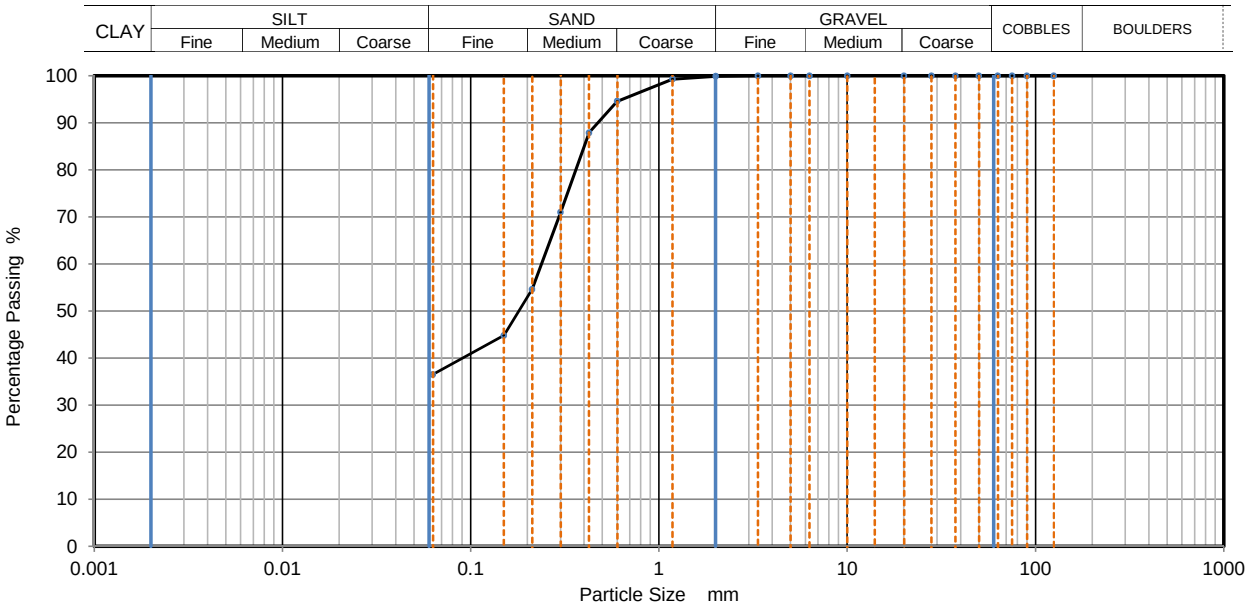
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	02/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 663999

Sample description:	Brown clayey SAND	Sample Reference:	Not Given
Location:	TP03	Sample Type:	D
Supplier:	Not Given	Depth Top [m]:	0.9
		Depth Base [m]:	Not Given



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		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	95		
0.425	88		
0.3	71		
0.212	55		
0.15	45		
0.063	37		

Dry Mass of sample [g]: 410

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.10
Sand	63.40
Fines <0.063mm	36.50

Grading Analysis		
D100	mm	3.35
D60	mm	0.238
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

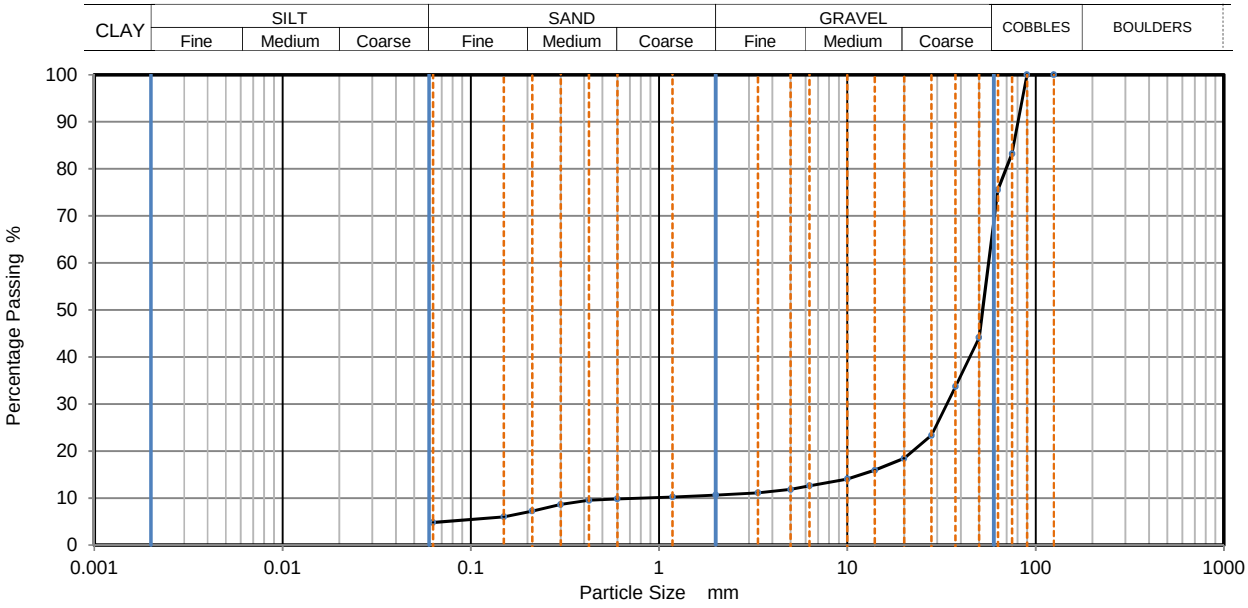
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	02/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664001 Sample Reference: Not Given

Sample description: Brown slightly sandy GRAVEL. Gravel is limestone Sample Type: B

Location: TP05 Depth Top [m]: 0.9

Supplier: Not Given Depth Base [m]: Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	83		
63	76		
50	44		
37.5	34		
28	23		
20	18		
14	16		
10	14		
6.3	13		
5	12		
3.35	11		
2	11		
1.18	10		
0.6	10		
0.425	10		
0.3	9		
0.212	7		
0.15	6		
0.063	5		

Dry Mass of sample [g]: 14304

Sample Proportions	% dry mass
Very coarse	24.50
Gravel	64.90
Sand	5.80
Fines <0.063mm	4.80

Grading Analysis		
D100	mm	90
D60	mm	56.2
D30	mm	33.8
D10	mm	0.858
Uniformity Coefficient		65
Curvature Coefficient		24

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

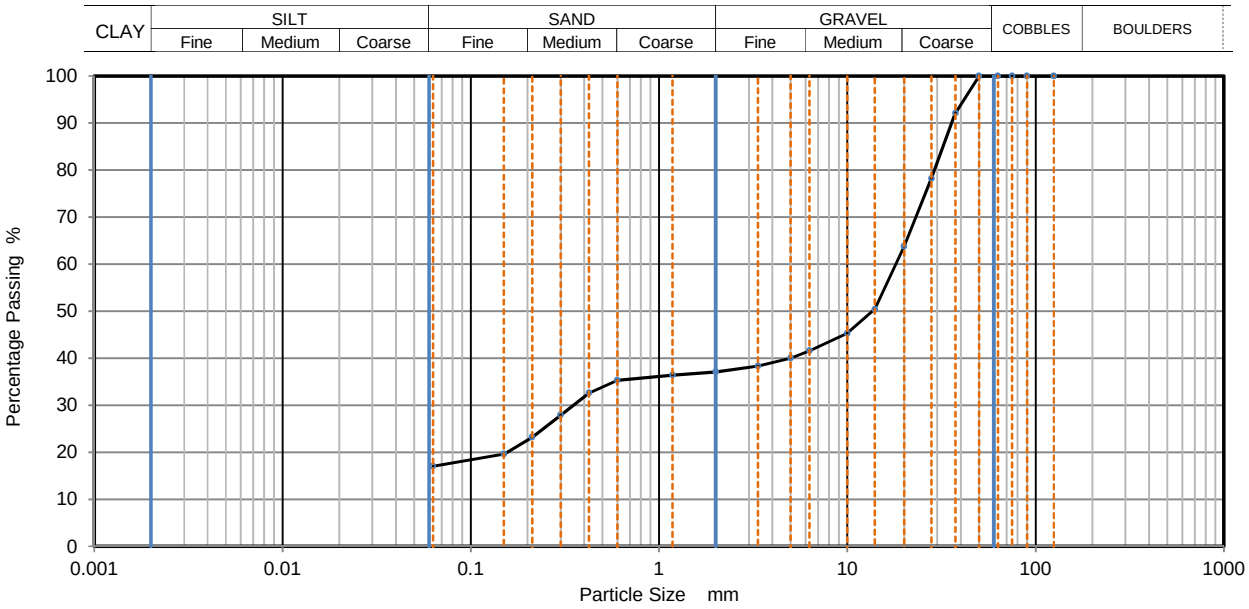
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	03/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664003 Sample Reference: Not Given

Sample description:	Brown slightly sandy slightly clayey GRAVEL	Sample Type:	B
Location:	TP10	Depth Top [m]:	0.75
Supplier:	Not Given	Depth Base [m]:	Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	92		
28	78		
20	64		
14	50		
10	45		
6.3	42		
5	40		
3.35	38		
2	37		
1.18	36		
0.6	35		
0.425	33		
0.3	28		
0.212	23		
0.15	20		
0.063	17		

Dry Mass of sample [g]: 7964

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	62.90
Sand	20.10
Fines <0.063mm	17.00

Grading Analysis		
D100	mm	50
D60	mm	18.1
D30	mm	0.35
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

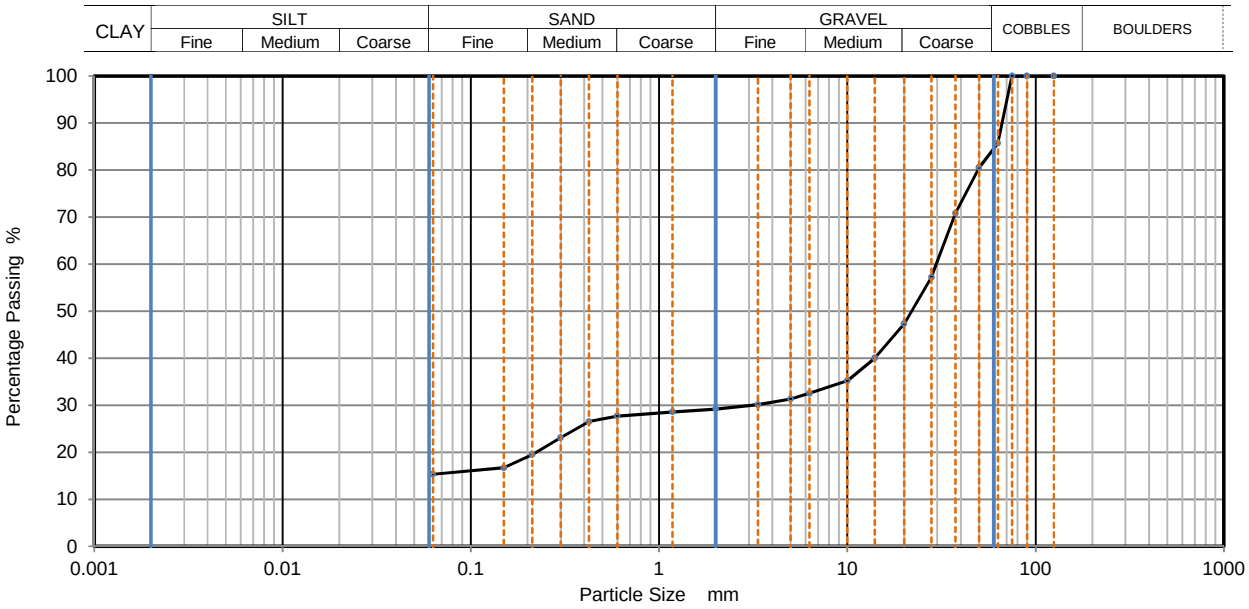
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	03/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664006

Sample description:	Brown slightly sandy slightly clayey GRAVEL	Sample Reference:	Not Given
Location:	TP15	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	1.5
		Depth Base [m]:	Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	86		
50	81		
37.5	71		
28	57		
20	47		
14	40		
10	35		
6.3	33		
5	31		
3.35	30		
2	29		
1.18	29		
0.6	28		
0.425	27		
0.3	23		
0.212	20		
0.15	17		
0.063	15		

Dry Mass of sample [g]: 6842

Sample Proportions	% dry mass
Very coarse	14.30
Gravel	56.50
Sand	14.00
Fines <0.063mm	15.30

Grading Analysis		
D100	mm	75
D60	mm	29.7
D30	mm	3.13
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

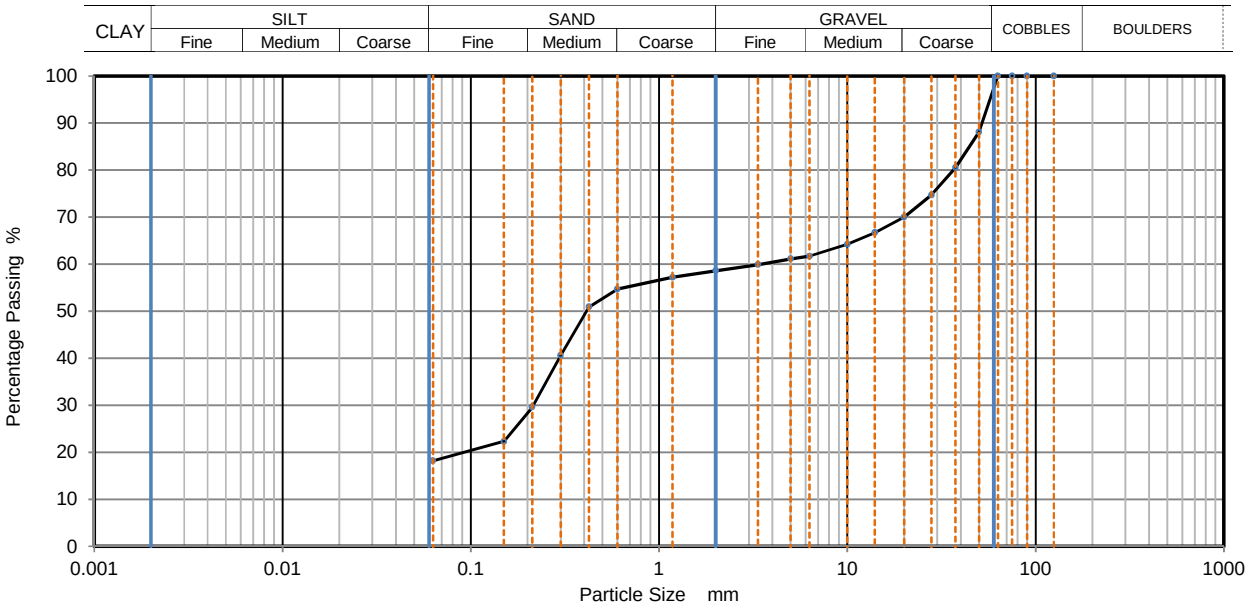
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	02/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664008

Sample description:	Brown slightly clayey SAND and GRAVEL	Sample Reference:	Not Given
Location:	TP101	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	1.5
		Depth Base [m]:	1.6



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	88		
37.5	81		
28	75		
20	70		
14	67		
10	64		
6.3	62		
5	61		
3.35	60		
2	59		
1.18	57		
0.6	55		
0.425	51		
0.3	41		
0.212	30		
0.15	22		
0.063	18		

Dry Mass of sample [g]: 5522

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	41.40
Sand	40.40
Fines <0.063mm	18.20

Grading Analysis		
D100	mm	63
D60	mm	3.42
D30	mm	0.215
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

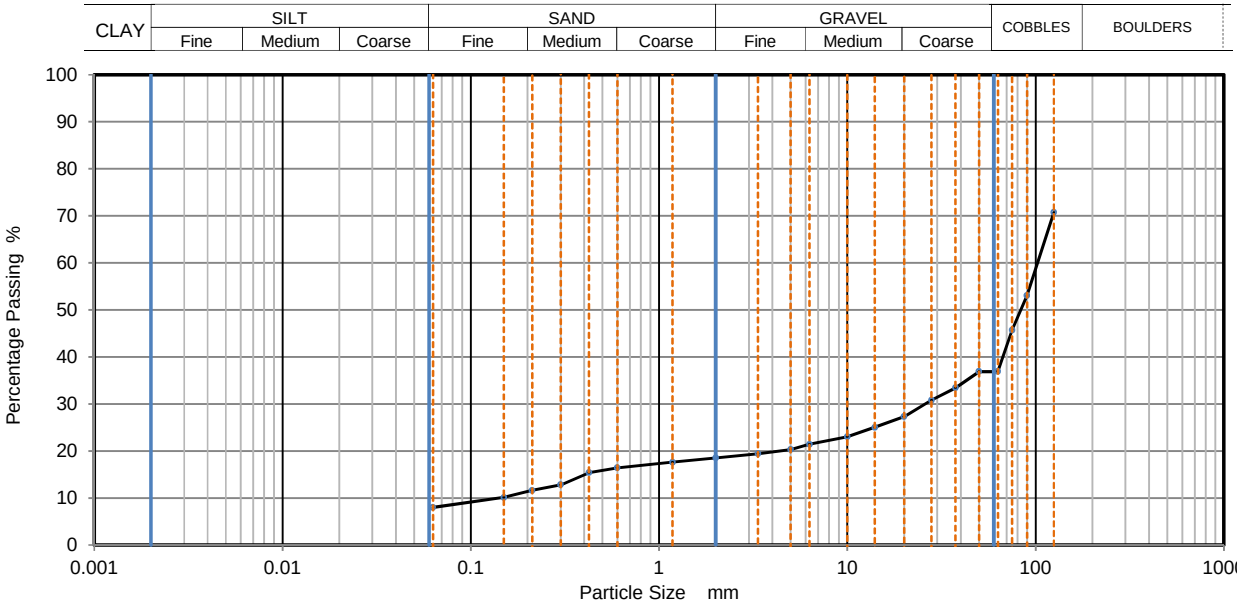
UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	03/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference:	664010	Sample Reference:	Not Given
Sample description:	Light brown slightly sandy slightly clayey GRAVEL. Gravel is limestone	Sample Type:	B
Location:	TP106	Depth Top [m]:	2
Supplier:	Not Given	Depth Base [m]:	2.1



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	71		
90	53		
75	46		
63	37		
50	37		
37.5	33		
28	31		
20	27		
14	25		
10	23		
6.3	21		
5	20		
3.35	19		
2	19		
1.18	18		
0.6	16		
0.425	15		
0.3	13		
0.212	12		
0.15	10		
0.063	8		

Dry Mass of sample [g]: 19799

Sample Proportions	% dry mass
Very coarse	63.10
Gravel	18.40
Sand	10.50
Fines <0.063mm	8.00

Grading Analysis		
D100	mm	
D60	mm	102
D30	mm	25.9
D10	mm	0.146
Uniformity Coefficient		700
Curvature Coefficient		45

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

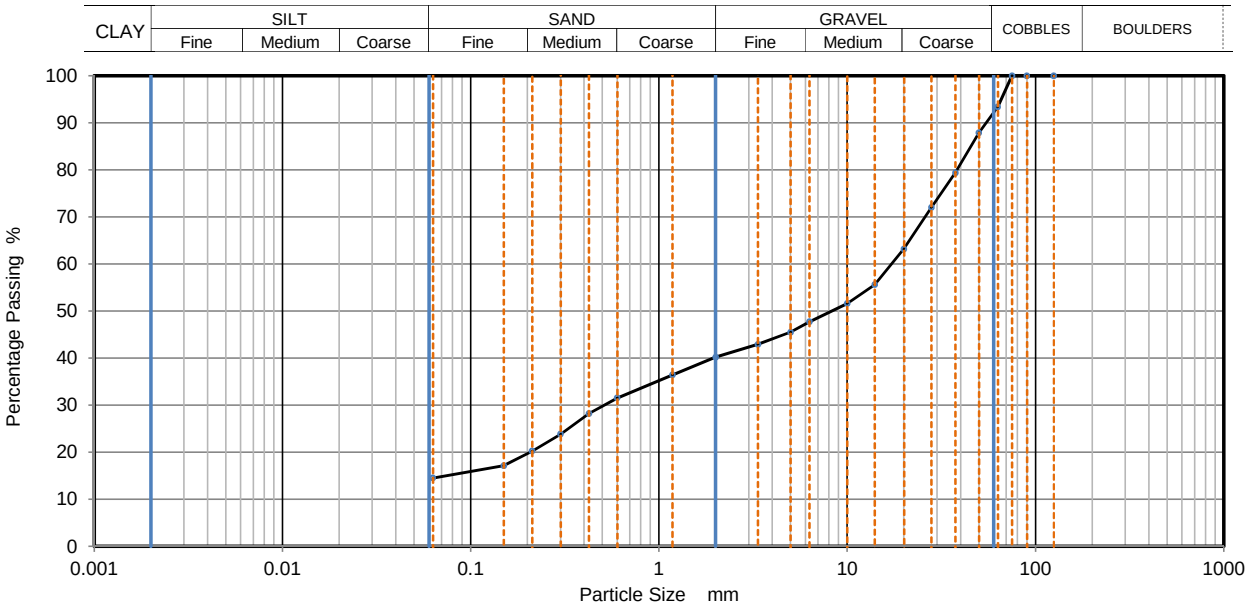
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	03/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference:	664011	Sample Reference:	Not Given
Sample description:	Brown sandy slightly clayey GRAVEL	Sample Type:	B
Location:	TP107	Depth Top [m]:	0.9
Supplier:	Not Given	Depth Base [m]:	1.1



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	93		
50	88		
37.5	79		
28	72		
20	63		
14	56		
10	52		
6.3	48		
5	46		
3.35	43		
2	40		
1.18	36		
0.6	32		
0.425	28		
0.3	24		
0.212	20		
0.15	17		
0.063	15		

Dry Mass of sample [g]: 4881

Sample Proportions	% dry mass
Very coarse	6.60
Gravel	53.20
Sand	25.70
Fines <0.063mm	14.50

Grading Analysis		
D100	mm	75
D60	mm	17.2
D30	mm	0.513
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

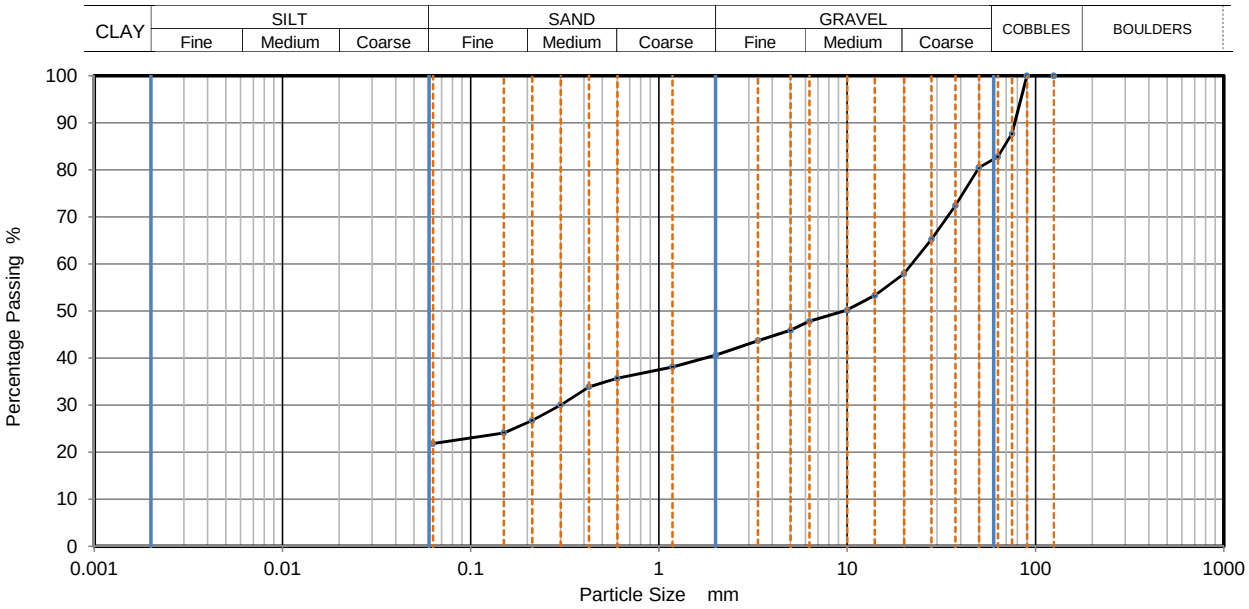
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	08/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference:	664012	Sample Reference:	Not Given
Sample description:	Brown sandy slightly clayey GRAVEL	Sample Type:	B
Location:	TP132	Depth Top [m]:	0.9
Supplier:	Not Given	Depth Base [m]:	1



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	88		
63	83		
50	81		
37.5	72		
28	65		
20	58		
14	53		
10	50		
6.3	48		
5	46		
3.35	44		
2	41		
1.18	38		
0.6	36		
0.425	34		
0.3	30		
0.212	27		
0.15	24		
0.063	22		

Dry Mass of sample [g]: 9824

Sample Proportions	% dry mass
Very coarse	17.20
Gravel	42.20
Sand	18.80
Fines <0.063mm	21.80

Grading Analysis		
D100	mm	90
D60	mm	22
D30	mm	0.3
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

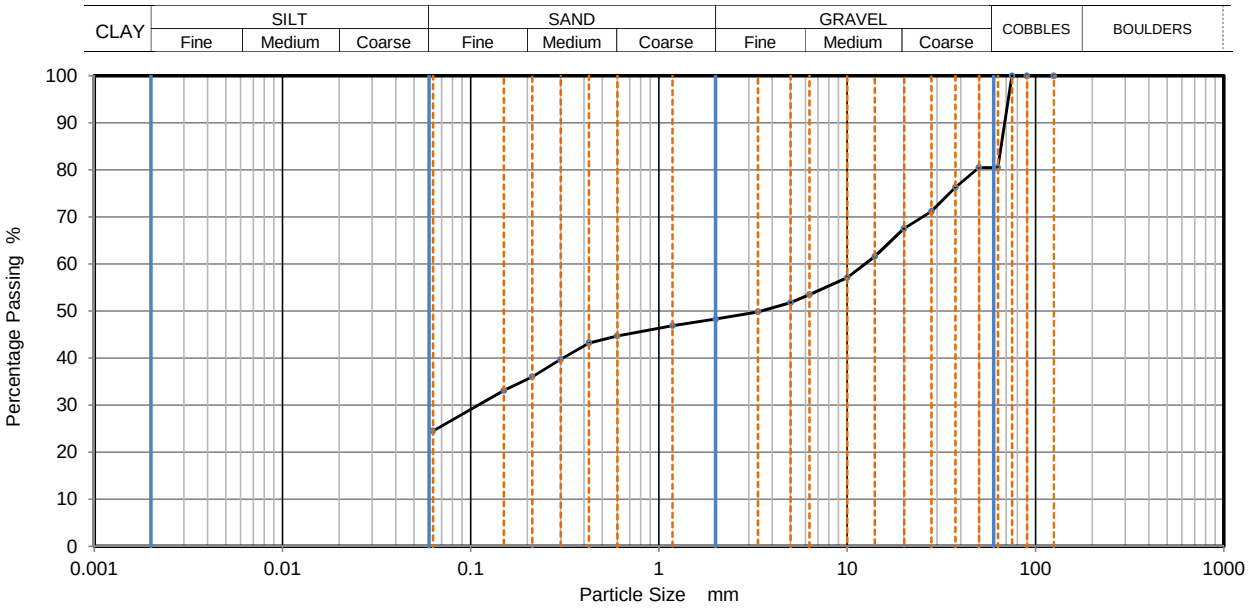
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33868
		Date Sampled:	08/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 9	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference:	664013	Sample Reference:	Not Given
Sample description:	Brown sandy clayey GRAVEL	Sample Type:	B
Location:	TP134	Depth Top [m]:	1.4
Supplier:	Not Given	Depth Base [m]:	1.5



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	81		
50	81		
37.5	76		
28	71		
20	68		
14	62		
10	57		
6.3	54		
5	52		
3.35	50		
2	48		
1.18	47		
0.6	45		
0.425	43		
0.3	40		
0.212	36		
0.15	33		
0.063	25		

Dry Mass of sample [g]: 4945

Sample Proportions	% dry mass
Very coarse	19.50
Gravel	32.20
Sand	23.90
Fines <0.063mm	24.50

Grading Analysis		
D100	mm	75
D60	mm	12.4
D30	mm	0.11
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Moisture Content

Tested in Accordance with BS 1377-2:1990: Clause 3.2

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

UKAS TESTING 4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33871
		Date Sampled:	09/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 10	Sampled By:	Not Given
Site Address:	Not Given		

Test results

Laboratory Reference	Sample Reference	Location	Depth Top [m]	Depth Base [m]	Sample Type	Description	Moisture Content [%]
664026	Not Given	SA07	0.35	1	B	Yellowish brown slightly sandy clayey GRAVEL with grass	10
664027	Not Given	TP126	1.9	2	B	Yellowish brown gravelly clayey SAND	13
664028	Not Given	TP127	0.6	0.7	B	Brown sandy gravelly CLAY	14
664029	Not Given	TP127	1.1	Not Given	D	Brown slightly gravelly slightly sandy CLAY	31
664030	Not Given	TP129	1.3	1.4	B	Yellowish brown sandy clayey GRAVEL	9.8
664032	Not Given	TP131	1.3	1.4	B	Yellow slightly sandy CLAY	30

Remarks

Approved:

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

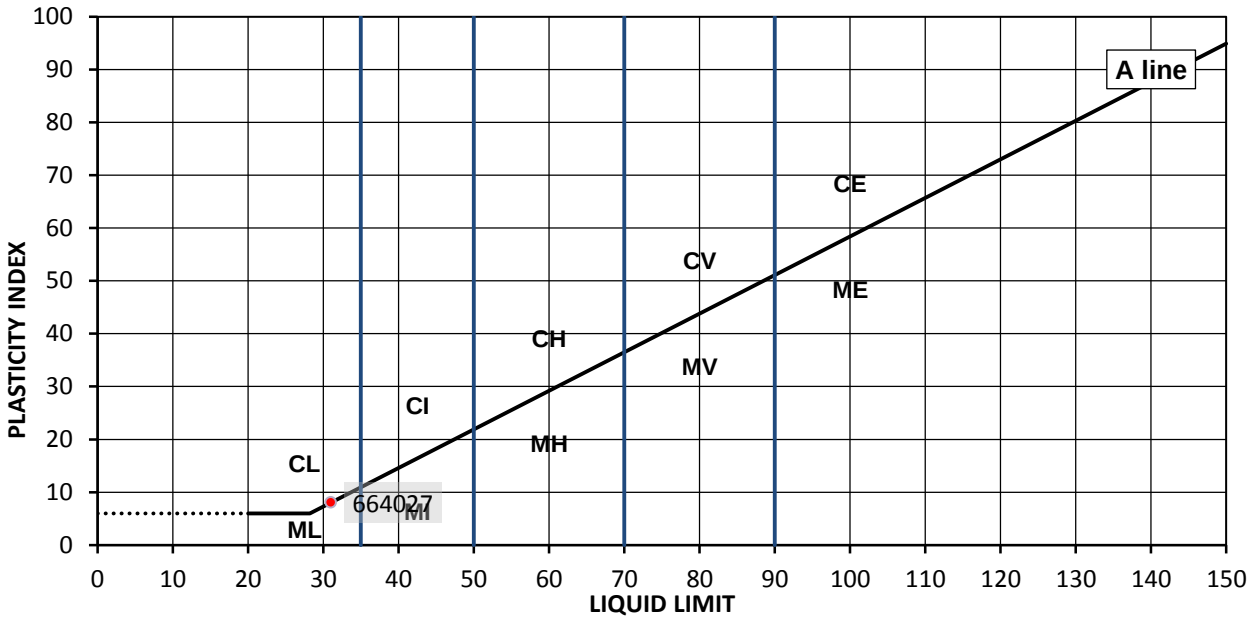
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33871
		Date Sampled:	08/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 10	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664027
Sample Reference: Not Given

Description:	Yellowish brown gravelly clayey SAND	Sample Type:	B
Location:	TP126	Depth Top [m]:	1.9
Sample Preparation:	Tested after >425um removed by hand	Depth Base [m]:	2

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
13	31	23	8	67



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

GF 106.10

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33871
		Date Sampled:	08/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 10	Sampled By:	Not Given
Site Address:	Not Given		

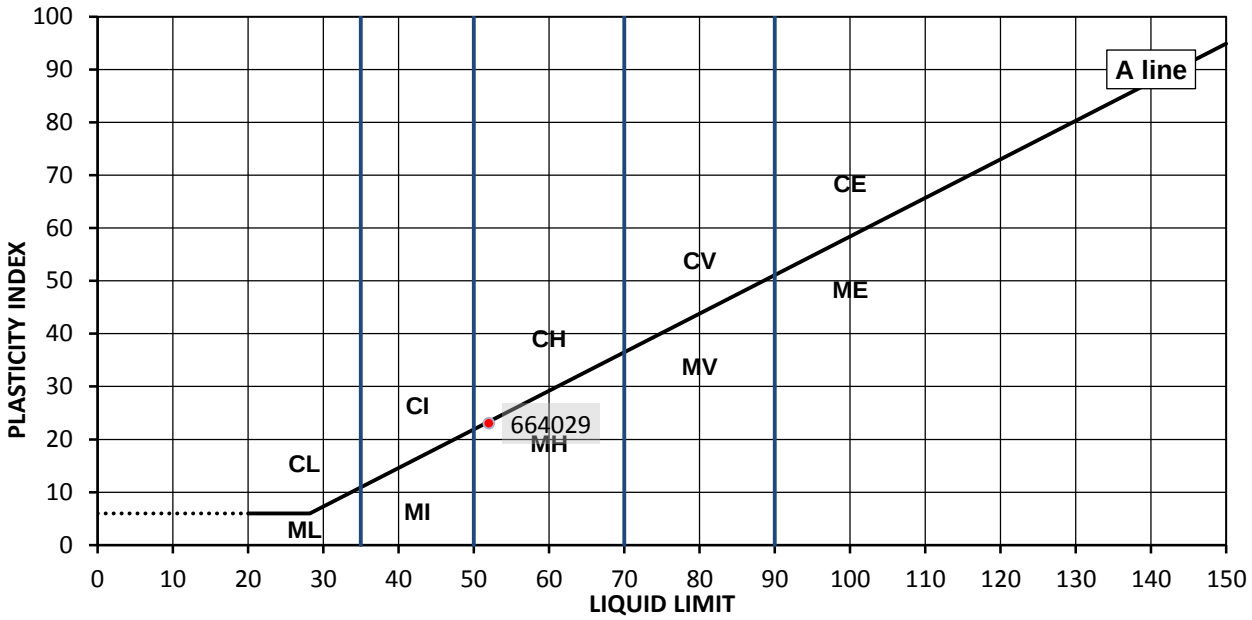
TEST RESULTS

Laboratory Reference: 664029
Sample Reference: Not Given

Description: Brown slightly gravelly slightly sandy CLAY
Location: TP127
Sample Preparation: Tested after >425um removed by hand

Sample Type: D
Depth Top [m]: 1.1
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
31	52	29	23	90



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

Mirosława Pytlik
PL Deputy of Head of
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

GF 106.10

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

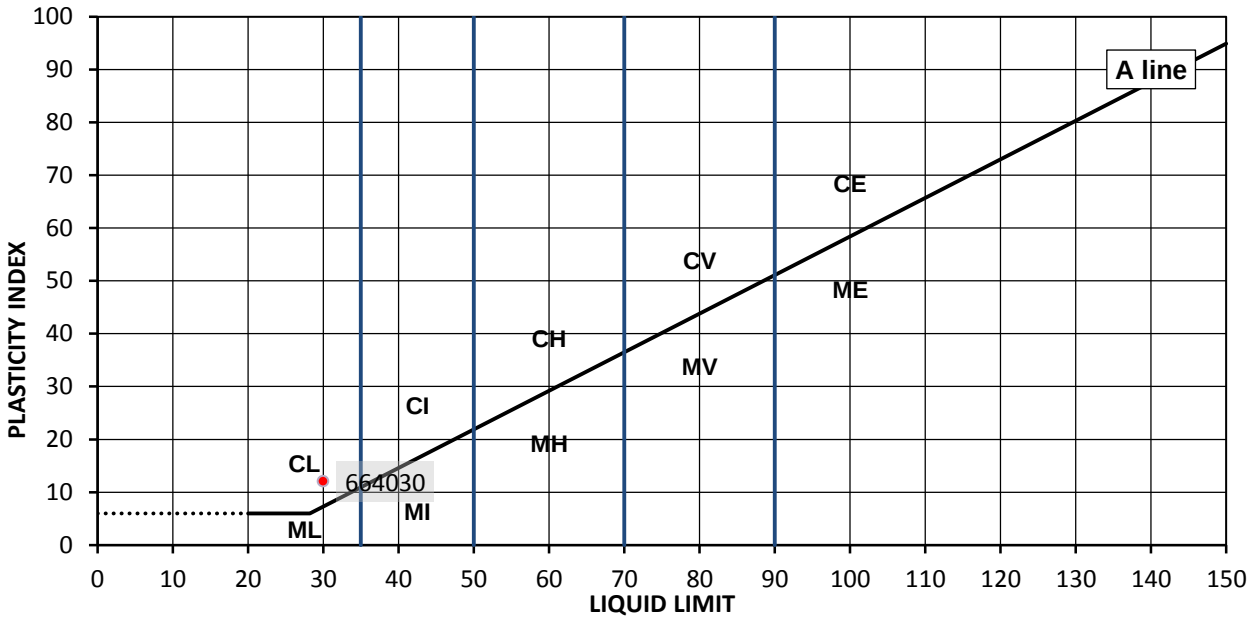
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33871
		Date Sampled:	08/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 10	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664030
Sample Reference: Not Given

Description:	Yellowish brown sandy clayey GRAVEL	Sample Type:	B
Location:	TP129	Depth Top [m]:	1.3
Sample Preparation:	Tested after washing to remove >425um	Depth Base [m]:	1.4

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
9.8	30	18	12	44



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

GF 106.10

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

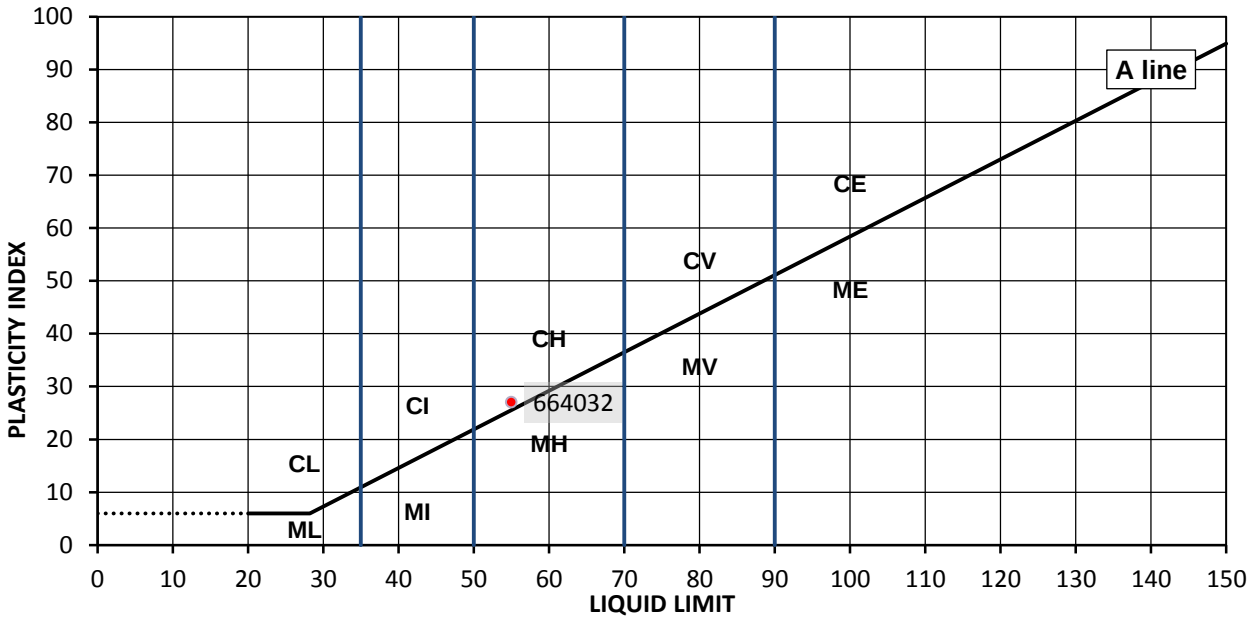
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33871
		Date Sampled:	08/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 10	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664032
Sample Reference: Not Given

Description:	Yellow slightly sandy CLAY	Sample Type:	B
Location:	TP131	Depth Top [m]:	1.3
Sample Preparation:	Tested in natural condition	Depth Base [m]:	1.4

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
30	55	28	27	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

GF 106.10

TEST CERTIFICATE

Summary of Classification Test Results

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

Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside
Festival Park
Stoke on Trent
ST1 5RY
Contact: Douglas Mayer
Site Name: Heyford Park - Main Site - Phase 10
Site Address: Not Given

Client Reference: C-04583-C
Job Number: 16-33871
Date Sampled: 08/11/2016
Date Received: 25/11/2016
Date Tested: 30/11/2016
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Soil Description	Density		M/C	Attenberg				PD
		Reference	Top depth [m]	Base depth [m]	Type		bulk Mg/m3	dry Mg/m3	%	% Passing 425um %	LL %	PL %	PI %	Mg/m3
664027	TP126	Not Given	1.90	2.00	B	Yellowish brown gravelly clayey SAND			13	67	31	23	8	
664029	TP127	Not Given	1.10	Not Given	D	Brown slightly gravelly slightly sandy CLAY			31	90	52	29	23	
664030	TP129	Not Given	1.30	1.40	B	Yellowish brown sandy clayey GRAVEL			9.8	44	30	18	12	
664032	TP131	Not Given	1.30	1.40	B	Yellow slightly sandy CLAY			30	100	55	28	27	

Comments:

Approved:

[redacted]

Mirosława Pytlik
PL Head of Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager (Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

GF 159.2

TEST CERTIFICATE

Determination of Particle Size Distribution

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

UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33871
		Date Sampled:	09/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 10	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664026

Sample Reference: Not Given

Sample description: Yellowish brown slightly sandy clayey GRAVEL with grass

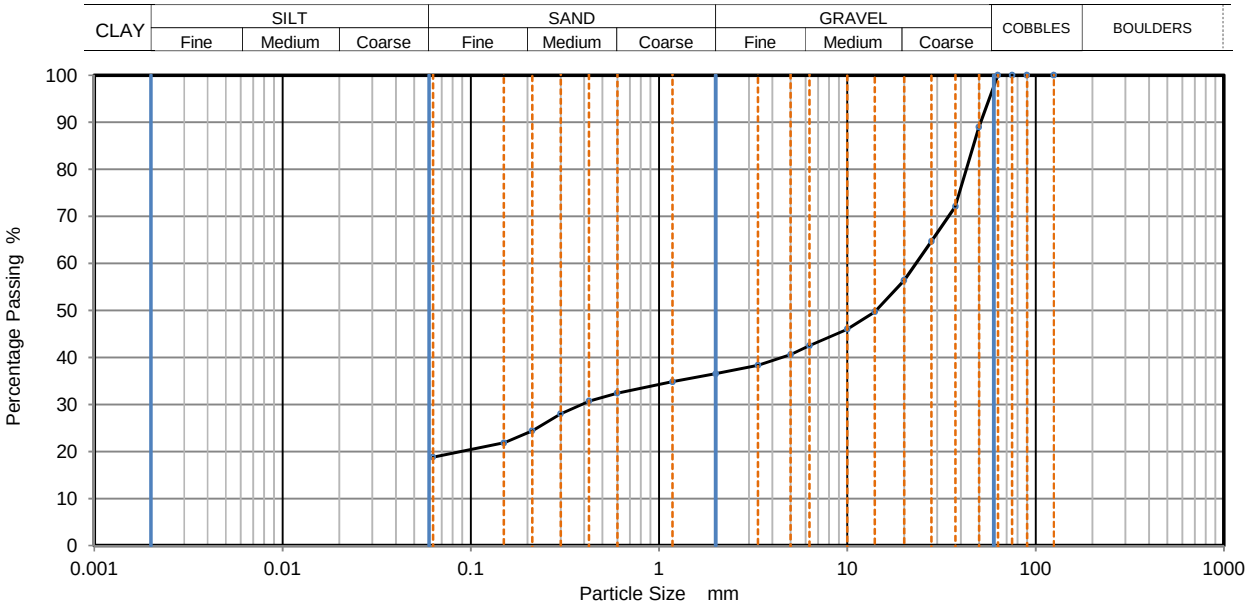
Sample Type: B

Location: SA07

Depth Top [m]: 0.35

Supplier: Not Given

Depth Base [m]: 1



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	89		
37.5	72		
28	65		
20	56		
14	50		
10	46		
6.3	43		
5	41		
3.35	38		
2	37		
1.18	35		
0.6	32		
0.425	31		
0.3	28		
0.212	24		
0.15	22		
0.063	19		

Dry Mass of sample [g]: 7477

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	63.50
Sand	17.70
Fines <0.063mm	18.80

Grading Analysis		
D100	mm	63
D60	mm	23.1
D30	mm	0.389
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

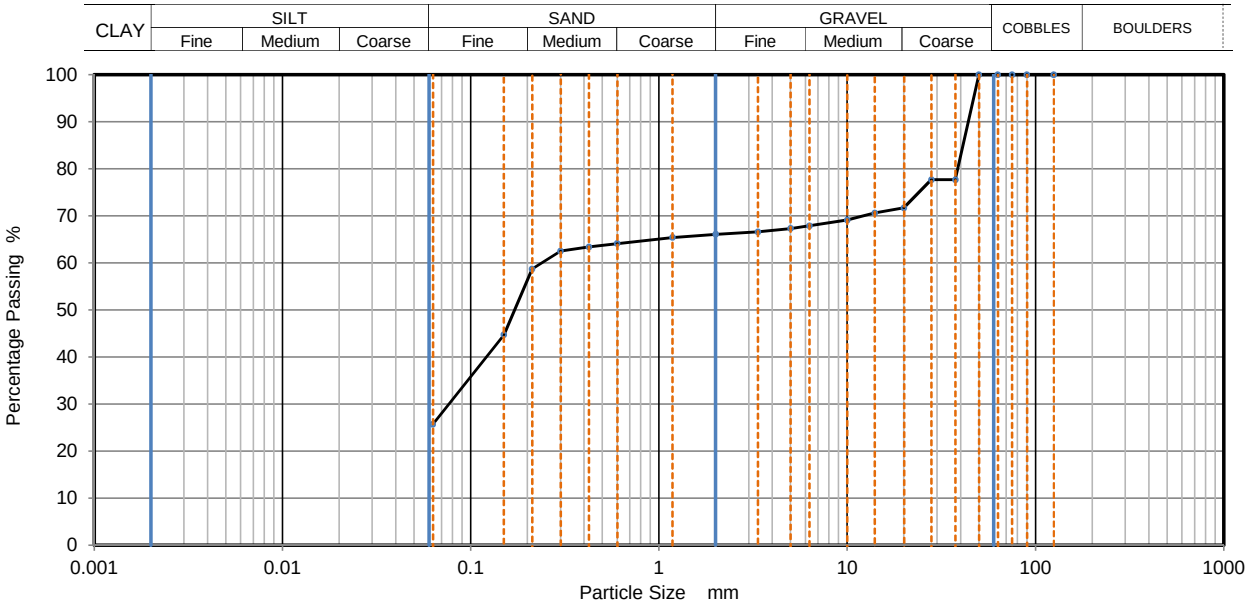
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33871
		Date Sampled:	08/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 10	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664027

Sample description:	Yellowish brown gravelly clayey SAND	Sample Reference:	Not Given
Location:	TP126	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	1.9
		Depth Base [m]:	2



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	78		
28	78		
20	72		
14	71		
10	69		
6.3	68		
5	67		
3.35	67		
2	66		
1.18	65		
0.6	64		
0.425	63		
0.3	63		
0.212	59		
0.15	45		
0.063	26		

Dry Mass of sample [g]: 2522

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	33.90
Sand	40.40
Fines <0.063mm	25.70

Grading Analysis		
D100	mm	50
D60	mm	0.239
D30	mm	0.0766
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

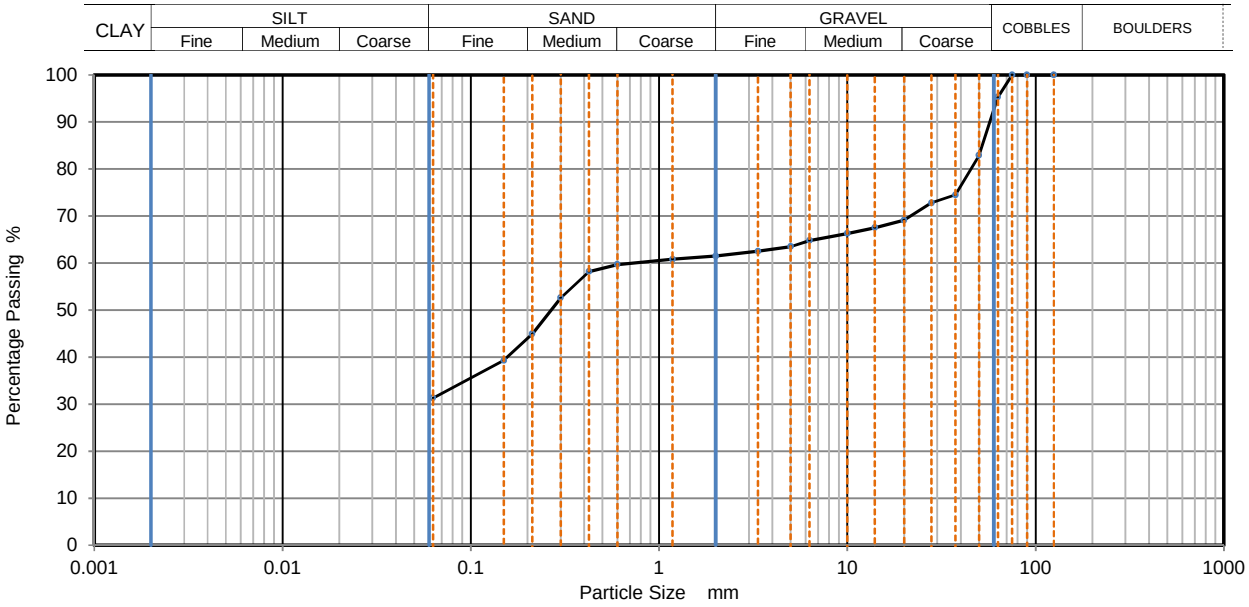
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33871
		Date Sampled:	08/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 10	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664028 Sample Reference: Not Given

Sample description:	Brown sandy gravelly CLAY	Sample Type:	B
Location:	TP127	Depth Top [m]:	0.6
Supplier:	Not Given	Depth Base [m]:	0.7



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	95		
50	83		
37.5	75		
28	73		
20	69		
14	68		
10	66		
6.3	65		
5	64		
3.35	63		
2	62		
1.18	61		
0.6	60		
0.425	58		
0.3	53		
0.212	45		
0.15	39		
0.063	31		

Dry Mass of sample [g]: 6399

Sample Proportions	% dry mass
Very coarse	4.70
Gravel	33.80
Sand	30.30
Fines <0.063mm	31.30

Grading Analysis		
D100	mm	75
D60	mm	0.707
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

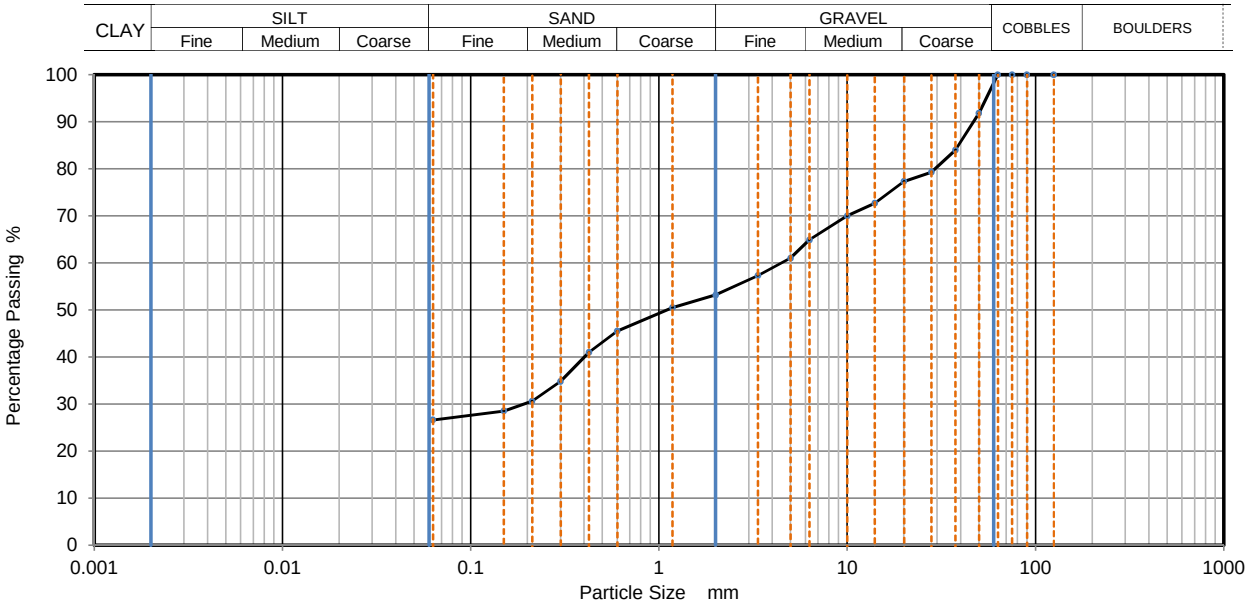
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33871
		Date Sampled:	08/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 10	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664030 Sample Reference: Not Given

Sample description:	Yellowish brown sandy clayey GRAVEL	Sample Type:	B
Location:	TP129	Depth Top [m]:	1.3
Supplier:	Not Given	Depth Base [m]:	1.4



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	92		
37.5	84		
28	79		
20	77		
14	73		
10	70		
6.3	65		
5	61		
3.35	57		
2	53		
1.18	51		
0.6	46		
0.425	41		
0.3	35		
0.212	31		
0.15	29		
0.063	27		

Dry Mass of sample [g]: 5515

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	46.80
Sand	26.70
Fines <0.063mm	26.60

Grading Analysis		
D100	mm	63
D60	mm	4.5
D30	mm	0.193
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

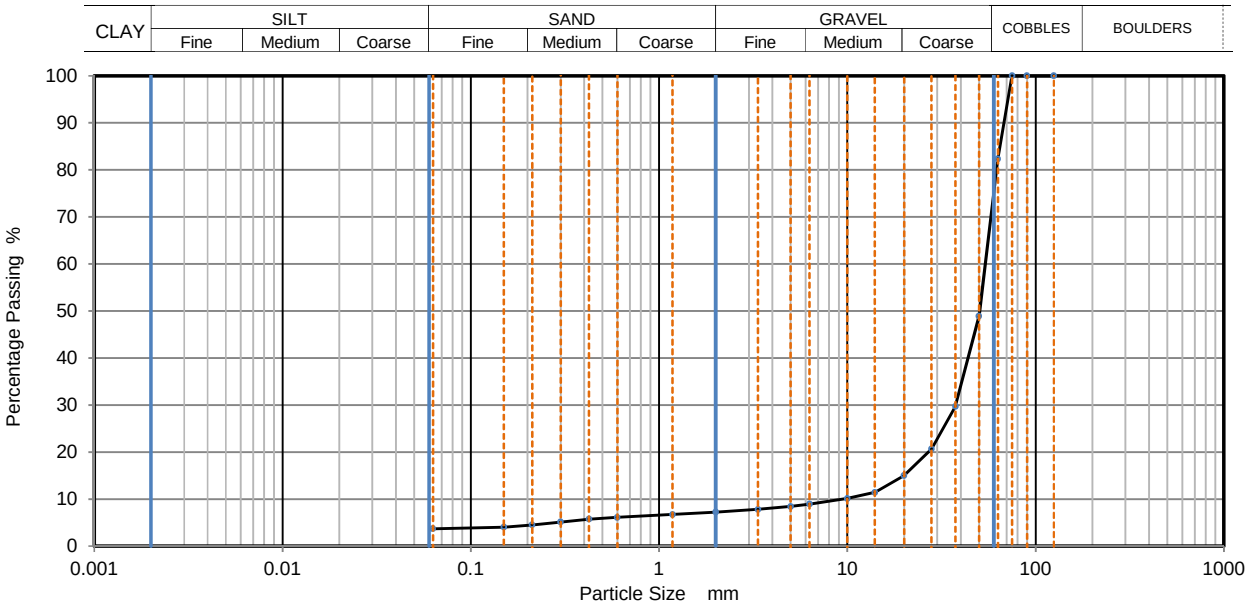
UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33871
		Date Sampled:	08/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 10	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664031 Sample Reference: Not Given

Sample description:	Yellowish brown slightly sandy GRAVEL	Sample Type:	B
Location:	TP130	Depth Top [m]:	0.8
Supplier:	Not Given	Depth Base [m]:	0.9



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	82		
50	49		
37.5	30		
28	21		
20	15		
14	11		
10	10		
6.3	9		
5	8		
3.35	8		
2	7		
1.18	7		
0.6	6		
0.425	6		
0.3	5		
0.212	5		
0.15	4		
0.063	4		

Dry Mass of sample [g]: 7178

Sample Proportions	% dry mass
Very coarse	17.70
Gravel	75.10
Sand	3.40
Fines <0.063mm	3.70

Grading Analysis		
D100	mm	75
D60	mm	54
D30	mm	37.7
D10	mm	9.58
Uniformity Coefficient		5.6
Curvature Coefficient		2.7

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Moisture Content

Tested in Accordance with BS 1377-2:1990: Clause 3.2

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

UKAS TESTING 4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33874
		Date Sampled:	10/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

Test results

Laboratory Reference	Sample Reference	Location	Depth Top [m]	Depth Base [m]	Sample Type	Description	Moisture Content [%]
664047	Not Given	TP147	1	1.1	B	Reddish brown slightly clayey sandy GRAVEL. Gravel is limestone	9.1
664049	Not Given	TP150	0.8	0.9	B	Brown gravelly sandy CLAY	10
664050	Not Given	TP154	0.5	Not Given	D	Orangish brown sandy CLAY	24
664052	Not Given	TP158	1	1.2	B	Yellowish brown sandy slightly clayey GRAVEL. Gravel is limestone	8.2
664053	Not Given	TP167	1	1.2	B	Yellowish brown slightly sandy slightly clayey GRAVEL. Gravel is limestone	7.1

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

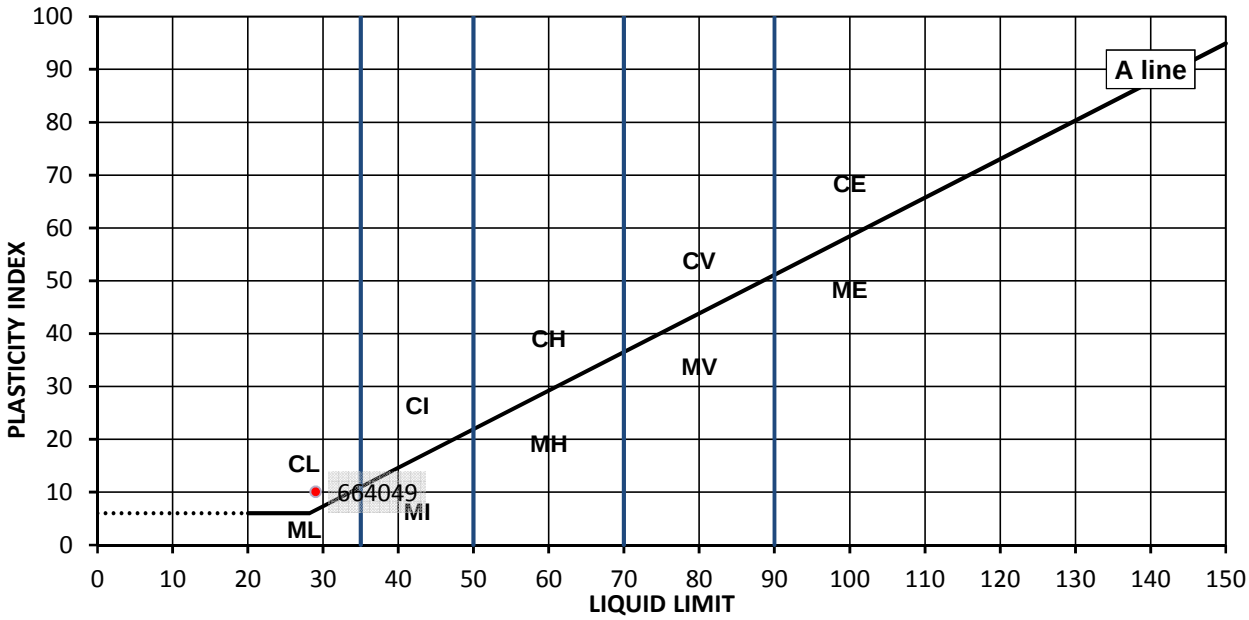
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33874
		Date Sampled:	10/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664049
Sample Reference: Not Given

Description:	Brown gravelly sandy CLAY	Sample Type:	B
Location:	TP150	Depth Top [m]:	0.8
Sample Preparation:	Tested after washing to remove >425um	Depth Base [m]:	0.9

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
10	29	19	10	58



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

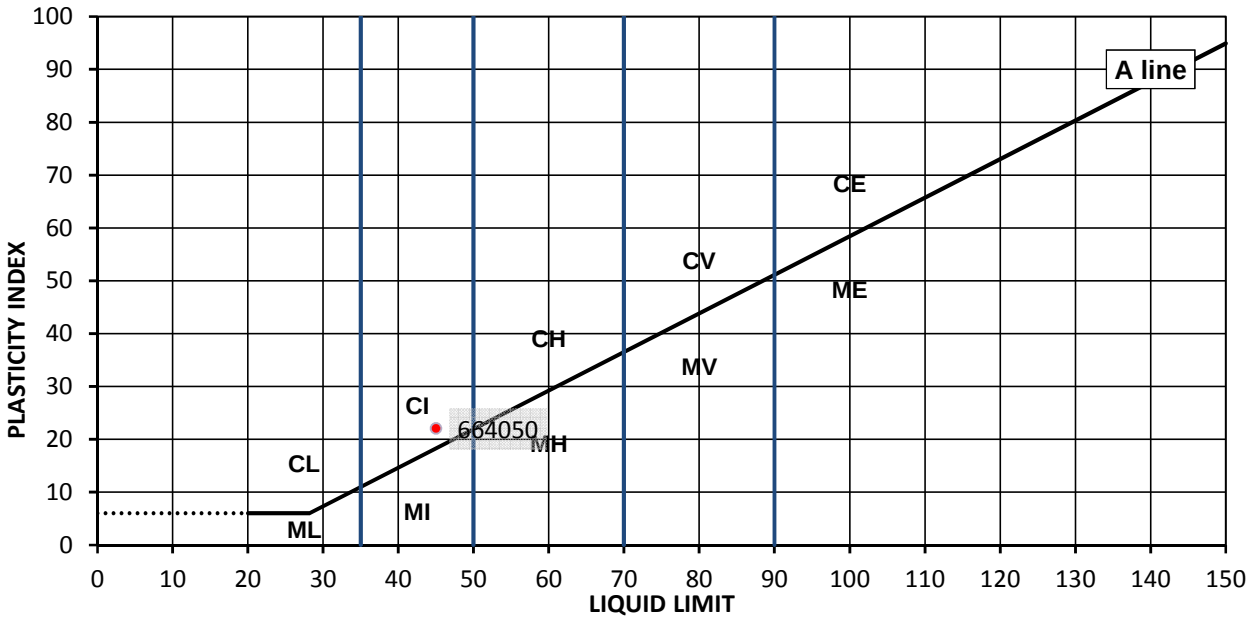
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33874
		Date Sampled:	14/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/111/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664050
Sample Reference: Not Given

Description:	Orangish brown sandy CLAY	Sample Type:	D
Location:	TP154	Depth Top [m]:	0.5
Sample Preparation:	Tested in natural condition	Depth Base [m]:	0

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
24	45	23	22	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

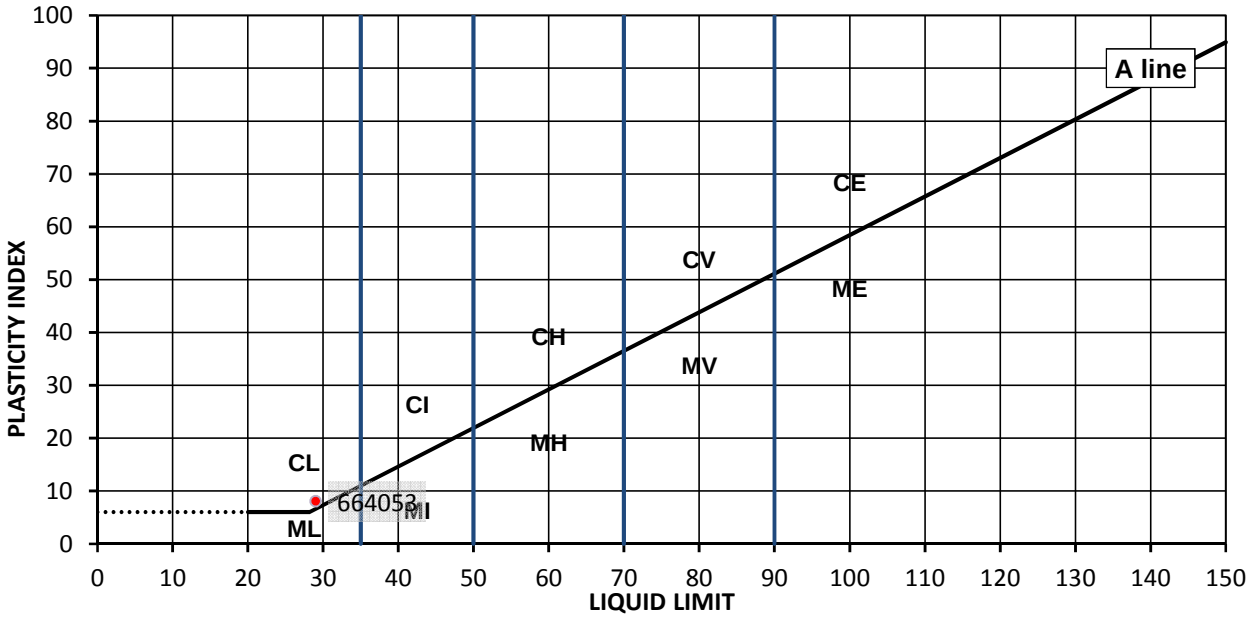
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33874
		Date Sampled:	14/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664053
Sample Reference: Not Given

Description:	Yellowish brown slightly sandy slightly clayey GRAVEL. Gravel is limestone	Sample Type:	B
Location:	TP167	Depth Top [m]:	1
Sample Preparation:	Tested after washing to remove >425um	Depth Base [m]:	1.2

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
7.1	29	21	8	10



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Summary of Classification Test Results

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

Client:	Hydrock Consultants Ltd
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY
Contact:	Douglas Mayer
Site Name:	Heyford Park - Main Site - Phase 16
Site Address:	Not Given

Client Reference:	C-04583-C
Job Number:	16-33874
Date Sampled:	10/11/2016
Date Received:	08/12/2016
Date Tested:	30/11/2016
Sampled By:	Not Given

Test results

Laboratory Reference	Hole No.	Sample				Soil Description	Density		M/C	Attenberg				PD
		Reference	Top depth [m]	Base depth [m]	Type		bulk Mg/m3	dry Mg/m3	%	% Passing 425um %	LL %	PL %	PI %	Mg/m3
664049	TP150	Not Given	0.80	0.90	B	Brown gravelly sandy CLAY			10	58	29	19	10	
664050	TP154	Not Given	0.50	Not Given	D	Orangish brown sandy CLAY			24	100	45	23	22	
664053	TP167	Not Given	1.00	1.20	B	Yellowish brown slightly sandy slightly clayey GRAVEL. Gravel is limestone			7.1	10	29	21	8	

Comments:

Approved:

Mirosława Pytlik
PL Head of Geotechnical Section

Signed:

Sushil Sharda
Technical Manager (Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

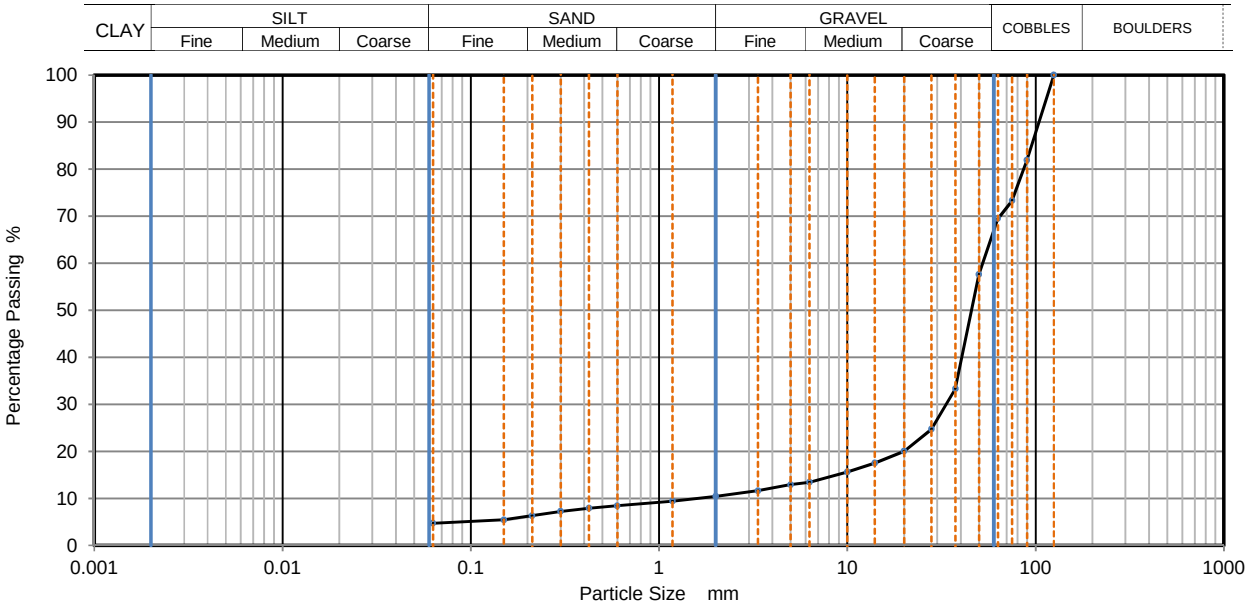
UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33874
		Date Sampled:	10/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664047 Sample Reference: Not Given

Sample description:	Reddish brown slightly clayey sandy GRAVEL. Gravel is limestone	Sample Type:	B
Location:	TP147	Depth Top [m]:	1
Supplier:	Not Given	Depth Base [m]:	1.1



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	82		
75	73		
63	70		
50	58		
37.5	33		
28	25		
20	20		
14	18		
10	16		
6.3	13		
5	13		
3.35	12		
2	10		
1.18	9		
0.6	8		
0.425	8		
0.3	7		
0.212	6		
0.15	5		
0.063	5		

Dry Mass of sample [g]: 13499

Sample Proportions	% dry mass
Very coarse	30.50
Gravel	59.20
Sand	5.70
Fines <0.063mm	4.70

Grading Analysis		
D100	mm	125
D60	mm	52.4
D30	mm	33.5
D10	mm	1.63
Uniformity Coefficient		32
Curvature Coefficient		13

Remarks

Preparation and testing in accordance with BS1377 unless noted below
Insufficient material supplied to be representative in accordance with BS1377 requirements

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

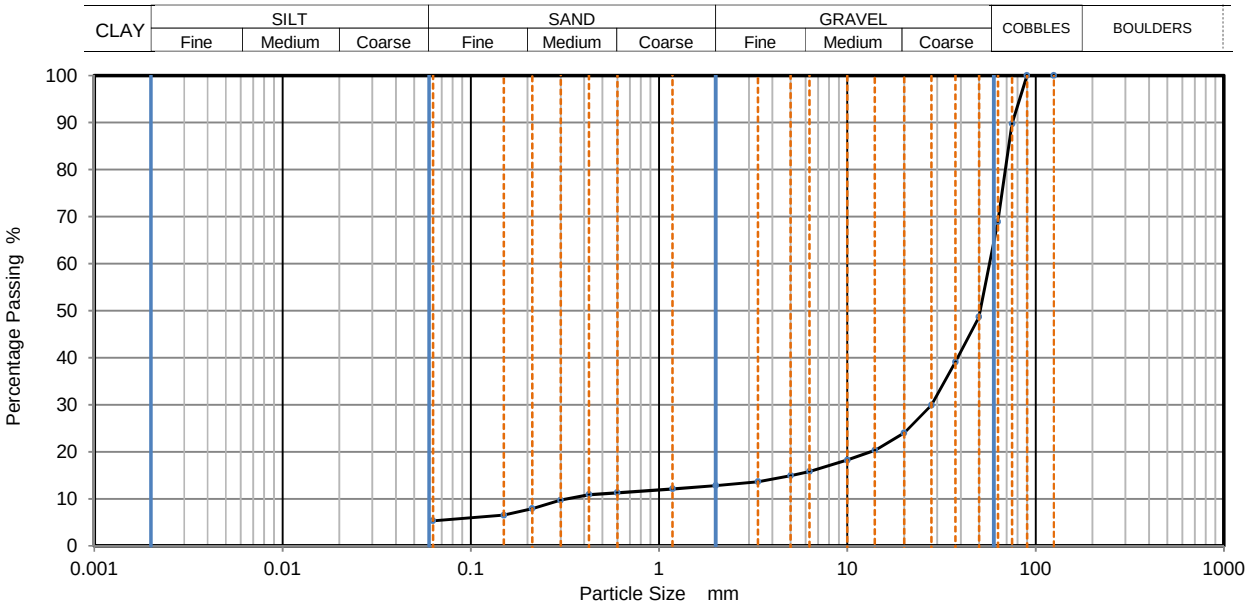
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33874
		Date Sampled:	10/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

	Laboratory Reference: 664048	Sample Reference:	Not Given
Sample description:	Brown sandy slightly clayey GRAVEL. Gravel is limestone	Sample Type:	B
Location:	TP149	Depth Top [m]:	0.8
Supplier:	Not Given	Depth Base [m]:	0.9



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	90		
63	69		
50	49		
37.5	39		
28	30		
20	24		
14	20		
10	18		
6.3	16		
5	15		
3.35	14		
2	13		
1.18	12		
0.6	11		
0.425	11		
0.3	10		
0.212	8		
0.15	7		
0.063	5		

Dry Mass of sample [g]: 12416

Sample Proportions	% dry mass
Very coarse	31.10
Gravel	56.10
Sand	7.50
Fines <0.063mm	5.30

Grading Analysis		
D100	mm	90
D60	mm	56.9
D30	mm	28.1
D10	mm	0.326
Uniformity Coefficient		170
Curvature Coefficient		43

Remarks

Preparation and testing in accordance with BS1377 unless noted below
Insufficient material supplied to be representative in accordance with BS1377 requirements

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

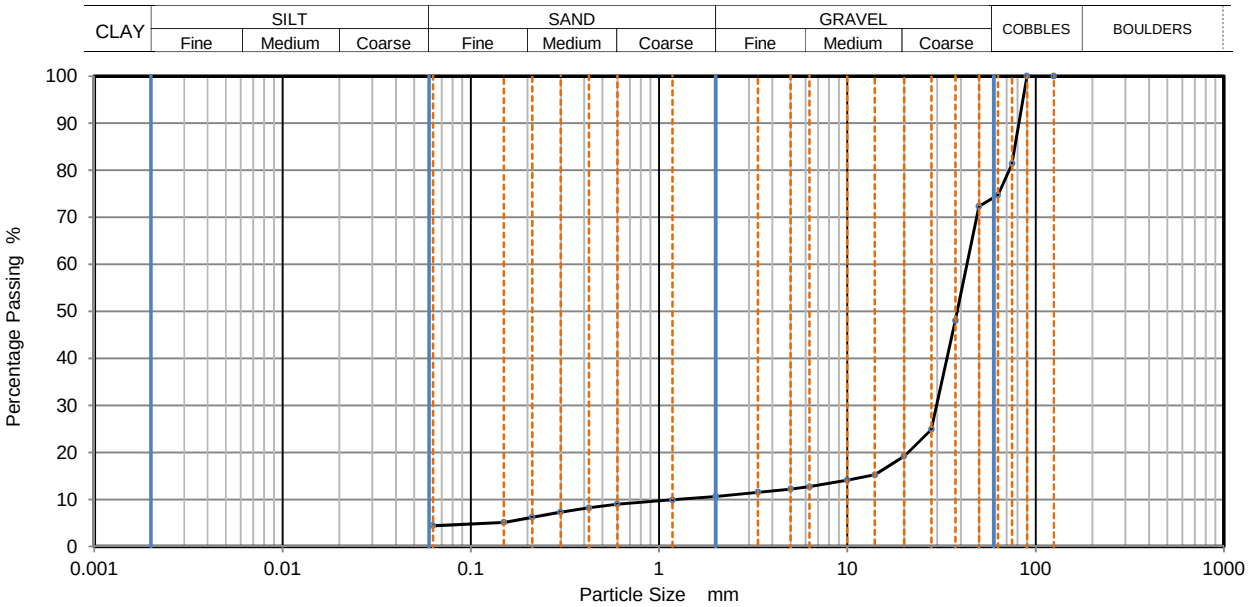
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33874
		Date Sampled:	14/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

	Laboratory Reference: 664051	Sample Reference:	Not Given
Sample description:	Brown slightly sandy slightly clayey GRAVEL. Gravel is limestone	Sample Type:	B
Location:	TP155	Depth Top [m]:	0.5
Supplier:	Not Given	Depth Base [m]:	0.7



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	81		
63	75		
50	72		
37.5	48		
28	25		
20	19		
14	15		
10	14		
6.3	13		
5	12		
3.35	12		
2	11		
1.18	10		
0.6	9		
0.425	8		
0.3	7		
0.212	6		
0.15	5		
0.063	4		

Dry Mass of sample [g]: 13143

Sample Proportions	% dry mass
Very coarse	25.30
Gravel	64.10
Sand	6.20
Fines <0.063mm	4.40

Grading Analysis		
D100	mm	90
D60	mm	43.2
D30	mm	29.9
D10	mm	1.31
Uniformity Coefficient		33
Curvature Coefficient		16

Remarks

Preparation and testing in accordance with BS1377 unless noted below
Insufficient material supplied to be representative in accordance with BS1377 requirements

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

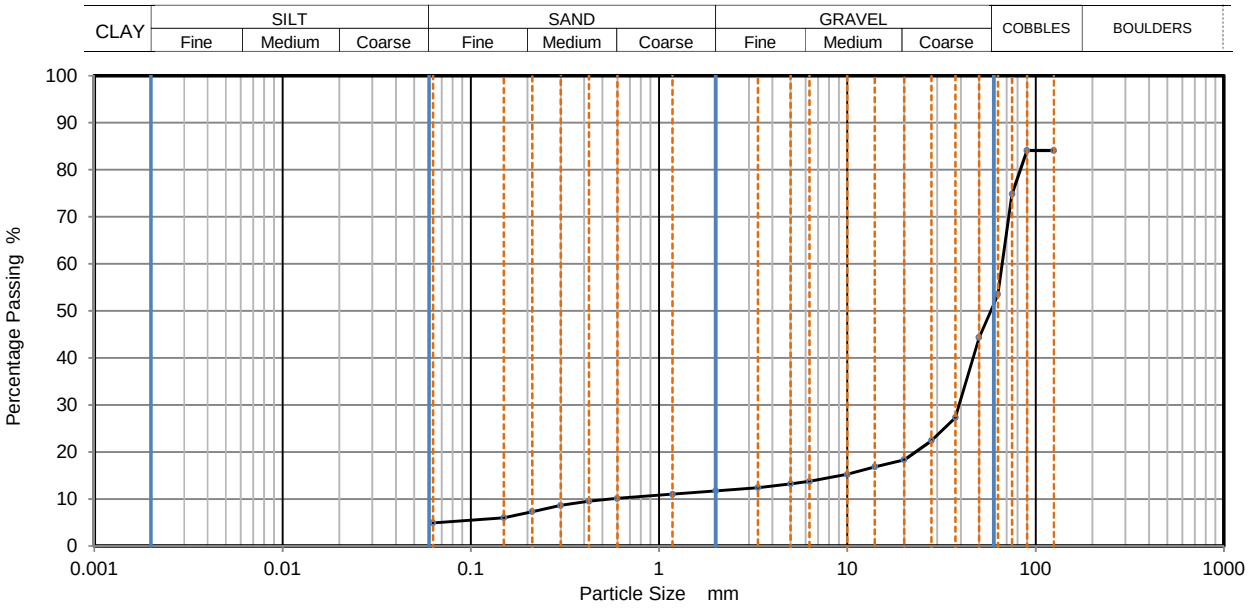
UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33874
		Date Sampled:	14/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference:	664052	Sample Reference:	Not Given
Sample description:	Yellowish brown slightly sandy GRAVEL. Gravel is limestone	Sample Type:	B
Location:	TP158	Depth Top [m]:	1
Supplier:	Not Given	Depth Base [m]:	1.2



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	84		
90	84		
75	75		
63	54		
50	44		
37.5	27		
28	22		
20	18		
14	17		
10	15		
6.3	14		
5	13		
3.35	12		
2	12		
1.18	11		
0.6	10		
0.425	10		
0.3	9		
0.212	7		
0.15	6		
0.063	5		

Dry Mass of sample [g]: 14615

Sample Proportions	% dry mass
Very coarse	46.50
Gravel	41.70
Sand	6.80
Fines <0.063mm	4.90

Grading Analysis		
D100	mm	
D60	mm	66.5
D30	mm	39.2
D10	mm	0.568
Uniformity Coefficient		120
Curvature Coefficient		41

Remarks

Preparation and testing in accordance with BS1377 unless noted below
Insufficient material supplied to be representative in accordance with BS1377 requirements

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

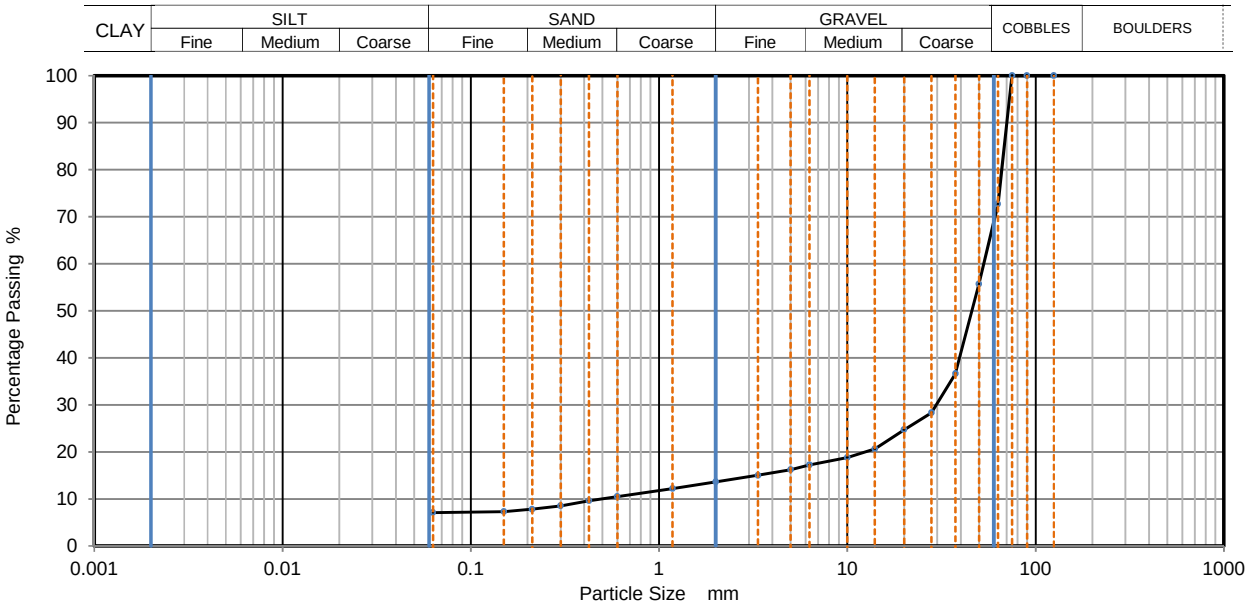
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33874
		Date Sampled:	14/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	30/11/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664053 Sample Reference: Not Given

Sample description:	Yellowish brown slightly sandy slightly clayey GRAVEL. Gravel is limestone	Sample Type:	B
Location:	TP167	Depth Top [m]:	1
Supplier:	Not Given	Depth Base [m]:	1.2



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	73		
50	56		
37.5	37		
28	28		
20	25		
14	21		
10	19		
6.3	17		
5	16		
3.35	15		
2	14		
1.18	12		
0.6	11		
0.425	10		
0.3	9		
0.212	8		
0.15	7		
0.063	7		

Dry Mass of sample [g]: 8119

Sample Proportions	% dry mass
Very coarse	27.30
Gravel	59.10
Sand	6.50
Fines <0.063mm	7.10

Grading Analysis		
D100	mm	75
D60	mm	53
D30	mm	29.7
D10	mm	0.496
Uniformity Coefficient		110
Curvature Coefficient		34

Remarks

Preparation and testing in accordance with BS1377 unless noted below
Insufficient material supplied to be representative in accordance with BS1377 requirements

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Moisture Content

Tested in Accordance with BS 1377-2:1990: Clause 3.2

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

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	2-4 Hawthorne Park Holdenby Road Spratton, Northamptonshire NN6 8LD	Job Number:	16-33874
		Date Sampled:	Not Given
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	08/12/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

Test results

Laboratory Reference	Sample Reference	Location	Depth Top [m]	Depth Base [m]	Sample Type	Description	Moisture Content [%]
664557	Not Given	TP144	1	1.1	B	Yellowish brown sandy slightly clayey GRAVEL	5.5
664558	Not Given	TP146	0.35	Not Given	D	Brown slightly gravelly sandy CLAY	24
664560	Not Given	TP152	0.9	1	B	Yellowish brown slightly sandy slightly clayey GRAVEL	7.4

Remarks

Approved:

Mirosława Pytlik
PL Head of
Geotechnical Section

Date Reported: 13/12/2016

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

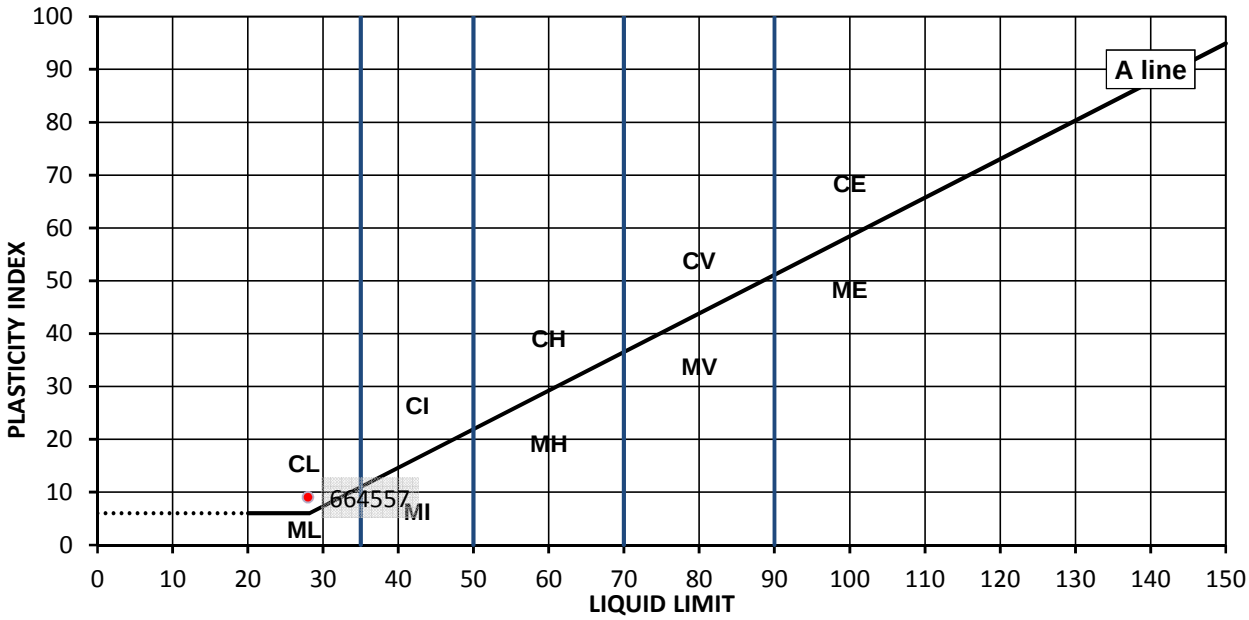
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	2-4 Hawthorne Park Holdenby Road Spratton, Northamptonshire NN6 8LD	Job Number:	16-33874
		Date Sampled:	Not Given
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	08/12/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664557
Sample Reference: Not Given

Description:	Yellowish brown sandy slightly clayey GRAVEL	Sample Type:	B
Location:	TP144	Depth Top [m]:	1
Sample Preparation:	Tested after washing to remove >425um	Depth Base [m]:	1.1

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
5.5	28	19	9	8



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 13/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

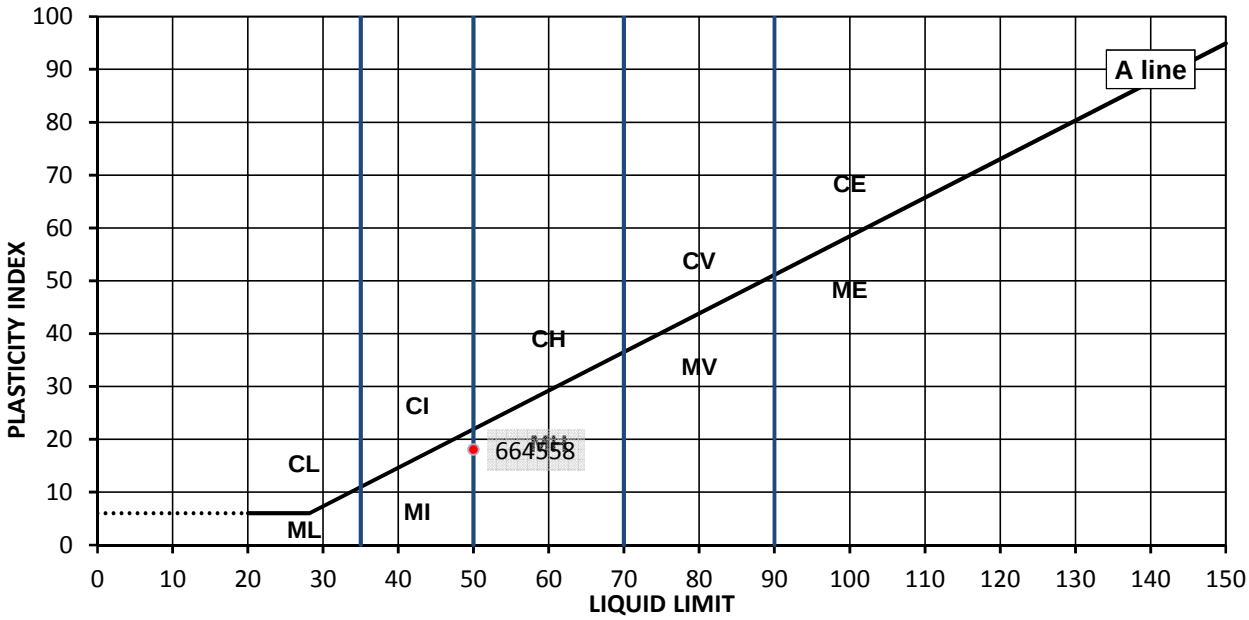
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	2-4 Hawthorne Park Holdenby Road Spratton, Northamptonshire NN6 8LD	Job Number:	16-33874
		Date Sampled:	Not Given
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	08/12/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664558
Sample Reference: Not Given

Description:	Brown slightly gravelly sandy CLAY	Sample Type:	D
Location:	TP146	Depth Top [m]:	0.35
Sample Preparation:	Tested after washing to remove >425um	Depth Base [m]:	

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
24	50	32	18	68



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 13/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

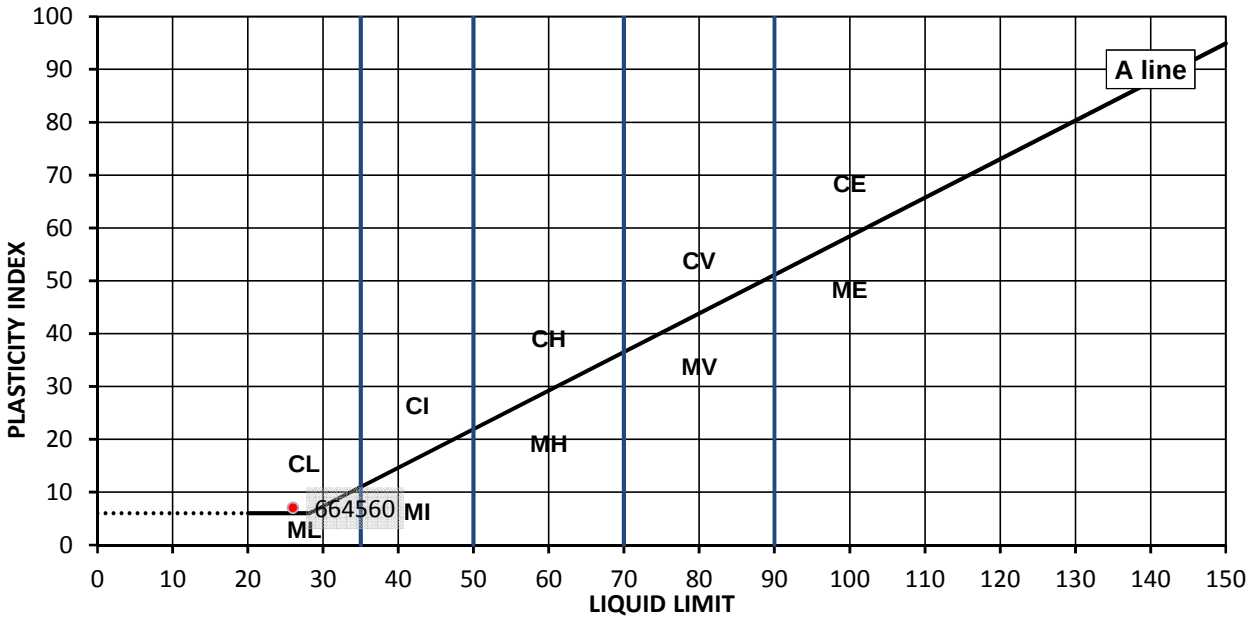
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	2-4 Hawthorne Park Holdenby Road Spratton, Northamptonshire NN6 8LD	Job Number:	16-33874
		Date Sampled:	Not Given
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	08/12/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664560
Sample Reference: Not Given

Description:	Yellowish brown slightly sandy slightly clayey GRAVEL	Sample Type:	B
Location:	TP152	Depth Top [m]:	0.9
Sample Preparation:	Tested after washing to remove >425um	Depth Base [m]:	1

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
7.4	26	19	7	17



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 13/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Summary of Classification Test Results

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

Client: Hydrock Consultants Ltd
Client Address: 2-4 Hawthorne Park
Holdenby Road
Spratton, Northamptonshire
NN6 8LD
Contact: Douglas Mayer
Site Name: Heyford Park - Main Site - Phase 16
Site Address: Not Given

Client Reference: C-04583-C
Job Number: 16-33874
Date Sampled: Not Given
Date Received: 25/11/2016
Date Tested: 08/12/2016
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Soil Description	Density		M/C	Attenberg				PD
		Reference	Top depth [m]	Base depth [m]	Type		bulk Mg/m3	dry Mg/m3	%	% Passing 425um %	LL %	PL %	PI %	Mg/m3
664557	TP144	Not Given	1.00	1.10	B	Yellowish brown sandy slightly clayey GRAVEL	-	-	5.5	8	28	19	9	-
664558	TP146	Not Given	0.35	Not Given	D	Brown slightly gravelly sandy CLAY	-	-	24	68	50	32	18	-
664560	TP152	Not Given	0.90	1.00	B	Yellowish brown slightly sandy slightly clayey GRAVEL	-	-	7.4	17	26	19	7	-

Comments:

Approved:

Mirosława Pytlik
PL Head of Geotechnical Section

Signed:

Sushil Sharda
Technical Manager (Geotechnical Division)

Date Reported: 13/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

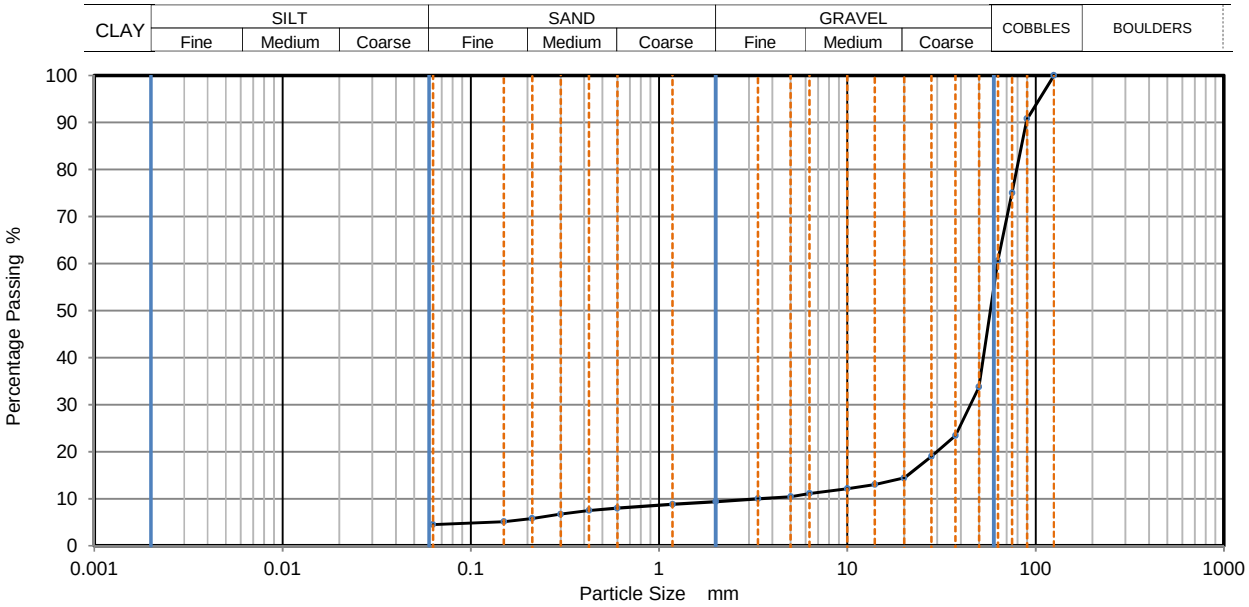
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	2-4 Hawthorne Park Holdenby Road Spratton, Northamptonshire NN6 8LD	Job Number:	16-33874
		Date Sampled:	Not Given
		Date Received:	25/11/2016
Contact:	Douglad Mayer	Date Tested:	08/12/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664557

Sample description:	Yellowish brown sandy slightly clayey GRAVEL	Sample Reference:	Not Given
Location:	TP144	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	1
		Depth Base [m]:	1.1



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	91		
75	75		
63	61		
50	34		
37.5	23		
28	19		
20	14		
14	13		
10	12		
6.3	11		
5	10		
3.35	10		
2	9		
1.18	9		
0.6	8		
0.425	8		
0.3	7		
0.212	6		
0.15	5		
0.063	5		

Dry Mass of sample [g]: 10054

Sample Proportions	% dry mass
Very coarse	39.40
Gravel	51.10
Sand	4.90
Fines <0.063mm	4.50

Grading Analysis		
D100	mm	125
D60	mm	62.7
D30	mm	45
D10	mm	3.39
Uniformity Coefficient		18
Curvature Coefficient		9.5

Remarks

Preparation and testing in accordance with BS1377 unless noted below
Insufficient material supplied to be representative in accordance with BS1377 requirements

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 13/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

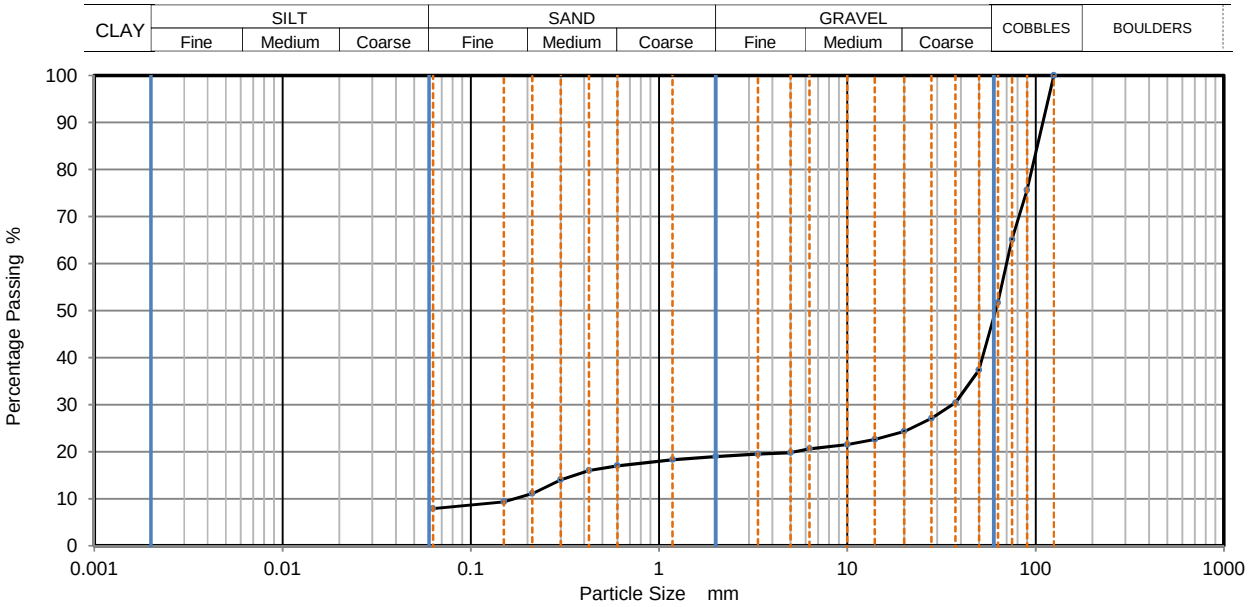
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	2-4 Hawthorne Park Holdenby Road Spratton, Northamptonshire NN6 8LD	Job Number:	16-33874
		Date Sampled:	Not Given
		Date Received:	25/11/2016
Contact:	Douglad Mayer	Date Tested:	08/12/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664559

Sample description:	Yellowish brown sandy slightly clayey GRAVEL	Sample Reference:	Not Given
Location:	TP146	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	0.7
		Depth Base [m]:	0.8



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	76		
75	65		
63	52		
50	37		
37.5	30		
28	27		
20	24		
14	23		
10	22		
6.3	21		
5	20		
3.35	20		
2	19		
1.18	18		
0.6	17		
0.425	16		
0.3	14		
0.212	11		
0.15	9		
0.063	8		

Dry Mass of sample [g]: 12872

Sample Proportions	% dry mass
Very coarse	48.30
Gravel	32.80
Sand	11.10
Fines <0.063mm	7.90

Grading Analysis		
D100	mm	125
D60	mm	70.2
D30	mm	36.3
D10	mm	0.172
Uniformity Coefficient		410
Curvature Coefficient		110

Remarks

Preparation and testing in accordance with BS1377 unless noted below
Insufficient material supplied to be representative in accordance with BS1377 requirements

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 13/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

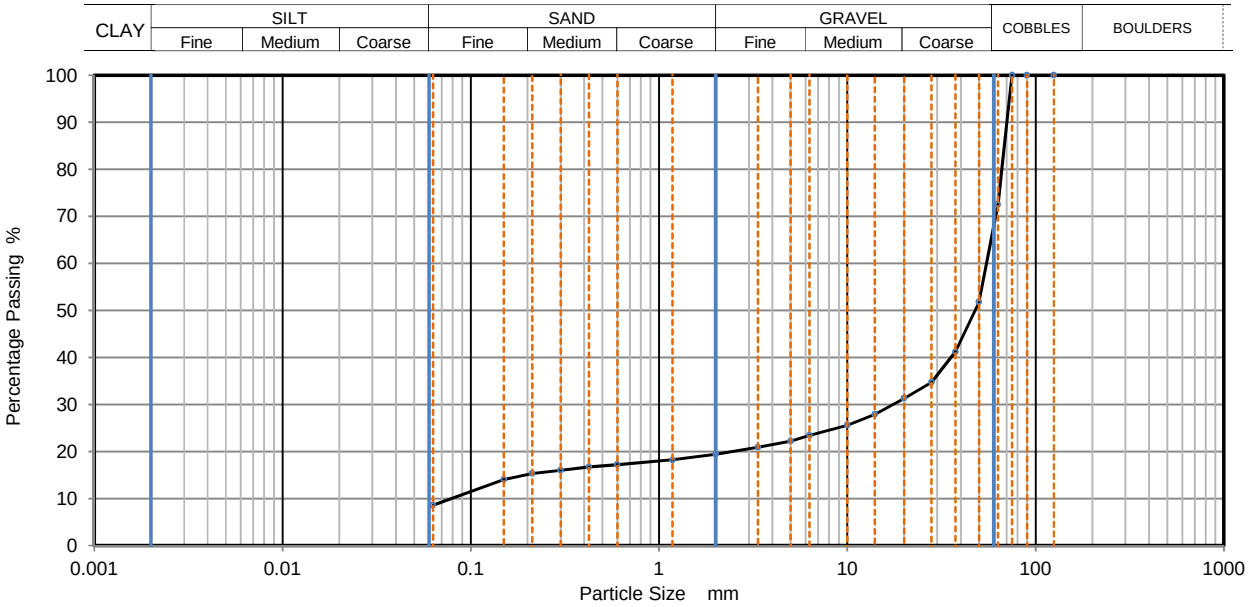
UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	2-4 Hawthorne Park Holdenby Road Spratton, Northamptonshire NN6 8LD	Job Number:	16-33874
		Date Sampled:	Not Given
		Date Received:	25/11/2016
Contact:	Douglad Mayer	Date Tested:	08/12/2016
Site Name:	Heyford Park - Main Site - Phase 16	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

	Laboratory Reference: 664560	Sample Reference:	Not Given
Sample description:	Yellowish brown slightly sandy slightly clayey GRAVEL	Sample Type:	B
Location:	TP152	Depth Top [m]:	0.9
Supplier:	Not Given	Depth Base [m]:	1



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	73		
50	52		
37.5	41		
28	35		
20	31		
14	28		
10	26		
6.3	23		
5	22		
3.35	21		
2	19		
1.18	18		
0.6	17		
0.425	17		
0.3	16		
0.212	15		
0.15	14		
0.063	9		

Dry Mass of sample [g]: 3941

Sample Proportions	% dry mass
Very coarse	27.50
Gravel	53.10
Sand	10.80
Fines <0.063mm	8.60

Grading Analysis		
D100	mm	75
D60	mm	54.8
D30	mm	17.4
D10	mm	0.0788
Uniformity Coefficient		700
Curvature Coefficient		70

Remarks

Preparation and testing in accordance with BS1377 unless noted below
Insufficient material supplied to be representative in accordance with BS1377 requirements

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 13/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Moisture Content

Tested in Accordance with BS 1377-2:1990: Clause 3.2

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

UKAS TESTING 4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	04/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

Test results

Laboratory Reference	Sample Reference	Location	Depth Top [m]	Depth Base [m]	Sample Type	Description	Moisture Content [%]
664070	Not Given	TP110	1.2	Not Given	D	Yellowish brown sandy CLAY	20
664071	Not Given	TP112	0.9	Not Given	D	Brown sandy CLAY	25
664072	Not Given	TP120	0.4	Not Given	D	Brown clayey SAND	15
664074	Not Given	TP123	0.6	Not Given	D	Brown sandy CLAY	20
664076	Not Given	TP123	2.7	2.8	B	Yellowish brown CLAY	21
664077	Not Given	TP124	1.5	Not Given	D	Yellowish brown sandy CLAY	19
664078	Not Given	TP125	1	1.2	B	Brown clayey SAND	14

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Mark Beastall
Geotechnical Commercial
Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

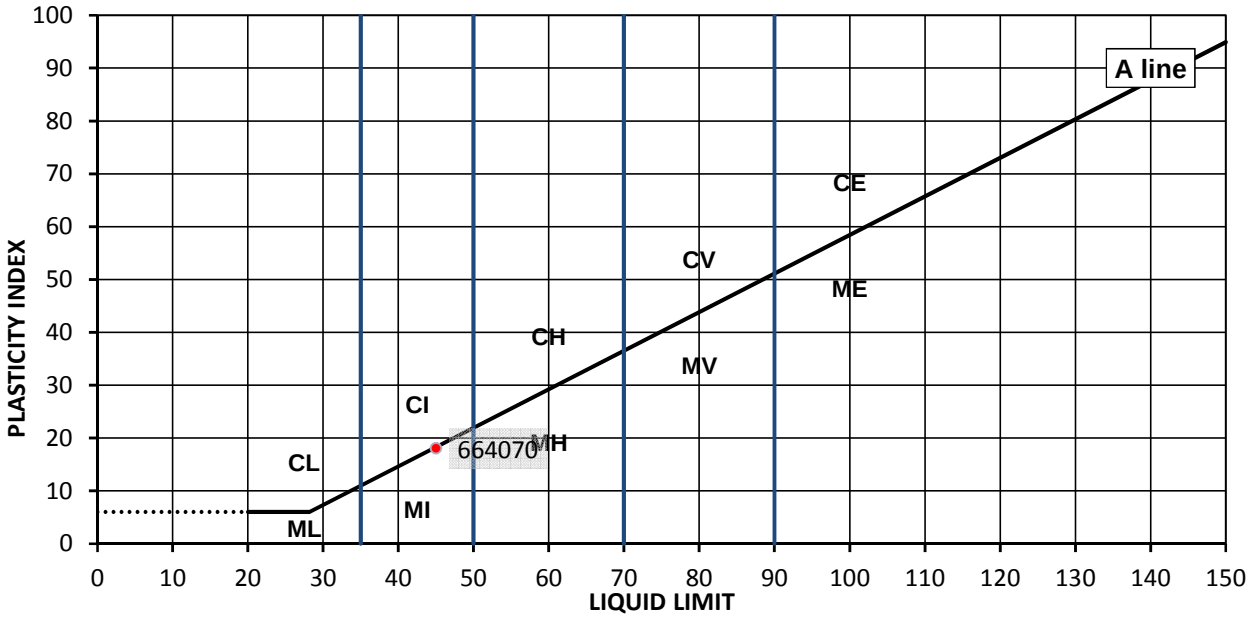
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	04/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664070
Sample Reference: Not Given

Description:	Yellowish brown sandy CLAY	Sample Type:	D
Location:	TP110	Depth Top [m]:	1.2
Sample Preparation:	Tested in natural condition	Depth Base [m]:	Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
20	45	27	18	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of Geotechnical Section

Signed:

[redacted]

Mark Beastall
Geotechnical Commercial Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

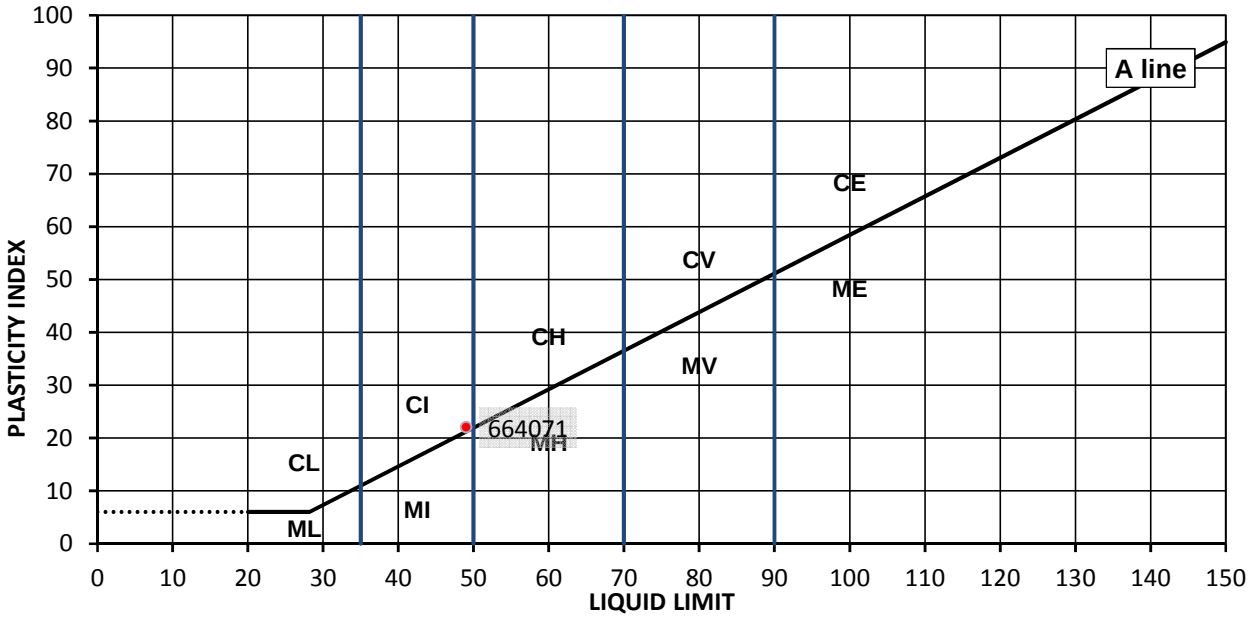
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	04/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664071
Sample Reference: Not Given

Description:	Brown sandy CLAY	Sample Type:	D
Location:	TP112	Depth Top [m]:	0.9
Sample Preparation:	Tested in natural condition	Depth Base [m]:	Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
25	49	27	22	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of Geotechnical Section

Signed:

[redacted]

Mark Beastall
Geotechnical Commercial Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	07/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

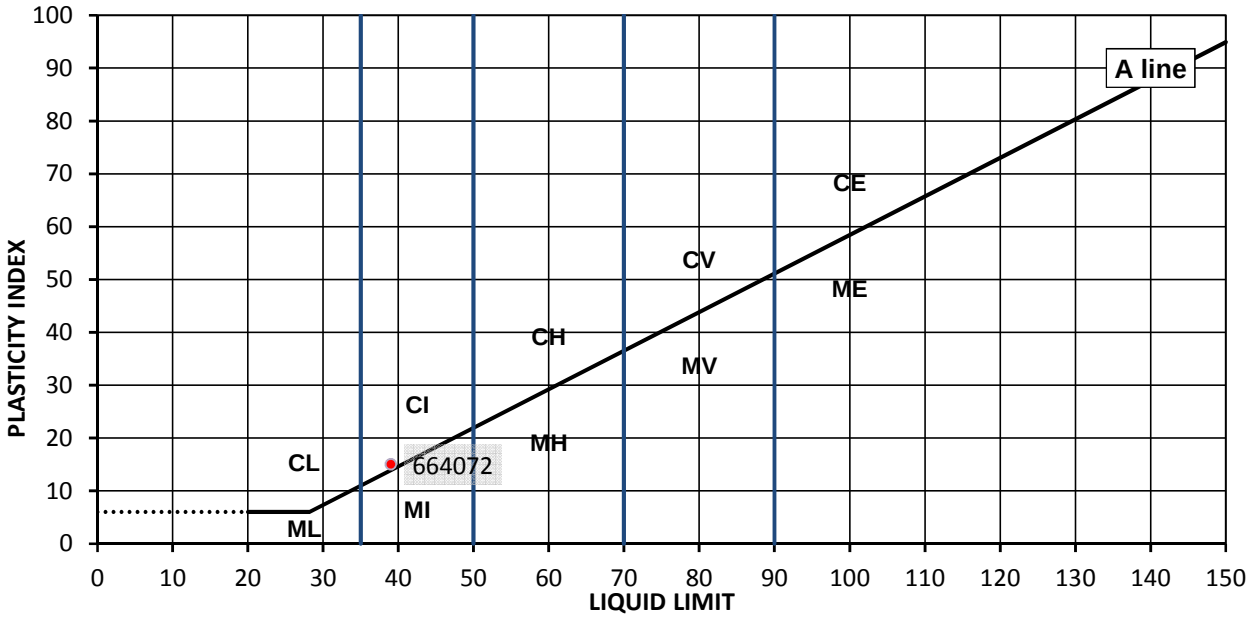
TEST RESULTS

Laboratory Reference: 664072
Sample Reference: Not Given

Description: Brown clayey SAND
Location: TP120
Sample Preparation: Tested in natural condition

Sample Type: D
Depth Top [m]: 0.4
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
15	39	24	15	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of Geotechnical Section

Signed:

[redacted]

Mark Beastall
Geotechnical Commercial Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	07/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

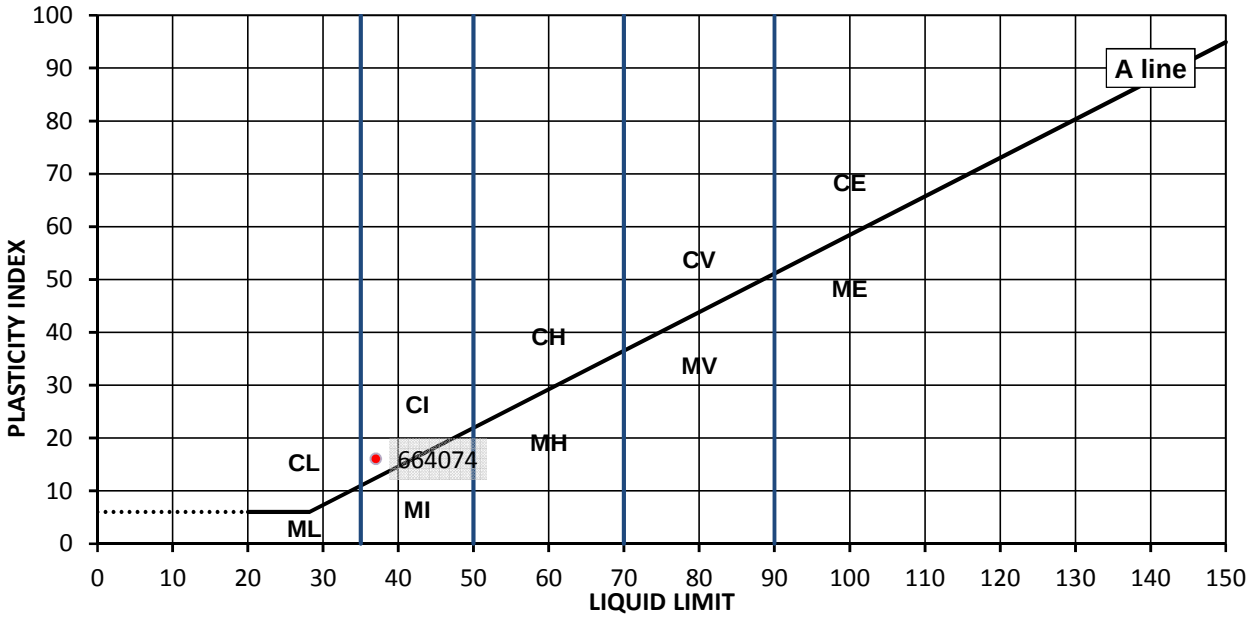
TEST RESULTS

Laboratory Reference: 664074
Sample Reference: Not Given

Description: Brown sandy CLAY
Location: TP123
Sample Preparation: Tested in natural condition

Sample Type: D
Depth Top [m]: 0.6
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
20	37	21	16	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

Mirosława Pytlik
PL Deputy of Head of Geotechnical Section

Signed:

Mark Beastall
Geotechnical Commercial Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

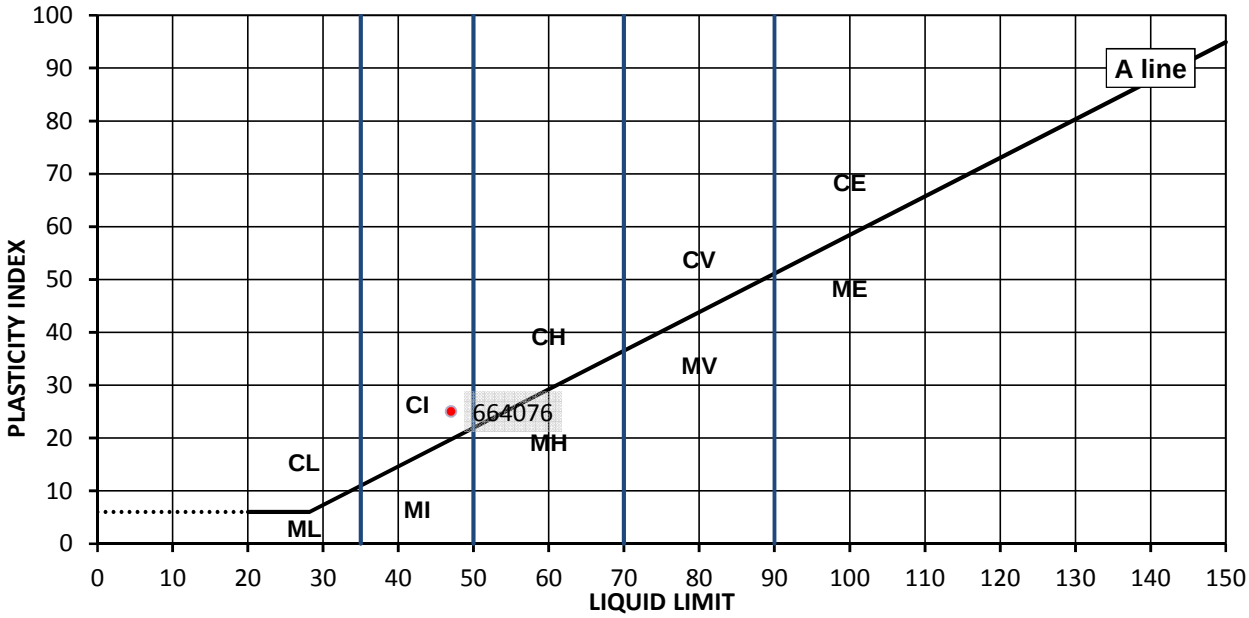
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	07/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664076
Sample Reference: Not Given

Description:	Yellowish brown CLAY	Sample Type:	B
Location:	TP123	Depth Top [m]:	2.7
Sample Preparation:	Tested after >425um removed by hand	Depth Base [m]:	2.8

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
21	47	22	25	98



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of Geotechnical Section

Signed:

[redacted]

Mark Beastall
Geotechnical Commercial Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	07/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

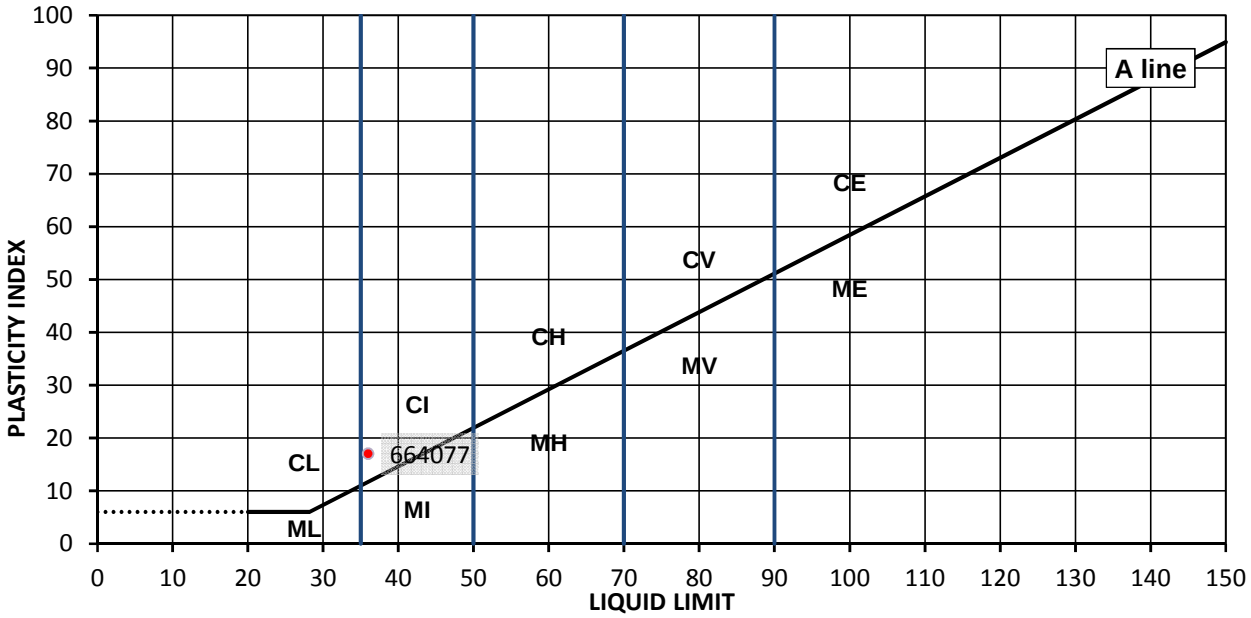
TEST RESULTS

Laboratory Reference: 664077
Sample Reference: Not Given

Description: Yellowish brown sandy CLAY
Location: TP124
Sample Preparation: Tested in natural condition

Sample Type: D
Depth Top [m]: 1.5
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
19	36	19	17	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of Geotechnical Section

Signed:

[redacted]

Mark Beastall
Geotechnical Commercial Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.3 & 5: Definitive Method

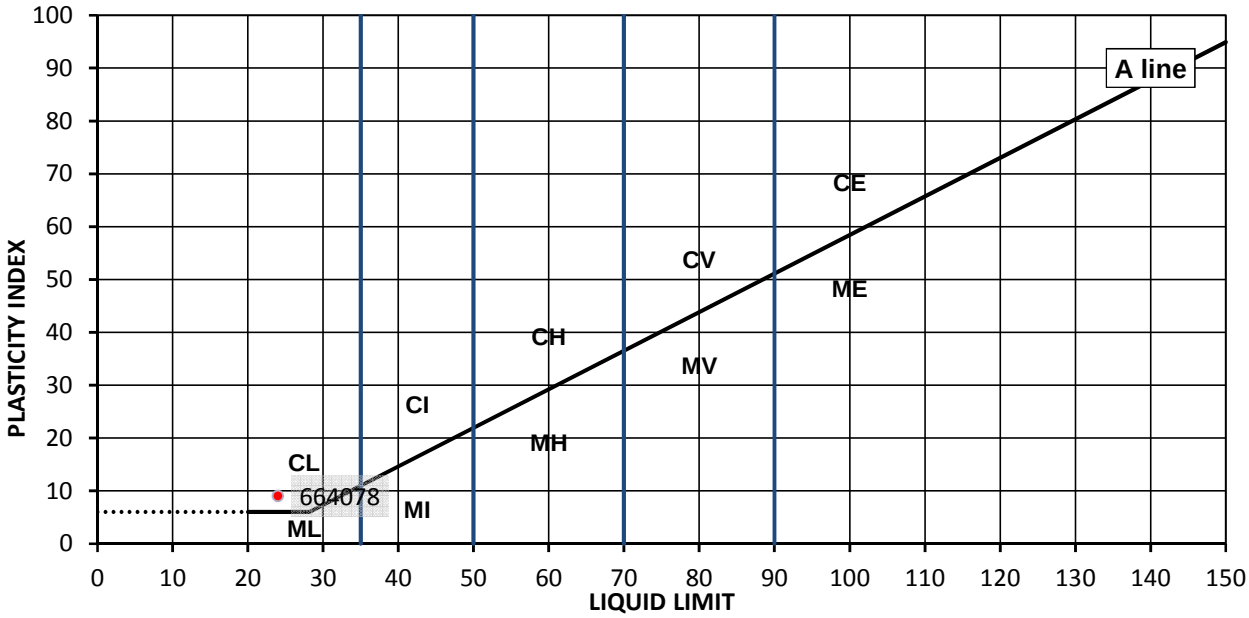
Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	07/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference: 664078
Sample Reference: Not Given

Description:	Brown clayey SAND	Sample Type:	B
Location:	TP125	Depth Top [m]:	1
Sample Preparation:	Tested in natural condition	Depth Base [m]:	1.2

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
14	24	15	9	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

[redacted]

Mirosława Pytlik
PL Deputy of Head of Geotechnical Section

Signed:

[redacted]

Mark Beastall
Geotechnical Commercial Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Summary of Classification Test Results

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

Client: Hydrock Consultants Ltd
Client Address: 4 Lakeside
Festival Park
Stoke on Trent
ST1 5RY
Contact: Douglas Mayer
Site Name: Heyford Park - Main Site - Phase 16A
Site Address: Not Given

Client Reference: C-04583-C
Job Number: 16-33877
Date Sampled: 04/11/2016
Date Received: 25/11/2016
Date Tested: 02/12/2016
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Soil Description	Density		M/C	Attenberg				PD
		Reference	Top depth [m]	Base depth [m]	Type		bulk Mg/m3	dry Mg/m3	%	% Passing 425um %	LL %	PL %	PI %	Mg/m3
664070	TP110	Not Given	1.20	Not Given	D	Yellowish brown sandy CLAY			20	100	45	27	18	
664071	TP112	Not Given	0.90	Not Given	D	Brown sandy CLAY			25	100	49	27	22	
664072	TP120	Not Given	0.40	Not Given	D	Brown clayey SAND			15	100	39	24	15	
664074	TP123	Not Given	0.60	Not Given	D	Brown sandy CLAY			20	100	37	21	16	
664076	TP123	Not Given	2.70	2.80	B	Yellowish brown CLAY			21	98	47	22	25	
664077	TP124	Not Given	1.50	Not Given	D	Yellowish brown sandy CLAY			19	100	36	19	17	
664078	TP125	Not Given	1.00	1.20	B	Brown clayey SAND			14	100	24	15	9	

Comments:

Approved:

Mirosława Pytlik
PL Head of Geotechnical Section

Signed:

Mark Beastall
Geotechnical Commercial Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

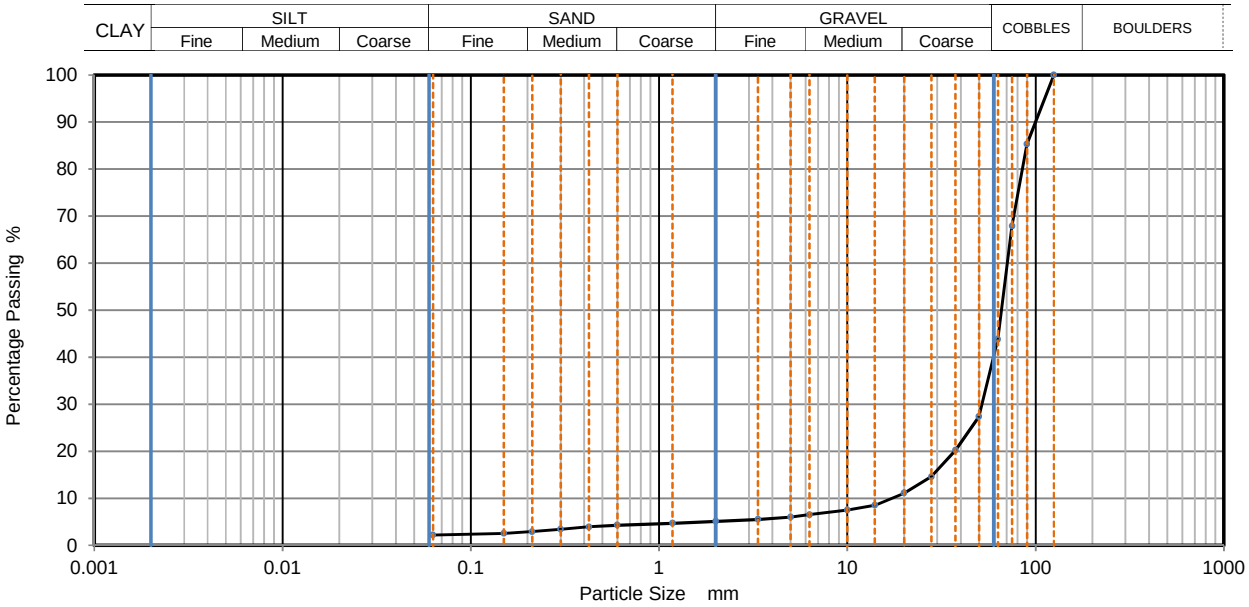
UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	04/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664065

Sample description:	Brown slightly sandy slightly clayey GRAVEL	Sample Reference:	Not Given
Location:	TP17	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	0.85
		Depth Base [m]:	Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	85		
75	68		
63	44		
50	27		
37.5	20		
28	15		
20	11		
14	9		
10	8		
6.3	7		
5	6		
3.35	6		
2	5		
1.18	5		
0.6	4		
0.425	4		
0.3	3		
0.212	3		
0.15	3		
0.063	2		

Dry Mass of sample [g]: 12872

Sample Proportions	% dry mass
Very coarse	56.20
Gravel	38.70
Sand	2.90
Fines <0.063mm	2.20

Grading Analysis		
D100	mm	125
D60	mm	70.8
D30	mm	51.8
D10	mm	17.1
Uniformity Coefficient		4.1
Curvature Coefficient		2.2

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

Mark Beastall
Geotechnical Commercial
Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

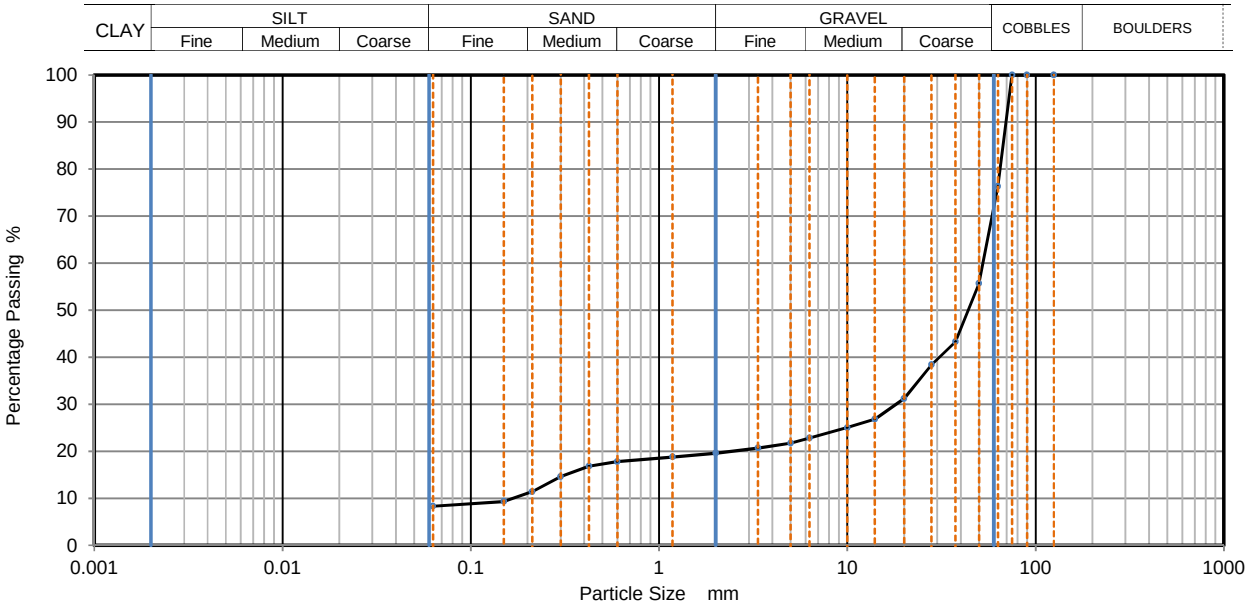
UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	04/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664066

Sample description:	Brown sandy slightly clayey GRAVEL	Sample Reference:	Not Given
Location:	TP19	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	0.7
		Depth Base [m]:	Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	76		
50	56		
37.5	43		
28	38		
20	31		
14	27		
10	25		
6.3	23		
5	22		
3.35	21		
2	20		
1.18	19		
0.6	18		
0.425	17		
0.3	15		
0.212	11		
0.15	9		
0.063	8		

Dry Mass of sample [g]: 7548

Sample Proportions	% dry mass
Very coarse	23.70
Gravel	56.70
Sand	11.20
Fines <0.063mm	8.30

Grading Analysis		
D100	mm	75
D60	mm	52.5
D30	mm	18.2
D10	mm	0.169
Uniformity Coefficient		310
Curvature Coefficient		37

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Mark Beastall
Geotechnical Commercial
Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

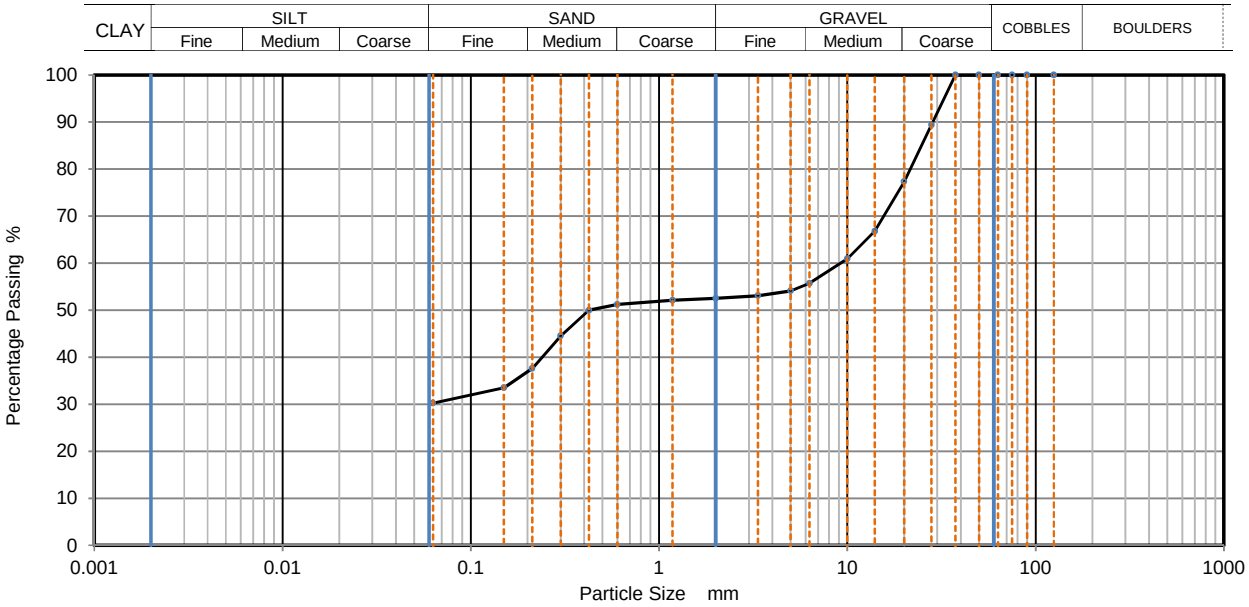
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	04/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664067

Sample description:	Brown gravelly clayey SAND	Sample Reference:	Not Given
Location:	TP23	Sample Type:	D
Supplier:	Not Given	Depth Top [m]:	0.4
		Depth Base [m]:	Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	89		
20	77		
14	67		
10	61		
6.3	56		
5	54		
3.35	53		
2	53		
1.18	52		
0.6	51		
0.425	50		
0.3	45		
0.212	38		
0.15	34		
0.063	30		

Dry Mass of sample [g]: 682

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	47.50
Sand	22.30
Fines <0.063mm	30.20

Grading Analysis		
D100	mm	37.5
D60	mm	9.21
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Mark Beastall
Geotechnical Commercial
Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

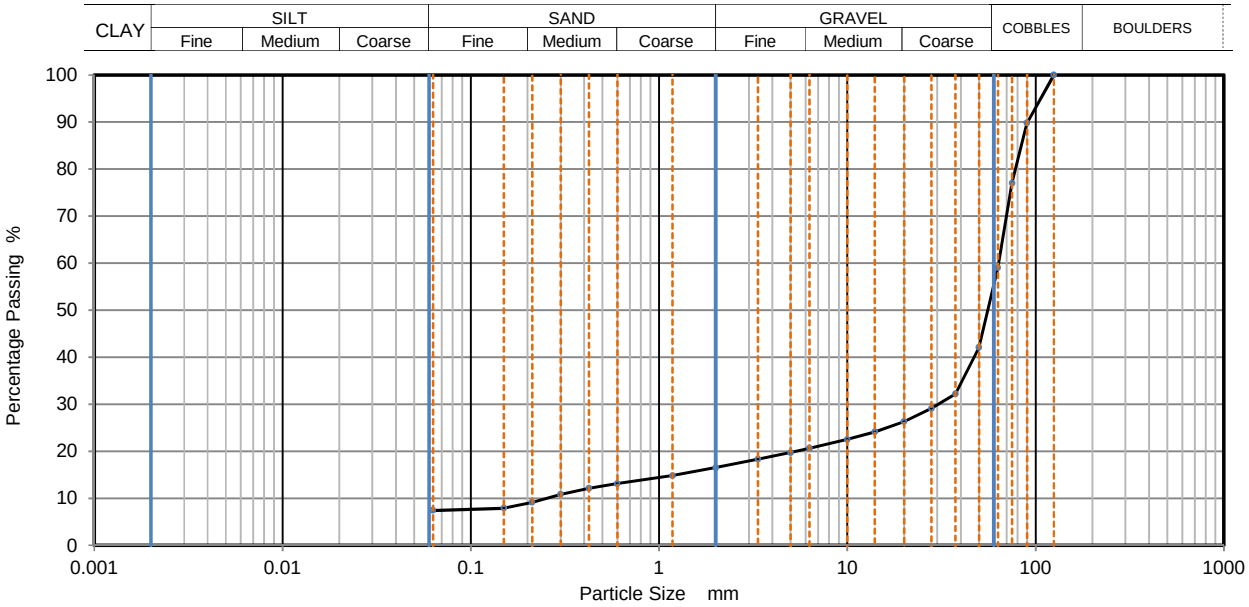
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	04/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664068

Sample description:	Light brown sandy slightly clayey GRAVEL	Sample Reference:	Not Given
Location:	TP24	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	0.8
		Depth Base [m]:	Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	90		
75	77		
63	59		
50	42		
37.5	32		
28	29		
20	26		
14	24		
10	23		
6.3	21		
5	20		
3.35	18		
2	17		
1.18	15		
0.6	13		
0.425	12		
0.3	11		
0.212	9		
0.15	8		
0.063	7		

Dry Mass of sample [g]: 9653

Sample Proportions	% dry mass
Very coarse	41.00
Gravel	42.50
Sand	9.10
Fines <0.063mm	7.40

Grading Analysis		
D100	mm	125
D60	mm	63.6
D30	mm	30.4
D10	mm	0.253
Uniformity Coefficient		250
Curvature Coefficient		57

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Mark Beastall
Geotechnical Commercial
Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

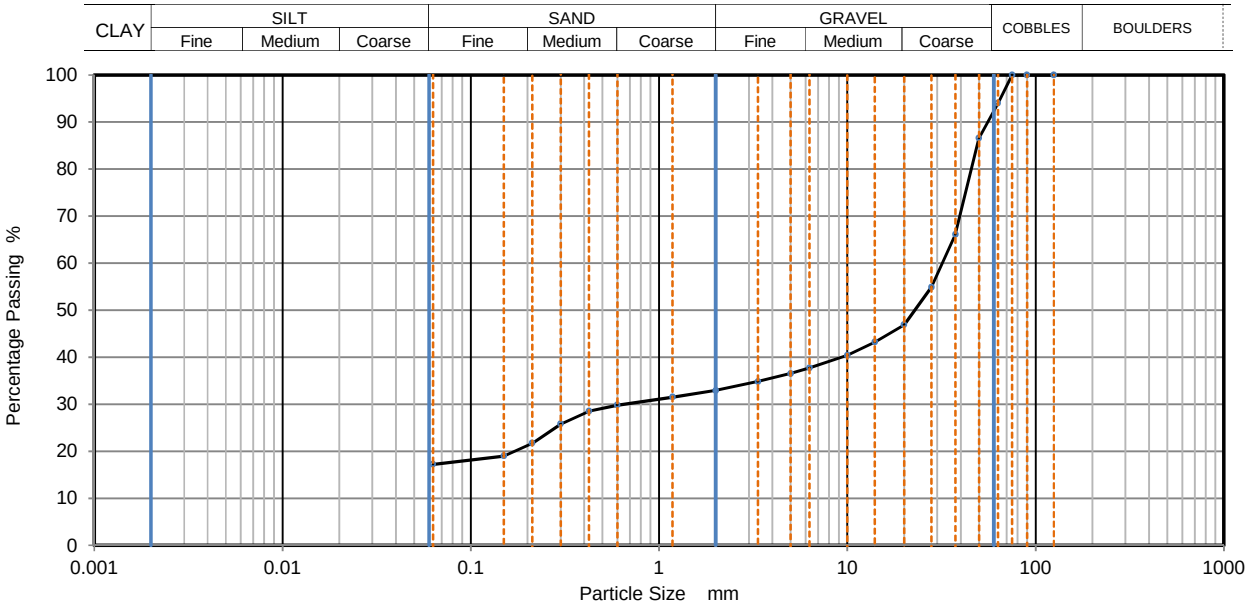
UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	04/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664069

Sample description:	Yellowish sandy clayey GRAVEL	Sample Reference:	Not Given
Location:	TP26	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	0.7
		Depth Base [m]:	Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	94		
50	87		
37.5	66		
28	55		
20	47		
14	43		
10	40		
6.3	38		
5	37		
3.35	35		
2	33		
1.18	32		
0.6	30		
0.425	29		
0.3	26		
0.212	22		
0.15	19		
0.063	17		

Dry Mass of sample [g]: 11278

Sample Proportions	% dry mass
Very coarse	6.00
Gravel	61.10
Sand	15.60
Fines <0.063mm	17.20

Grading Analysis		
D100	mm	75
D60	mm	32
D30	mm	0.659
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Mark Beastall
Geotechnical Commerc
Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

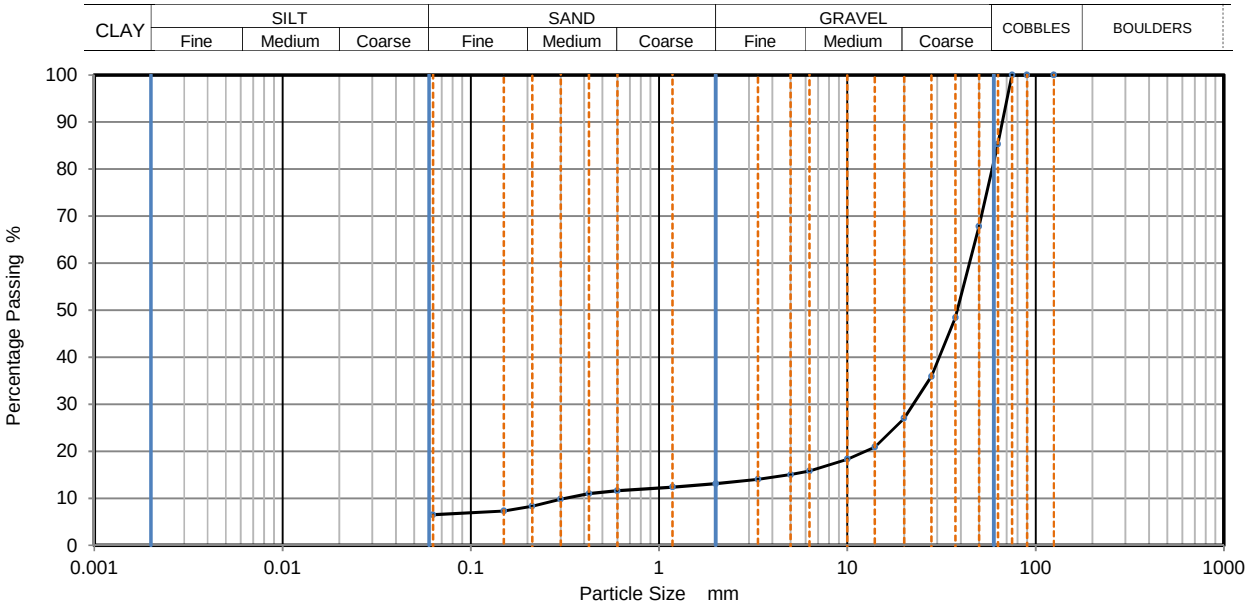
UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	07/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664073

Sample description:	Brown sandy slightly clayey GRAVEL	Sample Reference:	Not Given
Location:	TP121	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	0.9
		Depth Base [m]:	1



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	85		
50	68		
37.5	48		
28	36		
20	27		
14	21		
10	18		
6.3	16		
5	15		
3.35	14		
2	13		
1.18	12		
0.6	12		
0.425	11		
0.3	10		
0.212	8		
0.15	7		
0.063	7		

Dry Mass of sample [g]: 13957

Sample Proportions	% dry mass
Very coarse	14.70
Gravel	72.10
Sand	6.60
Fines <0.063mm	6.50

Grading Analysis		
D100	mm	75
D60	mm	44.5
D30	mm	22.4
D10	mm	0.316
Uniformity Coefficient		140
Curvature Coefficient		36

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

Mark Beastall
Geotechnical Commercial
Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

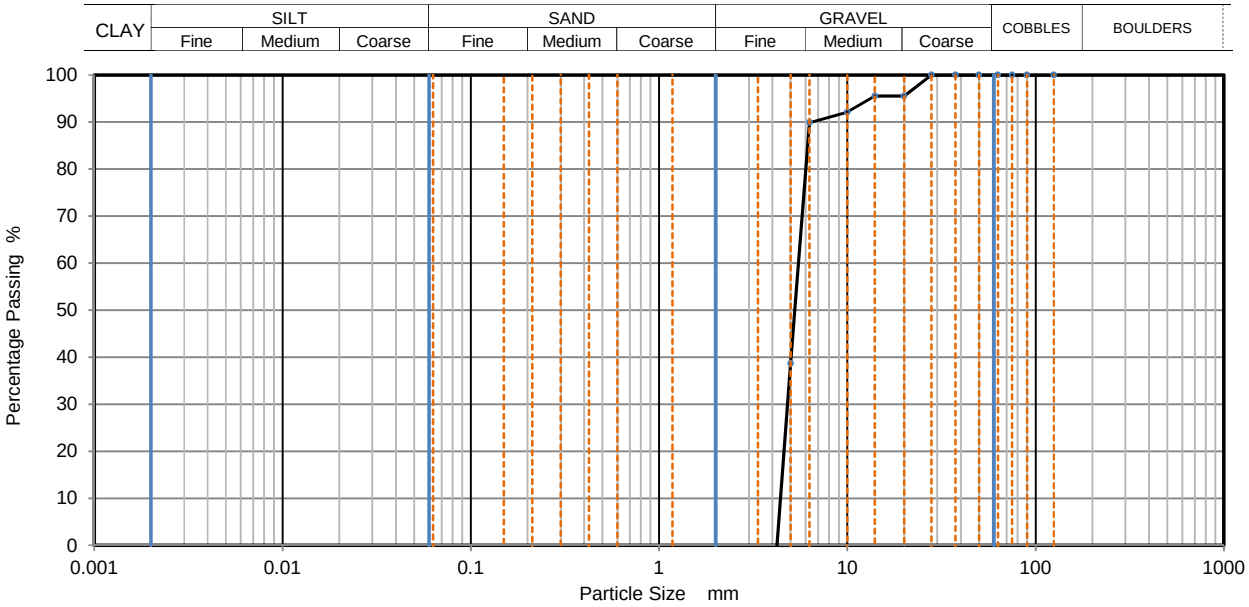
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	07/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664075

Sample description:	Brown gravelly sandy CLAY	Sample Reference:	Not Given
Location:	TP123	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	1.6
		Depth Base [m]:	1.7



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	96		
14	96		
10	92		
6.3	90		
5	39		
3.35	-54		
2	-147		
1.18	-301		
0.6	-612		
0.425	-830		
0.3	-1347		
0.212	-1945		
0.15	-2286		
0.063	-3083		

Dry Mass of sample [g]: 531

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	247.20
Sand	2936.00
Fines <0.063mm	-3083.20

Grading Analysis		
D100	mm	28
D60	mm	5.5
D30	mm	4.82
D10	mm	4.42
Uniformity Coefficient		1.2
Curvature Coefficient		0.95

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Mark Beastall
Geotechnical Commercial
Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

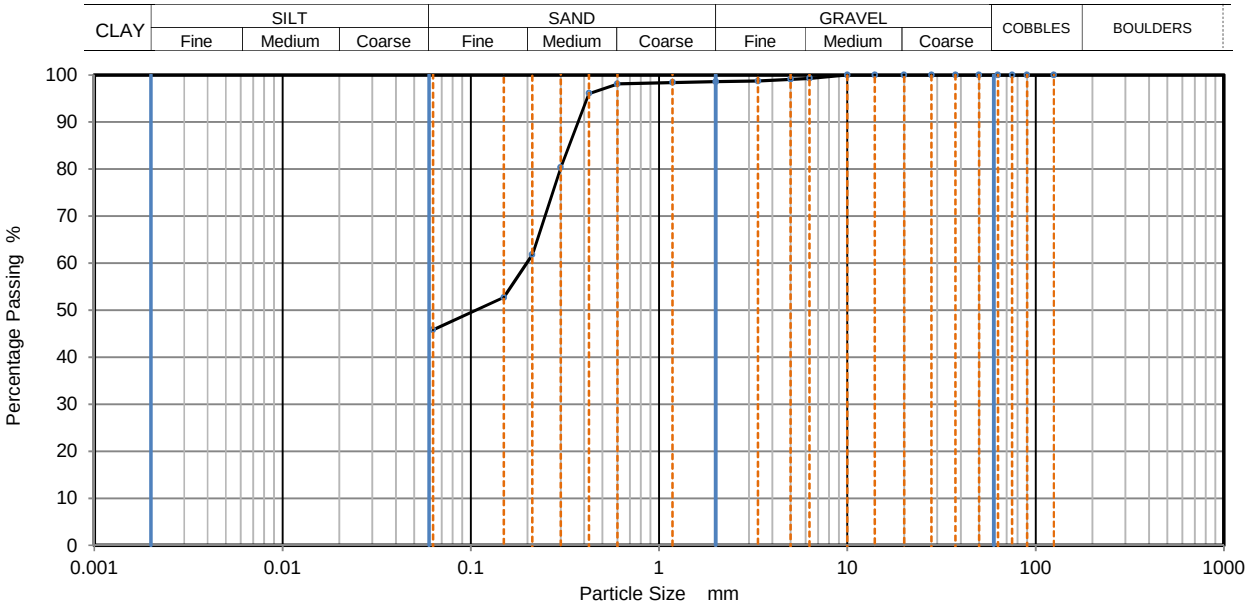
UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	07/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664078

Sample description:	Brown clayey SAND	Sample Reference:	Not Given
Location:	TP125	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	1
		Depth Base [m]:	1.2



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	99		
5	99		
3.35	99		
2	99		
1.18	98		
0.6	98		
0.425	96		
0.3	80		
0.212	62		
0.15	53		
0.063	46		

Dry Mass of sample [g]: 663

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	1.40
Sand	52.80
Fines <0.063mm	45.80

Grading Analysis		
D100	mm	10
D60	mm	0.198
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Mark Beastall
Geotechnical Commercial
Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Particle Size Distribution

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

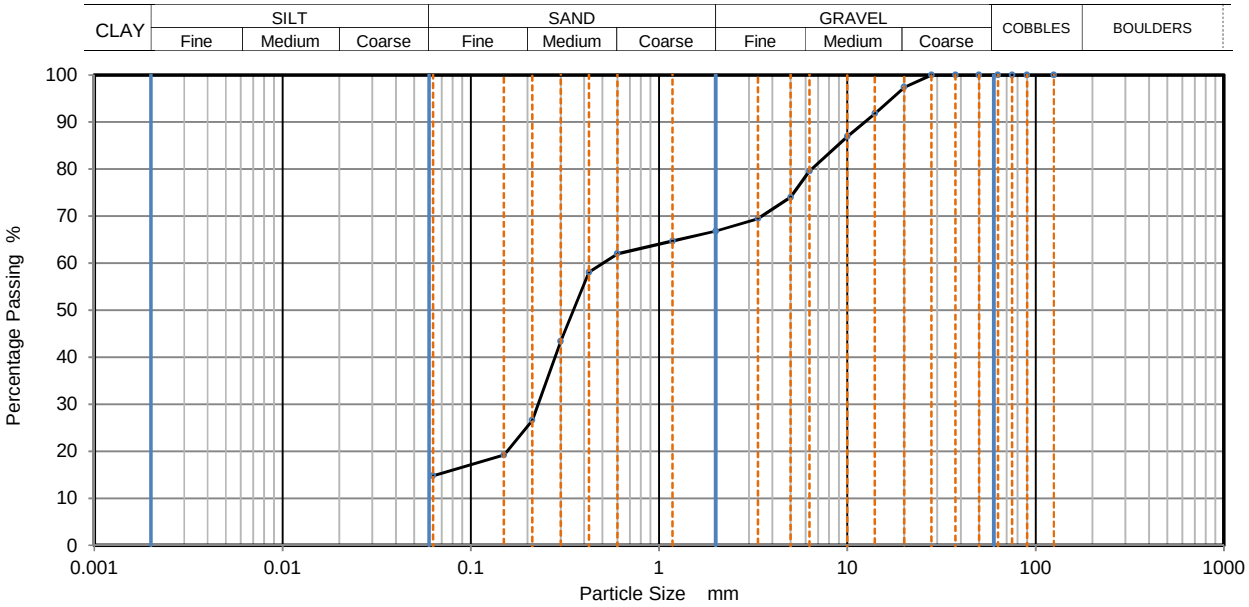
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Hydrock Consultants Ltd	Client Reference:	C-04583-C
Client Address:	4 Lakeside Festival Park Stoke on Trent ST1 5RY	Job Number:	16-33877
		Date Sampled:	10/11/2016
		Date Received:	25/11/2016
Contact:	Douglas Mayer	Date Tested:	02/12/2016
Site Name:	Heyford Park - Main Site - Phase 16A	Sampled By:	Not Given
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 664079

Sample description:	Brown gravelly slightly clayey SAND	Sample Reference:	Not Given
Location:	TP153	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	1.2
		Depth Base [m]:	1.4



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	97		
14	92		
10	87		
6.3	80		
5	74		
3.35	70		
2	67		
1.18	65		
0.6	62		
0.425	58		
0.3	43		
0.212	27		
0.15	19		
0.063	15		

Dry Mass of sample [g]: 1907

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	33.20
Sand	52.00
Fines <0.063mm	14.80

Grading Analysis		
D100	mm	28
D60	mm	0.504
D30	mm	0.227
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

[redacted]

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

[redacted]

Mark Beastall
Geotechnical Commercial
Manager

Date Reported: 08/12/2016

for and on behalf of i2 Analytical Ltd

Douglas Mayer
Hydrock Consultants Ltd
2-4 Hawthorne Park
Holdenby Road
Spratton
Northamptonshire
NN6 8LD

t: 01604842888
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i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

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

Analytical Report Number : 16-33870

Project / Site name:	Heyford Park - Main Site	**Samples received on:**	25/11/2016
Your job number:	C-04583-C	**Samples instructed on:**	25/11/2016
Your order number:	POP002067	**Analysis completed by:**	01/12/2016
Report Issue Number:	1	**Report issued on:**	01/12/2016
Samples Analysed:	10 soil samples		

Signed: [redacted]

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed: [redacted]

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

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 16-33870

Project / Site name: Heyford Park - Main Site
Your Order No: POP002067

Lab Sample Number				664016	664017	664018	664019	664020
Sample Reference				TP02	TP04	TP06	TP09	TP14
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.20	0.70	1.20	0.60
Date Sampled				02/11/2016	02/11/2016	02/11/2016	03/11/2016	03/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	14	8.3	8.0	6.0	9.5
Total mass of sample received	kg	0.001	NONE	1.1	1.2	1.2	1.3	1.3
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.0	7.8	8.2	8.2	7.8
Total Sulphate as SO_4	mg/kg	50	MCERTS	270	770	700	800	630
Total Sulphate as SO_4	%	0.005	MCERTS	0.027	0.077	0.070	0.080	0.063
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0082	0.0061	0.0059	0.0047	0.0081
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	8.2	6.1	5.9	4.7	8.1
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	< 1.0	5.6	< 1.0	< 1.0	< 1.0
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	< 0.5	2.8	< 0.5	< 0.5	< 0.5
Total Sulphur	mg/kg	50	MCERTS	100	340	270	270	280
Total Sulphur	%	0.005	MCERTS	0.010	0.034	0.027	0.027	0.028
Ammonium as NH_4	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	2.9	4.2	2.2	2.6	4.2
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Heavy Metals / Metalloids								
Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5

Analytical Report Number: 16-33870

Project / Site name: Heyford Park - Main Site
Your Order No: POP002067

Lab Sample Number				664021	664022	664023	664024	664025
Sample Reference				TP15	TP104	TP105	TP108	TP133
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.90	0.10	1.00-1.20	1.90-2.00
Date Sampled				03/11/2016	02/11/2016	03/11/2016	03/11/2016	08/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	17	13	5.8	6.9	12
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.1	1.2	1.3
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.2	8.0	7.7	8.5	8.1
Total Sulphate as SO_4	mg/kg	50	MCERTS	940	680	710	880	820
Total Sulphate as SO_4	%	0.005	MCERTS	0.094	0.068	0.071	0.088	0.082
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.013	0.0089	0.012	0.068	0.0090
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	13.0	8.9	11.9	68.4	9.0
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	6.6	2.7	6.0	3.6	6.8
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	3.3	1.3	3.0	1.8	3.4
Total Sulphur	mg/kg	50	MCERTS	480	250	350	320	320
Total Sulphur	%	0.005	MCERTS	0.048	0.025	0.035	0.032	0.032
Ammonium as NH_4	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	23	7.7	8.6	4.1	5.9
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	11	< 5.0	< 5.0	< 5.0	< 5.0
Heavy Metals / Metalloids								
Magnesium (water soluble)	mg/kg	5	NONE	5.7	< 5.0	5.6	< 5.0	< 5.0
Magnesium (leachate equivalent)	mg/l	2.5	NONE	2.8	< 2.5	2.8	< 2.5	< 2.5

Analytical Report Number : 16-33870

Project / Site name: Heyford Park - Main Site

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
664016	TP02	None Supplied	0.80	Brown clay and sand.
664017	TP04	None Supplied	0.20	Brown loam and clay with gravel.
664018	TP06	None Supplied	0.70	Brown loam and sand with gravel.
664019	TP09	None Supplied	1.20	Brown loam and sand with gravel.
664020	TP14	None Supplied	0.60	Brown loam and clay with gravel.
664021	TP15	None Supplied	0.20	Brown loam and sand with gravel.
664022	TP104	None Supplied	0.90	Brown clay and sand.
664023	TP105	None Supplied	0.10	Brown loam and clay with gravel.
664024	TP108	None Supplied	1.00-1.20	Light brown sandy loam with gravel.
664025	TP133	None Supplied	1.90-2.00	Brown clay and sand.

The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 16-33870

Project / Site name: Heyford Park - Main Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests. 2:1 extraction.	L082-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L038	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 16-33872

Project / Site name:	Heyford Park - Main Site - Phase 10	**Samples received on:**	25/11/2016
Your job number:	C-04583-C	**Samples instructed on:**	25/11/2016
Your order number:	POP002067	**Analysis completed by:**	01/12/2016
Report Issue Number:	1	**Report issued on:**	01/12/2016
Samples Analysed:	5 soil samples		

Signed: [redacted]

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed: [redacted]

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

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 16-33872

Project / Site name: Heyford Park - Main Site - Phase 10
Your Order No: POP002067

Lab Sample Number				664033	664034	664035	664036	664037
Sample Reference				SA08	SA08	TP126	TP127	TP131
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.30	1.40-2.10	1.30	1.10	1.30-1.40
Date Sampled				09/11/2016	09/11/2016	08/11/2016	08/11/2016	08/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	14	18	13	20	20
Total mass of sample received	kg	0.001	NONE	1.0	1.3	1.3	1.4	1.3
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.4	8.2	7.7	7.4	7.9
Total Sulphate as SO_4	mg/kg	50	MCERTS	1200	950	620	580	730
Total Sulphate as SO_4	%	0.005	MCERTS	0.121	0.095	0.062	0.058	0.073
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.014	0.0073	0.0073	0.014	0.0045
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	14.3	7.3	7.3	13.5	4.5
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	7.0	1.4	3.7	5.6	< 1.0
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	3.5	0.7	1.9	2.8	< 0.5
Total Sulphur	mg/kg	50	MCERTS	560	330	220	280	260
Total Sulphur	%	0.005	MCERTS	0.056	0.033	0.022	0.028	0.026
Ammonium as NH_4	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	7.0	3.3	5.3	10	2.6
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	5.0	< 5.0
Heavy Metals / Metalloids								
Magnesium (water soluble)	mg/kg	5	NONE	7.2	< 5.0	< 5.0	< 5.0	< 5.0
Magnesium (leachate equivalent)	mg/l	2.5	NONE	3.6	< 2.5	< 2.5	< 2.5	< 2.5

Analytical Report Number : 16-33872

Project / Site name: Heyford Park - Main Site - Phase 10

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
664033	SA08	None Supplied	0.00-0.30	Brown loam and sand with gravel and vegetation.
664034	SA08	None Supplied	1.40-2.10	Brown loam and clay.
664035	TP126	None Supplied	1.30	Brown loam and clay.
664036	TP127	None Supplied	1.10	Brown loam and clay.
664037	TP131	None Supplied	1.30-1.40	Light brown clay and sand.

Analytical Report Number : 16-33872

Project / Site name: Heyford Park - Main Site - Phase 10

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests. 2:1 extraction.	L082-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L038	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 16-33875

Project / Site name:	Heyford Park - Main Site - Phase 16	**Samples received on:**	25/11/2016
Your job number:	C-04583-C	**Samples instructed on:**	25/11/2016
Your order number:	POP002067	**Analysis completed by:**	01/12/2016
Report Issue Number:	1	**Report issued on:**	01/12/2016
Samples Analysed:	7 soil samples		

Signed: [redacted]

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed: [redacted]

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

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 16-33875

Project / Site name: Heyford Park - Main Site - Phase 16
Your Order No: POP002067

Lab Sample Number				664054	664055	664056	664057	664058
Sample Reference				TP151	TP155	TP161	TP162	TP168
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.40-1.50	0.50-0.70	0.10	1.00-1.10	0.50-0.60
Date Sampled				10/11/2016	14/11/2016	14/11/2016	14/11/2016	14/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	21	11	16	9.0	11
Total mass of sample received	kg	0.001	NONE	1.2	1.3	1.3	1.3	1.3
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.2	7.9	7.7	8.1	8.1
Total Sulphate as SO_4	mg/kg	50	MCERTS	650	750	850	620	800
Total Sulphate as SO_4	%	0.005	MCERTS	0.065	0.075	0.085	0.062	0.080
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.018	0.012	0.015	0.010	0.011
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	18.0	12.1	14.7	10.3	10.8
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	7.4	10	18	3.0	5.0
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	3.7	5.1	9.1	1.5	2.5
Total Sulphur	mg/kg	50	MCERTS	250	320	380	230	310
Total Sulphur	%	0.005	MCERTS	0.025	0.032	0.038	0.023	0.031
Ammonium as NH_4	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	18	21	16	5.8	14
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	8.8	11	7.8	< 5.0	6.9
Heavy Metals / Metalloids								
Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5

Analytical Report Number: 16-33875

Project / Site name: Heyford Park - Main Site - Phase 16
Your Order No: POP002067

Lab Sample Number				664059	664561			
Sample Reference				SA01	TP144			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.00-0.30	0.50			
Date Sampled				07/11/2016	10/11/2016			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	10	15			
Total mass of sample received	kg	0.001	NONE	1.2	0.75			
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.0	7.7			
Total Sulphate as SO_4	mg/kg	50	MCERTS	610	700			
Total Sulphate as SO_4	%	0.005	MCERTS	0.061	0.070			
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.014	0.0091			
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	13.8	9.1			
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	7.1	5.6			
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	3.5	2.8			
Total Sulphur	mg/kg	50	MCERTS	230	250			
Total Sulphur	%	0.005	MCERTS	0.023	0.025			
Ammonium as NH_4	mg/kg	0.5	MCERTS	< 0.5	< 0.5			
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	< 0.1	< 0.1			
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	9.9	9.4			
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0			
Heavy Metals / Metalloids								
Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0			
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5	< 2.5			

Analytical Report Number : 16-33875

Project / Site name: Heyford Park - Main Site - Phase 16

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
664054	TP151	None Supplied	1.40-1.50	Brown clay and sand.
664055	TP155	None Supplied	0.50-0.70	Brown loam and clay with gravel.
664056	TP161	None Supplied	0.10	Brown loam and clay with gravel.
664057	TP162	None Supplied	1.00-1.10	Brown loam and sand with gravel.
664058	TP168	None Supplied	0.50-0.60	Brown loam and clay with gravel.
664059	SA01	None Supplied	0.00-0.30	Brown loam and clay with gravel.
664561	TP144	None Supplied	0.50	Light brown loam and clay.

Analytical Report Number : 16-33875

Project / Site name: Heyford Park - Main Site - Phase 16

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests. 2:1 extraction.	L082-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L038	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 16-33878

Project / Site name:	Heyford Park - Main Site - Phase 16A	**Samples received on:**	25/11/2016
Your job number:	C-04583-C	**Samples instructed on:**	25/11/2016
Your order number:	POP002067	**Analysis completed by:**	01/12/2016
Report Issue Number:	1	**Report issued on:**	01/12/2016
Samples Analysed:	7 soil samples		

Signed: [redacted]

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed: [redacted]

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

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 16-33878

Project / Site name: Heyford Park - Main Site - Phase 16A
Your Order No: POP002067

Lab Sample Number				664080	664081	664082	664083	664084
Sample Reference				TP22	TP110	TP112	TP116	TP117
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	1.20	0.90	0.10	0.70-0.80
Date Sampled				04/11/2016	04/11/2016	04/11/2016	07/11/2016	07/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	11	16	14	11	7.0
Total mass of sample received	kg	0.001	NONE	1.2	0.49	0.48	1.3	1.3
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.8	8.2	7.9	7.6	8.2
Total Sulphate as SO_4	mg/kg	50	MCERTS	690	740	300	800	670
Total Sulphate as SO_4	%	0.005	MCERTS	0.069	0.074	0.030	0.080	0.067
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.014	0.0058	0.0054	0.011	0.010
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	13.9	5.8	5.4	10.9	10.4
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	6.6	2.1	1.4	4.9	2.1
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	3.3	1.1	0.7	2.4	1.0
Total Sulphur	mg/kg	50	MCERTS	320	260	110	330	270
Total Sulphur	%	0.005	MCERTS	0.032	0.026	0.011	0.033	0.027
Ammonium as NH_4	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	72	4.3	4.9	89	11
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	36	< 5.0	< 5.0	45	5.6
Heavy Metals / Metalloids								
Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5

Analytical Report Number: 16-33878

Project / Site name: Heyford Park - Main Site - Phase 16A
Your Order No: POP002067

Lab Sample Number				664085	664086			
Sample Reference				TP123	TP125			
Sample Number				None Supplied	None Supplied			
Depth (m)				1.60-1.70	1.00-1.20			
Date Sampled				07/11/2016	07/11/2016			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	11	11			
Total mass of sample received	kg	0.001	NONE	1.3	1.3			
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.0	7.7			
Total Sulphate as SO_4	mg/kg	50	MCERTS	640	270			
Total Sulphate as SO_4	%	0.005	MCERTS	0.064	0.027			
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0069	0.0084			
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	6.9	8.4			
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	2.1	1.3			
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	1.1	0.7			
Total Sulphur	mg/kg	50	MCERTS	260	130			
Total Sulphur	%	0.005	MCERTS	0.026	0.013			
Ammonium as NH_4	mg/kg	0.5	MCERTS	< 0.5	< 0.5			
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	< 0.1	< 0.1			
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	9.0	5.7			
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0			
Heavy Metals / Metalloids								
Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0			
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5	< 2.5			

Analytical Report Number : 16-33878

Project / Site name: Heyford Park - Main Site - Phase 16A

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
664080	TP22	None Supplied	0.20	Brown loam and sand with gravel.
664081	TP110	None Supplied	1.20	Light brown clay and sand.
664082	TP112	None Supplied	0.90	Brown loam and sand with gravel.
664083	TP116	None Supplied	0.10	Brown loam and sand with gravel.
664084	TP117	None Supplied	0.70-0.80	Brown sandy loam with gravel.
664085	TP123	None Supplied	1.60-1.70	Brown clay and sand.
664086	TP125	None Supplied	1.00-1.20	Brown loam and clay with gravel.

Analytical Report Number : 16-33878

Project / Site name: Heyford Park - Main Site - Phase 16A

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests. 2:1 extraction.	L082-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L038	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Hydrock

Client	Dorchester Living	**Location or material to which this assessment applies**
Project	**Heyford Park - Western Development Phase 9**	Topsoil
Job number	**C-04583-C**	

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	2	2	2
No. tests in 20% data set	0	0	0
No. tests with suspected pyrite		0	
Maximum value	25.925	0.1	2.8
Mean of highest two values	20	0	3
Mean of highest 20%			
Characteristic Value	**25.925**	**0.1**	**2.8**

	[no pyrite]	**[pyrite suspected]**
DS Class	**DS-1**	**DS-1**

If pyrite suspected, DS Class limited to **DS-1**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-1**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value (Maximum Level)	0	0

DS Class

pH data

	Soil	Water
Number of tests	2	0
No. tests in 20% data set	0	
Lowest pH	7.2	
Mean of lowest 20%		
Characteristic value	**7.2**	
Design value	**7.2**	

Number of soil pH results less than 5.5: 0

DS Class design value

Based on higher of soil and water data **DS-1**

ACEC Class design value

Natural ground

Mobile groundwater **AC-1 ***

* increase to AC-2z in flowing water (pure or with >15mg/l carbon dioxide)

Hydrock

Client	Dorchester Living	**Location or material to which this assessment applies**
Project	**Heyford Park - Western Development Phase 9**	Made Ground
Job number	**C-04583-C**	

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	1	1	1
No. tests in 20% data set	0	0	0
No. tests with suspected pyrite		0	
Maximum value	19.8	0.1	2.8
Mean of highest two values	20	0	3
Mean of highest 20%			
Characteristic Value	**19.8**	**0.1**	**2.8**

	[no pyrite]	**[pyrite suspected]**
DS Class	**DS-1**	**DS-1**

If pyrite suspected, DS Class limited to **DS-1**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-1**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value (Maximum Level)	0	0

DS Class

pH data

	Soil	Water
Number of tests	1	0
No. tests in 20% data set	0	
Lowest pH	7.7	
Mean of lowest 20%		
Characteristic value	**7.7**	
Design value	**7.7**	

Number of soil pH results less than 5.5: 0

DS Class design value

Based on higher of soil and water data **DS-1**

ACEC Class design value

Natural ground

Mobile groundwater **AC-1 ***

* increase to AC-2z in flowing water (pure or with >15mg/l carbon dioxide)

Hydrock

Client	Dorchester Living	**Location or material to which this assessment applies**
Project	**Heyford Park - Western Development Phase 9**	Great Oolite Group
Job number	**C-04583-C**	

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	7	7	7
No. tests in 20% data set	1	1	1
No. tests with suspected pyrite		0	
Maximum value	74.68	0.1	2.5
Mean of highest two values	46	0	3
Mean of highest 20%			
Characteristic Value	**46**	**0**	**3**

	[no pyrite]	**[pyrite suspected]**
DS Class	**DS-1**	**DS-1**

If pyrite suspected, DS Class limited to **DS-1**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-1**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value (Maximum Level)	0	0

DS Class

pH data

	Soil	Water
Number of tests	7	0
No. tests in 20% data set	1	
Lowest pH	7.8	
Mean of lowest 20%	7.8	
Characteristic value	**7.8**	
Design value	**7.8**	
Number of soil pH results less than 5.5	0	

DS Class design value

Based on higher of soil and water data **DS-1**

ACEC Class design value

Natural ground

Mobile groundwater **AC-1 ***

* increase to AC-2z in flowing water (pure or with >15mg/l carbon dioxide)

Hydrock

Client	Dorchester Living
Project	**Heyford Park - Western Development Phase 10**
Job number	**C-04583-C**

Location or material to which this assessment applies
Made Ground

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	1	1	1
No. tests in 20% data set	0	0	0
No. tests with suspected pyrite		0	
Maximum value	22.875	0.2	3.6
Mean of highest two values	23	0	4
Mean of highest 20%			
Characteristic Value	**22.875**	**0.2**	**3.6**

	[no pyrite]	**[pyrite suspected]**
DS Class	**DS-1**	**DS-1**

If pyrite suspected, DS Class limited to **DS-1**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-1**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value (Maximum Level)	0	0

DS Class

pH data

	Soil	Water
Number of tests	1	0
No. tests in 20% data set	0	
Lowest pH	7.4	
Mean of lowest 20%		
Characteristic value	**7.4**	
Design value	**7.4**	

Number of soil pH results less than 5.5: 0

DS Class design value

Based on higher of soil and water data **DS-1**

ACEC Class design value

Natural ground

Mobile groundwater **AC-1 ***

* increase to AC-2z in flowing water (pure or with >15mg/l carbon dioxide)

Hydrock

Client	Dorchester Living
Project	**Heyford Park - Western Development Phase 10**
Job number	**C-04583-C**

Location or material to which this assessment applies
Great Oolite Group

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	4	4	4
No. tests in 20% data set	1	1	1
No. tests with suspected pyrite		0	
Maximum value	21.13	0.1	2.5
Mean of highest two values	17	0	3
Mean of highest 20%			
Characteristic Value	**21.13**	**0.1**	**2.5**

	[no pyrite]	**[pyrite suspected]**
DS Class	**DS-1**	**DS-1**

If pyrite suspected, DS Class limited to **DS-1**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-1**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value (Maximum Level)	0	0

DS Class

pH data

	Soil	Water
Number of tests	4	0
No. tests in 20% data set	1	
Lowest pH	7.4	
Mean of lowest 20%	7.4	
Characteristic value	**7.4**	
Design value	**7.4**	
Number of soil pH results less than 5.5	0	

DS Class design value

Based on higher of soil and water data **DS-1**

ACEC Class design value

Natural ground
Mobile groundwater **AC-1 ***

* increase to AC-2z in flowing water (pure or with >15mg/l carbon dioxide)

Hydrock

Client	Dorchester Living	**Location or material to which this assessment applies**
Project	**Heyford Park - Western Development Phase 16**	Topsoil
Job number	**C-04583-C**	

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	2	2	2
No. tests in 20% data set	0	0	0
No. tests with suspected pyrite		0	
Maximum value	32.991	0.1	2.5
Mean of highest two values	28	0	3
Mean of highest 20%			
Characteristic Value	**32.991**	**0.1**	**2.5**

	[no pyrite]	**[pyrite suspected]**
DS Class	**DS-1**	**DS-1**

If pyrite suspected, DS Class limited to **DS-1**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-1**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value (Maximum Level)	0	0

DS Class

pH data

	Soil	Water
Number of tests	2	0
No. tests in 20% data set	0	
Lowest pH	7.7	
Mean of lowest 20%		
Characteristic value	**7.7**	
Design value	**7.7**	

Number of soil pH results less than 5.5: 0

DS Class design value

Based on higher of soil and water data **DS-1**

ACEC Class design value

Natural ground

Mobile groundwater **AC-1 ***

* increase to AC-2z in flowing water (pure or with >15mg/l carbon dioxide)

Hydrock

Client	Dorchester Living
Project	Heyford Park - Western Development Phase 16
Job number	C-04583-C

Location or material to which this assessment applies
Great Oolite Group

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	5	5	5
No. tests in 20% data set	1	1	1
No. tests with suspected pyrite		0	
Maximum value	29.771	0.1	2.5
Mean of highest two values	29	0	3
Mean of highest 20%			
Characteristic Value	**29**	**0**	**3**

	[no pyrite]	**[pyrite suspected]**
DS Class	**DS-1**	**DS-1**

If pyrite suspected, DS Class limited to **DS-1**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-1**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value (Maximum Level)	0	0

DS Class

pH data

	Soil	Water
Number of tests	5	0
No. tests in 20% data set	1	
Lowest pH	7.7	
Mean of lowest 20%	7.7	
Characteristic value	**7.7**	
Design value	**7.7**	

Number of soil pH results less than 5.5: 0

DS Class design value

Based on higher of soil and water data **DS-1**

ACEC Class design value

Natural ground

Mobile groundwater **AC-1 ***

* increase to AC-2z in flowing water (pure or with >15mg/l carbon dioxide)

Hydrock

Client	Dorchester Living
Project	Heyford Park - Western Development Phase 16A
Job number	C-04583-C

Location or material to which this assessment applies
Topsoil

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	2	2	2
No. tests in 20% data set	0	0	0
No. tests with suspected pyrite		0	
Maximum value	48.79	0.1	2.5
Mean of highest two values	47	0	3
Mean of highest 20%			
Characteristic Value	**48.79**	**0.1**	**2.5**

	[no pyrite]	**[pyrite suspected]**
DS Class	**DS-1**	**DS-1**

If pyrite suspected, DS Class limited to **DS-1**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-1**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value (Maximum Level)	0	0

DS Class

pH data

	Soil	Water
Number of tests	2	0
No. tests in 20% data set	0	
Lowest pH	7.6	
Mean of lowest 20%		
Characteristic value	**7.6**	
Design value	**7.6**	

Number of soil pH results less than 5.5: 0

DS Class design value

Based on higher of soil and water data **DS-1**

ACEC Class design value

Natural ground

Mobile groundwater **AC-1 ***

* increase to AC-2z in flowing water (pure or with >15mg/l carbon dioxide)

Hydrock

Client	Dorchester Living
Project	**Heyford Park - Western Development Phase 16A**
Job number	**C-04583-C**

Location or material to which this assessment applies
Great Oolite Group

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	5	5	5
No. tests in 20% data set	1	1	1
No. tests with suspected pyrite		0	
Maximum value	16.062	0.1	2.5
Mean of highest two values	15	0	3
Mean of highest 20%			
Characteristic Value	**15**	**0**	**3**

	[no pyrite]	**[pyrite suspected]**
DS Class	**DS-1**	**DS-1**

If pyrite suspected, DS Class limited to **DS-1**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-1**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value (Maximum Level)	0	0

DS Class

pH data

	Soil	Water
Number of tests	5	0
No. tests in 20% data set	1	
Lowest pH	7.7	
Mean of lowest 20%	7.7	
Characteristic value	**7.7**	
Design value	**7.7**	

Number of soil pH results less than 5.5: 0

DS Class design value

Based on higher of soil and water data **DS-1**

ACEC Class design value

Natural ground

Mobile groundwater **AC-1 ***

* increase to AC-2z in flowing water (pure or with >15mg/l carbon dioxide)

Hydrock

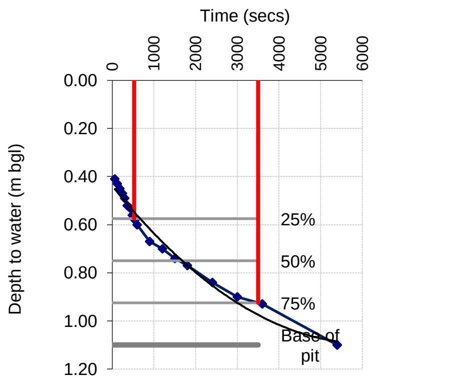
BRE BR365 - Trial Pit Soakaway Data Sheet

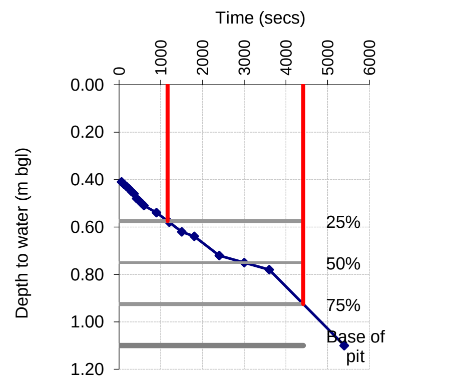
Site: Heyford Park
Client: Heyford Park Settlements LP
Test Location SA01 **Date of start of testing** 07/11/2016 **Date at end of testing** 07/11/2016

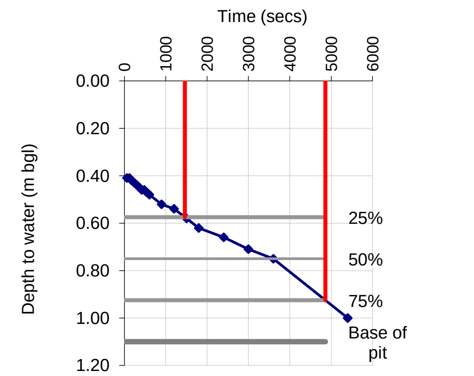
Test Run 1		Test Run 2		Test Run 3	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Length	1.900m	Length	1.900m	Length	1.900m
Width	0.600m	Width	0.600m	Width	0.600m
Depth	1.100m	Depth	1.100m	Depth	1.100m
Fill Depth	0.700m	Fill Depth	0.700m	Fill Depth	0.700m
Max Volume	0.798m³	Max Volume	0.798m³	Max Volume	0.798m³
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No
Method of Calculation	DATA	Method of Calculation	DATA	Method of Calculation	DATA

Time to soakaway (Run 1)				Time to soakaway (Run 2)				Time to soakaway (Run 3)			
Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	*0.00*	*0.400*	*0*	*1*	*0.00*	*0.400*	*0*	*1*	*0.00*	*0.400*	*0*
1	0.01	0.410	60	1	0.01	0.410	60	1	0.01	0.410	60
1	0.02	0.430	120	1	0.02	0.420	120	1	0.02	0.410	120
1	0.03	0.450	180	1	0.03	0.430	180	1	0.03	0.420	180
1	0.04	0.470	240	1	0.04	0.440	240	1	0.04	0.430	240
1	0.05	0.490	300	1	0.05	0.450	300	1	0.05	0.440	300
1	0.06	0.520	360	1	0.06	0.460	360	1	0.06	0.450	360
1	0.07	0.530	420	1	0.07	0.480	420	1	0.07	0.460	420
1	0.08	0.560	480	1	0.08	0.490	480	1	0.08	0.460	480
1	0.09	0.580	540	1	0.09	0.500	540	1	0.09	0.470	540
1	0.10	0.600	600	1	0.10	0.510	600	1	0.10	0.480	600
1	0.15	0.670	900	1	0.15	0.540	900	1	0.15	0.520	900
1	0.20	0.700	1200	1	0.20	0.580	1200	1	0.20	0.540	1200
1	0.25	0.740	1500	1	0.25	0.620	1500	1	0.25	0.580	1500
1	0.30	0.770	1800	1	0.30	0.640	1800	1	0.30	0.620	1800
1	0.40	0.840	2400	1	0.40	0.720	2400	1	0.40	0.660	2400
1	0.50	0.900	3000	1	0.50	0.750	3000	1	0.50	0.710	3000
1	0.60	0.930	3600	1	0.60	0.780	3600	1	0.60	0.750	3600
1	0.90	1.100	5400	1	0.90	1.100	5400	1	0.90	1.000	5400
1	0.90	1.100	5400	1	0.90	1.100	5400	1	0.90	1.000	5400
			5400				5400				5400
			5400				5400				5400
			5400				5400				5400
			5400				5400				5400
			5400				5400				5400

Test Run 1		Test Run 2		Test Run 3	
25% water depth	0.575m	**25% water depth**	0.575m	**25% water depth**	0.575m
50% water depth	0.750m	**50% water depth**	0.750m	**50% water depth**	0.750m
75% water depth	0.925m	**75% water depth**	0.925m	**75% water depth**	0.925m
25% time (seconds)	525 sec	**25% time (seconds)**	1163 sec	**25% time (seconds)**	1463 sec
75% time (seconds)	3500 sec	**75% time (seconds)**	4416 sec	**75% time (seconds)**	4860 sec
$V_{p\ 75-25}$	0.3990m³	$V_{p\ 75-25}$	0.3990m³	$V_{p\ 75-25}$	0.3990m³
$a_{p\ 50}$ **(Actual area from test)**	2.8900m²	$a_{p\ 50}$ **(Actual area from test)**	2.8900m²	$a_{p\ 50}$ **(Actual area from test)**	3.1400m²
$t_{p\ 75-25}$	2975.0	$t_{p\ 75-25}$	3253.1	$t_{p\ 75-25}$	3397.5
Soil Infiltration Rate	**4.64E-05m/s**	**Soil Infiltration Rate**	**4.24E-05m/s**	**Soil Infiltration Rate**	**3.74E-05m/s**







Note:

BRE BR365 - Trial Pit Soakaway Data Sheet

Site: Heyford Park

Client: Heyford Park Settlements LP

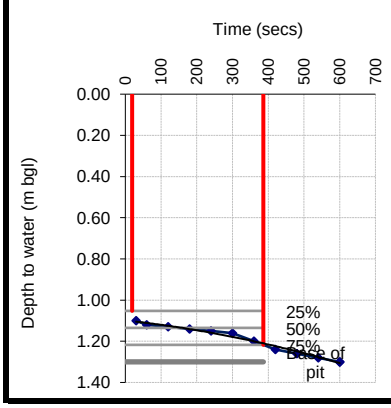
Test Location SA02 **Date of start of testing** 07/11/2016 **Date at end of testing** 07/11/2016

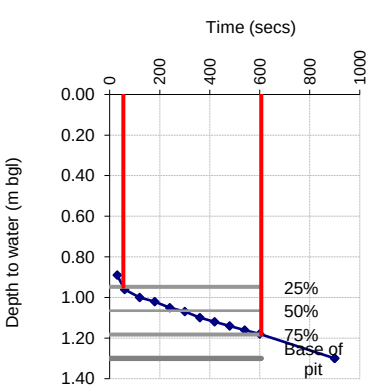
Test Run 1		Test Run 2		Test Run 3	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Length	2.000m	Length	2.000m	Length	2.000m
Width	0.750m	Width	0.750m	Width	0.750m
Depth	1.300m	Depth	1.300m	Depth	1.300m
Fill Depth	0.330m	Fill Depth	0.470m	Fill Depth	0.500m
Max Volume	0.495m³	Max Volume	0.705m³	Max Volume	0.750m³
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No
Method of Calculation	DATA	Method of Calculation	DATA	Method of Calculation	DATA

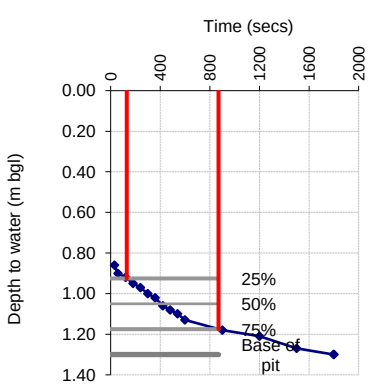
Time to soakaway

Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	*0.00*	*0.970*	*0*	*1*	*0.00*	*0.830*	*0*	*1*	*0.00*	*0.800*	*0*
1	0.01	1.100	30	1	0.01	0.890	30	1	0.01	0.860	30
1	0.01	1.120	60	1	0.01	0.960	60	1	0.01	0.900	60
1	0.02	1.130	120	1	0.02	1.000	120	1	0.02	0.920	120
1	0.03	1.140	180	1	0.03	1.020	180	1	0.03	0.950	180
1	0.04	1.150	240	1	0.04	1.050	240	1	0.04	0.970	240
1	0.05	1.160	300	1	0.05	1.070	300	1	0.05	1.000	300
1	0.06	1.200	360	1	0.06	1.100	360	1	0.06	1.020	360
1	0.07	1.240	420	1	0.07	1.120	420	1	0.07	1.060	420
1	0.08	1.260	480	1	0.08	1.140	480	1	0.08	1.080	480
1	0.09	1.280	540	1	0.09	1.160	540	1	0.09	1.100	540
1	0.10	1.300	600	1	0.10	1.180	600	1	0.10	1.130	600
1	0.10	1.300	600	1	0.15	1.300	900	1	0.15	1.180	900
			600	1	0.15	1.300	900	1	0.20	1.210	1200
			600				900	1	0.25	1.270	1500
			600				900	1	0.30	1.300	1800
			600				900	1	0.30	1.300	1800
			600				900				1800
			600				900				1800
			600				900				1800
			600				900				1800
			600				900				1800
			600				900				1800
			600				900				1800
			600				900				1800

25% water depth	1.053m	**25% water depth**	0.948m	**25% water depth**	0.925m
50% water depth	1.135m	**50% water depth**	1.065m	**50% water depth**	1.050m
75% water depth	1.218m	**75% water depth**	1.183m	**75% water depth**	1.175m
25% time (seconds)	19 sec	**25% time (seconds)**	55 sec	**25% time (seconds)**	130 sec
75% time (seconds)	386 sec	**75% time (seconds)**	606 sec	**75% time (seconds)**	870 sec
$V_{p\ 75\text{-}25}$	0.2475m³	$V_{p\ 75\text{-}25}$	0.3525m³	$V_{p\ 75\text{-}25}$	0.3750m³
$a_{p\ 50}$ **(Actual area from test)**	2.4075m²	$a_{p\ 50}$ **(Actual area from test)**	2.7925m²	$a_{p\ 50}$ **(Actual area from test)**	2.8750m²
$t_{p\ 75\text{-}25}$	367.2	$t_{p\ 75\text{-}25}$	551.6	$t_{p\ 75\text{-}25}$	740.0
Soil Infiltration Rate	**2.80E-04m/s**	**Soil Infiltration Rate**	**2.29E-04m/s**	**Soil Infiltration Rate**	**1.76E-04m/s**







Note:

BRE BR365 - Trial Pit Soakaway Data Sheet

Site: Heyford Park

Client: Heyford Park Settlements LP

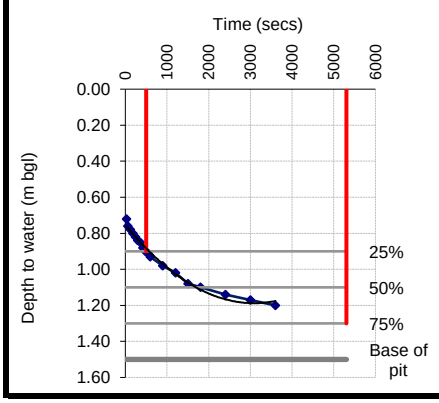
Test Location SA03 **Date of start of testing** 07/11/2016 **Date at end of testing** 07/11/2016

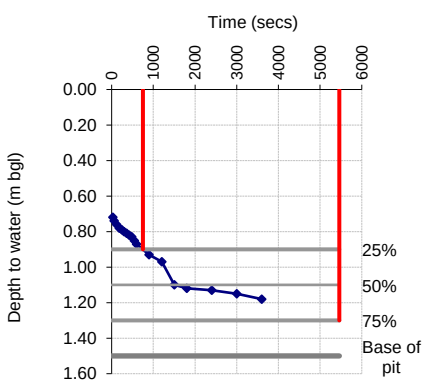
Test Run 1		Test Run 2		Test Run 3	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Length	2.000m	Length	2.000m	Length	2.000m
Width	0.700m	Width	0.700m	Width	0.700m
Depth	1.500m	Depth	1.500m	Depth	1.500m
Fill Depth	0.800m	Fill Depth	0.800m	Fill Depth	0.820m
Max Volume	1.120m³	Max Volume	1.120m³	Max Volume	1.148m³
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No
Method of Calculation	EXTRAPOLATE	Method of Calculation	EXTRAPOLATE	Method of Calculation	EXTRAPOLATE

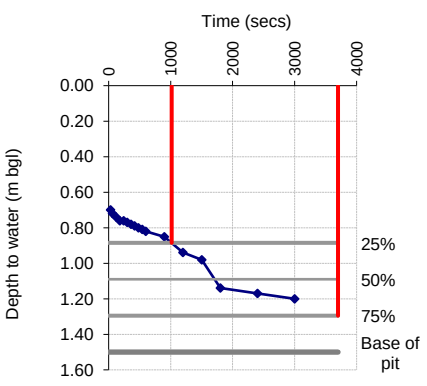
Time to soakaway

Test Run 1				Test Run 2				Test Run 3			
Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	*0.00*	*0.700*	*0*	*1*	*0.00*	*0.700*	*0*	*1*	*0.00*	*0.680*	*0*
1	0.01	0.720	30	1	0.01	0.720	30	1	0.01	0.700	30
1	0.01	0.760	60	1	0.01	0.740	60	1	0.01	0.720	60
1	0.02	0.780	120	1	0.02	0.760	120	1	0.02	0.740	120
1	0.03	0.800	180	1	0.03	0.780	180	1	0.03	0.760	180
1	0.04	0.820	240	1	0.04	0.790	240	1	0.04	0.760	240
1	0.05	0.840	300	1	0.05	0.800	300	1	0.05	0.770	300
1	0.06	0.850	360	1	0.06	0.810	360	1	0.06	0.780	360
1	0.07	0.880	420	1	0.07	0.820	420	1	0.07	0.790	420
1	0.08	0.900	480	1	0.08	0.830	480	1	0.08	0.800	480
1	0.09	0.910	540	1	0.09	0.850	540	1	0.09	0.810	540
1	0.10	0.930	600	1	0.10	0.870	600	1	0.10	0.820	600
1	0.15	0.980	900	1	0.15	0.930	900	1	0.15	0.850	900
1	0.20	1.020	1200	1	0.20	0.970	1200	1	0.20	0.940	1200
1	0.25	1.080	1500	1	0.25	1.100	1500	1	0.25	0.980	1500
1	0.30	1.100	1800	1	0.30	1.120	1800	1	0.30	1.140	1800
1	0.40	1.140	2400	1	0.40	1.130	2400	1	0.40	1.170	2400
1	0.50	1.170	3000	1	0.50	1.150	3000	1	0.50	1.200	3000
1	0.60	1.200	3600	1	0.60	1.180	3600				3000
			3600				3600				3000
			3600				3600				3000
			3600				3600				3000
			3600				3600				3000
			3600				3600				3000
			3600				3600				3000
			3600				3600				3000

25% water depth	0.900m	**25% water depth**	0.900m	**25% water depth**	0.885m
50% water depth	1.100m	**50% water depth**	1.100m	**50% water depth**	1.090m
75% water depth	1.300m	**75% water depth**	1.300m	**75% water depth**	1.295m
25% time (seconds)	402 sec	**25% time (seconds)**	583 sec	**25% time (seconds)**	858 sec
75% time (seconds)	5304 sec	**75% time (seconds)**	5461 sec	**75% time (seconds)**	3700 sec
$V_{p\ 75\text{-}25}$	0.5600m³	$V_{p\ 75\text{-}25}$	0.5600m³	$V_{p\ 75\text{-}25}$	0.5740m³
$a_{p\ 50}$ **(Actual area from test)**	4.3700m²	$a_{p\ 50}$ **(Actual area from test)**	4.4240m²	$a_{p\ 50}$ **(Actual area from test)**	4.4240m²
$t_{p\ 75\text{-}25}$	4902.3	$t_{p\ 75\text{-}25}$	4878.5	$t_{p\ 75\text{-}25}$	2842.0
Soil Infiltration Rate	**2.61E-05m/s**	**Soil Infiltration Rate**	**2.59E-05m/s**	**Soil Infiltration Rate**	**4.57E-05m/s**







Note:

BRE BR365 - Trial Pit Soakaway Data Sheet

Site: Heyford Park

Client: Heyford Park Settlements LP

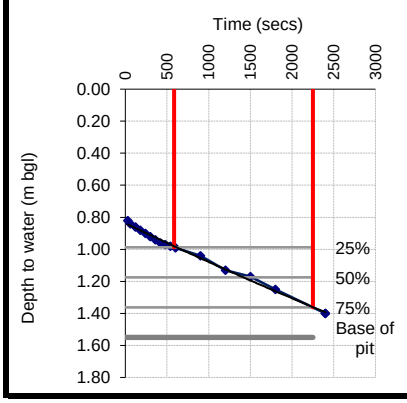
Test Location SA04 **Date of start of testing** 08/11/2016 **Date at end of testing** 08/11/2016

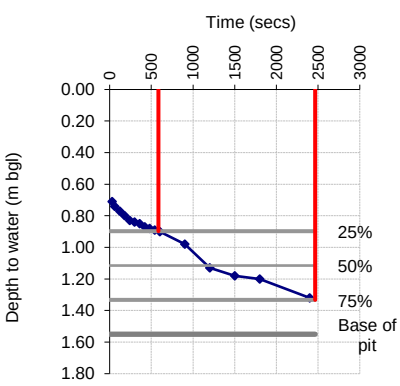
Test Run 1		Test Run 2		Test Run 3	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Length	1.700m	Length	1.700m	Length	
Width	0.700m	Width	0.700m	Width	
Depth	1.550m	Depth	1.550m	Depth	
Fill Depth	0.750m	Fill Depth	0.870m	Fill Depth	0.000m
Max Volume	0.893m³	Max Volume	1.035m³	Max Volume	0.000m³
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No
Method of Calculation	DATA	Method of Calculation	EXTRAPOLATE	Method of Calculation	DATA

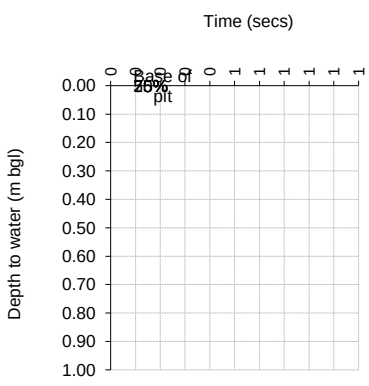
Time to soakaway

Test Run 1				Test Run 2				Test Run 3			
Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	*0.00*	*0.800*	*0*	*1*	*0.00*	*0.680*	*0*				*0*
1	0.01	0.820	30	1	0.01	0.710	30				0
1	0.01	0.840	60	1	0.01	0.740	60				0
1	0.02	0.860	120	1	0.02	0.770	120				0
1	0.03	0.880	180	1	0.03	0.800	180				0
1	0.04	0.900	240	1	0.04	0.830	240				0
1	0.05	0.920	300	1	0.05	0.840	300				0
1	0.06	0.940	360	1	0.06	0.850	360				0
1	0.07	0.960	420	1	0.07	0.870	420				0
1	0.08	0.970	480	1	0.08	0.880	480				0
1	0.09	0.980	540	1	0.09	0.890	540				0
1	0.10	0.990	600	1	0.10	0.900	600				0
1	0.15	1.040	900	1	0.15	0.980	900				0
1	0.20	1.130	1200	1	0.20	1.130	1200				0
1	0.25	1.170	1500	1	0.25	1.180	1500				0
1	0.30	1.250	1800	1	0.30	1.200	1800				0
1	0.40	1.400	2400	1	0.40	1.320	2400				0
1	0.40	1.400	2400				2400				0
			2400				2400				0
			2400				2400				0
			2400				2400				0
			2400				2400				0
			2400				2400				0
			2400				2400				0
			2400				2400				0

25% water depth	0.988m	**25% water depth**	0.898m	**25% water depth**	0.000m
50% water depth	1.175m	**50% water depth**	1.115m	**50% water depth**	0.000m
75% water depth	1.363m	**75% water depth**	1.333m	**75% water depth**	0.000m
25% time (seconds)	585 sec	**25% time (seconds)**	493 sec	**25% time (seconds)**	
75% time (seconds)	2250 sec	**75% time (seconds)**	2465 sec	**75% time (seconds)**	
$V_{p\ 75\text{-}25}$	0.4463m³	$V_{p\ 75\text{-}25}$	0.5177m³	$V_{p\ 75\text{-}25}$	0.0000m³
$a_{p\ 50}$ **(Actual area from test)**	3.3500m²	$a_{p\ 50}$ **(Actual area from test)**	3.8300m²	$a_{p\ 50}$ **(Actual area from test)**	0.0000m²
$t_{p\ 75\text{-}25}$	1665.0	$t_{p\ 75\text{-}25}$	1971.6	$t_{p\ 75\text{-}25}$	
Soil Infiltration Rate	**8.00E-05m/s**	**Soil Infiltration Rate**	**6.86E-05m/s**	**Soil Infiltration Rate**	**N/A**







Note:

BRE BR365 - Trial Pit Soakaway Data Sheet

Site: Heyford Park

Client: Heyford Park Settlements LP

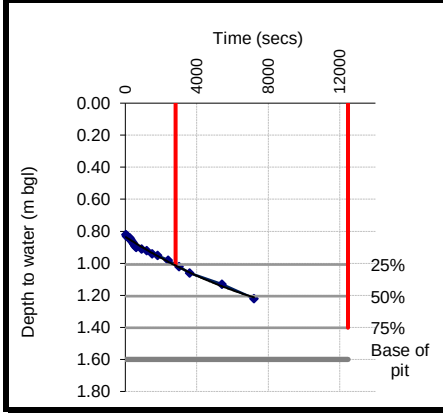
Test Location SA05 **Date of start of testing** 08/11/2016 **Date at end of testing** 08/11/2016

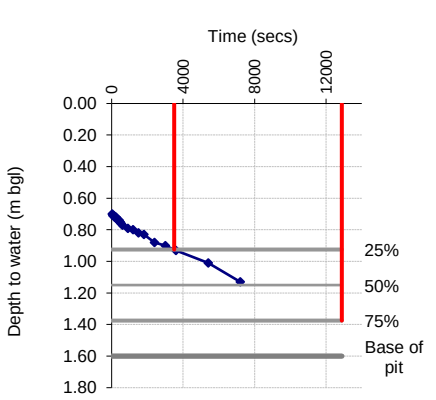
Test Run 1		Test Run 2		Test Run 3	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Length	1.900m	Length	1.900m	Length	
Width	0.650m	Width	0.650m	Width	
Depth	1.600m	Depth	1.600m	Depth	
Fill Depth	0.790m	Fill Depth	0.900m	Fill Depth	0.000m
Max Volume	0.976m³	Max Volume	1.112m³	Max Volume	0.000m³
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No
Method of Calculation	EXTRAPOLATE	Method of Calculation	EXTRAPOLATE	Method of Calculation	DATA

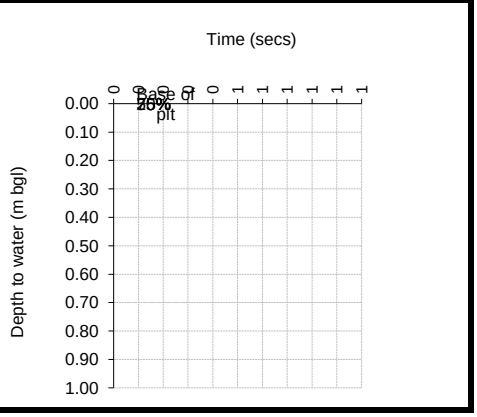
Time to soakaway

Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	*0.00*	*0.810*	*0*	*1*	*0.00*	*0.700*	*0*				*0*
1	0.01	0.820	30	1	0.01	0.700	30				0
1	0.01	0.830	60	1	0.01	0.710	60				0
1	0.02	0.830	120	1	0.02	0.710	120				0
1	0.03	0.840	180	1	0.03	0.720	180				0
1	0.04	0.840	240	1	0.04	0.720	240				0
1	0.05	0.850	300	1	0.05	0.730	300				0
1	0.06	0.860	360	1	0.06	0.740	360				0
1	0.07	0.870	420	1	0.07	0.740	420				0
1	0.08	0.880	480	1	0.08	0.750	480				0
1	0.09	0.890	540	1	0.09	0.760	540				0
1	0.10	0.900	600	1	0.10	0.770	600				0
1	0.15	0.910	900	1	0.15	0.790	900				0
1	0.20	0.920	1200	1	0.20	0.800	1200				0
1	0.25	0.940	1500	1	0.25	0.820	1500				0
1	0.30	0.950	1800	1	0.30	0.830	1800				0
1	0.40	0.980	2400	1	0.40	0.880	2400				0
1	0.50	1.020	3000	1	0.50	0.900	3000				0
1	0.60	1.060	3600	1	0.60	0.930	3600				0
1	0.90	1.130	5400	1	0.90	1.010	5400				0
1	2.00	1.220	7200	1	2.00	1.130	7200				0
			7200				7200				0
			7200				7200				0
			7200				7200				0
			7200				7200				0

25% water depth	1.008m	**25% water depth**	0.925m	**25% water depth**	0.000m
50% water depth	1.205m	**50% water depth**	1.150m	**50% water depth**	0.000m
75% water depth	1.403m	**75% water depth**	1.375m	**75% water depth**	0.000m
25% time (seconds)	2647 sec	**25% time (seconds)**	3337 sec	**25% time (seconds)**	
75% time (seconds)	12463 sec	**75% time (seconds)**	12883 sec	**75% time (seconds)**	
$V_{p\ 75\text{-}25}$	0.4878m³	**$V_{p\ 75\text{-}25}$**	0.5558m³	**$V_{p\ 75\text{-}25}$**	0.0000m³
$a_{p\ 50}$ (Actual area from test)	4.2185m²	**$a_{p\ 50}$ (Actual area from test)**	4.7285m²	**$a_{p\ 50}$ (Actual area from test)**	0.0000m²
$t_{p\ 75\text{-}25}$	9816.5	**$t_{p\ 75\text{-}25}$**	9545.3	**$t_{p\ 75\text{-}25}$**	
Soil Infiltration Rate	**1.18E-05m/s**	**Soil Infiltration Rate**	**1.23E-05m/s**	**Soil Infiltration Rate**	**N/A**







Note:

BRE BR365 - Trial Pit Soakaway Data Sheet

Site: Heyford Park

Client: Heyford Park Settlements LP

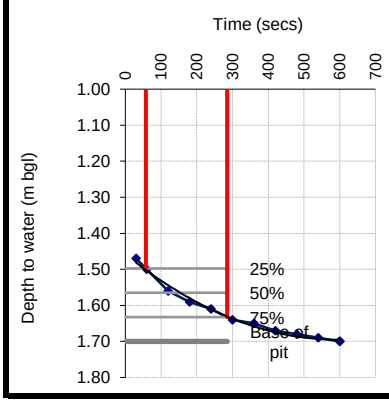
Test Location SA06 **Date of start of testing** 08/11/2016 **Date at end of testing** 08/11/2016

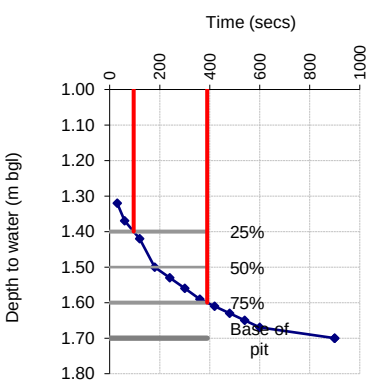
Test Run 1		Test Run 2		Test Run 3	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Length	1.900m	Length	1.900m	Length	1.900m
Width	0.700m	Width	0.700m	Width	0.700m
Depth	1.700m	Depth	1.700m	Depth	1.700m
Fill Depth	0.270m	Fill Depth	0.400m	Fill Depth	0.420m
Max Volume	0.359m³	Max Volume	0.532m³	Max Volume	0.559m³
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No
Method of Calculation	DATA	Method of Calculation	DATA	Method of Calculation	DATA

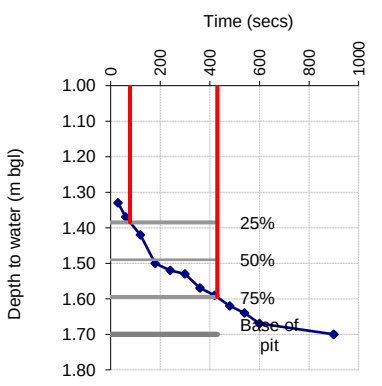
Time to soakaway

Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	*0.00*	*1.430*	*0*	*1*	*0.00*	*1.300*	*0*	*1*	*0.00*	*1.280*	*0*
1	0.01	1.470	30	1	0.01	1.320	30	1	0.01	1.330	30
1	0.01	1.500	60	1	0.01	1.370	60	1	0.01	1.370	60
1	0.02	1.560	120	1	0.02	1.420	120	1	0.02	1.420	120
1	0.03	1.590	180	1	0.03	1.500	180	1	0.03	1.500	180
1	0.04	1.610	240	1	0.04	1.530	240	1	0.04	1.520	240
1	0.05	1.640	300	1	0.05	1.560	300	1	0.05	1.530	300
1	0.06	1.650	360	1	0.06	1.590	360	1	0.06	1.570	360
1	0.07	1.670	420	1	0.07	1.610	420	1	0.07	1.590	420
1	0.08	1.680	480	1	0.08	1.630	480	1	0.08	1.620	480
1	0.09	1.690	540	1	0.09	1.650	540	1	0.09	1.640	540
1	0.10	1.700	600	1	0.10	1.670	600	1	0.10	1.670	600
1	0.10	1.700	600	1	0.15	1.700	900	1	0.15	1.700	900
			600	1	0.15	1.700	900	1	0.15	1.700	900
			600				900				900
			600				900				900
			600				900				900
			600				900				900
			600				900				900
			600				900				900
			600				900				900
			600				900				900
			600				900				900
			600				900				900
			600				900				900

25% water depth			1.498m	**25% water depth**			1.400m	**25% water depth**			1.385m
50% water depth			1.565m	**50% water depth**			1.500m	**50% water depth**			1.490m
75% water depth			1.633m	**75% water depth**			1.600m	**75% water depth**			1.595m
25% time (seconds)			58 sec	**25% time (seconds)**			96 sec	**25% time (seconds)**			78 sec
75% time (seconds)			285 sec	**75% time (seconds)**			390 sec	**75% time (seconds)**			430 sec
$V_{p\ 75\text{-}25}$			0.1796m³	**$V_{p\ 75\text{-}25}$**			0.2660m³	**$V_{p\ 75\text{-}25}$**			0.2793m³
$a_{p\ 50}$ (Actual area from test)			2.0320m²	**$a_{p\ 50}$ (Actual area from test)**			2.3700m²	**$a_{p\ 50}$ (Actual area from test)**			2.4220m²
$t_{p\ 75\text{-}25}$			227.5	**$t_{p\ 75\text{-}25}$**			294.0	**$t_{p\ 75\text{-}25}$**			352.0
Soil Infiltration Rate		**3.88E-04m/s**		**Soil Infiltration Rate**		**3.82E-04m/s**		**Soil Infiltration Rate**		**3.28E-04m/s**	







Note:

BRE BR365 - Trial Pit Soakaway Data Sheet

Site: Heyford Park

Client: Heyford Park Settlements LP

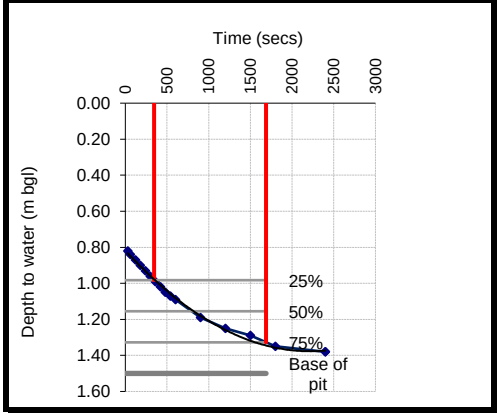
Test Location SA07 **Date of start of testing** 09/11/2016 **Date at end of testing** 09/11/2016

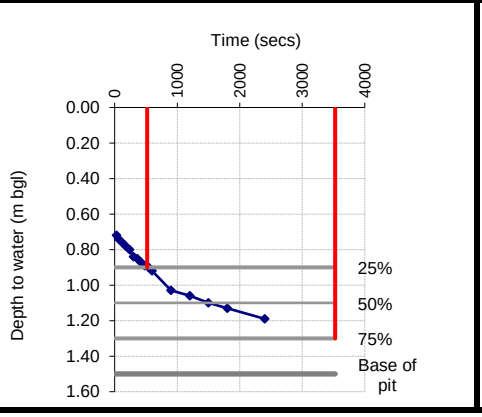
Test Run 1		Test Run 2		Test Run 3	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Length	1.500m	Length	1.500m	Length	1.500m
Width	0.650m	Width	0.650m	Width	0.650m
Depth	1.500m	Depth	1.500m	Depth	1.500m
Fill Depth	0.690m	Fill Depth	0.800m	Fill Depth	0.700m
Max Volume	0.673m³	Max Volume	0.780m³	Max Volume	0.683m³
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No
Method of Calculation	DATA	Method of Calculation	EXTRAPOLATE	Method of Calculation	EXTRAPOLATE

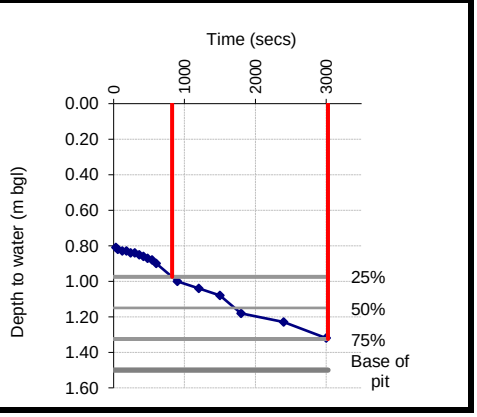
Time to soakaway

Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	*0.00*	*0.810*	*0*	*1*	*0.00*	*0.700*	*0*	*1*	*0.00*	*0.800*	*0*
1	0.01	0.820	30	1	0.01	0.720	30	1	0.01	0.810	30
1	0.01	0.840	60	1	0.01	0.740	60	1	0.01	0.820	60
1	0.02	0.870	120	1	0.02	0.760	120	1	0.02	0.830	120
1	0.03	0.900	180	1	0.03	0.780	180	1	0.03	0.830	180
1	0.04	0.930	240	1	0.04	0.800	240	1	0.04	0.840	240
1	0.05	0.960	300	1	0.05	0.840	300	1	0.05	0.840	300
1	0.06	0.990	360	1	0.06	0.850	360	1	0.06	0.850	360
1	0.07	1.020	420	1	0.07	0.870	420	1	0.07	0.860	420
1	0.08	1.050	480	1	0.08	0.890	480	1	0.08	0.870	480
1	0.09	1.070	540	1	0.09	0.900	540	1	0.09	0.880	540
1	0.10	1.090	600	1	0.10	0.920	600	1	0.10	0.900	600
1	0.15	1.190	900	1	0.15	1.030	900	1	0.15	1.000	900
1	0.20	1.250	1200	1	0.20	1.060	1200	1	0.20	1.040	1200
1	0.25	1.290	1500	1	0.25	1.100	1500	1	0.25	1.080	1500
1	0.30	1.350	1800	1	0.30	1.130	1800	1	0.30	1.180	1800
1	0.40	1.380	2400	1	0.40	1.190	2400	1	0.40	1.230	2400
1	0.40	1.380	2400				2400	1	0.50	1.320	3000
			2400				2400				3000
			2400				2400				3000
			2400				2400				3000
			2400				2400				3000
			2400				2400				3000
			2400				2400				3000
			2400				2400				3000
			2400				2400				3000

25% water depth	0.983m	**25% water depth**	0.900m	**25% water depth**	0.975m
50% water depth	1.155m	**50% water depth**	1.100m	**50% water depth**	1.150m
75% water depth	1.328m	**75% water depth**	1.300m	**75% water depth**	1.325m
25% time (seconds)	345 sec	**25% time (seconds)**	461 sec	**25% time (seconds)**	869 sec
75% time (seconds)	1688 sec	**75% time (seconds)**	3527 sec	**75% time (seconds)**	3025 sec
$V_{p\ 75\text{-}25}$	0.3364m³	$V_{p\ 75\text{-}25}$	0.3900m³	$V_{p\ 75\text{-}25}$	0.3413m³
$a_{p\ 50}$ **(Actual area from test)**	2.7165m²	$a_{p\ 50}$ **(Actual area from test)**	3.3615m²	$a_{p\ 50}$ **(Actual area from test)**	2.8670m²
$t_{p\ 75\text{-}25}$	1342.5	$t_{p\ 75\text{-}25}$	3065.4	$t_{p\ 75\text{-}25}$	2156.5
Soil Infiltration Rate	**9.22E-05m/s**	**Soil Infiltration Rate**	**3.78E-05m/s**	**Soil Infiltration Rate**	**5.52E-05m/s**







Note:

Hydrock

BRE BR365 - Trial Pit Soakaway Data Sheet

Site: Heyford Park

Client: Heyford Park Settlements LP

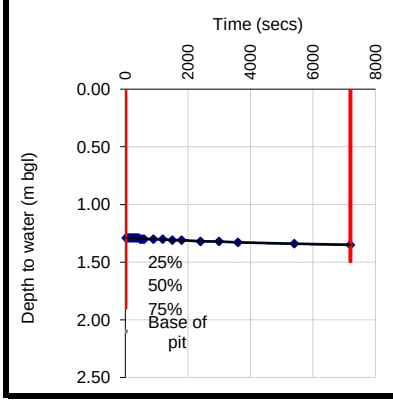
Test Location SA08 **Date of start of testing** 09/11/2016 **Date at end of testing** 09/11/2016

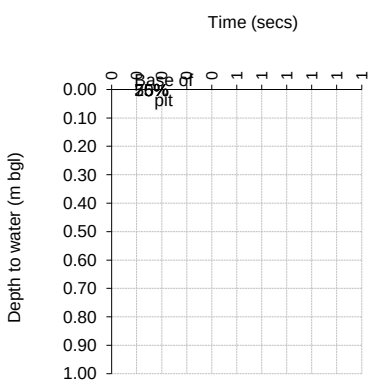
Test Run 1		Test Run 2		Test Run 3	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Length	1.550m	Length		Length	
Width	0.600m	Width		Width	
Depth	2.100m	Depth		Depth	
Fill Depth	0.810m	Fill Depth	0.000m	Fill Depth	0.000m
Max Volume	0.753m³	Max Volume	0.000m³	Max Volume	0.000m³
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No
Method of Calculation	DATA	Method of Calculation	DATA	Method of Calculation	DATA

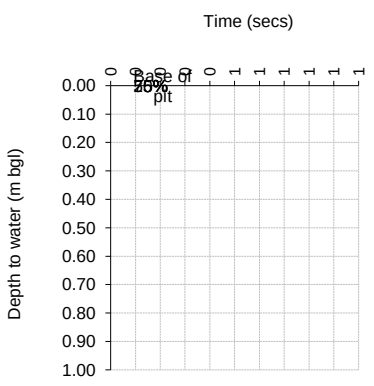
Time to soakaway

Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	*0.00*	*1.290*	*0*				*0*				*0*
1	0.01	1.290	30				0				0
1	0.01	1.290	60				0				0
1	0.02	1.290	120				0				0
1	0.03	1.290	180				0				0
1	0.04	1.290	240				0				0
1	0.05	1.290	300				0				0
1	0.06	1.290	360				0				0
1	0.07	1.290	420				0				0
1	0.08	1.300	480				0				0
1	0.09	1.300	540				0				0
1	0.10	1.300	600				0				0
1	0.15	1.300	900				0				0
1	0.20	1.300	1200				0				0
1	0.25	1.310	1500				0				0
1	0.30	1.310	1800				0				0
1	0.40	1.320	2400				0				0
1	0.50	1.320	3000				0				0
1	0.60	1.330	3600				0				0
1	0.90	1.340	5400				0				0
1	2.00	1.350	7200				0				0
			7200				0				0
			7200				0				0
			7200				0				0
			7200				0				0

25% water depth	1.493m	**25% water depth**	0.000m	**25% water depth**	0.000m
50% water depth	1.695m	**50% water depth**	0.000m	**50% water depth**	0.000m
75% water depth	1.898m	**75% water depth**	0.000m	**75% water depth**	0.000m
25% time (seconds)	No Result	**25% time (seconds)**		**25% time (seconds)**	
75% time (seconds)	No Result	**75% time (seconds)**		**75% time (seconds)**	
$V_{p\ 75\text{-}25}$	0.3767m³	$V_{p\ 75\text{-}25}$	0.0000m³	$V_{p\ 75\text{-}25}$	0.0000m³
$a_{p\ 50}$ **(Actual area from test)**	4.2840m²	$a_{p\ 50}$ **(Actual area from test)**	0.0000m²	$a_{p\ 50}$ **(Actual area from test)**	0.0000m²
$t_{p\ 75\text{-}25}$	No Result	$t_{p\ 75\text{-}25}$		$t_{p\ 75\text{-}25}$	
Soil Infiltration Rate	**No Result**	**Soil Infiltration Rate**	**N/A**	**Soil Infiltration Rate**	**N/A**







Note:

Appendix G

Site Monitoring Data

This appendix may not be included in the printed report to reduce the document size, but is included in the digital version.

Hydrock

Site: Heyford Park - Phase 9, 10, 16 & 16A
Job number: C 04583 C
Client: Dorchester Living

Gas analyser: GFM435 No. 11874
Equipment check OK: Y
Service in date: Y
Calibration check OK: Y
Name of person monitoring: Rod Langley

Notes on site conditions:

23.11.2016	Weather conditions = Overcast but dry.	Ground conditions = Soft and wet
01.12.2016	Weather conditions = Bright & frosty.	Ground conditions = Surface frozen Hard.
19.12.2016	Weather conditions = Damp & foggy	Ground conditions = Soft & wet

Notes: LEL = lower explosive limit = 5%v/v. * where the flow is less than the limit of detection of the instrument, the detection limit is reported. GSVs are rounded to 4 places.

Monitoring round		Borehole details						Pressure and flow					Gas concentrations										GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Response zone depth (m)	Depth to water or depth of hole if dry (m)	D denotes dry hole	Volume of headspace in BH (well pipie & filter pack) (m^3)	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	Gas flow (absolute value) (l/hr)	LNAPL (mbgl)	CH_4 (%v/v)		CH_4 (%LEL)		H2S (ppm)	CO (ppm)	CO_2 (%v/v)		O_2 (%v/v)		Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
														Initial	Steady	Initial	Steady			Initial	Steady	Initial	Steady			
23.11.2016		BH 01	S		7.37		0.05mØ x 7.89m	1002	R	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	1.2	1.2	19.5	19.5	0.0001	0.0012	BH in good condition. Nothing to report
23.11.2016		BH 02	S		5.70		0.05mØ x 7.84m	1003	R	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	0.9	0.9	18.6	18.6	0.0001	0.0009	BH in good condition. Nothing to report
23.11.2016		BH 03	S		2.81		0.05mØ x 7.94m	1003	R	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	4.9	4.9	13.2	13.2	0.0001	0.0049	BH in good condition. Nothing to report
23.11.2016		BH 04	S		3.15		0.05mØ x 5.03m	1003	R	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	1.5	1.5	19.3	19.3	0.0001	0.0015	BH in good condition. Nothing to report
23.11.2016		BH 05	S		1.83		0.05mØ x 7.66m	1004	R	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	2.4	2.4	16.7	16.7	0.0001	0.0024	BH in good condition. Nothing to report
23.11.2016		BH 06	S		7.74	D	0.05mØ x 7.74m	1003	R	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	1.5	1.5	18.9	18.9	0.0001	0.0015	BH in good condition. Nothing to report
23.11.2016		BH 07	S		6.72		0.05mØ x 7.68m	1003	R	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	1.4	1.4	19.9	19.9	0.0001	0.0014	BH in good condition. Nothing to report
23.11.2016		BH 08	S		2.02		0.05mØ x 7.93m	1004	R	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	1.3	1.3	19.1	19.1	0.0001	0.0013	BH in good condition. Nothing to report
23.11.2016		BH 09	S		1.08		0.05mØ x 7.82m	1004	R	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	2.3	2.3	16.1	16.1	0.0001	0.0023	BH in good condition. Nothing to report
23.11.2016		BH 10	S		2.50		0.05mØ x 7.92m	1000	R	0	0.1	0.1		1.5	1.5	36.2	36.2	1	1	0.6	0.6	19.7	19.7	0.0015	0.0006	BH in good condition. Nothing to report
23.11.2016		BH 11	S		2.56		0.05mØ x 7.95m	998	R	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	0.6	0.6	19.7	19.7	0.0001	0.0006	BH in good condition. Nothing to report
23.11.2016		BH 12	S		3.39		0.05mØ x 8.01m	999	R	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	0.7	0.7	20.0	20.0	0.0001	0.0007	BH in good condition. Nothing to report
23.11.2016		BH 13	S		2.98		0.05mØ x 8.01m	999	R	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	1.1	1.1	19.7	19.7	0.0001	0.0011	BH in good condition. Nothing to report
23.11.2016		BH 14	S		2.80		0.05mØ x 7.93m	998	R	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	1.1	1.1	19.1	19.1	0.0001	0.0011	BH in good condition. Nothing to report
01.12.2016		BH 01	S		7.37		0.05mØ x 7.89m	1013	S	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	1.8	1.8	18.3	18.3	0.0001	0.0018	BH in good condition. Nothing to report
01.12.2016		BH 02	S		6.41		0.05mØ x 7.84m	1013	S	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	2.5	2.5	10.5	10.5	0.0001	0.0025	BH in good condition. Nothing to report
01.12.2016		BH 03	S		2.72		0.05mØ x 7.94m	1014	S	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	4.4	4.4	12.3	12.3	0.0001	0.0044	BH in good condition. Nothing to report
01.12.2016		BH 04	S		3.25		0.05mØ x 5.03m	1012	S	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	1.0	1.0	19.4	19.4	0.0001	0.001	BH in good condition. Nothing to report
01.12.2016		BH 05	S		1.97		0.05mØ x 7.66m	1016	S	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	1.8	1.8	16.9	16.9	0.0001	0.0018	BH in good condition. Nothing to report
01.12.2016		BH 06	S		7.74	D	0.05mØ x 7.74m	1013	S	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	2.2	2.2	18.7	18.7	0.0001	0.0022	BH in good condition. Nothing to report
01.12.2016		BH 07	S		6.74		0.05mØ x 7.68m	1013	S	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	1.8	1.8	19.0	19.0	0.0001	0.0018	BH in good condition. Nothing to report
01.12.2016		BH 08	S		2.58		0.05mØ x 7.93m	1015	S	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	1.4	1.4	17.8	17.8	0.0001	0.0014	BH in good condition. Nothing to report
01.12.2016		BH 09	S		1.12		0.05mØ x 7.82m	1015	S	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	0.6	0.6	20.0	20.0	0.0001	0.0006	BH in good condition. Nothing to report
01.12.2016		BH 10	S		2.93		0.05mØ x 7.92m	1016	S	0	0.1	0.1		0.2	0.2	5.8	5.8	1	1	1.4	1.4	18.7	18.7	0.0002	0.0014	BH in good condition. Nothing to report
01.12.2016		BH 11	S		3.07		0.05mØ x 7.95m	1013	S	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	0.8	0.8	17.7	17.7	0.0001	0.0008	BH in good condition. Nothing to report
01.12.2016		BH 12	S		3.74		0.05mØ x 8.01m	1011	S	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	1.7	1.7	18.8	18.8	0.0001	0.0017	BH in good condition. Nothing to report
01.12.2016		BH 13	S		3.71		0.05mØ x 8.01m	1011	S	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	1.2	1.2	19.5	19.5	0.0001	0.0012	BH in good condition. Nothing to report
01.12.2016		BH 14	S		3.26		0.05mØ x 7.93m	1013	S	0	0.1	0.1		0.1	0.1	0.1	0.1	1	1	1.2	1.2	18.9	18.9	0.0001	0.0012	BH in good condition. Nothing to report
19.12.2016		BH 01	S		7.23		0.05mØ x 7.89m	1005	F	0	0.1	0.1	N/D	0.1	0.1	0.1	0.1	1	1	1.3	1.3	18.9	18.9	0.0001	0.0013	BH in good condition. Nothing to report
19.12.2016		BH 02	S		6.41		0.05mØ x 7.84m	1005	F	0	0.1	0.1	N/D	0.1	0.1	0.1	0.1	1	1	2.3	2.3	13.1	13.1	0.0001	0.0023	BH in good condition. Nothing to report
19.12.2016		BH 03	S		2.49		0.05mØ x 7.94m	1004	F	0	0.1	0.1	N/D	0.1	0.1	0.1	0.1	1	1	4.7	4.7	10.1	10.1	0.0001	0.0047	BH in good condition. Nothing to report
19.12.2016		BH 04	S		2.97		0.05mØ x 5.03m	1003	F	0	0.1	0.1	N/D	0.1	0.1	0.1	0.1	1	1	1.0	1.0	19.1	19.1	0.0001	0.001	BH in good condition. Nothing to report
19.12.2016		BH 05	S		1.69		0.05mØ x 7.66m	1011	F	0	0.1	0.1	N/D	0.1	0.1	0.1	0.1	1	1	2.2	2.2	14.2	14.2	0.0001	0.0022	BH in good condition. Nothing to report
19.12.2016		BH 06	S		7.74	D	0.05mØ x 7.74m	1006	F	0	0.1	0.1	N/D	0.1	0.1	0.1	0.1	1	1	1.5	1.5	19.4	19.4	0.0001	0.0015	BH in good condition. Nothing to report

Monitoring round		Borehole details						Pressure and flow					Gas concentrations											GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Response zone depth (m)	Depth to water or depth of hole if dry (m)	D denotes dry hole	Volume of headspace in BH (well pipie & filter pack) (m^3)	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	Gas flow* (absolute value) (l/hr)	LNAPL (mbgl)	CH_4 (%v/v)		CH_4 (%LEL)		H2S (ppm)	CO (ppm)	CO_2 (%v/v)		O_2 (%v/v)		Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
														Initial	Steady	Initial	Steady			Initial	Steady	Initial	Steady			
19.12.2016		BH 07	S		6.71		0.05mØ x 7.68m	1006	F	0	0.1	0.1	N/D	0.1	0.1	0.1	0.1	1	1	0.9	0.9	19.8	19.8	0.0001	0.0009	BH in good condition. Nothing to report
19.12.2016		BH 08	S		2.45		0.05mØ x 7.93m	1008	F	0	0.1	0.1	N/D	0.1	0.1	0.1	0.1	1	1	1.1	1.1	18.4	18.4	0.0001	0.0011	BH in good condition. Nothing to report
19.12.2016		BH 09	S		1.02		0.05mØ x 7.82m	1007	F	0	0.1	0.1	N/D	0.1	0.1	0.1	0.1	1	1	0.8	0.8	19.7	19.7	0.0001	0.0008	BH in good condition. Nothing to report
19.12.2016		BH 10	S		2.75		0.05mØ x 7.92m	1006	F	0	0.1	0.1	N/D	1.7	1.7	38.8	38.8	1	1	2.3	2.3	16.2	16.2	0.0017	0.0023	BH in good condition. Nothing to report
19.12.2016		BH 11	S		2.76		0.05mØ x 7.95m	1004	F	0	0.1	0.1	N/D	0.1	0.1	0.1	0.1	1	1	0.8	0.8	18.8	18.8	0.0001	0.0008	BH in good condition. Nothing to report
19.12.2016		BH 12	S		3.13		0.05mØ x 8.01m	1004	F	0	0.1	0.1	N/D	0.1	0.1	0.1	0.1	1	1	2.0	2.0	17.6	17.6	0.0001	0.002	BH in good condition. Nothing to report
19.12.2016		BH 13	S		3.43		0.05mØ x 8.01m	1004	F	0	0.1	0.1	N/D	0.1	0.1	0.1	0.1	1	1	0.8	0.8	19.6	19.6	0.0001	0.0008	BH in good condition. Nothing to report
19.12.2016		BH 14	S		3.03		0.05mØ x 7.93m	1003	F	0	0.1	0.1	N/D	0.1	0.1	0.1	0.1	1	1	1.2	1.2	18.8	18.8	0.0001	0.0012	BH in good condition. Nothing to report

Appendix H

Hydrock Methodology

Hydrock Report Appendix on Hydrock Methodology, version 27 updated 25-01-16 applies to this report.

This appendix may not be included in the printed report to reduce the document size, but is included in the digital version. Alternatively, it can be supplied on request by quoting the version number and date.

1.0 HYDROCK REPORT APPENDIX ON HYDROCK METHODOLOGY

This appendix provides additional background information on certain approaches and methods used by Hydrock Consultants Ltd in the preparation of this report.

Throughout the report the term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements) and the term 'geo-environmental' is used to describe aspects relating to ground-related environmental issues (such as potential contamination). However, it should be appreciated that this is an integrated investigation and these two main aspects are inter-related. The geo-environmental sections are written in broad agreement with BS 10175:2011+A1:2013.

The **first stage** of a two-staged investigation and assessment of a site is the Preliminary Investigation (BS 10175:2011+A1:2013), often referred to as the Phase 1 Study[1], comprising desk study and walk-over survey, which culminates in the Preliminary Risk Assessment. A preliminary conceptual site model (CSM) is developed. From this are identified any geotechnical and geo-environmental hazards and the qualitative degree of risk associated with them. From the geo-environmental perspective, the Hazard Identification process uses professional judgement to evaluate all the hazards in terms of **possible contaminant linkages** (of source-pathway-receptor). Possible contaminant linkages are potentially unacceptable risks in terms of the current contaminated land regime legal framework and require either remediation or further assessment. These are normally addressed via intrusive ground investigation and generic risk assessment.

The **second stage** is the Ground Investigation, Generic Risk Assessment and Geotechnical Interpretation. This represents the further assessment mentioned above. The Ground Investigation comprises field work and laboratory testing based on the findings of the Preliminary Risk Assessment, to reduce uncertainty in the geotechnical and geo-environmental hazard identification. This may include the Exploratory, Main and Supplementary Investigations described in BS 10175:2011+A1:2013.

For the geotechnical aspects of the report, the general requirements of Eurocode 7 (BS EN 1997-2:2007) are to produce a Ground Investigation Report (GIR) which shall form part of the Geotechnical Design Report (GDR). The geotechnical section of this report is intended to fulfil the general requirements of the GIR as outlined in BS EN 1997-2, Section 6.

The GIR contains the factual information including geological features and relevant data, and a geotechnical evaluation of the information stating the assumptions made in the interpretation of the test results.

[1] Please note that it does not refer to a site development phase.

2.0 SITE INVESTIGATION INFORMATION

2.1 Unexploded Ordnance

Clients have a legal duty under the CDM 2015 Regulations to provide designers and contractors with project-specific health and safety information needed to identify hazards and risks. This includes the possibility of unexploded ordnance (UXO) being encountered on the site. Further details are given in CIRIA report C681 (Stone *et al* 2009).

A non-specialist UXO screening exercise has been carried out for the site by considering (a) any evidence of UK defence activities on or near the site evident from the gathered desk study information and (b) the unexploded aerial delivered bomb (UXB) regional risk maps produced by Zetica. Other data sources are available, but as a first stage screening exercise the freely available Zetica maps have been used. The level of risk stated is that determined by Zetica, a company experience in the desk study, field investigation and clearance of UX0/UXB.

2.2 Hydrogeology

Under the Water Framework Directive the designations of principal and secondary aquifers is based on the Environment Agency interactive aquifer designation map. Where aquifers have been mapped, and they are capable of sustaining a yield of 10 m^3/day or supplying 50 people on a continuous basis, the Environment Agency has designated a number of Groundwater Bodies to help manage water quality under the River Basin Management Plans. Groundwater Bodies are defined based on their support for ecosystems as well as their capacity to supply drinking water. Note that some localised small aquifers capable of supporting the above supply may be too small to map and can be identified only by investigation.

Where an aquifer exists and it contains groundwater but is incapable of sustaining the above supply, the groundwater is not part of a Groundwater Body and may not be considered a strategic resource. In which case the groundwater is not a receptor, but can be a pathway to other receptors by virtue of its ability to transport contaminants.

2.3 Geotechnical Testing

Derived values of geotechnical parameters and/or coefficients are obtained from test results, by theory, correlation or empiricism in line with BS EN 1997-2:2007, Section 1.6.

Where derived geotechnical parameters are to be used in designs in accordance with EC7, there are two further stages of interpretation that will be carried out by the geotechnical designer. The first of these is the selection of **characteristic values** for geotechnical parameters using the derived values and complemented by well-established experience as per EN BS 1997-1:2004, Section 2.4.5.2. The characteristic value is a cautious estimate of the value affecting the occurrence of the limit state. Consequently, any particular material type may have more than one characteristic value for each parameter because there may be more than one limit state depending what is being designed.

The second stage is the selection of **design values** as per EN BS 1997-1:2004, Section 2.4.6.2. The design values is either derived from the characteristic value by applying the relevant partial

factor or is assessed directly. Similarly, there can be several design values for the same material type.

In the event that geotechnical designs are included in this report, selection of the characteristic and design values is included. Otherwise, it is the duty of the geotechnical designer to determine these within a separate design report.

3.0 RISK ASSESSMENT RATIONALE

The work presented in this report has been carried out in accordance with recognised best practice as detailed in guidance documents such as in the CLR 11 Model Procedures (Environment Agency 2004a), GP3 (Environment Agency August 2013), BS 5930:2015 and BS 10175:2011+A1:2013. Important aspects of the risk assessment process are transparency and justification. The particular rationale behind the risk assessments presented is given in this appendix.

A preliminary risk assessment is made of both geotechnical and geo-environmental hazards identified at the desk study stage and confirmed (or amended) at the ground investigation stage. In the case of geo-environmental hazards this is based on a simple matrix of probability of occurrence versus the consequence, as explained below, and is referred to as the **exposure model**. In the case of the geotechnical hazard identification, this is referred to as the **ground model**.

The geo-environmental risk assessment process proceeds to the next level, the generic risk assessment, in which actual contaminant concentrations are considered.

3.1 Preliminary Risk Assessment

In line with the CLR 11 Model Procedures (Environment Agency 2004a), the Preliminary Risk Assessment includes a geo-environmental Hazard Identification, which seeks to list all the suspected contaminant **sources**, the **receptors** that might be harmed by those sources and the **pathways** via which the sources might reach the receptors to cause the harm. The source-pathway-receptor concept is known as a contaminant linkage (formerly a pollutant linkage) and only when a linkage is complete is there any possibility of risk of harm arising.

The Hazard Identification process uses professional judgement to evaluate all the hazards in terms of **possible contaminant linkages**. Possible contaminant linkages are potentially unacceptable risks in terms of the current contaminated land regime legal framework and require either remediation or further assessment. These are normally addressed via intrusive ground investigation and the chemical analysis of soil and water samples.

Where no ground investigation has been carried out (i.e. in a desk study only report) there is greater uncertainty in the information available and so a geoenvironmental consequences and probability assessment is undertaken.

Some linkages may be identified which constitute a theoretical connection between a source and a receptor, but professional judgement shows them not to be possible for some reason. These are labelled ‘no linkage’ in the summary table and no further action is required. If a linkage is possible, a comparison is made of consequence against probability in accordance with the guidance given in CIRIA Report C552 (Rudland *et al* 2001), but is modified as mentioned below.

Classification of consequences and probability are given in CIRIA Report C552 Tables 6.3 and 6.4, respectively, but there are a number of inconsistencies in the original Table 6.3, in particular relating to ‘significant harm or significant possibility of significant harm’ (SH/SPOSH). Consequently, the table has been updated by Hydrock in line with current practice and the

revision presented in R&D Publication 66, Annex 4 (NHBC and Environment Agency. 2008, and is given in Table 3.1 below.

The basis of the classification is that 'severe' and 'medium' are likely to result in SH/SPOSH as defined by the EPA 1990, Part 2A, with 'severe' resulting in acute harm. 'Mild' lies below the level of SH/SPOSH but above the level of 'no harm' as implied by the relevant Generic assessment criterion (GAC, see below). Minor lies below the 'no harm' level.

Table 3.1: Classification of Consequences of Geo-environmental Risks

Classification of Consequences for Geo-environmental Risks		
Classification	**Definition**	**Examples**
Severe	Concentration of contaminants is likely to (or is known from previous data to) exceed that indicative of unacceptable intake or contact. Highly elevated concentrations **likely** to result in "significant harm" to human health as defined by the EPA 1990, Part 2A, if exposure occurs. I.e. >>SH/SPOSH, concentrations are high enough to cause acute (short-term) effects. Equivalent to EA **Category 1** pollution incident including persistent and/or extensive effects on water quality; leading to closure of a potable abstraction point; major impact on amenity value or major damage to agriculture or commerce. Major damage to aquatic or other ecosystems, which is likely to result in a substantial adverse change in its functioning or harm to a species of special interest that endangers the long-term maintenance of the population. Catastrophic damage to crops, buildings or property.	Human health: short-term (acute) effects likely to result in significant harm. E.g. high conc. of cyanide on the surface of an informal recreational area. Significant harm to humans is defined as death, disease*, serious injury, genetic mutation, birth defects or the impairment of reproductive functions. Planting: complete and rapid die-back of landscaped areas. Controlled waters: short-term pollution, e.g. major spillage into controlled water. Major fish kill in surface water from large spillage of contaminants from site. Highly elevated concentrations of List I and II substances present in groundwater close to small potable abstraction (high sensitivity). Buildings etc.: catastrophic damage, e.g. explosion causing collapse. (can also equate to immediate human health risk if buildings are occupied). Ecosystems: acute risk to a particular ecosystem or organism forming part of that ecosystem in a designated protected area, e.g. by contamination spillage. Damage to a protected area of international significance (e.g. Ramsar site). Site workers: risk assessment required to determine PPE and this may involve USEPA Level A, B or C protection.

Classification of Consequences for Geo-environmental Risks		
Classification	**Definition**	**Examples**
Medium	Concentration of contaminants is likely to (or is known from previous data to) exceed that indicative of unacceptable intake or contact. Elevated concentrations which could result in "significant harm" to human health as defined by the EPA 1990, Part 2A if exposure occurs. I.e. >SH/SPOSH. Equivalent to **EA Category 2** pollution incident including significant effect on water quality; notification required to abstractors; reduction in amenity value or significant damage to agriculture or commerce. Significant damage to aquatic or other ecosystems, which may result in a substantial adverse change in its functioning or harm to a species of special interest that may endanger the long-term maintenance of the population. Significant damage to crops, buildings or property.	Human health: long-term (chronic) effects likely to result in significant harm. E.g. high conc. of contaminants close to the surface of a development site. Significant harm to humans is defined as death, disease*, serious injury, genetic mutation, birth defects or the impairment of reproductive functions. Planting: stressed or dead plants in landscaped areas. Controlled waters: pollution of sensitive water resources, e.g. leaching into principal or secondary aquifers or rivers. Buildings etc.: damage renders unsafe to occupy e.g. foundation damage resulting in instability. Ingress of contaminants through plastic potable water pipes. Ecosystems: chronic death of species in a particular ecosystem in a designated protected area, e.g. by contamination spillage. Damage to a protected area of national significance (e.g. Site of Special Scientific Interest). Site workers: risk assessment required to determine PPE and this may involve USEPA Level B, C or D protection.
Mild	Concentration of contaminants is likely to (or is known from previous data to) exceed that indicative of no harm but not unacceptable intake or contact. Exposure to human health **unlikely** to lead to "significant harm". I.e. >SVG/GAC but <SH/SPOSH. Equivalent to **EA Category 3** pollution incident including minimal or short lived effect on water quality; marginal effect on amenity value, agriculture or commerce. Minor or short lived damage to aquatic or other ecosystems, which is unlikely to result in a substantial adverse change in its functioning or harm to a species of special interest that would endanger the long-term maintenance of the population. Minor damage to crops, buildings or property.	Human health: harm but probably not significant harm unless particularly sensitive individual within the receptor group. May be aesthetic/olfactory impacts. Exposure could lead to slight short-term effects (e.g. mild skin rash). Planting: damage to plants in landscaped areas, e.g. stunted growth, discoloration. Controlled waters: pollution of non-sensitive water bodies e.g. leaching into non-classified groundwater or minor ditches. Buildings etc.: damage to sensitive buildings etc. Surface spalling of concrete. Ecosystems: minor change in a particular ecosystem in a designated protected area, but not significant harm. Damage to a locally important area. Site workers: risk assessment required to determine PPE and this may involve USEPA Level C or D protection.

Classification of Consequences for Geo-environmental Risks		
Classification	**Definition**	**Examples**
Minor	Concentration of contaminants is likely to (or is known from previous data to) be less than that indicative of no harm. No measurable effects on humans. I.e. <SGV/GAC. Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems. Repairable effects of damage to buildings, structures and services.	No measurable effects, but simple PPE required (USEPA Level D protection, i.e. overalls, boots, goggles, hard hat). The loss of plants in a landscaping scheme. Discoloration of concrete.

CIRIA Report C552 Table 6.4 is reproduced as Table 3.2 below. This provides an estimate of the probability that the event described by the contaminant linkage will occur. For example, the likelihood that pollution of groundwater will occur by leaching of metals into the aquifer.

Table 3.2: Classification of Probability of Geo-environmental Risks

Classification of Probability of Geo-environmental Risks	
Classification	**Definition**
High Likelihood	There is a contaminant linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a contaminant linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event in not inevitable, but possible in the short term and likely over the long term.
Low Likelihood	There is a contaminant linkage and circumstances are possible under which an event could occur. However, it is no means certain that even over a longer period such event could take place, and is less likely in the shorter term.
Unlikely	There is a contaminant linkage but circumstances are such that it is improbable that an event would occur even in the very long term.

The perceived level of risk for each pathway is then derived from the probability versus consequences matrix, modified after CIRIA Report C552 Table 6.5, given in Table 3.3 below. Note that by definition, no contaminant linkage equates to no risk.

Table 3.3: Qualitative Risk Level from Consequence and Probability

		Consequence			
Probability	*product*	**Severe**	**Medium**	**Mild**	**Minor**
	High Likelihood	Very high risk	High risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Low risk	Very low risk
	Low Likelihood	Moderate risk	Low risk	Low risk	Very low risk
	Unlikely	Low risk	Very low risk	Very low risk	Very low risk
	No Linkage	No risk			

This approach assumes an equivalence between probability and consequences and ignores the difficulty that can arise where to probability of occurrence appears to be almost negligible but the consequences are very severe. In such conditions there is a degree of subjectivity in assessing the level of risk and it could be low, moderate or high. Such risks may require specialist consideration beyond the scope of this standard report.

Finally, a description of the classified risks and the likely action required can be determined from Table 3.4 below.

Table 3.4: Description of the Classified Risks and Likely Action Required

Description of Classified Risks and Likely Action Required	
Very High Risk	A significant contaminant linkage, including actual evidence of significant harm or significant possibility and significant harm, is clearly identifiable at the site (e.g. from visual or documentary evidence) under current conditions, with potential for legal and/or financial consequences for the site owner or other Responsible Person. Remediation advisable based on acute impacts being likely. Immediate action should be considered.
High Risk	A contaminant linkage is identifiable at the site under current and future use conditions. Although likely, there is no obvious actual evidence of significant harm or significant possibility and significant harm under current conditions. Extent of risk is therefore subject to confirmation by investigation and risk assessment and most likely to be deemed significant. Realisation of the risk is likely to present a substantial liability to the site owner or other Responsible Person. Remediation required for redevelopment and may also be required under Part 2A for existing receptors.
Moderate Risk	A contaminant linkage is identifiable at the site under current and future use conditions. However, it is not likely to be a significant linkage under current conditions. It is either relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely, that the harm would be relatively mild. Actual extent of risk subject to confirmation by additional investigation and risk assessment and most likely to lie between no possibility of harm (under current conditions) and significant possibility of significant harm (under conditions created by new use). Remediation may be required for redevelopment.
Low risk	Potential pathways and receptors exist but history of contaminative use or site conditions indicates that contamination is likely to be of limited extent and below the level of no possibility of harm. It is unlikely that the site owner or other Responsible Person would face substantial liabilities from suck a risk. Precautionary investigations and risk assessment advisable on change of use. Any subsequent remedial works are likely to be relatively limited.
Very Low Risk	No contaminant linkage likely to exist under current or future conditions, but this cannot be completely discounted. If harm is realised, it is likely at worst to be mild or minor. Site not capable of being determined under Part 2A where the local authority inspects the site. No further action recommended.
No Risk	No contaminant linkage exists.

3.2 Contaminant Analysis of Samples

The Model Procedures of CLR 11 provide guidance on key information sources with respect to potential contamination arising from past land uses of a site. In particular, the now withdrawn CLR 8 (Environment Agency 2002b), the DoE Industry Profile documents and ISO10381-5 provide good summaries of priority pollutants for UK sites. Additionally, the Environment Agency (2004b) has produced a list of priority pollutants for ecological risk assessment. These documents have been used, with the findings of the Phase 1 investigation, to scope the analyses of chemicals of potential concern. It should be noted that whilst CLR 8 was withdrawn in August 2008 it was not replaced and its findings are still considered useful.

Hydrock considers there to be a minimum requirement for soil chemical analysis, even for greenfield sites, in order to satisfy the 'suitable for use' criterion of the planning regime. This is represented by the 'Hydrock default list of determinands for solids'. The default list is derived

from the above guidance, particularly Tables 2.1 and 2.2 of CLR 8, listing potential inorganic and organic contaminants on typical former **industrial** land in the UK.

Since not all redevelopment sites have former industrial land uses, the default list designed to screen for unacceptable risks to property development and future occupiers comprises those substances with human, vegetation and construction materials receptors. The list includes common metals, metalloids and inorganic species, pH, asbestos fibres and screening tests for common organic compound groups which are deemed chemicals of potential concern. Sulfate is a contaminant whose principal receptor is concrete in the ground and is not considered toxic except in extreme conditions. Sulfate analysis is included in the list of geotechnical tests. Some common determinands such as elemental sulfur and sulfide are not included because there is insufficient information available to calculate meaningful assessment criteria.

The Hydrock default list of determinands for water or soil leaching samples is based on the prevailing UK drinking water standards and the environmental quality standards (EQS) values under the UK's obligations under the European Water Framework Directive (WFD). It includes the most common contaminants for use as a screening exercise but does not represent a complete list.

The two Hydrock default lists of determinands are used as a minimum requirement whatever the findings of the Phase 1 investigation. Added to this may be other suites of determinands based on the findings and review of the aforementioned documents.

Assessment is made of all chemicals of potential concern recorded on the site above the laboratory reporting limit. The reporting limits are less than the generic assessment criteria where this is possible. There are two main reasons why this may not be the case.

Firstly, low-level detection may be available using a more detailed analysis method, but this would be disproportionally expensive for routine screening purposes. More detailed testing may be recommended in some instances as an additional phase of investigation once the results of the screening exercise are known.

Secondly, there may be no suitable laboratory method available. In which case it is impossible to give a definitive opinion.

3.3 Generic Risk Assessment Criteria for Human Health

3.3.1 Policy

Generic assessment criteria (GAC) are criteria derived using largely generic assumptions about the characteristics and behaviour of sources, pathways and receptors. These assumptions will be conservative in a defined range of conditions. The Contaminated Land Exposure Assessment (CLEA) framework uses Soil Guideline Values (SGV) in assessing risks to human health from exposure to soils contaminated with selected contaminants. It has been assumed in this report that the exposure conditions are within the generic conditions used to derive the SGVs.

It should be noted that exceedance of GACs does not automatically mean that the soil is "contaminated". The derivation of GACs includes a number of precautionary assumptions such that non-exceedance will indicate that risk to human health is acceptable and that the land is

suitable for use, with regard to the contaminant in question. SGVs are not binding standards, but may be used to inform judgments about the need for action and the selection of remediation standards or target values for individual sites.

However, the legal test for land contamination under the statutory guidance of Part 2A of the Environment Protection Act 1990 (i.e. "significant harm or significant possibility of significant harm") is **unacceptable** intake or direct bodily contact. Defra (September 2005 and July 2008) has made it clear that exceedance of a GAC does not necessarily meet this legal test, i.e. exceedance of a GAC does not necessarily equate to unacceptable risk. Consequently, the GACs must be considered as screening values only. The situation was clarified by Defra (July 2008) in its guidance on the legal definition of contaminated land and in 2012 by the publication of revised contaminated land statutory guidance. One of the key policy aspects of this revision is to clarify that GACs are only one tool in the decision-making process and that background concentrations and a number of other relevant factors should also be taken into account. The aim is to prevent over-cautious determination of land as being contaminated.

The Environment Agency (2009a) has stated that the Health Criteria Values (HCV) used to derive GACs represent minimal or tolerable risk for long-term human exposure to chemicals in the soil. "Science alone cannot answer the question of whether or not a given *possibility of significant harm* is *significant*, since what is either *significant* or *unacceptable* is a matter of socio-political judgement, and the law entrusts decisions on this to the enforcing authorities (Defra July 2008)."

The former Health Protection Agency (2009) (now Public Health England) also described how HCVs do not represent unacceptable intake and that unacceptable intake is not a toxicological parameter. It further asserts that "unacceptable intake is a policy decision which can only be taken by the local authority." Pointers provided to local authorities in this regard are provided by the following: "The HCVs, and GACs based upon them represent trigger values above which there might be a possibility of significant harm. Whether there is a significant possibility will be linked to factors such as the margin of exceedance, the duration and frequency of exposure, and other site-specific factors."

The 2012 National Planning Policy Framework states that the standard of remediation to be achieved through the grant of planning permission for new development, including permission for land remediation activities, is the removal of unacceptable risk and making sure the site is suitable for its new use. As a minimum, after carrying out the development and commencement of its use, the land should not be capable of being determined as contaminated under Part 2A. The requirements for planning are, therefore, the same as for Part 2A.

The 2012 contaminated land statutory guidance says that GAC represent cautious estimates of levels of contaminants in soil at which there is considered to be no risk to health or, at most, a minimal risk to health. They may be used to indicate when land is very unlikely to pose a significant possibility of significant harm to human health. They should not:

- be used as direct indicators of whether a significant possibility of significant harm to human health may exist. Also, the local authority should not view the degree by which GACs are exceeded (in itself) as being particularly relevant to this consideration, given that the degree of risk posed by land would normally depend on many factors other than simply the amount of contaminants in soil.

- be seen as screening levels which describe the boundary between Categories 3 and 4 (see below);
- be viewed as indicators of levels of contamination above which detailed risk assessment would automatically be required under Part 2A or, under the planning system, in relation to ensuring that land affected by contamination does not meet the Part 2A definition of contaminated land after it has been developed; nor
- be used as generic remediation targets under the Part 2A regime.

Where it is judged that significant uncertainties remain following assessment against generic criteria, there are two options for the developer: either the implementation of an agreed remedial strategy, or to undertake additional testing and/or a detailed quantifiable risk assessment to determine whether remediation is indeed necessary.

Category 4 Screening Levels (C4SL) are criteria developed to screen out land affected by contamination under Part 2A of the EPA 1990 (see Section 3.12 below). They represent a low level of risk, whilst still being protective of human health. The Defra policy document (March 2014) states that "it is anticipated that, where they exist, C4SLs will be used as generic screening criteria that can be used within a GQRA, albeit describing a higher level of risk than the currently or previously available SGVs."

Defra also states that "the Part 2A regime and the planning regime are inter-linked such that the National Planning Policy Framework states that "after development, as a minimum, land should not be capable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990" and that "Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner." The Part 2A Statutory Guidance and accompanying Impact Assessment were developed on the basis that Category 4 Screening Levels could be used under the planning regime, as they would be in Part 2A investigations directly. The estimated benefits that were expected to accrue from the changes to the Part 2A Statutory Guidance and specifically from the use of the new Category 4 Screening Levels were based on this assumption. However, policy responsibility for the National Planning Policy Framework and associated Planning Practice Guidance falls to the Department for Communities and Local Government."

DCLG's Planning Policy Guidance (Reference ID: 33-007-20140612 Land affected by contamination, dated 12 June 2014) states that "if there is a reason to believe contamination could be an issue, developers should provide proportionate but sufficient site investigation information (a risk assessment) to determine the existence or otherwise of contamination, its nature and extent, the risks it may pose and to whom/what (the 'receptors') so that these risks can be assessed and satisfactorily reduced to an acceptable level. Defra has published a policy companion document considering the use of 'Category 4 Screening Levels' in providing a simple test for deciding when land is suitable for use and definitely not contaminated land."

In a letter to Local Authorities dated 3 September 2014, Defra Parliamentary Under Secretary Lord de Mauley confirmed that the Impact Assessment agreed during the revision of the Part 2A Statutory Guidance was developed on the basis that C4SLs could be used under the planning regime, and noted this intent is reflected in the above-mentioned revision of the Planning Policy Guidance. He highlighted that C4SLs provide a simple test for deciding when land is suitable for use. He concluded that the introduction of C4SLs has an important part to play in the

assessment of potentially contaminated land and encouraged Local Authority officials to read Defra's Policy Companion Document.

The NHBC (October 2014) has endorsed the use of C4SLs in the planning framework. "NHBC considers that:

- C4SLs may be used for schemes in England and Wales as generic screening levels for contaminants in soils, as long as they are justifiable and defensible in the conceptual site model for the site. Where representative contaminant concentrations exceed C4SLs, remediation or further detailed assessment will normally be required.
- Developers should, however, check that the use of C4SLs would be accepted by regulators under the relevant planning regime.
- Where a land use scenario covered by a C4SL applies in England and Wales, that use of C4SLs will satisfy NHBC Standards – Chapter 4.1 requirements. For lead, the C4SL value should be adopted as the screening level, though normal background concentrations can be considered when appropriate."

Public Health England has also communicated with Hydrock on a site-specific basis, confirming (in this instance) that the soil benzo(a)pyrene levels below C4SL not to be of particular concern as long as the Local Authority as the regulator is also satisfied.

On this basis, Hydrock considers the C4SLs to be more pragmatic assessment criteria for use in the planning regime. However, it is recommended that the opinion be sought of the Local Authority in question.

3.3.2 Methodology

The sample analyses are divided into representative data sets for the assessment, based on the conceptual model and taking into account such characteristics as variation in soil properties or historical, existing or proposed land uses. The 'averaging area' is the area of soil to which a receptor is exposed or which otherwise contributes to the creation of hazardous conditions.

The determination of averaging areas is clarified in the CLEA Frequently Asked Questions (30 January 2006) document available from the Agency CLEA web pages. In applying statistical tests, the risk assessor is asking the question "are mean (95 percentile upper confidence limit) soil concentrations within the averaging area equal to, or greater than, the SGV/GAC?" If a garden lies within a larger averaging area, but that averaging area is representative of conditions within the garden, then this is the average concentration a receptor using the garden will be exposed to. An averaging area can, therefore, be larger than a single garden and part of a larger zoned area if:

- contaminant concentrations are within the same statistical population, the sample data being representative of the averaging area and the mean concentration of the averaging area;
- hot spots are treated as separate zones or averaging areas; and
- the sampling strategy takes into account uncertainty (spatial heterogeneity) in contaminant concentration.

The approach taken in this report is to characterize the materials that are likely to form the ground cover in garden areas by zoning the site. Each averaging area has been chosen to describe the area(s) of the site, zoned according to material type and existing conditions, within which assessment against GACs has taken place. As pointed out in P5-066/TR (Environment Agency 2000) and by Nathanail (2004), this is a logical way of investigating a large plot of land that is intended for residential use, particularly if the development layout may not have been finalised.

The original Soil Guideline Values were all withdrawn in August 2008 and the Agency started a programme of publishing replacements using its 'new approach', which involves a number of changes to the way exposure is assessed. This was started using the CLEA 1.04 software. The current version is CLEA 1.07. This programme was put in abeyance when Defra started to re-draft the Part 2A statutory guidance and was never re-started.

This new approach included SGVs only at 6% soil organic matter (SOM) content and none for the residential without plant uptake land use. The contaminated land community has addressed this deficiency by publishing other lists of GACs (EIC/AGS/CL:AIRE 2009 and LQM/CIEH (Nathanail *et al* 2009)) and these have been given equal status to the SGVs in the 2012 revised statutory guidance. Hydrock adopted all these SGVs and GACs and where none are published has derived in-house values using generic assumptions about the characteristics and behaviour of sources, pathways and receptors, the CLEA 1.07 software and research of the recommended data sources.

Since the publication of these lists, CL:AIRE (December 2013) has highlighted that several of the original USEPA data sets used as default input parameters in CLEA have been revised based on a better understanding of the science. These are the outdoor soil-to-skin adherence factor, the exposure frequency for dermal contact, the indoor soil vapour inhalation rates and the produce consumption rates. The first three of these changes are based on updated research in a USEPA 2011 document cited by CL:AIRE. These supersede a draft 2006 USEPA document that was used in the default CLEA model and represent new science. The produce consumption rates used by CL:AIRE are from the most recent National Diet and Nutrition Survey (NSDS) (2008/2009 to 2010/11).

In November 2014 Hydrock used these revised parameters to update all the previously published GACs using modifications to CLEA 1.06. These changes are now built into CLEA 1.07 when the C4SL land uses are selected.

The mean and 90th percentile consumption rates from SP1010 Table 3.4 are used. In the derivation of the C4SLs, CL:AIRE used the 90th percentile consumption rates for the "top two" produce types for each substance and mean consumption rates are used for the remaining produce types (SP1010 Table 3.3). This approach has been followed by Hydrock for the C4SL substances. However, the procedure for determining which are the "top two" is time consuming and has not been replicated by Hydrock for all the other chemicals. The 90th percentile values have been taken for all produce types (and is slightly more conservative).

The GACs adopted by Hydrock for the standard CLEA land uses are given in Table 3.5 together with the source of the GAC. The table also lists GACs for open space (see below).

Please note also that CLEA 1.07 allows for other variations, most notably of soil type (9 options) and building type (5 residential options). The defaults are a sandy loam soil, a small terraced house in the residential setting and a pre-1970s office block in the commercial setting. These are generally conservative and the resultant SGV/GAC are protective of other combinations (unlike the default SOM mentioned above). It is not practical to include all permutations in Table 3.5 and in the cases where specific GACs have been derived, this is referred to in the text of the report and the relevant values included in the assessment tables.

Lead is a special case as the former SGV was not based on the CLEA model, but equations utilising blood lead concentrations. There is currently no guidance on how to risk assess lead in order to produce a GAC. The provisional C4SL for lead was derived using a number approaches, again based on blood lead concentrations, but for three different toxicological effects. The use of biokinetic modelling allows conversion to units suitable for use in the CLEA model. The final C4SLs for residential (with home-ground produce) stipulated in the Defra policy document is less than the withdrawn SGV although the SGV was supposed to represent a lower level of risk. It is clear from the work undertaken to develop the C4SLs why the SGVs were withdrawn. Consequently, and in view of the Defra policy document, Hydrock has adopted the C4SLs for lead *in lieu* of the withdrawn SGV or any specifically derived GAC (which would require a thorough review of lead toxicology). The lead C4SLs are, therefore, included under the term "GACs" in this report.

Further details including data sources can be obtained on request. It is Hydrock's policy to continually review GACs and updates are made in response to the latest Government guidance or as more data on the substances becomes available. The date of the last update of the table is indicated.

Table 3.5: Soil GACs Adopted by Hydrock (mg/kg) - on following pages

Updated 18/11/15		Human Health Generic Assessment Criteria (mg/kg)											
Contaminant	**Source of GAC**	**Human health - residential without plant uptake (1%SOM)**	**Human health - residential without plant uptake (2.5%SOM)**	**Human health - residential without plant uptake (6%SOM)**	**Human health - residential with plant uptake (1%SOM)**	**Human health - residential with plant uptake (2.5%SOM)**	**Human health - residential with plant uptake (6%SOM)**	**Human health - allotments (1%SOM)**	**Human health - allotments (2.5%SOM)**	**Human health - allotments (6%SOM)**	**Human health - commercial (1%SOM)**	**Human health - commercial (2.5%SOM)**	**Human health - commercial (6%SOM)**
							Default for SGV			Default for SGV			Default for SGV
Hydrock Default Suite													
Arsenic	SGV report + CLEA 1.07	40	40	40	37	37	37	49	49	49	640	640	640
Beryllium	LQM/CIEH + CLEA 1.07	73	73	73	73	73	73	56	56	56	390	390	390
Boron	LQM/CIEH + CLEA 1.07	11000	11000	11000	300	300	300	47	47	47	190000	190000	190000
Cadmium	SGV report + CLEA 1.07	87	87	87	14	14	14	2.4	2.4	2.4	220	220	220
Chromium (III)	LQM/CIEH + CLEA 1.07	890	890	890	890	890	890	15000	15000	15000	8400	8400	8400
Chromium (VI)	LQM/CIEH + CLEA 1.07	6.1	6.1	6.1	6.1	6.1	6.1	2.3	2.3	2.3	33	33	33
Copper	LQM/CIEH + CLEA 1.07	7300	7300	7300	2500	2500	2500	540	540	540	69000	69000	69000
Lead	C4SL (NB not minimal risk)	310	310	310	200	200	200	80	80	80	2300	2300	2300
Mercury, inorganic	SGV report + CLEA 1.07	240	240	240	170	170	170	81	81	81	3600	3600	3600
Nickel	Hydrock + CLEA 1.07	180	180	180	130	130	130	55	55	55	1700	1700	1700
Selenium	SGV report + CLEA 1.07	600	600	600	360	360	360	130	130	130	13000	13000	13000
Vanadium	LQM/CIEH + CLEA 1.07	1200	1200	1200	410	410	410	94	94	94	9000	9000	9000
Zinc	LQM/CIEH + CLEA 1.07	40000	40000	40000	3900	3900	3900	640	640	640	670000	670000	670000
Cyanide (free)	Hydrock + CLEA 1.07	800	800	800	790	790	790	2300	2300	2300	16000	16000	16000
Phenol	SGV report + CLEA 1.07	750	1300	2300	290	560	1100	69	140	290	760	1500	3200
Acenaphthene	LQM/CIEH + CLEA 1.07	3000	4700	6000	220	520	1100	35	95	210	84000	97000	100000
Acenaphthylene	LQM/CIEH + CLEA 1.07	2900	4600	6000	180	430	940	29	71	170	83000	97000	100000
Anthracene	LQM/CIEH + CLEA 1.07	31000	35000	37000	2400	5500	11000	390	940	2300	520000	540000	540000
Benz(a)anthracene	LQM/CIEH + CLEA 1.07	5.5	7.8	9.4	4.2	6.7	8.6	2.5	5.4	10	86	91	94
Benzo(a)pyrene	LQM/CIEH + CLEA 1.07	1.5	1.6	1.6	1.50	1.50	1.5	2.10	2.2	2.4	14	14	14
Benzo(b)fluoranthene	LQM/CIEH + CLEA 1.07	11.0	11.0	11.0	7.6	9.4	10.0	3.5	7.3	13	97	98	99
Benzo(ghi)perylene	LQM/CIEH + CLEA 1.07	71	72	72	64	69	71	69	110	150	630	640	640
Benzo(k)fluoranthene	LQM/CIEH + CLEA 1.07	15	16	16	12.0	14.0	15	6.7	13	23	140	140	140
Chrysene	LQM/CIEH + CLEA 1.07	13.0	16.0	15	7.7	11.0	13.0	2.6	5.8	12	140	140	140
Dibenz(ah)anthracene	LQM/CIEH + CLEA 1.07	1.30	1.40	1.40	1.10	1.30	1.40	0.75	1.4	2.3	12	12	13
Fluoranthene	LQM/CIEH + CLEA 1.07	1500	1600	1600	290	560	900	52	130	290	23000	23000	23000
Fluorene	LQM/CIEH + CLEA 1.07	2800	3800	4500	170	410	880	28	68	160	63000	68000	71000
Indeno(123cd)pyrene	LQM/CIEH + CLEA 1.07	6.3	6.6	6.7	4.3	5.5	6.2	1.8	3.8	7.1	58	59	60
Naphthalene	LQM/CIEH + CLEA 1.07	2.3	5.6	13.0	2.2	5.2	12.0	4.2	10	24	190	460	1100
Phenanthrene	LQM/CIEH + CLEA 1.07	1300	1500	1500	97	220	440	16	39	92	22000	22000	23000
Pyrene	LQM/CIEH + CLEA 1.07	3700	3800	3800	620	1200	2000	110	270	620	54000	54000	55000
TPH fractions													
TPH ali EC05-EC06	LQM/CIEH + CLEA 1.07	42	78	160	42	78	160	760	1800	4000	300	560	1200
TPH ali >EC06-EC08	LQM/CIEH + CLEA 1.07	100	230	530	100	230	530	2400	5700	13000	140	320	740
TPH ali >EC08-EC10	LQM/CIEH + CLEA 1.07	27	65	160	27	65	150	320	760	1700	78	190	450
TPH ali >EC10-EC12	LQM/CIEH + CLEA 1.07	48	120	280	48	120	280	2100	4200	7000	48	120	280
TPH ali >EC12-EC16	LQM/CIEH + CLEA 1.07	24	59	140	24	59	140	11000	13000	13000	24	59	140
TPH ali >EC16-EC35	LQM/CIEH + CLEA 1.07	65000	93000	110000	65000	92000	110000	260000	270000	270000	1000000	1000000	1000000
TPH ali >EC35-EC44	LQM/CIEH + CLEA 1.07	65000	93000	110000	65000	92000	110000	260000	270000	270000	1000000	1000000	1000000
TPH aro EC05-EC07	LQM/CIEH + CLEA 1.07	370	690	1400	73	150	310	14	28	60	1200	2300	4700
TPH aro >EC07-EC08	LQM/CIEH + CLEA 1.07	860	1800	3900	130	300	680	23	53	120	870	1900	4400
TPH aro >EC08-EC10	LQM/CIEH + CLEA 1.07	47	120	270	35	84	190	8.9	22	52	610	1500	3600
TPH aro >EC10-EC12	LQM/CIEH + CLEA 1.07	250	590	1200	75	180	390	13	32	76	360	900	2200
TPH aro >EC12-EC16	LQM/CIEH + CLEA 1.07	1800	2300	2500	150	330	670	23	58	140	36000	37000	38000
TPH aro >EC16-EC21	LQM/CIEH + CLEA 1.07	1900	1900	1900	260	550	930	46	110	260	28000	28000	28000
TPH aro >EC21-EC35	LQM/CIEH + CLEA 1.07	1900	1900	1900	1100	1500	1700	360	790	1500	28000	28000	28000
TPH aro >EC35-EC44	LQM/CIEH + CLEA 1.07	1900	1900	1900	1100	1500	1700	360	790	1500	28000	28000	28000
TPH >EC44-EC70	LQM/CIEH + CLEA 1.07	1900	1900	1900	1600	1800	1900	1100	2000	2900	28000	28000	28000
VOCs - BTEX & MTBE													
Benzene	SGV report + CLEA 1.07	0.38	0.70	1.4	0.099	0.2	0.42	0.02	0.041	0.09	27	48	90
Toluene	SGV report + CLEA 1.07	860	1800	3900	130	300	680	23	53	120	870	1900	4400
Ethylbenzene	SGV report + CLEA 1.07	240	540	1200	76	180	410	17	40	94	520	1200	2800
Xylene, o-	SGV report + CLEA 1.07	85	200	460	59	140	320	29	70	160	480	1100	2600
Xylene, m-	SGV report + CLEA 1.07	79	190	430	58	140	320	32	77	180	630	1500	3500
Xylene, p- (use this for combined m & p)	SGV report + CLEA 1.07	76	180	410	55	130	300	30	72	170	580	1400	3200
MTBE	EIC/AGS/CL:AIRE + CLEA 1.07	100	170	320	62	110	210	23	45	92	7500	12000	27000
VOCs - other benzenes													
Iso-propylbenzene	EIC/AGS/CL:AIRE + CLEA 1.07	17	40	95	15	38	89	33	81	190	390	950	2300
Propylbenzene	EIC/AGS/CL:AIRE + CLEA 1.07	57	140	320	46	110	260	35	86	200	400	980	2300
1,2,4-Trimethylbenzene	EIC/AGS/CL:AIRE + CLEA 1.07	0.58	1.4	3.3	0.47	1.2	2.7	0.39	0.96	2.3	39	94	210

Updated 18/11/15		Human Health Generic Assessment Criteria (mg/kg)											
Contaminant	**Source of GAC**	Human health - residential without plant uptake (1%SOM)	Human health - residential without plant uptake (2.5%SOM)	Human health - residential without plant uptake (6%SOM)	Human health - residential with plant uptake (1%SOM)	Human health - residential with plant uptake (2.5%SOM)	Human health - residential with plant uptake (6%SOM)	Human health - allotments (1%SOM)	Human health - allotments (2.5%SOM)	Human health - allotments (6%SOM)	Human health - commercial (1%SOM)	Human health - commercial (2.5%SOM)	Human health - commercial (6%SOM)
VOCs - chlorobenzenes													
Bromobenzene	EIC/AGS/CL:AIRE + CLEA 1.07	1.3	3	7	1.2	2.8	6.6	3.3	7.9	18	92	210	490
Chlorobenzene	LQM/CIEH + CLEA 1.07	0.47	1.1	2.4	0.46	1.0	2.4	6.1	14	33	56	130	290
1,2-Dichlorobenzene	LQM/CIEH + CLEA 1.07	24	57	130	23	55	130	97	240	560	570	1400	3200
1,3-Dichlorobenzene	LQM/CIEH + CLEA 1.07	0.44	1.1	2.5	0.41	0.98	2.3	0.26	0.63	1.5	30	73	170
1,4-Dichlorobenzene	LQM/CIEH + CLEA 1.07	60	140	330	38	92	220	16	38	91	230	540	1300
Hexachlorobenzene	LQM/CIEH + CLEA 1.07	0.20	0.50	2.5	0.20	0.50	1.9	0.17	0.42	0.91	0.2	53	55
Pentachlorobenzene	LQM/CIEH + CLEA 1.07	20	30	38	5.9	12	22	1.3	3.1	7.1	640	770	830
1,2,3-trichlorobenzene	LQM/CIEH + CLEA 1.07	1.5	3.7	8.8	1.5	3.6	8.6	4.8	12	28	100	250	590
1,2,4-trichlorobenzene	LQM/CIEH + CLEA 1.07	2.6	3.4	15	2.6	6.4	15	31	77	180	220	530	1300
1,3,5-trichlorobenzene	LQM/CIEH + CLEA 1.07	0.33	0.81	1.9	0.33	0.81	1.9	4.9	12	28	23	55	130
1,2,3,4-tetrachlorobenzene	LQM/CIEH + CLEA 1.07	24	56	120	15	36	78	4.5	11	26	120	300	730
1,2,3,5-tetrachlorobenzene	LQM/CIEH + CLEA 1.07	0.75	1.9	4.3	0.67	1.6	3.7	0.39	0.95	2.2	39	98	240
1,2,4,5-tetrachlorobenzene	LQM/CIEH + CLEA 1.07	0.73	1.7	3.5	0.34	0.78	1.6	0.065	0.16	0.38	20	49	96
VOCs - chloroalkanes & alkanes													
Bromodichloromethane	EIC/AGS/CL:AIRE + CLEA 1.07	0.027	0.049	0.10	0.022	0.040	0.082	0.017	0.033	0.070	2.0	3.5	7.1
Bromoform	EIC/AGS/CL:AIRE + CLEA 1.07	7.4	15	32	3.5	7.3	16	0.98	2.1	4.8	710	1400	3000
Chloroethane	EIC/AGS/CL:AIRE + CLEA 1.07	12	16	26	12	16	26	120	210	390	900	1200	2000
Chloroethene (aka vinyl chloride)	LQM/CIEH + CLEA 1.07	0.00077	0.0010	0.0015	0.00064	0.00087	0.0014	0.00057	0.0010	0.0019	0.059	0.077	0.12
Chloromethane	EIC/AGS/CL:AIRE + CLEA 1.07	0.012	0.014	0.019	0.012	0.014	0.019	0.068	0.13	0.24	1.0	1.1	1.5
1,1-Dichloroethane	EIC/AGS/CL:AIRE + CLEA 1.07	3.6	5.8	11	3.4	5.5	11	9.6	18	37	260	430	800
1,2-Dichloroethane	LQM/CIEH + CLEA 1.07	0.0092	0.013	0.023	0.0071	0.011	0.019	0.0048	0.0086	0.016	0.67	0.97	1.7
1,1-Dichloroethene	EIC/AGS/CL:AIRE + CLEA 1.07	0.33	0.58	1.2	0.32	0.57	1.2	2.9	5.8	12	24	43	87
Cis 1,2 Dichloroethene	EIC/AGS/CL:AIRE + CLEA 1.07	0.17	0.29	0.56	0.16	0.27	0.52	0.27	0.52	1.1	14	23	44
Trans 1,2 Dichloroethene	EIC/AGS/CL:AIRE + CLEA 1.07	0.28	0.50	1.0	0.27	0.48	0.98	0.97	1.9	4.2	21	37	76
Dichloromethane	EIC/AGS/CL:AIRE + CLEA 1.07	3.0	4.0	6.4	0.62	1.1	1.9	0.11	0.19	0.35	260	340	530
1,2-Dichloropropane	EIC/AGS/CL:AIRE + CLEA 1.07	0.034	0.06	0.12	0.034	0.060	0.12	0.64	1.3	2.7	3.1	5.5	11
Hexachloroethane	EIC/AGS/CL:AIRE + CLEA 1.07	0.31	0.77	1.8	0.27	0.66	1.6	0.28	0.069	1.6	8.2	20	48
Tetrachloroethene	LQM/CIEH + CLEA 1.07	1.5	3.3	7.5	1.3	2.9	6.7	1.7	3.9	9.0	120	280	620
1,1,1,2-Tetrachloroethane	LQM/CIEH + CLEA 1.07	1.5	3.6	8.2	1.2	2.8	6.5	0.82	1.9	4.6	110	250	560
1,1,2,2-Tetrachloroethane	LQM/CIEH + CLEA 1.07	4.1	8.3	18	1.7	3.5	7.8	0.42	0.92	2.1	280	560	1200
Tetrachloromethane	LQM/CIEH + CLEA 1.07	0.026	0.056	0.13	0.026	0.056	0.13	0.17	0.38	0.88	2.9	6.3	14
Trichloroethene	LQM/CIEH + CLEA 1.07	0.16	0.33	0.73	0.15	0.31	0.69	0.44	0.99	2.2	11	24	52
1,1,1-Trichloroethane	LQM/CIEH + CLEA 1.07	9.0	18	40	8.8	18	39	50	110	250	660	1400	3000
1,1,2 Trichloroethane	EIC/AGS/CL:AIRE + CLEA 1.07	1.3	2.5	5.5	0.76	1.6	3.5	0.29	0.64	1.4	89	180	380
Trichloromethane	LQM/CIEH + CLEA 1.07	1.3	2.3	4.6	0.98	1.8	3.6	0.37	0.73	1.5	100	180	350
Other phenols & chlorophenols													
2-Chlorophenol	LQM/CIEH + CLEA 1.07	110	170	220	3.9	9.1	20	0.60	1.4	3.4	3600	4000	4300
2,4-Dichlorophenol	LQM/CIEH + CLEA 1.07	94	150	200	0.91	2.1	4.7	0.14	0.31	0.72	3500	3900	4200
2,4-Dimethylphenol	EIC/AGS/CL:AIRE + CLEA 1.07	300	590	1000	20	46	100	3.2	7.4	17	1400	3100	7200
2-Methylphenol	EIC/AGS/CL:AIRE + CLEA 1.07	5300	7700	9900	85	190	430	13	29	67	160000	180000	180000
3-Methylphenol	EIC/AGS/CL:AIRE + CLEA 1.07	6800	9100	11000	85	190	420	13	29	65	170000	180000	190000
4-Methylphenol	EIC/AGS/CL:AIRE + CLEA 1.07	5400	7900	10000	84	190	420	13	29	65	160000	180000	180000
Pentachlorophenol	LQM/CIEH + CLEA 1.07	37	56	69	0.56	1.3	3.1	0.085	0.21	0.49	1200	1300	1400
2,3,4,6-Tetrachlorophenol	LQM/CIEH + CLEA 1.07	140	200	240	0.89	2.1	4.8	0.14	0.32	0.74	3900	4200	4300
2,4,6-Trichlorophenol	LQM/CIEH + CLEA 1.07	140	200	250	1.5	3.5	7.8	0.22	0.53	1.2	3900	4200	4400
Phthalates													
Bis (2-ethylhexyl) phthalate	EIC/AGS/CL:AIRE + CLEA 1.07	3900	4000	4100	290	660	1300	48	120	280	85000	86000	86000
Butyl benzyl phthalate	EIC/AGS/CL:AIRE + CLEA 1.07	61000	63000	64000	1500	3500	7800	230	560	1300	940000	940000	950000
Diethyl Phthalate	EIC/AGS/CL:AIRE + CLEA 1.07	14	29	65	120	270	610	19	43	98	14	29	65
Di-n-butyl phthalate	EIC/AGS/CL:AIRE + CLEA 1.07	650	650	650	13	32	72	2.1	5.1	12	15000	15000	15000
Di-n-octyl phthalate	EIC/AGS/CL:AIRE + CLEA 1.07	4900	4900	4900	2800	3800	4300	920	2000	3900	89000	89000	89000
Pesticides													
Aldrin	LQM/CIEH + CLEA 1.07	3.0	3.1	3.1	2.3	2.7	2.9	1.3	2.5	4.0	54	54	54
Atrazine	LQM/CIEH + CLEA 1.07	45	46	46	0.25	0.58	1.3	0.038	0.089	0.21	870	880	880
DDD	Hydrock + CLEA 1.07	1300	1300	1300	910	1100	1200	400	780	1200	22000	22000	22000
DDE	Hydrock + CLEA 1.07	1300	1300	1300	870	1100	1200	360	740	1300	22000	22000	22000
DDT	Hydrock + CLEA 1.07	1300	1300	1300	830	1000	1200	320	650	1100	21000	21000	21000
Dichlorvos	LQM/CIEH + CLEA 1.07	36	45	53	0.30	0.62	1.3	0.046	0.094	0.20	840	870	890
Dieldrin	LQM/CIEH + CLEA 1.07	5.0	5.4	5.6	0.74	1.5	2.7	0.13	0.32	0.74	90	91	92
Endosulfan - alpha	LQM/CIEH + CLEA 1.07	62	110	160	3.1	7.4	17	0.49	1.2	2.8	2300	3000	3400
Endosulfan - beta	LQM/CIEH + CLEA 1.07	76	130	180	2.9	7.0	16	0.46	1.1	2.6	2500	3100	3500
Hexachlorocyclohexanes - alpha (inc. Lindane)	LQM/CIEH + CLEA 1.07	660	840	940	20	48	110	3.1	7.7	18	14000	15000	15000
Hexachlorocyclohexanes - beta (inc. Lindane)	LQM/CIEH + CLEA 1.07	73	75	76	1.7	4.1	9.2	0.27	0.66	1.6	1100	1100	1100
Hexachlorocyclohexanes - gamma (inc. Lindane)	LQM/CIEH + CLEA 1.07	27	31	33	0.60	1.4	3.3	0.092	0.23	0.54	530	550	550

Updated 18/11/15		Human Health Generic Assessment Criteria (mg/kg)											
Contaminant	**Source of GAC**	Human health - residential without plant uptake (1%SOM)	Human health - residential without plant uptake (2.5%SOM)	Human health - residential without plant uptake (6%SOM)	Human health - residential with plant uptake (1%SOM)	Human health - residential with plant uptake (2.5%SOM)	Human health - residential with plant uptake (6%SOM)	Human health - allotments (1%SOM)	Human health - allotments (2.5%SOM)	Human health - allotments (6%SOM)	Human health - commercial (1%SOM)	Human health - commercial (2.5%SOM)	Human health - commercial (6%SOM)
Dioxins, furans & dioxin-like-PCBs													
Total dioxins, furans & DL-PCB (aerial dep.)	SGV report + CLEA 1.07	0.012	0.012	0.012	0.0099	0.010	0.010	0.0075	0.0083	0.0086	0.24	0.24	0.24
Non-dioxin-like PCBs													
PCB-28	Hydrock + CLEA 1.07	0.63	0.63	0.63	0.24	0.37	0.47	0.056	0.12	0.22	9.0	9.0	9.0
PCB-52	Hydrock + CLEA 1.07	0.63	0.63	0.63	0.24	0.38	0.49	0.058	0.13	0.26	9.0	9.0	9.0
PCB-101	Hydrock + CLEA 1.07	0.63	0.63	0.63	0.50	0.57	0.60	0.290	0.52	0.74	9.0	9.0	9.0
PCB-138	Hydrock + CLEA 1.07	0.63	0.63	0.63	0.54	0.59	0.61	0.39	0.65	0.88	9.0	9.0	9.0
PCB-153	Hydrock + CLEA 1.07	0.63	0.63	0.63	0.56	0.60	0.61	0.49	0.75	0.95	9.0	9.0	9.0
PCB-180	Hydrock + CLEA 1.07	0.63	0.63	0.63	0.58	0.61	0.62	0.58	0.85	1.0	9.0	9.0	9.0
Explosives													
HMX	LQM/CIEH + CLEA 1.07	6700	6700	6700	5.9	13	27	0.89	2.0	4.0	110000	110000	110000
RDX	LQM/CIEH + CLEA 1.07	400	400	400	3.5	7.6	17	0.54	1.2	2.6	6400	6400	6400
2,4,6-Trinitrotoluene	LQM/CIEH + CLEA 1.07	65	65	66	1.6	3.8	8.4	0.25	0.61	1.4	1000	1000	1100
Other inorganics													
Antimony	EIC/AGS/CL:AIRE + CLEA 1.07	380	380	380	190	190	190	54	54	54	6600	6600	6600
Barium	EIC/AGS/CL:AIRE + CLEA 1.07	1400	1400	1400	790	790	790	270	270	270	22000	22000	22000
Mercury, elemental	SGV report + CLEA 1.07	0.24	0.60	1.5	0.24	0.60	1.5	4.3	11	26	4.3	11	26
Molybdenum	EIC/AGS/CL:AIRE + CLEA 1.07	670	670	670	250	250	250	59	59	59	18000	18000	18000
Thiocyanate	Hydrock + CLEA 1.07	13	13	13	13	13	13	28	28	28	190	190	190
Other organics													
Biphenyl	EIC/AGS/CL:AIRE + CLEA 1.07	34	84	200	34	84	200	15	36	86	34	84	200
Carbon disulphide	LQM/CIEH + CLEA 1.07	0.14	0.29	0.62	0.14	0.29	0.62	5.0	11	24	11	22	47
2,4-Dinitrotoluene	EIC/AGS/CL:AIRE + CLEA 1.07	240	250	250	1.5	3.4	7.6	0.23	0.51	1.2	3700	3800	3800
2,6-Dinitrotoluene	EIC/AGS/CL:AIRE + CLEA 1.07	110	120	130	0.82	1.8	4.1	0.12	0.28	0.63	1900	1900	1900
Hexachloro-1,3-butadiene	LQM/CIEH + CLEA 1.07	0.32	0.78	1.8	0.29	0.70	1.6	0.25	0.62	1.4	31	66	120
Mercury, methyl	SGV report + CLEA 1.07	12	16	20	10	13	15	8.0	8.0	8.0	370	390	410
Styrene	EIC/AGS/CL:AIRE + CLEA 1.07	52	120	280	11	25	58	1.6	3.9	9.1	630	1400	3400
Tributyl tin oxide	EIC/AGS/CL:AIRE + CLEA 1.07	12	14	15	0.28	0.67	1.5	0.040	0.11	0.25	230	230	240
2-Chloronaphthalene	EIC/AGS/CL:AIRE + CLEA 1.07	5.4	13	32	5.3	13	31	42	100	230	370	900	2100
Insufficient data to derive GAC													
n butylbenzene	Insufficient data (EIC)	-	-	-	-	-	-	-	-	-	-	-	-
sec butylbenzene	Insufficient data (EIC)	-	-	-	-	-	-	-	-	-	-	-	-
Carbazole	Insufficient data (EIC)	-	-	-	-	-	-	-	-	-	-	-	-
Dimethyl phthalate	Insufficient data (EIC)	-	-	-	-	-	-	-	-	-	-	-	-
Isopropyltoluene	Insufficient data (EIC)	-	-	-	-	-	-	-	-	-	-	-	-
1-Methylnaphthalene	Insufficient data (EIC)	-	-	-	-	-	-	-	-	-	-	-	-
2-Methylnaphthalene	Insufficient data (EIC)	-	-	-	-	-	-	-	-	-	-	-	-
Sulfur (elemental)	Insufficient data (Hydrock)	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	Insufficient data (EIC)	-	-	-	-	-	-	-	-	-	-	-	-
tert butylbenzene	Insufficient data (EIC)	-	-	-	-	-	-	-	-	-	-	-	-
NOTES													
If >1,000,000 is calculated, 1,000,000 is adopted.													
Red text - liquid at ambient temperature, calculated GAC exceeds saturation value and highlighed in red in CLEA - saturation value adopted for GAC													
Orange text - solid at ambient temperature, calculated GAC exceeds saturation value and highlighted red in CLEA - manual calculation not possible as only one HCV - saturated vapour concentration exceed, so saturation value adopted for GAC.													
Blue text - solid at ambient temperature, calculated GAC exceeds saturation value and highlighted red in CLEA - manual calculation not possible as only one HCV - aqueous solubility exceed, so original red-highlighted value adopted for GAC.													
Green text - solid at ambient temperature, calculated GAC exceeds saturation value and highlighted red in CLEA - manual calculation undertaken but result is greater than original red-highlighted value, so original red-highlighted value adopted for GAC.													

Updated 18/11/15							
Contaminant	**Source of GAC**	**Human health - POSresi (1%SOM)**	**Human health - POSresi (2.5%SOM)**	**Human health - POSresi (6%SOM)**	**Human health - POSpark (1%SOM)**	**Human health - POSpark (2.5%SOM)**	**Human health - POSpark (6%SOM)**
Hydrock Default Suite							
Arsenic	SGV report + CLEA 1.07	79	79	79	170	170	170
Beryllium	LQM/CIEH + CLEA 1.07	92	92	92	670	670	670
Boron	LQM/CIEH + CLEA 1.07	21000	21000	21000	46000	46000	46000
Cadmium	SGV report + CLEA 1.07	120	120	120	560	560	560
Chromium (III)	LQM/CIEH + CLEA 1.07	1500	1500	1500	27000	27000	27000
Chromium (VI)	LQM/CIEH + CLEA 1.07	7.7	7.7	7.7	220	220	220
Copper	LQM/CIEH + CLEA 1.07	12000	12000	12000	44000	44000	44000
Lead	C4SL (NB not minimal risk)	630	630	630	1300	1300	1300
Mercury, inorganic	SGV report + CLEA 1.07	470	470	470	1100	1100	1100
Nickel	Hydrock + CLEA 1.07	290	290	290	800	800	800
Selenium	SGV report + CLEA 1.07	1400	1400	1400	2600	2600	2600
Vanadium	LQM/CIEH + CLEA 1.07	2000	2000	2000	5000	5000	5000
Zinc	LQM/CIEH + CLEA 1.07	81000	81000	81000	170000	170000	170000
Cyanide (free)	Hydrock + CLEA 1.07	1600	1600	1600	3400	3400	3400
Phenol	SGV report + CLEA 1.07	760	1500	3200	760	1500	3200
Acenaphthene	LQM/CIEH + CLEA 1.07	15000	15000	15000	29000	30000	30000
Acenaphthylene	LQM/CIEH + CLEA 1.07	15000	15000	15000	29000	30000	30000
Anthracene	LQM/CIEH + CLEA 1.07	74000	74000	74000	150000	150000	150000
Benz(a)anthracene	LQM/CIEH + CLEA 1.07	17	18	18	26	33	40
Benzo(a)pyrene	LQM/CIEH + CLEA 1.07	2.6	2.6	2.6	4.5	5.6	6.5
Benzo(b)fluoranthene	LQM/CIEH + CLEA 1.07	18	18	18	30	38	45
Benzo(ghi)perylene	LQM/CIEH + CLEA 1.07	120	120	120	270	310	350
Benzo(k)fluoranthene	LQM/CIEH + CLEA 1.07	26	26	26	46	57	67
Chrysene	LQM/CIEH + CLEA 1.07	25	26	26	34	45	55
Dibenz(ah)anthracene	LQM/CIEH + CLEA 1.07	2.3	2.3	2.3	4.5	5.5	6.3
Fluoranthene	LQM/CIEH + CLEA 1.07	3100	3100	3100	6300	6300	6400
Fluorene	LQM/CIEH + CLEA 1.07	9900	9900	9900	20000	20000	20000
Indeno(123cd)pyrene	LQM/CIEH + CLEA 1.07	11	11	11	17	22	26
Naphthalene	LQM/CIEH + CLEA 1.07	3900	4100	4200	1100	1600	2300
Phenanthrene	LQM/CIEH + CLEA 1.07	3100	3100	3100	6200	6300	6300
Pyrene	LQM/CIEH + CLEA 1.07	7400	7400	7400	15000	15000	15000
TPH fractions							
TPH ali EC05-EC06	LQM/CIEH + CLEA 1.07	300	590000	600000	300	560	1200
TPH ali >EC06-EC08	LQM/CIEH + CLEA 1.07	600000	610000	620000	140	320	740
TPH ali >EC08-EC10	LQM/CIEH + CLEA 1.07	13000	13000	13000	77	190	450
TPH ali >EC10-EC12	LQM/CIEH + CLEA 1.07	13000	13000	13000	48	120	280
TPH ali >EC12-EC16	LQM/CIEH + CLEA 1.07	13000	13000	13000	24	59	140
TPH ali >EC16-EC35	LQM/CIEH + CLEA 1.07	250000	250000	250000	460000	480000	490000
TPH ali >EC35-EC44	LQM/CIEH + CLEA 1.07	250000	250000	250000	460000	480000	490000
TPH aro EC05-EC07	LQM/CIEH + CLEA 1.07	56000	56000	56000	1200	2300	4700
TPH aro >EC07-EC08	LQM/CIEH + CLEA 1.07	56000	56000	56000	870	1900	4400
TPH aro >EC08-EC10	LQM/CIEH + CLEA 1.07	5000	5000	5000	610	1500	3600
TPH aro >EC10-EC12	LQM/CIEH + CLEA 1.07	5000	5000	5000	360	900	10000
TPH aro >EC12-EC16	LQM/CIEH + CLEA 1.07	5000	5000	5000	10000	10000	10000
TPH aro >EC16-EC21	LQM/CIEH + CLEA 1.07	3800	3800	3800	7600	7700	7800
TPH aro >EC21-EC35	LQM/CIEH + CLEA 1.07	3800	3800	3800	7800	7800	7900
TPH aro >EC35-EC44	LQM/CIEH + CLEA 1.07	3800	3800	3800	7800	7800	7900
TPH >EC44-EC70	LQM/CIEH + CLEA 1.07	3800	3800	3800	7800	7800	7900
VOCs - BTEX & MTBE							
Benzene	SGV report + CLEA 1.07	72	72	73	90	100	110
Toluene	SGV report + CLEA 1.07	56000	56000	56000	870	1900	4400
Ethylbenzene	SGV report + CLEA 1.07	25000	25000	25000	520	1200	2800
Xylene, o-	SGV report + CLEA 1.07	41000	42000	43000	480	1100	2600
Xylene, m-	SGV report + CLEA 1.07	41000	42000	43000	630	1500	3500
Xylene, p- (use this for combined m & p)	SGV report + CLEA 1.07	41000	42000	43000	580	1400	3200
MTBE	EIC/AGS/CL:AIRE + CLEA 1.07	75000	75000	75000	20000	33000	63000
VOCs - other benzenes							
Iso-propylbenzene	EIC/AGS/CL:AIRE + CLEA 1.07	25000	25000	25000	390	950	2300
Propylbenzene	EIC/AGS/CL:AIRE + CLEA 1.07	25000	25000	25000	400	980	2300
1,2,4-Trimethylbenzene	EIC/AGS/CL:AIRE + CLEA 1.07	250	250	250	310	360	410

Updated 18/11/15							
Contaminant	**Source of GAC**	**Human health - POSresi (1%SOM)**	**Human health - POSresi (2.5%SOM)**	**Human health - POSresi (6%SOM)**	**Human health - POSpark (1%SOM)**	**Human health - POSpark (2.5%SOM)**	**Human health - POSpark (6%SOM)**
VOCs - chlorobenzenes							
Bromobenzene	EIC/AGS/CL:AIRE + CLEA 1.07	5200	5400	5600	850	2000	3500
Chlorobenzene	LQM/CIEH + CLEA 1.07	12000	13000	14000	680	1500	2900
1,2-Dichlorobenzene	LQM/CIEH + CLEA 1.07	95000	100000	100000	570	1400	3300
1,3-Dichlorobenzene	LQM/CIEH + CLEA 1.07	300	300	300	390	440	470
1,4-Dichlorobenzene	LQM/CIEH + CLEA 1.07	17000	17000	17000	220	540	1300
Hexachlorobenzene	LQM/CIEH + CLEA 1.07	6.5	6.5	6.5	11	11	11
Pentachlorobenzene	LQM/CIEH + CLEA 1.07	110	110	110	190	190	190
1,2,3-trichlorobenzene	LQM/CIEH + CLEA 1.07	1700	1800	1800	130	330	1600
1,2,4-trichlorobenzene	LQM/CIEH + CLEA 1.07	10000	11000	12000	320	790	1900
1,3,5-trichlorobenzene	LQM/CIEH + CLEA 1.07	1600	1700	1800	37	91	220
1,2,3,4-tetrachlorobenzene	LQM/CIEH + CLEA 1.07	830	830	830	120	1600	1600
1,2,3,5-tetrachlorobenzene	LQM/CIEH + CLEA 1.07	79	79	79	39	120	130
1,2,4,5-tetrachlorobenzene	LQM/CIEH + CLEA 1.07	13	13	13	25	26	26
VOCs - chloroalkanes & alkanes							
Bromodichloromethane	EIC/AGS/CL:AIRE + CLEA 1.07	73	73	74	56	67	81
Bromoform	EIC/AGS/CL:AIRE + CLEA 1.07	3900	3900	4000	2700	4700	5200
Chloroethane	EIC/AGS/CL:AIRE + CLEA 1.07	2600	3500	5700	2600	3500	5700
Chloroethene (aka vinyl chloride)	LQM/CIEH + CLEA 1.07	3.5	3.5	3.5	4.8	5	5.4
Chloromethane	EIC/AGS/CL:AIRE + CLEA 1.07	540	550	560	140	150	170
1,1-Dichloroethane	EIC/AGS/CL:AIRE + CLEA 1.07	46000	47000	48000	1800	3000	5600
1,2-Dichloroethane	LQM/CIEH + CLEA 1.07	29	29	29	21	24	28
1,1-Dichloroethene	EIC/AGS/CL:AIRE + CLEA 1.07	2200	3900	11000	2200	3900	5900
Cis 1,2 Dichloroethene	EIC/AGS/CL:AIRE + CLEA 1.07	1300	1300	1400	690	840	1000
Trans 1,2 Dichloroethene	EIC/AGS/CL:AIRE + CLEA 1.07	3800	4000	4000	1700	2100	2700
Dichloromethane	EIC/AGS/CL:AIRE + CLEA 1.07	760	760	760	1500	1500	1500
1,2-Dichloropropane	EIC/AGS/CL:AIRE + CLEA 1.07	1700	1900	2200	160	210	290
Hexachloroethane	EIC/AGS/CL:AIRE + CLEA 1.07	120	130	130	8.2	20	48
Tetrachloroethene	LQM/CIEH + CLEA 1.07	3400	3400	3400	420	950	2200
1,1,1,2-Tetrachloroethane	LQM/CIEH + CLEA 1.07	1400	1400	1400	1500	1800	2100
1,1,2,2-Tetrachloroethane	LQM/CIEH + CLEA 1.07	1400	1400	1400	1800	2100	2300
Tetrachloromethane	LQM/CIEH + CLEA 1.07	340	350	350	170	240	320
Trichloroethene	LQM/CIEH + CLEA 1.07	1200	1300	1300	660	860	1100
1,1,1-Trichloroethane	LQM/CIEH + CLEA 1.07	140000	140000	140000	1400	2900	6400
1,1,2 Trichloroethane	EIC/AGS/CL:AIRE + CLEA 1.07	990	990	1000	1100	1300	1500
Trichloromethane	LQM/CIEH + CLEA 1.07	1700	1700	1700	2700	2900	3100
Other phenols & chlorophenols							
2-Chlorophenol	LQM/CIEH + CLEA 1.07	610	610	610	1100	1100	1100
2,4-Dichlorophenol	LQM/CIEH + CLEA 1.07	610	610	610	1000	1100	1100
2,4-Dimethylphenol	EIC/AGS/CL:AIRE + CLEA 1.07	5000	5000	5000	1400	9600	9900
2-Methylphenol	EIC/AGS/CL:AIRE + CLEA 1.07	25000	25000	25000	15000	48000	49000
3-Methylphenol	EIC/AGS/CL:AIRE + CLEA 1.07	25000	25000	25000	27000	48000	49000
4-Methylphenol	EIC/AGS/CL:AIRE + CLEA 1.07	25000	25000	25000	27000	48000	49000
Pentachlorophenol	LQM/CIEH + CLEA 1.07	180	180	180	220	250	270
2,3,4,6-Tetrachlorophenol	LQM/CIEH + CLEA 1.07	610	610	610	1000	1100	1100
2,4,6-Trichlorophenol	LQM/CIEH + CLEA 1.07	610	610	610	1100	1100	1100
Phthalates							
Bis (2-ethylhexyl) phthalate	EIC/AGS/CL:AIRE + CLEA 1.07	9700	9700	9700	17000	17000	17000
Butyl benzyl phthalate	EIC/AGS/CL:AIRE + CLEA 1.07	130000	130000	130000	250000	260000	260000
Diethyl Phthalate	EIC/AGS/CL:AIRE + CLEA 1.07	49000	50000	50000	14	93000	96000
Di-n-butyl phthalate	EIC/AGS/CL:AIRE + CLEA 1.07	1300	1300	1300	2600	2700	2600
Di-n-octyl phthalate	EIC/AGS/CL:AIRE + CLEA 1.07	11000	11000	11000	20000	20000	20000
Pesticides							
Aldrin	LQM/CIEH + CLEA 1.07	6.6	6.6	6.6	13	13	13
Atrazine	LQM/CIEH + CLEA 1.07	100	100	100	180	180	180
DDD	Hydrock + CLEA 1.07	2700	2700	2700	5700	5700	5700
DDE	Hydrock + CLEA 1.07	2700	2700	2700	5700	5700	5700
DDT	Hydrock + CLEA 1.07	2600	2600	2600	5500	5500	5500
Dichlorvos	LQM/CIEH + CLEA 1.07	120	120	120	140	160	180
Dieldrin	LQM/CIEH + CLEA 1.07	12	12	12	23	23	23
Endosulfan - alpha	LQM/CIEH + CLEA 1.07	490	490	490	940	970	990
Endosulfan - beta	LQM/CIEH + CLEA 1.07	490	490	490	950	980	990
Hexachlorocyclohexanes - alpha (inc. Lindane)	LQM/CIEH + CLEA 1.07	2000	2000	2000	4000	4100	4100
Hexachlorocyclohexanes - beta (inc. Lindane)	LQM/CIEH + CLEA 1.07	150	150	150	300	300	310
Hexachlorocyclohexanes - gamma (inc. Lindane)	LQM/CIEH + CLEA 1.07	71	71	71	140	140	140

Updated 18/11/15							
Contaminant	**Source of GAC**	**Human health - POSresi (1%SOM)**	**Human health - POSresi (2.5%SOM)**	**Human health - POSresi (6%SOM)**	**Human health - POSpark (1%SOM)**	**Human health - POSpark (2.5%SOM)**	**Human health - POSpark (6%SOM)**
Dioxins, furans & dioxin-like-PCBs							
Total dioxins, furans & DL-PCB (aerial dep.)	SGV report + CLEA 1.07	0.023	0.023	0.023	0.049	0.049	0.049
Non-dioxin-like PCBs							
PCB-28	Hydrock + CLEA 1.07	1.2	1.2	1.2	2.5	2.5	2.5
PCB-52	Hydrock + CLEA 1.07	1.2	1.2	1.2	2.5	2.5	2.5
PCB-101	Hydrock + CLEA 1.07	1.2	1.2	1.2	2.5	2.5	2.5
PCB-138	Hydrock + CLEA 1.07	1.2	1.2	1.2	2.5	2.5	2.5
PCB-153	Hydrock + CLEA 1.07	1.2	1.2	1.2	2.5	2.5	2.5
PCB-180	Hydrock + CLEA 1.07	1.2	1.2	1.2	2.5	2.5	2.5
Explosives							
HMX	LQM/CIEH + CLEA 1.07	13000	13000	13000	23000	23000	24000
RDX	LQM/CIEH + CLEA 1.07	790	790	800	19	1500	1600
2,4,6-Trinitrotoluene	LQM/CIEH + CLEA 1.07	130	130	130	260	270	270
Other inorganics							
Antimony	EIC/AGS/CL:AIRE + CLEA 1.07	740	740	740	1700	1700	1700
Barium	EIC/AGS/CL:AIRE + CLEA 1.07	2700	2700	2700	5800	5800	5800
Mercury, elemental	SGV report + CLEA 1.07	4.3	11	26	4.3	11	26
Molybdenum	EIC/AGS/CL:AIRE + CLEA 1.07	1400	1400	1400	2900	2900	2900
Thiocyanate	Hydrock + CLEA 1.07	25	25	25	53	53	53
Other organics							
Biphenyl	EIC/AGS/CL:AIRE + CLEA 1.07	9500	9500	9500	34	84	19000
Carbon disulphide	LQM/CIEH + CLEA 1.07	11000	11000	12000	1300	1900	2700
2,4-Dinitrotoluene	EIC/AGS/CL:AIRE + CLEA 1.07	500	500	500	140	960	990
2,6-Dinitrotoluene	EIC/AGS/CL:AIRE + CLEA 1.07	250	250	250	290	490	500
Hexachloro-1,3-butadiene	LQM/CIEH + CLEA 1.07	25	25	25	48	50	51
Mercury, methyl	SGV report + CLEA 1.07	53	53	53	73	93	97
Styrene	EIC/AGS/CL:AIRE + CLEA 1.07	3000	3000	3000	630	1400	3400
Tributyl tin oxide	EIC/AGS/CL:AIRE + CLEA 1.07	31	31	31	63	64	65
2-Chloronaphthalene	EIC/AGS/CL:AIRE + CLEA 1.07	7500	8400	9000	110	1800	2800
Insufficient data to derive GAC							
n butylbenzene	Insufficient data (EIC)	-	-	-	-	-	-
sec butylbenzene	Insufficient data (EIC)	-	-	-	-	-	-
Carbazole	Insufficient data (EIC)	-	-	-	-	-	-
Dimethyl phthalate	Insufficient data (EIC)	-	-	-	-	-	-
Isopropyltoluene	Insufficient data (EIC)	-	-	-	-	-	-
1-Methylnaphthalene	Insufficient data (EIC)	-	-	-	-	-	-
2-Methylnaphthalene	Insufficient data (EIC)	-	-	-	-	-	-
Sulfur (elemental)	Insufficient data (Hydrock)	-	-	-	-	-	-
1,3,5-Trimethylbenzene	Insufficient data (EIC)	-	-	-	-	-	-
tert butylbenzene	Insufficient data (EIC)	-	-	-	-	-	-
NOTES							
If >1,000,000 is calculated, 1,000,000 is adopted.							
Red text - liquid at ambient temperature, calculated GAC exceeds saturation value and							
Orange text - solid at ambient temperature, calculated GAC exceeds saturation value a							
Blue text - solid at ambient temperature, calculated GAC exceeds saturation value and							
Green text - solid at ambient temperature, calculated GAC exceeds saturation value a							

3.3.3 Exceedance of Saturation Limits

In some instances the CLEA 1.07 model produces GACs with a warning that the value exceeds the saturation value, which is either the solubility of the substance in water or the vapour saturation limit. Limited guidance is given in SR4 (Section 4.12) on how to assess the GAC in these circumstances. Precedence is also set in a number of SGV reports, to date those dealing with the BTEX compounds. These two sets of documentation are contradictory. The original issue of SR4 (CLEA 1.04) (Environment Agency 2009b) gives an example of how to carry out a manual calculation using data for ethylbenzene, whereas the BTEX SGV reports (e.g. Environment Agency March 2009) state that the GAC should be limited to the saturation level. The revised version of SR4 (CLEA 1.05/6) (Environment Agency 2009c) retains the example, but the name ethylbenzene has been removed.

There are three options: to adopt the value as calculated, to limit the GAC to the saturation value, or to undertake a manual calculation as per Section 4.12 of SR4. Again, the guidance is confusing. SR3 (Environment Agency 2009b) cautions against adopting the saturation limit, which is the most conservative, saying that it may be over-conservative. However, this is the approach taken in the BTEX SGV reports.

Clearly, the adoption of a GAC under conditions where the saturation level is exceeded is subjective and professional judgement is involved. With this in mind, the protocol adopted by Hydrock is as follows, and has been derived at by considering the possible values from the three methods given above.

1. For substances where the GAC is highlighted in amber in CLEA, this is adopted as the GAC. For substances where the GAC is highlighted in red, the following apply.

2. For VOCs including BTEX and the volatile TPH Fractions (less than EC10), the saturation value is adopted in line with the latest recommendations in the BTEX SGV reports.

3. For substances which are liquid at ambient temperature, the saturation value is adopted.

4. For substances which are solid at ambient temperature, the manual calculation is undertaken provided there are both oral and inhalation HCVs. The result is compared with the red-highlighted GAC and the lower of the two adopted as the GAC. If there is only one HCV and the calculation cannot be performed, the red-highlighted value is adopted as the GAC where the saturation limit exceed the aqueous solubility, but the saturation value is adopted where the saturation limit exceed the saturated vapour concentration.

5. In some instances the GACs shows a large difference between different SOM where the saturation value has been taken for, say, 1% SOM and the calculated values for 2.5% and 6% SOM. Whilst this may appear inconsistent on first inspection, the results have been adopted as they are and the difference must be attributed to the physico-chemical influence of organic matter in the soil as modelled by CLEA.

3.3.4 GACs for Public Open Space

The first UK methodology for assessing public open space (POS) was published for the C4SLs (CL:AIRE December 2013) based on two land use scenarios:

- Public open space near residential housing (POS_{resi}) includes the predominantly grassed areas adjacent to high density housing and the central green area around which houses are located, as on many housing estates from the 1930s to 1970s. It also includes the smaller areas commonly incorporated in new developments as informal grassed areas or more formal landscaped areas with a mixture of open space and covered soil with planting. It is considered to be a predominantly grassed area up to 0.05 ha and a considerable portion of this (up to 50%) may be bare soil. The site is regularly used by children for playing and may be used for informal sports activities such as a football "kickabout".
- Public park (POS_{park}) is an area of open space provided for recreational use and usually owned and maintained by the Local Authority and could be used for a wide range of activities such as family visits and picnics, children's play area, sporting activities such as football on an informal basis (although this POS is not considered as a dedicated sports pitch) and dog walking. It is considered to be a relatively large are (>0.5 ha) of predominantly grassed open space with no more than 25% of exposed soil.

Hydrock has calculated GACs for these two standard land uses using the land use scenarios given in Tables 3.6 and 3.7 of the CL:AIRE report, but with the following modifications:

- POS_{resi} (Table 3.6), items omitted from the published table in error: building = small terraced house; occupancy period for lifetime averaging (for Cd) AC10-12 = 19, AC13-16 = 15 & AC17-18 = 16; and indoor inhalation rates updated according to a USEPA 2011 publication that supersedes the draft 2006 version used in the CLEA model previously.
- POS_{park} (Table 3.7), typographic errors in the published table: soil ingestion rate for AC1-12 = 50 mg/day and for AC13-18 = 20 mg/day.

Note that these corrections are included in the revised CLEA 1.07 when the C4SL land uses are selected. The calculated GACs are presented in Table 3.5 and are based on a sandy loam soil of pH 7 su.

3.4 Note on Petroleum Hydrocarbons

Petroleum hydrocarbon contamination is complex. The type of crude oil, its distillation, processing and blending, and the subsequent weathering in the environment all result in the development of petroleum residues of extreme chemical complexity (Environment Agency, 2003). The laboratory analysis of petroleum hydrocarbons is highly method dependent. In addition to contaminants such as fuels and lubricating oils, the analyses also pick up a range of other chemicals such as PAHs and phenols, together with naturally occurring substances like humic and fulvic matter in organic soils. For example, TPH determination on dried oak leaves can give a result of 18,000 mg/kg of TPH.

TPH can only be used as a surrogate for estimating the petroleum load of a soil if a spill is well defined but is generally not a sound basis for risk management and regulatory control. International approaches for assessing risks from petroleum hydrocarbons focus on dividing the components into groups and assigning toxicologically potency and fate-transport to each group.

Approaches have been developed internationally, one such proposal is discussed by the Dutch National Institute of Public Health and the Environment (RIVM) (Franken *et al* 1999). The approach is broadly to sub-divide the TPH into fractions based on equivalent carbon length for aliphatic (straight chain) and aromatic (cyclic) compounds. The choice of the fractions is based

on work carried out by, amongst others, the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG). The Working Group is guided by a steering committee consisting of representatives from industry, government and academia, with the remit *to develop scientifically defensible information for establishing soil cleanup levels that are protective of human health at petroleum contaminated sites.*

Generic assessment criteria can be developed for each TPH fraction in the same way as they can be for named substances, providing certain assumptions are made regarding the applicability of the data to all the compounds in each fraction. A significant part of the TPHCWG activity has been in determining fraction boundaries to maximize confidence in the eventual criteria.

A modified TPHCWG approach has been adopted in a framework developed by the Environment Agency (2005) for use within the UK. The 13 original TPHCWG fractions have been adopted, with the addition of >EC35-EC44. An undifferentiated (i.e. without aliphatic – aromatic split) fraction of >EC44-EC70 has also been suggested but the Agency says it will be reviewing the need for this in due course, once research has been carried out into the toxicity of these heavy-end products like resins and asphaltenes.

The UK suggested approach to petroleum hydrocarbon risk assessment is summarised as follows:

- Measure indicator chemicals and compare with their GAC – these are chemicals which are considered as key risk drivers at petroleum hydrocarbon contaminated sites. The chemicals of potential concern depend on the type of hydrocarbon product, but a (non-exhaustive) list has been suggested by the Environment Agency (2005):

  Non-threshold: benzene, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3,cd)pyrene.

  Threshold: toluene, ethylbenzene, xylene, naphthalene, fluoranthene, phenanthrene, pyrene.

- Measure TPH fractions and compare with their GAC, based on threshold toxicity only.

  Aliphatic fractions: >EC5-EC6, >EC6-EC8, >EC8-EC10, >EC10-EC12, >EC12-EC16, >EC16-EC35, >EC35-EC44.

  Undifferentiated: >EC44-EC77 (subject to review and confirmation by Agency).

  Aromatic fractions: >EC5-EC7, >EC7-EC8, >EC8-EC10, >EC10-EC12, >EC12-EC16, >EC16-EC21, >EC21-EC35, >EC35-EC44.

- Carry out an additivity check on the TPH fractions if none of the individual fractions exceed their GAC. A Hazard Quotient is calculated for each fraction by dividing the measured concentration by the GAC and these are summed to give the Hazard Index. Where the Hazard Index exceeds unity, this can indicate a potentially significant risk to human health and consideration should proceed to the next stage (remediation or further assessment). Including all the fractions in a Hazard Index is conservative as it assumes all fractions add together in acting on the same target organ within the critical receptor. The Environment Agency (2005) has stated that fractions exhibiting different toxicological properties might be excluded from this process in due course, once research has been completed and further guidance published. The Louisiana Department of Environmental Quality (LDEQ) (2003) has published more detailed guidance, suggesting the following fractions be grouped: (a)

aliphatic >EC8-EC10, >EC10-EC12 & >EC12-EC16, (b) aromatic >EC8-EC10, >EC10-EC12 & >EC12-EC16 and (c) aromatic >EC16-EC21 & >EC21-EC35.

Hydrock has adopted the first two points from above approach and has developed generic assessment criteria for the TPH fractions up to EC35. These are used for assessment where an appropriate level of sampling and laboratory analysis has been carried out, but cannot be used where more generalised TPH analysis has been scheduled (such as DRO/GRO only).

There is, however, some uncertainty concerning the validity of the additivity check. The Environment Agency (2002a) stated in the now withdrawn CLR 9, Section 4.4, "that it is not valid to simply calculate the sum of the fractions 'soil concentration divided by SGV', and compare this with 1.", because total intake, not just intake from soil, needs to be included. It is assumed that the 2005 document takes this into account and that it is erring on the side of conservatism. Until this is formally resolved, Hydrock will report the additivity check for information, using the LDEQ groupings, but will caution against its use in setting remedial goals without further study or publication of definitive guidance. It is more realistic to carry out the additivity test on individual samples rather than on US_{95} values for the whole population, because it is unlikely that the TPH profile of the averaging area will be represented by the US_{95}s of every fraction. More likely, a sample high in one fraction will be low in another, particularly where a mixture of products is present in the ground.

The analysis required for the above methodology, using the aliphatic / aromatic split of TPH fractions, is referred to by Hydrock its "**TPH Level 2 suite**" of determinands. In instances where a full numerical risk assessment is not required, Hydrock carries out a screening analysis known as its "**TPH Level 1 suite**" of determinands. The TPH is divided into fractions, but without the aliphatic / aromatic split. This allows a semi-quantitative risk assessment on the basis of taking a worst case condition. The fraction split with the lowest GAC is deemed to apply to the whole fraction. For example, if the Level 1 analysis indicates the presence of >EC8-EC10, the result is compared to the GACs for the aliphatic >C8-C10 and the aromatic >EC8-EC10 fractions. The worst case would be to assume the whole fraction is aliphatic because this is the lower of the two GACs. This is a conservative approach, and if the test is passed, there is no need to proceed further. However, if the test is failed this does not necessarily indicate unacceptable risks and a more detailed risk assessment is required, with the full TPH Level 2 analysis suite.

3.5 Note on PAHs

A number of authors have used to concept of PAH double ratio plots to investigate the possible source of PAHs in environmental samples.

NAVFAC (Appendix A, April 2003) defines three major source type: petrogenic - generated from organic matter in ancient sediments by geologic conditions (i.e. including petroleum hydrocarbons and refined products); pyrogenic – generated by combustion of organic matter (wood, coal, petroleum, wastes etc.); and biogenic – generated by modern biological processes or by diagenetic processes (e.g. oxidation of organic matter). The following broad trends in the data were recognised:

- a ratio of fluoranthene to pyrene (Fl/Py) of <1 is indicative petrogenic sources, and of >1 is indicative of pyrogenic sources; and

- a ratio of anthracene to phenanthrene (An/Ph) of <0.2 is indicative of pyrogenic sources and of >0.2 is indicative of petrogenic sources.

Yunker *et al* (2002) carried out a literature study of published PAH ratios for a number of petroleum sources, combustion sources and environmental sources. They identified the following broad trends in the data:

- a ratio of fluoranthene to fluoranthene plus pyrene (Fl/(Fl+Py)) of <0.4 is indicative of petroleum hydrocarbon sources; of 0.4-0.5 is indicative of liquid fossil fuel combustion products; and of >0.5 is indicative of grass, wood and coal combustion products;

- a ratio of benzo(a)anthracene to benzo(a)anthracene plus chyrsene (BaA/(BaA+Ch)) of <0.2 is indicative of petroleum hydrocarbon sources; of 0.2-0.35 is indicative of either petroleum hydrocarbon sources or combustion and of >0.35 is indicative of combustion products;

- a ratio of anthracene to anthracene plus phenanthrene (An/(An+Ph)) of <0.1 is indicative petroleum hydrocarbon sources, but can be emissions from lignite, diesel or oil combustion, and of >0.1 is indicative of combustion sources, but can be diesel, coal or some crude oil hydrocarbons;

- a ratio of indeno(1,2,3)pyrene to indeno(1,2,3)pyrene plus benzo(ghi)perylene (IP/(IP+Bghi)) of <0.2 is indicative of petroleum hydrocarbon sources; of 0.2-0.5 is indicative of petroleum hydrocarbon combustion; and >0.5 is indicative of grass, wood or coal combustion products.

Note that in these authors' study of these and a number of other ratios they cautioned there are exceptions to these generalisations on account of the variability and complexity of, for example, different crude oil sources.

Costa *et al* (2004) and Costa and Sauer (2005) used plots of fluoranthene to pyrene (Fl/Py) against benzo(a)anthracene to chrysene (BaA/Ch), benzo(a)anthracene to benzo(a)pyrene (BaA/BaP) and chrysene to benzo(a)pyrene (Ch/BaP) to distinguish coal tar and creosote contaminants from combustion products they referred to as urban background. They report distinctive areas on the plots relating to the sites being studied. Litton (2006) has also used these ratios to similar effect on other sites.

ALcontrol Laboratories (2006) also uses plots of fluoranthene to pyrene (Fl/Py) against benzo(a)anthracene to chrysene (BaA/Ch). Jones (2008) confirms that the following broad trends are derived from unpublished work at the laboratory:

- a ratio of Fl/Py of <0.65 is indicative of used engine oil when the ratio of BaA/Ch is higher (approaching 1.40) or other petroleum products when the ratio of BaA/Ch is lower (above about 0.35);

- a ratio of F/Py of 0.65-1 is indicative of petroleum combustion products; and

- a ratio of Fl/Py of <1 is indicative of coal when the ratio of BaA/Ch is higher (approaching 1.40) or other combustion soots when the ratio of BaA/Ch is lower (above about 0.35).

Stogiannidis and Laane (2015) undertook a review of published literature and produced a summary (their Table 4 plus supporting text) of a number of PAH ratios and threshold values for the initial screening or identification of pyrogenic or petrogenic PAHs.

It is evident from the literature that if a cross plot is made of two ratios it is often possible to see a separation in samples from different sources and, together with other supporting information, gain a better understanding of the likely source of the PAHs. Different ratios may give differing degrees of separation and so trying several plots is often useful. The work of Stogiannidis and Laane can help distinguish between oil-spill related PAHs and those produced by combustion.

3.6 Note on Cyanide

Cyanide toxicity is complicated but it is generally accepted that cyanide species exist in 'free' and 'complex' forms. Free cyanide species are toxic and it is generally agreed that free cyanide provides a more scientifically correct basis for the establishment of generic criteria. This approach has been followed in this report.

Metal-cyanide complexes (complex cyanide) are generally not considered toxic but in certain environmental fate reactions it is possible that dissociation may release toxic free cyanide into the water environment. This might occur where complex cyanides are exposed to direct sunlight and photolysis takes place. Such circumstances are considered very rare.

There is no published approach to assessing acute toxicity, but this can be a concern on gas works sites where spent oxide or, more particularly foul lime (aka "blue billy") from the older processes, may contain significant concentrations of free cyanide. This is a particular problem because young children may be attracted to the bright blue deposits.

A methodology was presented by Macklin *et al* (December 2012): an acute oral LOAEL dose was identified by the then Health Protection Agency as 0.4 mg/kg bw/day; a dose of 5 g of soil was selected based on USEPA studies, eaten by a 10 kg weight child. This equates to a trigger level of 800 mg/kg free cyanide in soil. Above this concentration, there is a plausible hazard of ingestion of a harmful or fatal dose.

3.7 Note on Polychlorinated Biphenyls

PCBs fall into two groups, the dioxin-like (DL) and the non-dioxin-like (NDL), by virtue of their toxicity.

The Environment Agency methodology for DL-PCBs is included with dioxins and furans in the published dioxins SGV report (Science Report SC050021 / Dioxins SGV). The basis of this report is that because of the additive nature of these substances it is inappropriate to produce individual SGVs. The approach is to obtain speciated analyses of 12 DL-PCBs and, using an Agency spreadsheet, calculate a Hazard Index for a prescribed mixture of substances. SGVs can only be produced for atmospheric fall-out sites where the proportions of the individual substances are assumed to be uniform across the UK according to a table listed in the document.

For potentially industrially contaminated sites (such as where PCBs have escaped from transformers) only a Hazard Index can be produced. This can be converted into a GAC by

calculation, but such a GAC is only applicable to conditions where the mixture of substances is unchanged. In effect, Hazard Indices will be calculated for each soil sample and provided these are all less than unity, the site poses no significant risk.

There is not Agency guidance with respect to NDL-PCBs. Hydrock has produced individual GACs for a number of these. A precautionary approach has been taken, in that the NDL-PCBs are assumed to have additive effects and the same approach is taken as with Hydrock's assessment of contamination by TPH fractions. Namely, each substance is compared with its GAC, but there is an additional stage in which a Hazard Index is also calculated. This is similar to the Agency's approach for DL-PCBs, but the Hazard Index calculation is performed at a different stage in the process.

Currently, these two approaches are separate. That is to say, there is no assumption of additvity of effect between DL- and NDL-PCBs. The logic for this is the fact that these two groups where established in the first place on account of their different effects.

The toxicity of the DL-PCBs is far greater than that of the NDL-PCBs. For example, the residential SGV for the full list of dioxins, furans and DL-PCBs under atmospheric fall-out conditions is 0.0087 mg/kg (NB: using only the 12 DL-PCBs in this list gives a GAC of 0.051 mg/kg), whist the lowest GAC for the NDL-PCBs is 0.32 mg/kg under the same exposure conditions. Analyses for DL-PCBs must be undertaken with very low laboratory reporting limits (typically 1ng/kg).

In real life examples, it is almost certain that both forms of PCBs will be present at a site. This is because the marketed products (known as Aroclors) were mixtures of many PCB congeners and they all appear to contain members from both groups (according to literature researched by Hydrock). Perhaps this is why the Agency has only issued guidance on the DL-PCBs.

Logically, if a site contains any PCBs (for example as a 'total' analysis) it is likely to contain DL-PCBs. In which case, the safe concentrations will be very low and can only be confirmed by re-analysing using low detection methods and following the Agency methodology on a sample-by-sample basis. This is effect means that GACs for NDL-PCBs are redundant. The implications of the Agency methodology have yet to be fully understood by the contaminated land community. For example, it would appear that standard laboratory tests for NDL-PCBs are irrelevant. Furthermore, standard reporting limits are far too high, typically 1ug/kg. The only instance where NDL-PCBs become the risk driver at a PCB contaminated site would be if for some reason the DL-PCBs had preferentially degraded.

The Hydrock methodology for PCB risk assessment is to carry out analyses for the 12 DL-PCBs (commonly referred to as the WHO-12) and the 7 most persistent NDL-PCBs (commonly referred to as the ICES-7) at a detection limit of 1 ng/kg (Table 3.6). This is considered conservative because it covers both groups even though the risk driver is most likely to be the DL-PCB group.

The WHO-12 are assessed using the Environment Agency SGV report methodology, to produce a Hazard Index, and the ICES-7 are compared to Hydrock-derived GACs with additivity check. Note that PCB118 appears in both lists and so in assessed under the Environment Agency methodology as a DL-PCB.

Table 3.6: PCB Suites

WHO-12 (dioxin-like)	ICES-7 (most persistent)
PCB-77	PCB-28
PCB-81	PCB-52
PCB-126	PCB-101
PCB-169	PCB-118
PCB-105	PCB-138
PCB-114	PCB-153
PCB-118	PCB-180
PCB-123	(Non-dioxin-like apart
PCB-156	from PCB-118)
PCB-157	
PCB-167	
PCB-189	

3.8 Note on Pesticides and Herbicides

Unless there is evidence to suggest that a certain pesticide or herbicide has been used on the land, the standard approach adopted by Hydrock is to screen for the presence of common pesticides in the organochlorine, organophosphorous and organonitrogen groups (OCP, OPP & OPN), for example on agricultural land. Note that the only available GACs are for pesticides in these groups (and then only a sub-set of the whole).

3.9 Note on Radon

Advice on radon protection in England is provided by Public Health England (www.ukradon.org), formerly the Health Protection Agency (*The Indicative Atlas of Radon in England and Wales,* HPA-RPD-033 (Miles *et al* 2007) and RCE-15 (2010)), and by the BRE (BRE Report BR 211 (Scivyer 2015)). An area of the country can be categorised according to the percentage of existing homes where radon is present above the Action Level: 0-1% lower probability, 1-3% and 3-10% intermediate probability and >10% higher probability. It is important to understand that the database on which these numbers are based is incomplete and contains more data points in areas of the country that have traditionally been known for high radon concentrations. As more properties are monitored, the categorisation may change.

The areas where >1% of homes exceed the Action Level are known as Radon Affected Areas.

The Building Regulations cite BR 211 and require basic radon protection measures in new buildings in areas of England and Wales where 3-10% of properties exceed the Action Level and full radon protection measures where >10% exceed the Action Level.

Landlords and employers have a legal duty to keep radon levels as low as practicable and to install remedial measures if levels are too high. Commercial new build includes protection measures similar to those for new homes, but once occupied they are subject to the HSW Act and the Ionising Radiations Regulations 1999.

Private residents are advised to have a radon test where their property is in a Radon Affected Area, and to fit remedial measures if levels are too high.

The Law Society's advice to conveyancing solicitors is to ask the vendor standard questions concerning whether the property is in a radon affected area, whether it was constructed with radon protection measures and whether a radon test has been carried out by the vendor. Hydrock understands that PHE is discussing with the Law Society the adoption of stronger wording to these questions.

In 2009 the then Health Protection Agency recommended that Building Regulations and supporting documents should be amended to ensure that *all* new buildings, extensions, conversions and refurbished buildings in the UK include basic radon protective measures as a minimum. This recommendation was rejected by the Government. Consequently, the current situation is that a developer is *required* only to install protective measures in buildings where >3% of existing properties are above the Action Level, but is not required to install them in Radon Affected Areas where 1-3% of existing properties exceed the Action Level (even though there may be future implications for occupiers of these buildings).

Note that whilst membranes intended to protect against radon *may* also protect against methane and carbon dioxide, this will only be the case if they have also been specifically designed (and installed) to protect against those gases (BS 8485:2015, Annex G).

3.10 Note on the Use of Non-UK Assessment Criteria

In rare instances reference to assessment criteria or other trigger values published by other authoritative bodies (other than those concerned with the UK contaminated land regime) may provide background information on the likely degree of contamination of a substance. Trigger levels indicative of naturally occurring concentrations or risk-based guidance from other countries often help place site analysis results into context. It must be remembered that use of non-UK assessment criteria is not in compliance with the UK contaminated land assessment regime given in the Model Procedures. However, these criteria can be of use as an aid to professional judgement and can help in determining a cost-effective and sustainable remedial strategy for a site, in consultation with the regulatory authorities.

3.11 Site-specific Assessment Criteria for Volatile Substances

The CLEA methodology includes the inhalation of indoor vapours where there are occupied buildings in the standard land use scenarios. For volatile substances such as those listed in Table 3.7 the percentage contribution of the indoor vapour pathway to the average daily exposure (ADE) can be seen to be significant (up to 100%). Consequently, if this pathway can be severed by the installation of a suitably designed and installed organic vapour barrier in the buildings only the remaining CLEA exposure pathways need to be considered for the site. Assessment criteria can be calculated for the remaining exposure pathways.

Site Specific Assessment Criteria (SSAC) have been calculated using CLEA UK using the same input parameters etc. as for the Hydrock GACs but with the indoor vapour pathway turned off in the model. The resulting SSACs can be used to inform on risk from these contaminants in the same way as GACs are used, but apply only if suitable membranes are provided and verified.

Table 3.7: Derivation of Site Specific Assessment Criteria for Volatile Substances for CLEA Standard Land Uses *Excluding the Indoor Vapour Pathway* (mg/kg) – on following page(s).

Updated 18/11/15		Human Health Generic Assessment Criteria (no indoor vapour pathway) (mg/kg)								
Contaminant	**Source of GAC**	Human health - residential without plant uptake, no indoor vapour (1%SOM)	Human health - residential without plant uptake, no indoor vapour (2.5%SOM)	Human health - residential without plant uptake, no indoor vapour (6%SOM)	Human health - residential with plant uptake, no indoor vapour (1%SOM)	Human health - residential with plant uptake, no indoor vapour (2.5%SOM)	Human health - residential with plant uptake, no indoor vapour (6%SOM)	Human health - commercial, no indoor vapour (1%SOM)	Human health - commercial, no indoor vapour (2.5%SOM)	Human health - commercial, no indoor vapour (6%SOM)
TPH fractions										
TPH ali EC05-EC06	LQM/CIEH + CLEA 1.07	320000	320000	320000	5000	11000	25000	300	560	1200
TPH ali >EC06-EC08	LQM/CIEH + CLEA 1.07	320000	320000	320000	15000	34000	71000	140	320	740
TPH ali >EC08-EC10	LQM/CIEH + CLEA 1.07	6400	6400	6400	1600	2900	4300	78	94000	94000
TPH ali >EC10-EC12	LQM/CIEH + CLEA 1.07	6500	6500	6500	4600	5500	6000	94000	95000	95000
TPH ali >EC12-EC16	LQM/CIEH + CLEA 1.07	6500	6500	6500	6300	6300	6400	95000	95000	95000
TPH ali >EC16-EC35	LQM/CIEH + CLEA 1.07	-	-	-	-	-	-	-	-	-
TPH ali >EC35-EC44	LQM/CIEH + CLEA 1.07	-	-	-	-	-	-	-	-	-
TPH aro EC05-EC07	LQM/CIEH + CLEA 1.07	29000	29000	29000	90	180	390	1200	2300	4700
TPH aro >EC07-EC08	LQM/CIEH + CLEA 1.07	29000	29000	29000	150	350	800	870	420000	420000
TPH aro >EC08-EC10	LQM/CIEH + CLEA 1.07	2600	2600	2600	58	140	310	38000	38000	38000
TPH aro >EC10-EC12	LQM/CIEH + CLEA 1.07	1800	1800	1800	83	200	430	38000	38000	38000
TPH aro >EC12-EC16	LQM/CIEH + CLEA 1.07	-	-	-	-	-	-	-	-	-
TPH aro >EC16-EC21	LQM/CIEH + CLEA 1.07	-	-	-	-	-	-	-	-	-
TPH aro >EC21-EC35	LQM/CIEH + CLEA 1.07	-	-	-	-	-	-	-	-	-
TPH aro >EC35-EC44	LQM/CIEH + CLEA 1.07	-	-	-	-	-	-	-	-	-
TPH >EC44-EC70	LQM/CIEH + CLEA 1.07	-	-	-	-	-	-	-	-	-
VOCs - BTEX & MTBE										
Benzene	SGV report + CLEA 1.07	37	37	37	0.13	0.27	0.59	530	530	540
Toluene	SGV report + CLEA 1.07	29000	29000	29000	150	350	800	870	420000	420000
Ethylbenzene	SGV report + CLEA 1.07	13000	13000	13000	110	260	600	180000	180000	190000
Xylene, o-	SGV report + CLEA 1.07	22000	22000	22000	190	460	1100	260000	280000	300000
Xylene, m-	SGV report + CLEA 1.07	22000	22000	22000	210	500	1200	260000	280000	300000
Xylene, p- (use this for combined m & p)	SGV report + CLEA 1.07	22000	22000	22000	200	470	1100	260000	280000	300000
MTBE	EIC/AGS/CL:AIRE + CLEA 1.07	39000	39000	39000	150	300	600	550000	550000	560000
VOCs - other benzenes										
Iso-propylbenzene	EIC/AGS/CL:AIRE + CLEA 1.07	13000	13000	13000	220	520	1200	180000	180000	180000
Propylbenzene	EIC/AGS/CL:AIRE + CLEA 1.07	13000	13000	13000	230	550	1200	180000	190000	190000
1,2,4-Trimethylbenzene	EIC/AGS/CL:AIRE + CLEA 1.07	130	130	130	2.5	6.1	14	1800	1800	1900
VOCs - chlorobenzenes										
Bromobenzene	EIC/AGS/CL:AIRE + CLEA 1.07	2900	3000	3000	22	52	120	31000	34000	37000
Chlorobenzene	LQM/CIEH + CLEA 1.07	6200	6300	6400	40	94	210	63000	77000	91000
1,2-Dichlorobenzene	LQM/CIEH + CLEA 1.07	54000	55000	56000	640	1500	3500	580000	670000	730000
1,3-Dichlorobenzene	LQM/CIEH + CLEA 1.07	130	130	130	1.7	4.1	9.3	3000	3100	3100
1,4-Dichlorobenzene	LQM/CIEH + CLEA 1.07	8800	8900	8900	100	250	570	130000	130000	130000
Hexachlorobenzene	LQM/CIEH + CLEA 1.07	-	-	-	-	-	-	-	-	-
Pentachlorobenzene	LQM/CIEH + CLEA 1.07	-	-	-	-	-	-	-	-	-
1,2,3-trichlorobenzene	LQM/CIEH + CLEA 1.07	950	960	960	31	74	160	12000	13000	13000
1,2,4-trichlorobenzene	LQM/CIEH + CLEA 1.07	6300	6500	6600	200	480	1100	49000	60000	69000
1,3,5-trichlorobenzene	LQM/CIEH + CLEA 1.07	920	940	940	31	74	160	9300	11000	12000
1,2,3,4-tetrachlorobenzene	LQM/CIEH + CLEA 1.07	-	-	-	-	-	-	-	-	-
1,2,3,5-tetrachlorobenzene	LQM/CIEH + CLEA 1.07	34	34	34	2.4	5.4	11.0	690	700	700
1,2,4,5-tetrachlorobenzene	LQM/CIEH + CLEA 1.07	-	-	-	-	-	-	-	-	-
VOCs - chloroalkanes & alkanes										
Bromodichloromethane	EIC/AGS/CL:AIRE + CLEA 1.07	38	38	38	0.11	0.22	0.46	500	520	530
Bromoform	EIC/AGS/CL:AIRE + CLEA 1.07	-	-	-	-	-	-	-	-	-
Chloroethane	EIC/AGS/CL:AIRE + CLEA 1.07	350000	350000	350000	780	1400	2600	2600	3500	5700
Chloroethene (aka vinyl chloride)	LQM/CIEH + CLEA 1.07	1.8	1.8	1.8	0.0038	0.0069	0.013	26	26	26
Chloromethane	EIC/AGS/CL:AIRE + CLEA 1.07	310	310	310	0.45	0.88	1.6	1900	2200	3000
1,1-Dichloroethane	EIC/AGS/CL:AIRE + CLEA 1.07	25000	25000	25000	64	120	240	1800	3000	5600
1,2-Dichloroethane	LQM/CIEH + CLEA 1.07	15	15	15	0.032	0.057	0.11	200	200	210
1,1-Dichloroethene	EIC/AGS/CL:AIRE + CLEA 1.07	5700	5700	5700	19	39	82	2200	3900	8000
Cis 1,2 Dichloroethene	EIC/AGS/CL:AIRE + CLEA 1.07	680	690	690	1.8	3.5	7.1	3900	6600	9900
Trans 1,2 Dichloroethene	EIC/AGS/CL:AIRE + CLEA 1.07	2100	2100	2100	6.5	13	27	3400	6200	13000
Dichloromethane	EIC/AGS/CL:AIRE + CLEA 1.07	390	390	390	0.70	1.3	2.3	7300	9000	9000
1,2-Dichloropropane	EIC/AGS/CL:AIRE + CLEA 1.07	1200	1300	1400	4.3	8.4	18	1200	2100	11000
Hexachloroethane	EIC/AGS/CL:AIRE + CLEA 1.07	64	64	64	1.8	4.3	9.3	900	920	930
Tetrachloroethene	LQM/CIEH + CLEA 1.07	1700	1700	1700	11	26	58	420	950	26000
1,1,1,2-Tetrachloroethane	LQM/CIEH + CLEA 1.07	730	730	730	5.4	13	29	10000	10000	11000
1,1,2,2-Tetrachloroethane	LQM/CIEH + CLEA 1.07	730	730	730	2.8	6.1	14	11000	11000	11000
Tetrachloromethane	LQM/CIEH + CLEA 1.07	180	180	180	1.1	2.5	5.7	1500	2500	2500
Trichloroethene	LQM/CIEH + CLEA 1.07	660	660	660	3.0	6.5	15	1500	3200	9000
1,1,1-Trichloroethane	LQM/CIEH + CLEA 1.07	75000	76000	76000	330	730	1600	1400	2900	6400
1,1,2 Trichloroethane	EIC/AGS/CL:AIRE + CLEA 1.07	510	510	510	2.0	4.2	9.4	7100	7300	7400
Trichloromethane	LQM/CIEH + CLEA 1.07	880	880	880	2.5	4.8	10	5200	9100	20000
Other inorganics										
Antimony	EIC/AGS/CL:AIRE + CLEA 1.07	-	-	-	-	-	-	-	-	-
Barium	EIC/AGS/CL:AIRE + CLEA 1.07	-	-	-	-	-	-	-	-	-

Updated 18/11/15		Human Health Generic Assessment Criteria (no indoor vapour pathway) (mg/kg)								
Contaminant	**Source of GAC**	Human health - residential without plant uptake, no indoor vapour (1%SOM)	Human health - residential without plant uptake, no indoor vapour (2.5%SOM)	Human health - residential without plant uptake, no indoor vapour (6%SOM)	Human health - residential with plant uptake, no indoor vapour (1%SOM)	Human health - residential with plant uptake, no indoor vapour (2.5%SOM)	Human health - residential with plant uptake, no indoor vapour (6%SOM)	Human health - commercial, no indoor vapour (1%SOM)	Human health - commercial, no indoor vapour (2.5%SOM)	Human health - commercial, no indoor vapour (6%SOM)
Mercury, elemental	SGV report + CLEA 1.07	4.3	11	26	4.3	11	26	4.3	11	26
Molybdenum	EIC/AGS/CL:AIRE + CLEA 1.07	-	-	-	-	-	-	-	-	-
Thiocyanate	Hydrock + CLEA 1.07									
Other organics										
Biphenyl	EIC/AGS/CL:AIRE + CLEA 1.07	-	-	-	-	-	-	-	-	-
Carbon disulphide	LQM/CIEH + CLEA 1.07	6200	6300	6300	33	70	150	2100	4200	75000
2,4-Dinitrotoluene	EIC/AGS/CL:AIRE + CLEA 1.07	-	-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	EIC/AGS/CL:AIRE + CLEA 1.07	-	-	-	-	-	-	-	-	-
Hexachloro-1,3-butadiene	LQM/CIEH + CLEA 1.07	13	13	13	1.5	3.1	5.6	290	290	290
Mercury, methyl	SGV report + CLEA 1.07	-	-	-	-	-	-	-	-	-
Styrene	EIC/AGS/CL:AIRE + CLEA 1.07	1500	1500	1500	11	25	58	23000	23000	23000
Tributyl tin oxide	EIC/AGS/CL:AIRE + CLEA 1.07	-	-	-	-	-	-	-	-	-
2-Chloronaphthalene	EIC/AGS/CL:AIRE + CLEA 1.07	-	-	-	-	-	-	-	-	-
NOTES										
If >1,000,000 is calculated, 1,000,000 is adopted.										
Red text - liquid at ambient temperature, calculated GAC exceeds saturation value and highlighed in red in CLEA - saturation value adopted for GAC										
Orange text - solid at ambient temperature, calculated GAC exceeds saturation value and highlighted red in CLEA - manual calculation not possible as only one HCV - saturated vapour concentration exceed, so saturation valu										
Blue text - solid at ambient temperature, calculated GAC exceeds saturation value and highlighted red in CLEA - manual calculation not possible as only one HCV - aqueous solubility exceed, so original red-highlighted value ad										
Green text - solid at ambient temperature, calculated GAC exceeds saturation value and highlighted red in CLEA - manual calculation undertaken but result is greater than original red-highlighted value, so original red-highlighte										

3.12 Determination of Contaminated Land Under Part 2A of the Environmental Protection Act 1990

The legal test for land contamination under the statutory guidance of Part 2A of the Environment Protection Act 1990 (i.e. "significant harm or significant possibility of significant harm") is **unacceptable** intake or direct bodily contact.

The situation was clarified by Defra (July 2008) in its guidance on the legal definition of contaminated land.

Part 2A does not prescribe number-based thresholds because it would be very difficult to produce numbers which are meaningful and proportionate, given the lack of scientific information about many substances and the site specific nature of risks. Instead, it relies on local authorities to assess risks posed on individual sites, then decide whether (in their view) the risks represent SPOSH, and thus whether land qualifies as **contaminated**.

The intention of the approach is that local authorities can use their judgement to ensure that Part 2A focuses on the SPOSH it was designed to address, whilst avoiding unnecessary burdens on land where contaminants may be present but there is no SPOSH.

In making Part 2A decisions, local authorities are likely to face some difficult decisions caused by uncertainty on the nature of risks. But they should be confident in exercising their judgement on the basis of available information. Part 2A clearly leaves judgements about what constitutes a SPOSH to local authorities, and it is up to them to make decisions.

GACs are not proxy thresholds for SPOSH, and should not be used as such. They describe levels (based on cautious estimates and assumptions in hypothetical example situations) at which concentrations of contaminants in soil may cease to pose **no appreciable/ minimal** risk. They do not seek to describe levels at which there might be a SPOSH.

Thus, if a GAC is exceeded, the assessor will usually need to conduct a detailed quantitative risk assessment to discover whether there is a **possibility of significant harm** and, if so, the nature of that risk. Whether or not SPOSH exists will depend on the results of risk assessment, the existence and nature of any pollutant linkages, and (ultimately) the judgement of the local authority.

As a general guide:

(i) For substances where there is a GAC, the more the GAC is exceeded, the more likely it is that an authority should consider the risks to be SPOSH.

(ii) Generally, the cautious nature of GACs means that local authorities may conclude that SPOSH is unlikely to exist at concentrations close to GACs.

(iii) In some cases, land with concentrations of contaminants which marginally exceed a GAC (say, up to a few times the GAC) might give rise to SPOSH if, for example, the receptor is particularly sensitive; or if further assessment finds that exposure is higher than that estimated in the GAC; or if there is little uncertainty in the underlying toxicology and HCV.

(iv) In other cases a GAC may be exceeded by tens of times and there might be no SPOSH (e.g. if further assessment found that exposure was much lower than that estimated using the GAC).

In view of the above, Hydrock has not to attempted to derive numerical SPOSH concentrations, but to use GACs as screening values. Where GACs are exceeded, it is recommended that the linkages and the uncertainties in the data are reviewed in consultation the regulatory authority to aid its judgment on determination.

A possible next phase would be to refine the generic risk assessment with a detailed risk assessment. This would involve using site-specific input parameters relevant to the particular site, in the CLEA model.

Revised contaminated land statutory guidance was published by Defra in 2012 with respect to Part 2A. The Act itself is unchanged. A new four category test (and associated classifications) has been introduced to ensure a high standard without being excessive. The aims are to make the regime target higher risk sites more efficiently, remove excessive cost burdens and facilitate the development of technical tools to increase consistency over time. This includes supporting non-technical guidance including a possible framework to aid in deciding into which of the proposed four new Categories of land a site should be placed.

Conversely, the regime is not intended to intervene where there is only a low level of risk, particularly in cases where it is difficult to demonstrate anything other than a very small hypothetical risk, as might be the case with vast swathes of land.

Defra states that there is a need for a more pragmatic approach. In practice, deciding when regulatory intervention is justified involves making decisions about when to act on a wide spectrum of risk, with varying levels of uncertainty over the precise nature of the risks. A number of the changes are intended to clarify when land is “contaminated land”. These are most likely to affect the assessment and remediation of contaminated land and are listed below.

1. Statutory explanation of broad objectives of the regime to explain that regulators should seek a reasonable balance between dealing with unacceptable risks whilst ensuring that burdens on businesses and society are manageable and sustainable. The regime should be seen as an option of last resort; that land is in effect “innocent until proven guilty”. This should give greater clarity for all concerned on what the regime seeks to achieve, and what it seeks to avoid.

2. Local Authorities to produce risk summaries before land may be determined as “contaminated”. Summaries must be understandable to non-experts to provide greater transparency and accountability. Easier for all involved to understand what local authority considers risks to be. It should be easier for Local Authorities managers, lawyers and councillors to be involved in decision making, particularly more difficult sites where wider socio-economic effects need to be take into account. Easier to share experience between Local Authorities leading to greater consistency in decision making.

3. Clarification of the legal test of significant harm to human health to mean serious unhealthy conditions of the body or part of it, and not minor/trivial complaints. This is unlikely to have a major effect because, to date, no site in England and Wales has been determined on

grounds that significant harm to human health has actually been caused. However, greater clarity on the meaning of significant harm is likely to help clarify the related legal test of significant possibility of significant harm.

4. Explanation of how to decide when land is (and is not) "contaminated land". A new four category test which recognises the spectrum of risk encountered by assessors, and the reality that some sites are clearly contaminated land (Category 1), some clearly are not (Category 4), and others need more detailed consideration before a decision can be taken (Categories 2 and 3). Greater clarity that decision making is a two stage process in which the regulator must first understand the risk before deciding whether the risk is sufficiently high to justify regulatory intervention. The aim is to create legal certainty around what definitely is, and is not, contaminated land, whilst leaving Local Authorities with discretion to exercise local judgement on less straightforward land.

5. Category 4 will include normal background levels of contamination unless there is some exceptional reason to consider otherwise. Clarification that land at SGV/GAC levels is likely to be well into Category 4. Statutory backing for the sector to develop new tests to describe the top of Category 4 (including the production of Category 4 Screening Levels). This should provide clarity on when land will not be caught, reduced uncertainty and costs for landowners and businesses and faster decision making on non-problematic land.

6. Clarify the status of GACs and how they should (and should not) be used including a legal backing for the use of robust GACs produced by reputable, non-governmental, organisations within the sector (LQM/CIEH, EIC/AGS/CL:AIRE). Backing the development of new GACs (or similar tools) as might be developed by the sector to help implement the new Guidance. Specific legal backing for the current set of SGVs/GACs, and clarity on how they can (and cannot) be used.

7. Category 1 land is clearly caught by the regime when there is clear evidence of an unacceptable risk (e.g. similar land is known to have caused significant harm). This should give clarity on when land is definitely "contaminated land", and help frame the spectrum of risk raised by land contamination.

8. New category of land under which Local Authorities would decide whether a site is in Category 2 (contaminated land) or Category 3 (not contaminated land). The new test would rest on whether or not the local authority believes there is a strong case for regulatory action, taking account of the scientific evidence, the objectives of the regime, and other factors. The local authority would start by considering health risks alone, and if they clearly tend towards the Category 4 or the Category 1 the decision could be taken at this point. However, if this does not lead to a decision, the local authority would consider wider socio-economic factors (e.g. cost, views of local people, etc) before deciding. If the local authority still cannot decide, the default decision is that the site is not contaminated land.

9. Reduce "regulatory creep" (excessive remediation of land forced by regulatory uncertainty) with greater clarity on what the enforcing authority can "reasonably" require by way of remediation. Clarity that SGVs/GACs must not be used as "one size fits all" remediation requirements; and that Part 2A can only be used to force remediation to a level where land

is no longer contaminated land (i.e. to a point where land is in Category 3), but it should not be used to force remediation beyond this point.

10. Guidance on the process of risk assessment: the need to take a strategic approach; the aim of dismissing low risk sites as soon as possible in order to focus on finding higher risk sites; and the general need to ensure that risk assessment is conducted in a timely and efficient manner. Clarify that in considering possible future risks the local authority should consider likely future situations (e.g. rather than hypothetical worst possible case situations). Recognise that in practice there is often a need for authorities to bring in external experts and act in accordance with their advice. Recognise that scientific and technical uncertainty is an inevitable part of contaminated land risk assessment, and set out broadly how regulators should deal with it. It is important that this is recognised in the Guidance to support the regulators who have to make decisions in the face of uncertainty.

In deciding whether or not a significant possibility of significant harm to human health exists, the local authority should first understand the possibility of significant harm from the relevant contaminant linkage(s) and the levels of uncertainty attached to that understanding, before it goes on to decide whether or not the possibility of significant harm is significant.

The term “possibility of significant harm” means the risk posed by one or more relevant contaminant linkage(s) relating to the land. It comprises:

- the estimated likelihood that significant harm might occur to an identified receptor, taking account of the current use of the land in question; and
- the estimated impact if the significant harm did occur i.e. the nature of the harm, the seriousness of the harm to any person who might suffer it, and (where relevant) the extent of the harm in terms of how many people might suffer it.

Having completed its estimation of the possibility of significant harm, the local authority should produce a risk summary.

The decision on whether the possibility of significant harm being caused is significant (SPOSH) is a regulatory decision to be taken by the relevant local authority. In deciding whether the possibility of significant harm being caused is significant, the authority is deciding whether the possibility of significant harm posed by contamination in, on or under the land is sufficiently high that regulatory action should be taken to reduce it, with all that would entail.

In deciding whether or not land is contaminated land on grounds of significant possibility of significant harm to human health, the local authority should use the four categorisations.

The decision between Categories 2 and 3 is a positive legal test, which means that the starting assumption should be that land does not pose a significant possibility of significant harm unless there is reason to consider otherwise. Category 3 may include land where the risks are not low, but nonetheless the authority considers that regulatory intervention under Part 2A is not warranted.

The local authority should first consider its assessment of the possibility of significant harm to human health, including the estimated likelihood of such harm, the estimated impact if it did occur, the timescale over which it might occur, and the levels of certainty attached to these

estimates. If the authority considers, on the basis of this consideration alone, that the strong case does or does not exist, the authority should make its decision on whether the land falls into Category 2 or Category 3 on this basis regardless of any other factors.

However, if the authority considers that it cannot make a decision, it should consider other factors which it considers are relevant, including:

- The likely direct and indirect health benefits and impacts of regulatory intervention including benefits of reducing or removing the risk posed by contamination, any risks from contaminants being mobilised during remediation and any indirect impacts such as stress-related health effects that may be experienced by affected people, particularly local residents. If it is not clear to the authority that the health benefits of remediation would outweigh the health impacts, the authority should presume the land falls into Category 3 unless there is strong reason to consider otherwise.
- The authority's initial estimate of what remediation would involve; how long it would take; what benefit it would be likely to bring; whether the benefits would outweigh the financial and economic costs; and any impacts on local society or the environment from taking action that the authority considers to be relevant.

Deregulatory Change to Definition of Contaminated Land as it Relates to Water Pollution.

Defra will commence Section 86 of the Water Act 2003 so that in future this would only be the case if there is significant pollution of controlled waters or significant possibility of such pollution. To explain how to decide whether or not "significant" pollution is being caused, the Statutory Guidance introduced new Category 1-4 tests similar to those for deciding when there is a significant risk to human health as described above. There will be new technical guidance produced by the Environment Agency. In practice, this change is likely to have little effect on the practical implementation of the Part 2A regime because the Environment Agency has already been prioritising sites likely to meet the new "significance" test.

The 'pollution of Controlled Waters' means the entry into controlled Waters of any poisonous, noxious or polluting matter or any solid waste matter. Given that the Part 2A regime seeks to identify and deal with significant pollution (rather than lesser levels of pollution), the local authority should seek to focus on pollution which: (i) may be harmful to human health or the quality of aquatic ecosystems or terrestrial ecosystems directly depending on aquatic ecosystems; (ii) which may result in damage to material property; or (iii) which may impair or interfere with amenities and other legitimate uses of the environment.

In deciding whether significant pollution of Controlled Waters is being caused, the local authority should consider that this test is only met where it is satisfied that the substances in question are continuing to enter controlled Waters; or that they have already entered the waters and are likely to do so again in such a manner that past and likely future entry in effect constitutes on-going pollution.

3.13 Generic Risk Assessment Criteria for Risk to Plants

Soil contaminants, if present at sufficient concentrations, can have an adverse effect on the plant population. Phytotoxic effects can be manifested by a variety of responses, such as growth inhibition, interference with plant processes, contaminant-induced nutrient deficiencies and

chlorosis (yellowing of leaves). All chemicals are probably capable of causing phytotoxic effects. Thus the phytotoxic potential of substances is dependent on the concentrations capable of having adverse effects on plants and the concentrations likely to be found at contaminated sites. Phytotoxicity is a difficult parameter to quantify given that experimental techniques vary widely and variations exist in plant tolerances, soil effects and synergistic/antagonistic reactions between chemicals.

Contaminants may be taken up and accumulated by plants through a range of mechanisms. The principal pathways are active and/or passive uptake through the plant root, adsorption to root surfaces and volatilisation from the soil surface followed by foliar uptake. After plant uptake, contaminants may be metabolised or excreted, or they may be bioaccumulated.

Many of the substances capable of adversely affecting vegetation exert this effect because of their water solubility, a characteristic that could result in their transport from contaminated sites into adjacent locations where the chemical may generate a phytotoxic response. This could be important if, for example, the adjacent site has important conservation status.

Whilst many contaminants may be phytotoxic, data are limited. Some heavy metals are essential as trace elements for plant growth but may become toxic at higher concentrations. Toxicity may be displayed in many forms, including signs of stress such as reduction in growth or yellowing of the tissue. The concentration in soil at which substances become phytotoxic depend on a range of factors including plant type, soil type, pH, the form and availability of the contaminant and other vegetation stress factors that may be present (such as drought).

Hydrock has carried out a review of a number of current and former guidance documents and other texts on phytotoxicity. It is not possible to produce a definitive list of phytotoxic substances on account of the variables mentioned above. However, a number of metals are repeatedly cited as commonly occurring priority pollutants. As a result, the following list is adopted as Hydrock's indicators of the potential for phytotoxicity: As, B, Cr, Cu, Ni and Zn.

As the CLEA framework is a risk based approach, applied to humans, an alternative strategy is required to assess the risk to plants from substances that are phytotoxic. Reference to published criteria and background concentrations can help put site data into context.

Published assessment criteria for the protection of plant life from a number of countries are given in Table 3.8. Also included in the table are some measures of natural background concentrations in typical soils.

The most authoritative source is the British Standard for topsoil, but this only lists three elements. CLR 11 states that the ICRCL Guidance Note 70/90 can be used for initial screening criteria. This approach has been adopted by Hydrock where BS 3882 is lacking, but where an ICRCL 70/90 criterion is lacking, the lowest criterion in Table 3.8 from, firstly MAFF, and, secondly, another country has been adopted. The adopted criteria are highlighted in Table 3.8. The MAFF value of 250 mg/kg has been chosen for As over the ICRCL value of 50 mg/kg as MAFF explains the 50 is applicable to vegetables and human health, whereas 250 is applicable to the plants themselves.

Table 3.8: Published Assessment Criteria and Natural Background Concentrations for Phytotoxic Elements (mg/kg)

Reference	As	B	Cr (total)	Cr (III)	Cr (VI)	Cu	Ni	Zn
Published assessment criteria (mg/kg)								
British Standard for topsoil (BS 3882:2015)						200 (pH>7) 135 (pH 6-7) 100 (pH 5.5-6.0)	110 (pH>7) 75 (pH 6-7) 60 (pH 5.5-6.0)	300 (pH>7) 200 (pH 6-7) 200 (pH 5.5-6.0)
MAFF Code of Good Agricultural Practice for the Protection of Soil (1998)	250			unlikely to be toxic except in v low pH. 400 for sites containing sewage sludge		500 (grass) but may fall to 250 for clover and sensitive species (at pH≥6)	110 (pH>7) 75 (pH 6-7) 60 (pH 5.5-6.0)	1000 (clover & grass at pH 6), may fall to 300 for sensitive species (at pH 6-7)
Australian Guideline B(1) (1999), Interim Urban Ecological Investigation Level (EIL). Soils not generally considered phytotoxic below these EILs.	20			400	1	100	60	200
Considered toxic to plants - Ponnamperuma *et al* (1979)		5 (hot water soluble)						
Dutch ecotoxicological intervention value (Swartjes 1993 & 1994) *	40	7	230			190		
Alberta Environment (1990) Tier 1 (draft) *	10 acid sandy soils			600 acid sandy soils	25 acid sandy soils	130 acid sandy soils		
Ontario MoE (1989) *	20 acid sandy soils 25 clay soils							
ICRCL 59/83 (1987) now withdrawn for human health assessment		3 (hot water soluble)				130	70	300
ICRCL 70/90 (1990) threshold trigger value	50				25	250		1000
New Zealand guidelines for timber treatment sites (1997), estimated based on Cu bioavailability *						500-1000 clay soils		
New Zealand guidelines for timber treatment sites (1997), soil criteria for protection of plant life (residential/agricultural setting)	10-20	3 (soluble)		600	25	130		

Reference	As	B	Cr (total)	Cr (III)	Cr (VI)	Cu	Ni	Zn
Natural Background Concentrations (mg/kg)								
Dutch background level (target value) (VROM 2000)	29		100			36	35	140
UK ICRCL 42/80 (2nd ed. 1983) - Normal conc. In agricultural soil	0.1-40	2-100	5-500			2-100	5-500	10-300
UK ICRCL 70/90 (1st ed. 1990) - Typical range (and mean) in agricultural soils	2.3 - 53 (11.0)					5.8-62 (19) [1.2-19 4.9) extractable]		29-210 (78.1) [1.5-21 (5.6) extractable]
Canadian assessment criteria (i.e. background) (CCME 1991)	5	1(hot water soluble)	20		2.5	30		60
New Zealand timber sites (1997) – background	2-30							
Australian Guideline B(1) (1999), typical background levels	1-50		5-1000			2-100	5-500	10-300
* cited in New Zealand Ministry for the Environment (1997) timber treatment chemicals guidelines.								

3.14 Generic Risk Assessment Criteria for Controlled Waters

The following aquifer definitions are adopted.

- **Principal aquifers** - These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.
- **Secondary aquifers** - These include a wide range of rock layers or drift deposits with an equally wide range of water permeability and storage. Secondary aquifers are subdivided into two types:
- **Secondary A** - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers; and
- **Secondary B** - predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
- **Secondary undifferentiated** - has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
- **Unproductive strata** - These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

The Environment Agency (August 2013) Groundwater Protection Policy (known as GP3) contains the legal framework, detailed policies, technical background and the tools to be used in the protection of groundwater.

The European Water Framework Directive (2000/60/EC) (WFD) and its daughter Directives establish a consolidated way of controlling water quality of the whole water environment. The UK Government has revised its guidance to the Environment Agency and Natural Resources Wales (the Agencies) to remain relevant to the second and subsequent planning cycles. *River basin planning guidance* (Defra and Welsh Government July 2014) is a point of reference for other regulators, bodies and individuals affected by or contributing to the river basin planning process. Parts of this guidance are transposed into The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015, which support The Water Environment (Water Framework Directive) (England and Wales) (Amendment) Regulations 2015 (Statutory Instrument 2015 No. 1623) which came into force on 14 September 2015. This updates the 2003 Regulations to include the revised EQS Directive (2013/39/EU) which has been amended to cover the second planning cycle, starting on 22 December 2015.

Water Framework Directive implementation in England and Wales: new and updated standards to protect the water environment (Defra and Welsh Government May 2014) informs interested parties of the new and updated environmental standards. There are a number of support documents produced by the UK Technical Advisory Group on the Water Framework Directive (UKTAG), including *Updated Recommendations on Environmental Standards* for the 2015-21 river basin management programme.

A groundwater body is defined as groundwater in an aquifer capable of supporting an abstraction of 10 m^3/day or 50 people over a sustained period under the WFD. Groundwater bodies are a strategic resource, even if there is no current abstraction. Lesser amounts of groundwater in an aquifer may not be considered as receptors in their own right, but may still be pathways to other receptors such as surface water bodies or aquatic ecosystems. However, if the conceptual site model indicates a potable supply of less than 10 m^3/day, this source will be included in the risk assessment.

One of the main objectives of the Agencies is to 'prevent or limit' inputs of substances. Substances are defined as either 'hazardous substances' or 'non-hazardous pollutants'. Directive 2006/118/EC include the objective of preventing the input of hazardous substances into groundwater and limiting inputs of other (non-hazardous) pollutants so as to avoid deterioration of the groundwater body. The revised EQS Directive 2013/39/EU Annex I contains a list of 'priority substances' in the field of water policy and includes those identified as 'priority hazardous substances'.

For practical purposes, the Agency interprets prevention of inputs of hazardous substances and any other substances which meet the criteria for persistence, toxicity and bioaccumulation taking into account those substances listed in WFD (2000/60/EC) Annex VIII.

The 'prevent' objective applies to active inputs such as industrial discharges and *de minimus* concentrations are set as a series of minimum reporting values (MRV). Inputs to Controlled Waters from contaminated land sites are classed as passive inputs under the WFD and, as such, were regulated under the Agency's 'limit' objective. However, paragraph 9.3 of the revised *River*

basin planning guidance (Defra and Welsh Government July 2014) states that the governments will issue revised Directions to take into account the recommendations of UKTAG (November 2013, amended January 2014) as well as Directive 2013/39/EU. These recommendations provide approached for hazardous and non-hazardous substances as follows.

- Hazardous substances – standards in groundwater help to assess whether or not measures to prevent inputs from identified sources have been successful and are based on 'limits of quantification' achieved routinely by competent laboratories (also known as minimum reporting values, MRV). Recommended standards are given in Table 13 of the UKTAG document. These standards are recommended for use in assessing risks posed by new developments (such as landfills) and whether or not existing activities and contaminated land with the potential to cause inputs are doing so.

  This is potentially more onerous than the previous 'limit' objective and the UKTAG document states that actions currently taken with respect to contaminated land are not always sufficient to prevent inputs of hazardous substances and additional remediation may be required. However, it also states that exemptions are available where measures would be disproportionately costly.

- Non-hazardous pollutants – standards in groundwater help to assess the extent to which inputs need to be limited to ensure they do not cause deterioration. Standards vary depending on the receptor at risk. Acceptable water quality targets are defined for protection of human health (based on drinking water standards (DWS)) and for protection of aquatic ecosystems (environmental quality standards (EQS)).

In the event, when the revised Directions were issued (namely, The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015) there was no mention of the use of MRVs with respect to inputs from land subjected to contamination. Consequently, MRVs are not used by Hydrock in this report.

All substances which are not determined to be hazardous are potentially non-hazardous pollutants. The final say lies with the Agencies as to which chemicals they consider to be of potential concern and whilst the indicator substances analysed for by Hydrock in this report may be indicative of the likely risk of pollution of Controlled Waters, this report may not be definitive and the relevant Agency may require additional work.

The definition of pollution is "the direct or indirect introduction, as a result of human activity, of substances or heat into the air water or land which may be harmful to human health or the quality of aquatic ecosystems or terrestrial ecosystems directly depending on aquatic ecosystems, which result in damage to material property, or which impair or interfere with amenities and other legitimate uses of the environment."

Pollution equates to harm. In order to protect receptors there is a regulatory regime. This involves setting an environmental standard at the receptor (i.e. minimum acceptable water quality). In recognition that pollutants may degrade *en route* to the receptor it is possible to set a limit value at the source of the pollution and compliance values at locations along the pathway, such that water reaching the receptor does not exceed the environmental standard. By definition, the target value is greater than or equal to the compliance value, which in turn is greater than or equal to the environmental standard, depending on the amount of degradation

expected. This concept is used in the Remedial Targets Methodology (Environment Agency 2006a) to determine how land contamination impacts on groundwater and surface water quality.

The applied environmental standards vary with the hydrogeological conditions and the perceived value of the water resource, and are subject to local assessment by the relevant Agency. Note that protection of Controlled Waters may involve work over and above that required for 'suitable use' of a site for the proposed development.

Note also that Article 6.3(e)(ii) of the WFD enables the regulatory authorities to exempt measures from the prevent and limit requirements where it would be disproportionately costly to remove or control the further movement of pollutants that are already in the ground. Where a continuing source that has given rise in the past to land contamination this must be brought under control to prevent further unacceptable inputs to groundwater, but it is clear that the extent is limited by what is considered to be 'reasonableness'.

This report provides an initial assessment of the risks of pollution of Controlled Waters using water quality targets (WQT) as screening values. These are the drinking water standards (DWS) and the environmental quality standards (EQS), the latter designed to protect the surface water ecosystems. EQS are available for inland surface waters (freshwater) and other surface waters (transitional and marine). In addition, the recommended standards for hazardous substances in groundwater (UKTAG November 2013, amended January 2014, Table 13, Column 2) are also used where appropriate.

DWS are given in the Water Supply Regulations 2010 (which amends to Water Quality (Water Supply) Regulations 2000, Schedule 1, Table B, Part 1 (Directive requirements) and Part 2 (national requirements)). Where no UK or EU drinking water standard exists, reference is made to the World Health Organization (2011).

The list of EQS for priority substances is published in Directive 2013/39/EU. In addition, each Member State has to define country-specific substances and their EQS (river basin specific pollutants). Those adopted by the UK listed by Defra and Welsh Government (May 2014) and the 2015 Directions. These documents form the basis for the DWS and EQS used in this report.

It is noted that the EQS for iron in *Water Framework Directive implementation in England and Wales: new and updated standards to protect the water environment* is given in Table 5.2a as 1 µg/l. The 'standard status' in that table is listed as an existing standard. However, the existing standard was 1 mg/l (i.e. 1000 µg/l) and the tabulated value appears to be an error. This has been carried forward to the 2015 Directions. Consequently, Hydrock continues to use 1000 µg/l in its assessments.

Several EQS are based on bioavailable metal proportions (i.e. copper, lead, manganese, nickel and zinc). For zinc, this is the concentration in excess of the ambient background concentration (ABC). A software tool (M-BAT) is available from the Water Framework Directive - UK TAG web site for calculating the bioavailable fraction of Cu, Mn, Ni and Zn, but not Pb, and it also lists regional ABC values (WFD-UKTAG July 2014). Use of the tool requires knowledge of certain determinants of the receiving waters. Consequently, unless otherwise stated in the report text, this modelling has not been used in Hydrock's initial screening exercise and so an assessment

based on the total dissolved metal concentrations will be conservative and a further level of risk assessment may be required.

Where this tool has been used, the bioavailability has been taken into account by calculating site-specific $PNEC_{dissolved}$ (Predicted No Effect Concentration) values. These enable the dissolved concentration data to be compared with the PNEC as if it were an EQS.

The WFD imposes a duty on the Agencies to classify surface water and groundwater bodies and to ensure long-term improvement (where necessary) to achieve acceptable standards. Threshold Values (TV) for individual groundwater bodies (GWB) are published. Each GWB has been identified by the Agencies and specific TVs calculated based on the perceived risks to that GWB. Failure of a TV is an indicator of potential adverse impact in specific circumstances. These TVs are not intended to be applied to meet the 'prevent or limit' objective of the Agencies (UKTAG September 2008) and are not to be used as part of specific site investigations (The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015) and they are not used by Hydrock in this report.

Generic criteria for contaminated soils which might result in groundwater contamination can be derived from generic assumptions using the Environment Agency (2006) Remedial Targets Methodology. A tiered approach is detailed in this document. In accordance with CLR 11, EQS and DWS can be used as generic water quality targets with respect to contamination of controlled waters.

It is clearly not cost-effective to analyse every water sample for all determinands. Hydrock has produced a default *de minimus* suite which includes a number of common water quality indicators plus a selection of the more common chemicals of potential concern, drawn from the lists of Specific Pollutants and Priority Substances / Priority Hazardous Substances plus additional common contaminants listed in the EPA-H1 Part 2 document, as being indicators of Good water quality under the terms of the Directive.

In addition to this, Hydrock will add to this list any chemicals identified as potential risks by reference to the conceptual site model.

Using the WQTs discussed above, the risks to groundwater and surface water from contaminants on site have been assessed according to the remedial targets methodology (RTM) prescribed by the Environment Agency (2006a).

The Level 1 soil zone assessment considers whether the contaminant concentrations in the soil moisture are sufficient to impact the water receptor(s). It is a conservative model and compares soil pore water concentrations with the above criteria, taking no account of dilution, dispersion or attenuation. Pore water concentrations can be estimated by analysis of perched water samples, analysis of eluates produced in the laboratory by standard leaching of soil samples, or by calculation from physico-chemical properties of the substances. Calculation may be more appropriate for poorly soluble substances where retention times may not be long enough during the standard leaching tests to reach equilibrium. However, the Environment Agency (2009d) cautions that the use of published k_d values to calculate pore water concentrations "can lead to a conservative estimate of risk" and suggest that leaching tests may be designed for non-volatile organics using BS 18772:2008.

The Level 2 groundwater assessment is applicable where groundwater quality data are available and compares these with the above criteria, again taking no account of dilution, dispersion or attenuation.

The remedial targets methodology also allows for more detailed assessment (soil Level 2, 3 or 4, or groundwater Level 3 or 4) for substances which fail the above-mentioned assessments. These are progressively more complex assessments and do take into account attenuation and/or dilution, as applicable to the conceptual exposure model. Such assessment is beyond the scope of this report.

Where more than one water quality target is available it is important to apply the one relevant to the critical receptor. The DWS apply to groundwater or to surface water used for abstraction and the EQS apply to surface water where the aquatic ecosystem is the receptor. EQS are available for *inland* surface waters (freshwater) and *other* surface waters (transitional and marine). Where the most appropriate water quality target cannot be determined with certainty, the lowest one is adopted in line with the precautionary principle.

For the purposes of this report, the site data are compared with the various targets as set out in Table 3.9

Table 3.9: Summary of Water Quality Risk Assessment Protocol

Scenario	Water body Receptors	Secondary Receptors	Example Contaminant Linkages	RTM Level and Samples Used (if Available)	Water Quality Targets
A	Groundwater.	Human health (abstraction).	Contaminants from site leach or seep into groundwater body and this is a (potential/actual) source of human consumption or a strategic resource.	RTM Level 2 - Groundwater. RTM Level 1 - Soil leachate (including any calculated pore water concentrations) or pore water.	DWS
A	Groundwater. Surface water.	Human health (abstraction).	Contaminants from site leach or seep into groundwater body and this feeds surface water by base flow. The surface water may be used for human consumption.		DWS
B	Groundwater. Surface water.	Aquatic ecosystem.	Contaminants from site leach or seep into groundwater body and this feeds surface water by base flow. The surface water may be an aquatic ecosystem.		EQS (inland)
C	Groundwater. Surface water.	Aquatic ecosystem.	Contaminants from site leach or seep into groundwater body and this feeds surface water by base flow. The surface water may be an aquatic ecosystem.		EQS (other)
D	Groundwater. Surface water.	Human health (abstraction). Aquatic ecosystem.	Contaminants from site leach or seep into groundwater body and this feeds surface water by base flow. The surface water may be used for human consumption and is an aquatic ecosystem.		DWS EQS (inland)

Scenario	Water body Receptors	Secondary Receptors	Example Contaminant Linkages	RTM Level and Samples Used (if Available)	Water Quality Targets
E	Surface water.	Human health (abstraction).	Contaminants from site leach or seep into surface water which may be used for human consumption.	RTM Level 1 - Soil leachate (including any calculated pore water concentrations) or pore water. Although not part of the RTM, these scenarios are used to compare surface water data to the water quality targets.	DWS
F	Surface water.	Aquatic ecosystem.	Contaminants from site leach or seep into surface water which may be an aquatic ecosystem.		EQS (inland)
G	Surface water.	Aquatic ecosystem.	Contaminants from site leach or seep into surface water which may be an aquatic ecosystem.		EQS (other)
H	Surface water.	Human health (abstraction). Aquatic ecosystem.	Contaminants from site leach or seep into surface water which may be used for human consumption and is an aquatic ecosystem.		DWS EQS (inland)

Notes:
Some EQS are water hardness dependent. This is measured either in the receiving water or in groundwater (if it is part of the pathway), or is estimated from national maps.
Inland waters EQS applicable to freshwater, other waters EQS applicable to marine or transitional waters.
Where both DWS and EQS are applicable, it is assumed that the EQS is for inland waters.
This table and the results of the assessment are considered as a first screening for potential risks of pollution of Controlled Waters. More specific requirements may be stipulated by the Environment Agency.

Note that in some instances the reporting limit (or detection limit) quoted by the laboratory may be greater than the water quality target that it is being assessed against. Where this is the case it is noted in the table. The current exercise is an initial screening assessment.

There are three main possible reasons for this. Firstly, it may be that the 'standard' method gives a relatively higher reporting limit, but that a lower one could be obtained using a more specialised technique. However, it would be disproportionately expensive to adopt the more costly specialist technique for this initial screening exercise. Secondly, it may be that the sample in question was not 'clean' because the matrix was contaminated by other substances which interfere with the analysis and so a less sensitive method has been used to protect the laboratory equipment. Thirdly, it may be that no method exists that can reach the required limit. Hydrock has contacted the Environment Agency's own National Laboratory Service and even they cannot reach low enough limits for several of the substances in the Hydrock default suite (Cr(VI), total cyanide, phenols and certain PAHs). Consequently, and depending on the particular chemicals, it may be possible with additional effort to refine the assessment, or it may be the case that it is not possible to say for certainty because suitable techniques are not available. Methods are being continually updated and new ones may become available.

The problem is compounded when EQS are revised downwards (eg the PAHs in 2013/39/EU Annex II) on the basis of toxicology, but laboratory techniques have yet to catch up. Indeed, the Directive acknowledges this in the revised Article 3b and where it states "... measurement, when carried out using the best available technique not entailing excessive costs, is referred to as "less than limit of quantification", and the limit of quantification of that technique is above the EQS, the result for the substance being measured shall not be considered for the purposes of assessing the overall chemical status of that water body."

In some cases all samples are below the detection limit but above the water quality target. It is not possible to make any judgement about these. However, in other cases, even though the detection limit is greater than the water quality target, some sample results do exceed the target.

3.14.1 Petroleum Hydrocarbons in Water

With respect to hydrocarbons in water, the Water Supply (Water Quality) Regulations 1989 (as amended 1999) contained a prescribed concentration of 10 µg/l for "dissolved or emulsified hydrocarbons (after extraction with petroleum ether); mineral oils". This was removed from the 2000 (consolidated 2007) Regulations. It was confirmed by email from the Drinking Water Inspectorate to Hydrock (1 November 2005) that dissolved hydrocarbons are no longer a prescribed substance under the Regulations. However, the 10 µg/l limit did remain in the Private Drinking Water Regulations 1991 until their revision at the end of 2009.

In the absence of a prescribed concentration for drinking water, many Environment Agency officers continue to use the superseded value. This is perhaps because petroleum hydrocarbons are a hazardous substance (former List 1) under the WFD. There is, however, no clear UK policy on hydrocarbon contamination of controlled waters. This is partly because analyses for 'petroleum hydrocarbons' are fraught with complications concerning false positives, the results being method dependent and not restricted to petroleum products.

Guidance written by the Environment Agency on risk assessment of hydrocarbons in groundwater is dated 2009 but has never been officially released through the Agency's website, although the dissemination status of the document is given as publicly available. This gives a table of water quality targets for hydrocarbons and lists "TPH (dissolved or emulsified hydrocarbons)". No minimum reporting value (MRV) is quoted, the value that would equate to a *de minimus* concentration under the prevention objective. The target of 10 µg/l is given and this is described as coming from the "Private Water Supply Regulations 1991 No. 2790 (due to be updated in 2009)". As mentioned above, the 2009 Regulations no longer list dissolved hydrocarbons.

Furthermore, the guidance also states that in cases where petroleum hydrocarbons have already entered the water, the Agency will regulate under its limit objective, rather than the prevention objective. This means that EQS or DWS will be appropriate. However, none exist.

In the absence of definitive guidance on petroleum hydrocarbons in water Hydrock recognises that it is not possible to provide EQS and so regulation with respect to aquatic ecosystems is impossible. However, it is possible to extend the use of DWS by calculating screening criteria for the speciated TPH fractions. This provides a rational, transparent and risk-based approach using established scientific principles, rather than simply adopting a withdrawn standard.

Whilst not strictly applicable to aquatic ecosystems, at least this approach can help inform the judgement as to the degree of degradation of a water body.

Accordingly Hydrock has calculated guidelines for drinking water quality based on the methodology proposed by the World Health Organisation (WHO, 2005). This is based on an adult consuming 2 litres of water per day. Whereas the WHO document assumes a body weight of 60kg, Hydrock has assumed 70kg in keeping with the UK Contaminated Land CLEA methodology.

A conservative allocation of 10% of the oral Tolerable Daily Intake (TDI) has been attributed to intake from drinking water. It is noted by the WHO (2005) that exposure from other sources would be expected to be very small and that it would be possible to allocate a greater percentage to drinking water if required. In other words, this approach is very conservative and is appropriate as an initial screening value and allows for potential additive toxicity and simultaneous exposure from other sources.

The TDIs used are the same as those used in the derivation of soil GACs and are listed in Table 3.10 along with the calculated health-based water quality targets for drinking water. Note, however, that the Environment Agency (2009d) states that when considering carbon bands, one does not know the range of toxicities and health effects of the individual chemicals, and it is precautionary to assume that the toxicological effects are additive when setting water quality targets even though the toxic endpoints and modes of action might in reality be quite different. The recommendation is to adopt a precautionary approach whereby the water quality target for each band is divided by the number of bands with detected concentrations.

Table 3.10: Calculated Water Quality Targets for Petroleum Hydrocarbons in Drinking Water

Determinand	TDI (µg/kg/day)	Solubility (µg/l)	Water Quality Target (see Note 1) (µg/l)	Notes
Ali EC5-EC6	5000	35900	**17500**[1]	
Ali >EC6-EC8	5000	5370	**17500**[1]	This concentration would be significantly above the solubility in water.
Ali >EC8-EC10	100	427	**350**[1]	
Ali >EC10-EC12	100	33.9	**350**[1]	This concentration would be significantly above the solubility in water.
Ali >EC12-EC16	100	0.759	**350**[1]	This concentration would be significantly above the solubility in water.
Ali >EC16-EC44	2000	0.00254	**7000**[1]	This concentration would be significantly above the solubility in water.
Aro EC5-EC7	223	1780000	**1**[1]	Based on the TDI for toluene as recommended by Environment Agency (2005) P5-080/TR3 gives 780. In reality the UK DWS for benzene = **1** takes precedence.
Aro >EC7-EC8	223	590000	**700**[1]	Calculated as 780, WHO DWS = **700** takes precedence.
Aro >EC8-EC10	40	64600	**140**[1]	
Aro >EC10-EC12	40	24500	**140**[1]	
Aro > EC12-EC16	40	5750	**140**[1]	
Aro >EC16-EC21	30	653	**105**[1]	
Aro >EC21-EC44	30	6.61	**105**[1]	This concentration would be significantly above the solubility in water.
Benzene	n/a	1780000	**1**	Calculation not possible as non-threshold substance, UK DWS = **1** takes precedence.
Toluene	223	590000	**700**	Calculated as 780, WHO DWS = **700** takes precedence.
Ethylbenzene	100	180000	**300**	Calculated as 350, WHO DWS = **300** takes precedence.
Xylene	180	200000	**500**	Calculated as 630, WHO DWS = **500** takes precedence.
MTBE	300	48000000	**15**	Calculated as 1050 so the odour threshold = **15** is adopted.

Determinand	TDI (µg/kg/day)	Solubility (µg/l)	Water Quality Target (see Note 1) (µg/l)	Notes
Note 1: The value to be used in a risk assessment (for carbon bands) is the value in the table divided by the number of bands with detected concentrations. Last updated 29/06/10				

In instances where a simple 'total' TPH is reported for water samples this should be considered indicative only. This is particularly the case if groundwater or surface water samples were not available and an indication of pore water quality has been derived by subjecting soil samples to a standard leaching procedure or calculation.

Where petroleum hydrocarbon contamination of Controlled Waters is suspected, Hydrock recommends that discussion with the Environment Agency is entered into at the earliest opportunity.

3.15 Statistical Tests of Soil Contamination Results

As discussed above, the sample analyses are divided into representative data sets for the assessment, based on the conceptual site model, and are referred to as 'averaging areas'. In this case it has been chosen to characterize materials that are likely to form the ground cover in critical receptor areas (e.g. gardens), on a material by material basis. The critical part of the soil column is the upper metre in terms of contact with end users of a development site.

Under the **land use planning system** where the aim is to demonstrate 'suitability for use' the key question will usually be "can we say confidently that the level of contamination of this land is low relative to some appropriate measure of risk, sometimes referred to as the critical concentration?" The critical concentration can be, for example, the relevant GAC.

It is necessary to demonstrate that (for each contaminant) the mean concentration on the site is **below** the critical concentration. The true mean concentration of a contaminant is not known because all the site soil has not been tested. An estimation of the true mean can be obtained from the samples tested during the investigation. The greater the number of samples tested, the closer the mean of these values is to the true mean.

In practice, this involves calculation of a quantity known as the 95th Upper Confidence Limit (UCL) of the true population mean, also known as the US_{95}. This is the estimate of the true mean at a 95% level of confidence (i.e. there is a 95% probability that the true mean will not be greater than this, given the values obtained from the investigation sample testing).

The statistical test that is carried out, therefore, is used to demonstrate that there is a 95% probability that the true mean falls below critical concentration (typically the GAC in a screening exercise).

In statistical language, a **null hypothesis** is stated; that the level of contamination is the same as, or higher than, the critical concentration. The **alternative hypothesis** is that the level of contamination is lower than the critical concentration. The statistical test is used to decide whether or not the null hypothesis is rejected.

If it is rejected, the assessor can conclude that the alternative hypothesis is more likely to be true, i.e. that contaminant concentrations are low relative to the critical concentration and that, potentially, the land is suitable for use. Conversely, if the null hypothesis is not rejected, the assessor should conclude that contaminant concentrations may be the same as, or higher than, the critical concentration and further measures may be needed.

A useful summary of the methodology is provided by CIEH & CL:AIRE (May 2008), which forms the basis for the approach adopted by Hydrock, and is described below. Appendix I of the C4SL report SP1010 (CL:AIRE, December 2013) contains a review of this methodology.

Firstly, the data set is assessed for outliers and normality. This is mainly a visual exercise rather than following a particular statistical method. Two graphs are considered, the data frequency histogram with a normal 'bell curve' for comparison and a quantlie-quantile (q-q) plot. The closer the data points lie to the 45° line, the closer they are to a normal distribution. Kinks in the q-q plot are indicative of more than one data set. Individual points away from the 45° line are indicative of outliers.

Additional evidence of outliers is obtained through a simple method of robust statistics advocated by the Royal Society of Chemistry (2001) and others. The measure of the mean is taken to be the median value because this is less susceptible to outliers and non-normal data sets. A value known as the mean absolute deviation (MAD) is calculated and from this can be calculated a robust standard deviation estimate by multiplying by 1.483.

A z-score can then be calculated, which is the absolute value of the data value minus the median, divided by the robust standard deviation. This is then compared with a critical value which, if exceeded, suggests a possible outlier. The critical value represents the number of standard deviations from the mean (or in this case the median). A critical value of 3 to 3.5 is generally considered appropriate. The attraction of this approach is that it is a robust, non-parametric method suitable for all data sets. It is not considered as definitive, but merely a tool to aid decision making.

If a potential outlier is identified it could be a laboratory or typographic error. If this is not the case it could be representative of a different contaminative incident and, therefore, be a hot-spot. However, it could also be simply the result of heterogeneous ground conditions and a relatively low number of sampling points. The initial review of the data is then coupled to a knowledge of the conceptual site model before an outlier is removed from the data set. A good reason is required to justify the removal of outliers and this will be reported in the text.

The second stage of the assessment is to carry out the statistical test as described previously. Two alternative methods are highlighted in the CIEH/CL:AIRE document. The one-sample t-test is said to be appropriate for normally distributed data (it is a parametric test) but is not sensitive to moderate departures from normality. The Chebychev Theorem is a non-parametric test which is said to be suitable for all data distributions. It is a less powerful test (statistically) and gives a more cautious result than the t-test because there is less certainty about the shape of the distribution.

The CL:AIRE review of 2013 considers the use of the t-test in more detail and states that if enough samples have been taken the distribution that describes the uncertainty about the mean depends only on the mean concentration and the size of between-location variation (as

measured by the observed standard deviation, not the shape of the variation. The review goes on to say that in certain circumstances, the use of the Chebychev Theorem may be unsound and suggests the use of statistical tests not based on the null hypothesis test.

The method of determining when there are enough samples to be able to use the t-test is based on the condition that the relative standard error (RSE) is less than 0.25. The RSE is calculated from the relative standard deviation (RSD) by dividing my the square root of the number of samples. The RSD is the standard deviation divided by the mean. The number of samples required for an unbiased estimate of the average concentration are listed in Table 2 of Appendix I of SP1010, for various values of RSD and based on RSE of 0.25. The number of samples required and the RSE are calculated for each chemical on the Hydrock statistics spreadsheet and a note appears as to whether or not the t-test is applicable on this basis.

The risk assessor ultimately decides, based on all the evidence, whether to use the t-test (by selecting the data as being treated as normally distributed) or the Chebychev Theorem (data treated as non-normal). The chosen method is applied and the outcome recorded with respect to whether or not the null hypothesis is rejected and the site is potentially suitable for use.

Please note that under certain circumstances a 'divided by 0' error can occur in the spreadsheets used in the statistical analyses. This happens when all the data points are the same integer value, for example where all results are <3 mg/kg and they have been assumed to be 3 mg/kg. To prevent this error, one of the results can be altered by a small amount (e.g. 3 becomes 2.99999). This allows the statistical tests to be carried out but makes no difference to the outcome. However, it does mean that the q-q and histogram plots show a spurious point, which should be ignored.

It should be noted that a similar, but opposite, set of propositions applies in the case of a potential Part 2A determination where the level of contamination must be higher than some appropriate level of risk (critical concentration) (e.g. that indicative of SPOSH). In this case, however, a lower standard of proof may be accepted and the guidance suggests that if the statistical test of significance at the 95% confidence level does not indicate rejection of the null hypothesis, then the test should be repeated at the 51% level to see if there is evidence to suggest the null hypothesis be rejected on the balance of probabilities. Where no SPOSH concentrations are available and, say C4SLs, are being used as a low-level screen under Part 2A, the same approach as for the planning regime is appropriate.

When considering potential Part 2A sites, updated guidance published by Barnes *et al* (2010) recommends the t-test for all data sets where exceedance of a critical concentration is being tested (unless the data are negatively skewed, something these authors have never seen in contaminated land data sets).

3.15.1 Note on Clustered Data Sets

The assumption behind the statistical tests is that each sample represents an equal fraction of the averaging area (Nathanail, 2004). If the data are clustered, i.e. the sampling points are not equally spaced, the calculated US_{95} would be too high if targeted sampling has taken place around suspected high concentration areas to determine the extent of the high contamination. Conversely, the calculated US_{95} would be too low if there is a high density of sampling in an area of low contaminant concentration.

The sampling pattern used in this report has been reviewed to determine if clustering of data points is likely to affect the statistical tests significantly. In cases where the area represented by each sample is judged to be similar, the tests have been carried out without modification. The error in this approach is likely to be conservative to human health because the Hydrock approach to targeted sampling is more likely to produce more closely spaced higher concentrations than more closely spaced lower concentrations.

Erring on the conservative side is, however, counter-productive when it would indicate unnecessary remediation, i.e. remediation triggered by a US_{95} which is skewed by clustered data. This is taken into consideration in the risk evaluation part of the risk assessment exercise and can take the form of professional judgement, the modification of the averaging area datasets to decluster them, or the weighting of sample results to decluster the data set. The latter method involves weighting the measured concentrations according the proportion of the area they represent, giving greater weight to samples representative of a larger area.

3.15.2 Statistical Tests and Risk to Controlled Waters

Where only a few water quality tests are available, the maximum concentrations are compared with the standards because the 95 percentile will be close to the maximum value. However, where a larger population is available, the 95 percentile is compared with the standards, as recommended by the Environment Agency.

3.16 Ground Gas Risk Assessment

The permanent ground gases methane (CH_4) and carbon dioxide (CO_2) are monitored in accordance with the principles of BS 8576:2013 and the site records are reported in an appendix. Instrument calibration records are kept in accordance with Hydrock's in-house protocol for ground gas monitoring.

The risks associated with the methane and carbon dioxide are assessed using BS 8485:2015 and guidelines from CIRIA (Wilson *et al* 2007), the NHBC (Boyle and Witherington 2007) and CL:AIRE RB17 (Card *et al* 2012).

In the above guidance, 'Situation B' is defined as the specific development of low-rise (1 or 2 storey) housing with beam and block floors, vented sub-floor void and gardens. Initial risk classification can be made according to NHBC Table 8.1. This determines the appropriate risk strategy for protection, including the need to progress to generic quantitative risk assessment (GQRA). Even where no risk assessment is recommended by this table, one may be carried out if so desired. The GQRA is known as the 'NHBC traffic light classification' as it uses red, amber and green designations to portray levels of risk.

'Situation A' covers all other forms of development. This uses a modified version of the Wilson and Card (1999) methodology.

The idealised frequency of monitoring is suggested in CIRIA Tables 5.5a and 5.5b. These tables are adapted from Wilson and Haines (2005) Table 3 which gives examples of ground conditions with the various gas generation potentials, ranging from inert Made Ground (very low potential) to post 1960s domestic landfill (very high potential).

The report does not constitute a design for gas protection measures, but lists the recommendations given by the above-mentioned guidance for the particular "Situation" considered relevant. Reference should be made to BS 8485:2015 which provides guidance for the design, based on a system of scoring depending on the type of building, the type of structural barrier, ventilation protection measures and the gas membrane. The design of gas protection measures according to BS 8485:2015 requires the building(s), or different parts thereof, to be categorized into one of four building types: Type A, Type B, Type C or Type D. This is because the construction and use of the building, together with the control of future structural changes to the building and its maintenance (the building's management) should be assessed, since potential risks posed by ground gases are strongly influenced by these factors. Note that if a membrane is installed it must be verified in accordance with CIRIA C735 (Mallet *et al* 2014) or it will score zero points and will not be deemed to afford any protection.

CL:AIRE RB17 (Card *et al* 2012) is a pragmatic approach to ground gas risk assessment and was developed because gas concentration, pressure and flow rate measured in a well headspace may not be representative of the conditions in the surrounding formation. This approach is endorsed in BS 8485:2015. This is particularly the case where landfill or mine gases are not present, but there is scope for gas generation from Made Ground or naturally occurring organic matter in the soil. If generation rates are low, relatively high concentrations may be present in the soil pores but there is no driving force to expel gases at sufficiently high fluxes so as to represent a risk by entering enclosed living spaces.

In these low risk situations, the approach is to use the conceptual site model and the estimation of the likely gas generation from a source to identify:

- where gas monitoring is required to better define the risks;
- where it may be appropriate to reduce the period of monitoring required (or avoid extra monitoring in response to anomalous results); or
- gas protection measures where the total organic content (TOC) is not greater than 6%.

In summary:

Natural soils only with no credible methane source:

- no action required (monitoring or gas protection measures) as this represents Characteristic Situation 1 (CS1).

Natural soils with peat/organic alluvium or Made Ground with low organic content and a radon barrier is being provided:

- no action required (monitoring or gas protection measures).

Natural soils with peat/organic alluvium or Made Ground with low organic content and a radon barrier is *not* being provided:

- no gas monitoring required;
- if peat/organic alluvium is present this represents CS2 (note Table A1 in RB17 reads CS3 and this is an error according to Wilson (pers. Comm.);

- if Made Ground is present, is less than 1 m thick and is inert material such as sub-base of mineral soils no gas protection is required as this represents CS1;
- if Made Ground is present, is less than 5 m (maximum) and less than 3 m (average) thick determine TOC and forensic description (Table 3.11) and Characteristic Situation (and hence gas protection measures) (Table 3.12);
- if Made Ground is present, is greater than 5 m thick (for example and 'old refuse tip' on the Ordnance Survey map) determine Characteristic Situation (and hence gas protection measures) from TOC with forensic description plus gas generation modelling and gas monitoring to provide a lines of evidence approach. The findings of the TOC and gas modelling may mean gas monitoring for a period shorter than recommended by CIRIA.

Table 3.11: TOC and Forensic Description

Made Ground Fraction	TOC (%)
Fine soil <10mm organic	Laboratory test for TOC
Fine soil <10mm inorganic	Zero (inert) or confirm TOC with lab test
Coarse inert – clinker, gravel, concrete, brick etc.	Zero (inert)
Wood, trees, branches etc.	57 (=IPCC (2006) DOC of 43% x 1.33 according to Hesse (1971))
Vegetable matter	27 (=IPCC (2006) DOC of 20% x 1.33 according to Hesse (1971))
Metal, glass, ceramic and other inert matter	Zero (inert)
Paper and card	53 (=IPCC (2006) DOC of 40% x 1.33 according to Hesse (1971))
Other degradable matter	Food: 20 (=IPCC (2006) DOC of 15% x 1.33 according to Hesse (1971) Nappies: 32 (=IPCC (2006) DOC of 24% x 1.33 according to Hesse (1971) Construction / demolition waste: 5 (=IPCC (2006) DOC of 4% x 1.33 according to Hesse (1971)
Cloth and leather	32 (=IPCC (2006) DOC of 24% x 1.33 according to Hesse (1971))
Total TOC for the sample	**Weighted average of above based on mass of fractions**

Table 3.12: Characteristic Situation Based on TOC of Made Ground Maximum 5 m Thick, Average 3 m Thick

Maximum TOC (%) Made Ground in Place for 20 years or Less	Maximum TOC (%) Made Ground in Place for More Than 20 years	Characteristic Situation (CIRIA C665)
≤ 1.0	≤ 1.0	CS1
≤ 1.5	≤ 3.0	CS2
≤ 4.0	≤ 6.0	CS3
Not applicable for >CS3. Gas monitoring required if TOC > 4% (or 6% in old Made Ground)		

In a scenario where Made Ground is greater than 5 m thick the gas generation potential can be calculated according to the equation on page 10 of RB17, but ignoring the summation as no iteration is required if no new Made Ground is placed every year (Wilson, pers. comm.). The equation comes from LTGN03 (Environment Agency 2004c) and was originally developed to calculate the gas generation potential of landfill sites based on iterations representing the amount of waste deposited year by year. The rate constants (half-life) Hydrock uses as default

are the fast, medium and slow degradation waste types from LTGN03 (viz 0.185/yr, 0.1/yr and 0.03/yr, respectively).

The result of the above calculation is assumed to represent the surface emission rate from a given area and mass of degradable Made Ground. This can be converted into a borehole emission rate (rounded up to the nearest 0.5%) for comparison with CIRIA C665 by assuming one borehole is equivalent to 10 m^2 of ground surface (Pecksen 1986).

Furthermore, the above calculated surface emission rate can be used with the equations from the NHBC Appendix F (Boyle and Witherington 2007) to estimate gas content in as house and compare this with the permissible concentrations.

4.0 WATER SUPPLY PIPES

The current guidance on selection of materials for potable water supply pipes to be laid in contaminated land is contained in a document published jointly by Water UK and the Home Builders Federation (Water UK HBF 2014). The protocols in that document are for guidance and are not subject to enforcement by Water UK or any agency, but have been adopted by Water UK and by HBF as best practice for their members. It has been produced to replace the guidance published by UK Water Industry Research (UKWIR) (Report 10/WM/03/02 and reissued in 2010), which came under criticism from contaminated land specialists. Accordingly this guidance is used in the following assessment.

The contaminants are divided into a number of 'parameter groups'. Threshold values for a selection of organic contaminants that may have a detrimental effect on pipes and fittings, together with threshold values for certain parameters that could cause corrosion of metal pipes, are presented.

It is generally accepted that the UKWIR document contains a number of technical errors and inconsistencies and was not universally accepted (AGS June 2014). The Water UK guidance document states that UKWIR Tables 3.1 and G1 are "not considered a definitive guide" and replaces these with its own Table 1 which clarifies the guidance. This is reproduced as within Table 4.1 below and although not stated in the document, it is assumed the units are mg/kg.

With respect to VOCs it is not clear whether or not BTEX and MTBE are to be included within the total VOC category. They appear in the USEPA method 8260C list of priority pollutants, but the text does not say to exclude them from the VOC total even though there is a separate group for BTEX and MTBE. The text does specifically exclude certain sub-sets of the SVOC list and so Hydrock has taken the guidance at face value and includes BTEX and MTBE in the VOC total.

Table 4.1: Water UK Threshold Values for Water Pipes

Parameter Group	Testing Required?	PE Pipe Threshold (mg/kg)	Metal or Barrier Pipe Threshold
Total VOC Sum of all USEPA 8260C VOC >10ug/kg and TIC >20ug/kg	Where preliminary risk assessment has identified land potentially affected by contamination	0.5	No limit
Total BTEX and MTBE		0.1	No limit
Total SVOC Sum of all USEPA 8270D SVOC >10ug/kg and TIC >20ug/kg but excluding PAH and those substances marked with an asterisk below.		2	No limit
TPH >EC5-EC10		2	No limit

Parameter Group	Testing Required?	PE Pipe Threshold (mg/kg)	Metal or Barrier Pipe Threshold
TPH >EC10-EC16		10	No limit
TPH >EC16-EC40		500	No limit
Phenols* from SVOC analysis		2	No limit
Cresols* and chlorinated phenols* from SVOC analysis		2	No limit
Ethers*	Only where identified from former land use	0.5	No limit
Nitrobenzene*		0.5	No limit
Ketones*		0.5	No limit
Aldehydes*		0.5	No limit
Amines*		Nothing >LoD	No limit
Corrosive indicators, pH, conductivity EC and redox potential Eh	Where metal pipes are contemplated	No limit	Wrapped steel: corrosive if pH<7 and EC>400uS/cm. Wrapped ductile iron corrosive if pH<5, Eh not neutral and EC>400uS/cm. Copper: corrosive if pH<5 or >* and Eh positive.
Presence of liquid free phase hydrocarbons	Observation	None allowed	None allowed

Within the guidance the soil tested must be representative of that in which the pipes will be laid, be it existing ground, remediated ground or imported soil, and should be sampled to at least 0.5 m below the underside of the pipe and along the pipe runs with sufficient number of samples to satisfy sampling strategies set out in CLR 4, CRL 11 and P5-066/TR. Following this, the data are to be incorporated into a specified risk assessment methodology.

Note that, unless stated otherwise, the Hydrock report does not constitute a formal water pipe risk assessment. Rather, the findings of the standard site investigation are screened against the threshold values in Table 4.1 insofar as is practicable given the data availability to give an indication of the possible restrictions to the use of plastic water pipes.

Note that the use of barrier pipe (PE-Al-PE) is applicable for all brownfield sites according to the guidelines, unless there are liquid free phase hydrocarbons present.

Note also that the Water UK guidance also includes greenfield sites where the preliminary risk assessment indicates there is a potential for contamination to be present.

The Water UK guidance above concentrates on direct contact of pipes with contaminated soil. It also refers to contact with excessive vapour phase and contaminated groundwater, but does not define either of these nor give any threshold concentrations.

The guidance also cautions against the creation of new pathways during construction, mainly the ability of contaminated groundwater to flow into granular pipe bedding.

It is **strongly recommended** that site-specific approval of the materials for underground pipes to be used for water supply be obtained from the water company that will be supplying this site and/or adopting the pipe work.

5.0 FLOOD RISK

The following additional information concerns the background to flood risk mentioned in the report. Guidance is given in the document *Technical Guidance to the National Planning Policy Framework* (DCLG March 2012) which retains key elements from the withdrawn Planning Policy Statement 25.

The Environment Agency flood maps are divided into Flood Zones, as follows.

- Flood Zone 1 is land outside the extent of extreme flooding and the annual risk is less than 1:1000, low probability (depicted as white on the web-based map).

- Flood Zone 2 is land unlikely to flood except in extreme conditions if no defences are present and the annual risk is between 1:100 and 1:1000 (for rivers) or 1:200 and 1:1000 (for the sea), medium probability (depicted as light blue on the web-based map).

- Flood Zone 3 is land within the floodplain at risk of flooding if no defences are present and the annual risk is greater than or equal to 1:100 (for rivers) or 1:200 (for the sea), high probability (depicted as dark blue on the web-based map).

The Agency flood maps also define the risk of flooding: as 'low' (≤1:200), 'moderate' (>1:200 to ≤1:75) or 'significant' (>1:75), which are not the same divisions as those in the guidance mentioned above. Note that the published flood map only relates to flooding from rivers, estuaries and the sea and does not include other potential sources such as surface water, groundwater, sewers, canals and reservoirs. Note also that the presence on the map of flood defences, or areas benefiting from flood defences, should not be taken to imply that a proposed development in these areas is acceptable.

The **Environment Agency in England** has issued Flood Risk Standing Advice. However, this is to be reviewed following the publication of the NPPF (see http://www.environment-agency.gov.uk/research/planning/33098.aspx for updates and details).

The flood map mentioned above can be accessed at the Agency's website.

The Technical Guidance states:

- Within Flood Zone 1 all uses of land are appropriate. For development proposals on sites comprising one hectare or above, the vulnerability to flooding from other sources as well as from river and sea flooding; and the potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new development on surface water run-off, should be incorporated in a flood risk assessment (FRA) to accompany the planning application. This need only be brief unless the factors above or other local considerations require particular attention. For development proposals less than one hectare no flood risk assessment (FRA) is required.

- Within Flood Zone 2, water-compatible, less vulnerable and more vulnerable uses of land and essential infrastructure (as defined in Technical Guidance, Table 2) are appropriate in this zone. The Sequential Test is required and must be passed and for highly vulnerable uses in Table 2 the Exception Test must be applied and passed also. All

development proposals in this zone should be accompanied by a flood risk assessment (FRA).

- Flood Zone 3 is sub-divided into 3a and 3b, but these are not distinguished on the published maps. Flood Zone 3a is land having an annual probability of flooding of >1:100 (from rivers) or >1:200 (from the sea). The water-compatible and less vulnerable uses of land (as defined in Technical Guidance, Table 2) are appropriate in this zone. The highly vulnerable uses in Table 2 should not be permitted in this zone. The Sequential Test is required and must be passed and for the more vulnerable and essential infrastructure uses in Table 2 the Exception Test must be applied and passed also. Essential infrastructure permitted in this zone should be designed and constructed to remain operational and safe for users in times of flood. All development proposals in this zone should be accompanied by a flood risk assessment (FRA).

  Flood Zone 3b is known as the 'functional floodplain' and comprises land where water has to flow or be stored in times of flood and should be identified on Strategic Flood Risk Assessments (SFRA) undertaken by the Local Planning Authority. Such land is defined as land which would flood with an annual probability of 1:20 or greater, or is *designed* to flood in an extreme (1:1000) flood, or at another probability to be agreed between the Local Planning Authority and the Environment Agency, including water conveyance routes). Only the water-compatible uses and the essential infrastructure (as defined in Technical Guidance, Table 2) that has to be there should be permitted in this zone. It should be designed and constructed to: remain operational and safe for users in times of flood; result in no net loss of floodplain storage; not impede water flows; and not increase flood risk elsewhere. The Sequential Test is required and must be passed and for essential infrastructure the Exception Test must be applied and passed also. All development proposals in this zone should be accompanied by a FRA.

Natural Resources Wales points users to the Environment Agency flood map, but it is not used for planning purposes (only to provide information on flood risk and to raise awareness). Development advice with respect to flooding is provided by the Welsh Assembly Government (July 2004) Technical Advice Note 15 (TAN15) and the accompanying development advice maps. An interactive map is available from the WAG web site.

The development advice map containing three zones (A, B and C with subdivision into C1 and C2) should be used to trigger the appropriate planning tests.

- Zone A is considered to be at little or no risk of fluvial or tidal/coastal flooding. The justification test (TAN15, Section 6) is not applicable and there is no need to consider flood risk further. This equates to Flood Zone 1 on the Agency maps.

- Zone B is land known to have been flooded in the past evidenced by sedimentary deposits. As part of a precautionary approach site levels should be checked against the extreme (1:1000) flood level. If site levels are greater than the flood levels used to define adjacent extreme flood outline there is no need to consider flood risk further. This land within Flood Zone 1 of the Agency maps but close to Flood Zone 2 or 3.

- Zone C is based on the Environment Agency extreme flood outline, equal to or greater than 1:1000 (river, tidal or coastal) and equates to Flood Zones 2 and 3 on the Agency map. Flooding issues should be considered as an integral part of decision making by the application of the justification test (TAN15, Section 6) including assessment of consequences (TAN15, Section 7) is required. Sub-division C1 is land in the floodplain which are developed and served by significant infrastructure, including flood defences. Development can take place subject to application of the justification test, including acceptability of consequences. Sub-division C2 is land in the floodplain without significant flood defence infrastructure. Only less vulnerable development should be considered subject to application of the justification test, including acceptability of consequences. Emergency services and highly vulnerable development should not be considered. The categories of land use are defined in TAN15, Figure 2.

6.0 WASTE MANAGEMENT

6.1 Introduction

Any material excavated on site may be classified as waste and it is the responsibility of the holder of a material to form their own view on whether or not it is waste. This includes determining when waste that has been treated in some way can cease to be classed as waste for a particular purpose.

One of the ways this can be achieved is set out in the Development Industry Code of Practice (CoP) (CL:AIRE, March 2011). This builds on the Environment Agency guidance document Definition of waste: developing greenfield and brownfield sites (2006b).

The handling, re-use or disposal of waste is regulated by the Environment Agency. The Agency will take into account the use of the CoP in deciding whether to regulate materials as waste. If materials are dealt with in accordance with the CoP, the Agency considers that those materials are unlikely to be waste at the point when they are to be used for the purpose of land development. This may be because the materials were never discarded in the first place, or because they have been submitted to a recovery operation and have been completely recovered so that they have ceased to be waste.

Further details are provided in the CoP.

The chemical analyses in this report were scheduled for the purposes of risk assessment with respect to human health, plant life and controlled waters as discussed in the report. Whilst the results may be useful in applying the Hazardous Waste Assessment Methodology given in Environment Agency Technical Guidance WM3, they are not primarily intended for that purpose and additional analysis may be required should waste classification be required for consideration of off-site disposal of contaminated soils. As part of the report, Hydrock may have undertaken a preliminary exercise to characterise the soils encountered in the investigation in order to inform the waste characterisation process. This has been undertaken using a proprietary web-based tool and in not necessarily identical to the assessment that could be made by a particular landfill operator.

Separate analyses are required to meet the Waste Acceptance Criteria for specific landfill sites.

6.2 Classification of Materials for Off-Site Disposal Purposes

With respect to the possible waste streams from a site, it is recommended that a phased approach is implemented. This phased approach comprises Waste Characterisation and Waste Acceptance Criteria.

6.2.1 Waste Characterisation

Background

All wastes going to landfill must be classified as ‘inert’, ‘non-hazardous’ or ‘hazardous’, with a sub-category of hazardous waste known as ‘stable non-reactive hazardous waste’. Individual landfill sites must operate in accordance with their Environmental Permits.

Basic Characterisation

The first step is to determine if a waste is hazardous or non-hazardous.

Contaminated soil is a 'mirror entry' in the Consolidated European Waste Catalogue, and is not necessarily a hazardous waste. It is only classified as hazardous if it contains dangerous substances above certain threshold concentrations. The Environment Agency document *Waste Sampling and Testing for Disposal to Landfill* (March 2013) suggests that waste holders should use the information collected as part of the contaminated land risk assessment to inform decisions as to the concentrations that might reasonably be expected to be present in the contaminated soil, given the past and current uses of the site.

The waste must be assessed against all the appropriate hazards in accordance with the Environment Agency Technical Guidance WM3. This makes certain worst case assumptions about the chemical composition if specific compounds are not analysed for.

The classification of the soils as waste in England and Wales is undertaken in accordance with the revised Waste Framework Directive (WFD) (2008/98/EC).

Defining the class of waste is carried out on the actual waste being disposed of and the destination landfill site will have the final decision on acceptability of the waste. Therefore, it is recommended that if soils are to be removed from the site, the appointed contractor should approach a landfill site with the available chemical data and seek a formal waste characterisation.

The waste characterisation in this report is for information purposes only and should be considered in the light of the final decision made by the landfill site.

6.2.2 Waste Acceptance Criteria

If the waste is destined for landfill, the second step is Waste Acceptance Criteria (WAC) testing to determine if the receiving landfill can accept the waste. Further sampling and testing may be required.

WAC testing must be carried out on waste classified as non-hazardous to check if it can be disposed of at an inert landfill. Otherwise, it can be disposed of at a non-hazardous landfill without WAC testing.

WAC testing must be carried out on waste classified as hazardous to check if it can be disposed of at a hazardous landfill (or in a special stable non-reactive hazardous waste landfill site/cell).

The WAC are a list of limit values for certain parameters obtained from total content tests and standard leaching tests. If the limit values are exceeded, the waste is not suitable for disposal at that class of landfill site and alternative disposal methods have to be found.

Maximum permissible limit values are determined by the EU (part of what is known as 'full waste acceptance criteria') but individual landfills may have more stringent values to take into account the environmental setting, liner system or additional nature of specific waste streams.

WAC tests should be performed on the soils leaving the site and is not normally part of a site investigation exercise.

6.3 Materials Management

Any material excavated on site may be classified as waste and it is the responsibility of the holder of a material to form their own view on whether or not it is waste. This includes determining when waste that has been treated in some way can cease to be classed as waste for a particular purpose. One of the ways this can be achieved is set out in the Development Industry Code of Practice (CoP) (CL:AIRE, March 2011).

The handling, re-use or disposal of waste is regulated by the Environment Agency. The Agency will take into account the use of the CoP in deciding whether to regulate materials as waste. If materials are dealt with in accordance with the CoP, the Agency considers that those materials are unlikely to be waste at the point when they are to be used for the purpose of land development. The MMP must be signed off by a Qualified Person as defined in the CoP.

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Appendix I

Contamination Test Results and Statistical Analysis

This appendix may not be included in the printed report to reduce the document size, but is included in the digital version.

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Analytical Report Number : 16-33893

Project / Site name:	Heyford Park - Main Site (Phase 9)	**Samples received on:**	15/11/2016
Your job number:	C-04583-C	**Samples instructed on:**	25/11/2016
Your order number:	POP002067	**Analysis completed by:**	02/12/2016
Report Issue Number:	1	**Report issued on:**	02/12/2016
Samples Analysed:	18 soil samples		

Signed: [redacted]

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

Signed: [redacted]

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

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664197	664198	664199	664200	664201
Sample Reference				TP02	TP03	TP03	TP05	TP07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.10	0.55	0.10	0.25
Date Sampled				02/11/2016	02/11/2016	02/11/2016	02/11/2016	03/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	11	6.2	10	10	12
Total mass of sample received	kg	0.001	NONE	1.2	1.2	0.49	0.10	1.2
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.9	10.7	8.0	8.0	7.9
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.012	0.063	0.084	0.010	0.021
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	12.4	62.9	83.5	10.1	20.7
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.017	0.016	0.0099	0.017	0.022
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	0.35	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	3.6	< 0.10	0.25	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	1.8	< 0.10	0.17	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	0.38	25	< 0.10	2.9	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	8.1	< 0.10	0.86	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	1.1	64	< 0.10	6.6	0.44
Pyrene	mg/kg	0.1	MCERTS	0.96	53	< 0.10	5.6	0.40
Benzo(a)anthracene	mg/kg	0.1	MCERTS	0.55	28	< 0.10	3.1	0.27
Chrysene	mg/kg	0.05	MCERTS	0.56	24	< 0.05	2.8	0.28
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	0.69	23	< 0.10	3.6	0.36
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.31	20	< 0.10	1.5	0.13
Benzo(a)pyrene	mg/kg	0.1	MCERTS	0.64	25	< 0.10	3.2	0.32
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.30	11	< 0.10	1.5	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	2.4	< 0.10	0.30	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.38	12	< 0.05	1.7	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	5.87	301	< 1.60	33.9	2.20
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	32	20	17	17	18
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.96	0.48	0.69	0.65	0.88
Boron (water soluble)	mg/kg	0.2	MCERTS	1.0	0.4	1.0	0.7	1.0
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.2	< 0.2	0.2	0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	30	16	21	23	28
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30	17	21	23	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	16	16	17	16	17
Lead (aqua regia extractable)	mg/kg	1	MCERTS	23	15	15	18	27
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	14	15	18	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	2.6	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	60	35	41	45	60
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	77	39	38	49	58

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664197	664198	664199	664200	664201
Sample Reference				TP02	TP03	TP03	TP05	TP07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.10	0.55	0.10	0.25
Date Sampled				02/11/2016	02/11/2016	02/11/2016	02/11/2016	03/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	1.8	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	2.5	19	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	25	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	130	27	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	130	51	< 10	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	210	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	2.5	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	6.8	65	< 2.0	12	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	15	310	< 10	45	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	140	430	< 10	61	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	310	85	< 8.4	11	< 8.4

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664197	664198	664199	664200	664201
Sample Reference				TP02	TP03	TP03	TP05	TP07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.10	0.55	0.10	0.25
Date Sampled				02/11/2016	02/11/2016	02/11/2016	02/11/2016	03/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chloroethane	µg/kg	1	NONE	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-
Vinyl Chloride	µg/kg	1	NONE	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-	-	-
1,1-dichloroethene	µg/kg	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Tetrachloroethene	µg/kg	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-
Tribromomethane	µg/kg	1	NONE	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
Tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
Sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664197	664198	664199	664200	664201
Sample Reference				TP02	TP03	TP03	TP05	TP07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.10	0.55	0.10	0.25
Date Sampled				02/11/2016	02/11/2016	02/11/2016	02/11/2016	03/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
VOC % Match	%	N/A	NONE	-	-	-	-	-
VOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
VOC % Match	%	N/A	NONE	-	-	-	-	-

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664197	664198	664199	664200	664201
Sample Reference				TP02	TP03	TP03	TP05	TP07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.10	0.55	0.10	0.25
Date Sampled				02/11/2016	02/11/2016	02/11/2016	02/11/2016	03/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664197	664198	664199	664200	664201
Sample Reference				TP02	TP03	TP03	TP05	TP07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.10	0.55	0.10	0.25
Date Sampled				02/11/2016	02/11/2016	02/11/2016	02/11/2016	03/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664202	664203	664204	664205	664206
Sample Reference				TP09	TP11	TP11	TP14	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.15	0.60	0.10	0.40
Date Sampled				03/11/2016	03/11/2016	03/11/2016	03/11/2016	02/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	9.1	13	9.7	11	9.7
Total mass of sample received	kg	0.001	NONE	0.73	1.0	0.68	1.1	0.40
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	-	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	10.3	7.8	-	7.7	9.2
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	-	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.18	0.012	-	0.017	0.062
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	176	11.7	-	16.9	62.0
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0098	0.024	-	0.027	0.017
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	2.1
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	180
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	4.3
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	130
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	130
Phenanthrene	mg/kg	0.1	MCERTS	0.59	0.68	-	0.42	500
Anthracene	mg/kg	0.1	MCERTS	0.16	0.15	-	0.15	170
Fluoranthene	mg/kg	0.1	MCERTS	1.3	1.1	-	0.93	410
Pyrene	mg/kg	0.1	MCERTS	1.1	0.89	-	0.85	330
Benzo(a)anthracene	mg/kg	0.1	MCERTS	0.61	0.59	-	0.50	170
Chrysene	mg/kg	0.05	MCERTS	0.70	0.51	-	0.43	110
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	0.83	0.66	-	0.56	120
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.30	0.29	-	0.31	110
Benzo(a)pyrene	mg/kg	0.1	MCERTS	0.66	0.60	-	0.51	140
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.34	0.29	-	0.26	50
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	11
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.39	0.36	-	0.32	57
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	6.88	6.08	-	5.24	2620
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	22	14	-	16	8.7
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.53	0.68	-	0.78	0.15
Boron (water soluble)	mg/kg	0.2	MCERTS	1.6	0.8	-	1.8	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.2	-	0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	-	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	28	21	-	26	3.7
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	21	-	27	4.0
Copper (aqua regia extractable)	mg/kg	1	MCERTS	18	18	-	18	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	21	22	-	26	3.7
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	-	0.4	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	18	-	19	3.8
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.7	-	< 1.0	2.3
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	56	55	-	52	9.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	57	59	-	110	17

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664202	664203	664204	664205	664206
Sample Reference				TP09	TP11	TP11	TP14	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.15	0.60	0.10	0.40
Date Sampled				03/11/2016	03/11/2016	03/11/2016	03/11/2016	02/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	29
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	56
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	60
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	55
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	< 10	< 10	< 10	< 10	120
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	240
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	1100
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	2500
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	21	21	< 10	12	2800
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	650

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664202	664203	664204	664205	664206
Sample Reference				TP09	TP11	TP11	TP14	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.15	0.60	0.10	0.40
Date Sampled				03/11/2016	03/11/2016	03/11/2016	03/11/2016	02/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	< 1.0
Chloroethane	µg/kg	1	NONE	-	< 1.0	-	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	< 1.0
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	-	-	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	-	-	< 1.0
1,1-dichloroethene	µg/kg	1	NONE	-	< 1.0	-	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
1,1-dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
1,2-dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	-	-	< 1.0
Benzene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
1,2-dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	-	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Styrene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Tribromomethane	µg/kg	1	NONE	-	< 1.0	-	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
N-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	1.8
Tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	4.6
Sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	< 1.0
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	-	-	< 1.0
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	< 1.0

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664202	664203	664204	664205	664206
Sample Reference				TP09	TP11	TP11	TP14	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.15	0.60	0.10	0.40
Date Sampled				03/11/2016	03/11/2016	03/11/2016	03/11/2016	02/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs Compound Name		N/A	NONE	-	None Detected	-	-	Naphthalene
VOC % Match	%	N/A	NONE	-	0	-	-	90
VOCs TICs Compound Name		N/A	NONE	-	-	-	-	Azulene
VOC % Match	%	N/A	NONE	-	-	-	-	90

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664202	664203	664204	664205	664206
Sample Reference				TP09	TP11	TP11	TP14	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.15	0.60	0.10	0.40
Date Sampled				03/11/2016	03/11/2016	03/11/2016	03/11/2016	02/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	< 0.1	-	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2	-	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	-	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2	-	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	-	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	-	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1	-	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	< 0.05	-	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2	-	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2	-	-	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3	-	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	-	-	180
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1	-	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1	-	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	-	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	< 0.2	-	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	< 0.1	-	-	130
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1	-	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	< 0.1
Acenaphthylene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	4.3
Acenaphthene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	130
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	< 0.2	-	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	< 0.2	-	-	93
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	< 0.3	-	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	-	-	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	< 0.2	-	-	< 0.2
Fluorene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	130
Azobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2	-	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	< 0.3
Phenanthrene	mg/kg	0.1	MCERTS	-	0.68	-	-	500
Anthracene	mg/kg	0.1	MCERTS	-	0.15	-	-	170
Carbazole	mg/kg	0.3	MCERTS	-	< 0.3	-	-	44
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	-	-	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	< 0.3	-	-	< 0.3
Fluoranthene	mg/kg	0.1	MCERTS	-	1.1	-	-	410
Pyrene	mg/kg	0.1	MCERTS	-	0.89	-	-	330
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	< 0.3	-	-	< 0.3
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	0.59	-	-	170
Chrysene	mg/kg	0.05	MCERTS	-	0.51	-	-	110
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	0.66	-	-	120
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	0.29	-	-	110
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	0.60	-	-	140
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	0.29	-	-	50
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	11
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	0.36	-	-	57

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664202	664203	664204	664205	664206
Sample Reference				TP09	TP11	TP11	TP14	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.15	0.60	0.10	0.40
Date Sampled				03/11/2016	03/11/2016	03/11/2016	03/11/2016	02/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	Benzo[e]pyrene	-	-	Benzo[e]pyrene
SVOC % Match	%	N/A	NONE	-	98	-	-	99
SVOCs TICs Compound Name		N/A	NONE	-	Cyclotetracosane	-	-	Benzo[b]triphenylene
SVOC % Match	%	N/A	NONE	-	97	-	-	99
SVOCs TICs Compound Name		N/A	NONE	-	Ethanol, 2-phenoxy-	-	-	Naphthalene, 1,6,7-trimethyl-
SVOC % Match	%	N/A	NONE	-	91	-	-	98
SVOCs TICs Compound Name		N/A	NONE	-	1,19-Eicosadiene	-	-	3,4:9,10-Dibenzopyrene
SVOC % Match	%	N/A	NONE	-	90	-	-	98
SVOCs TICs Compound Name		N/A	NONE	-	(+-)-5-(1-Acetoxy-1-methylethyl)-2-methyl-2-cyclohexen-1-one semicarbazone	-	-	3,4:8,9-Dibenzopyrene
SVOC % Match	%	N/A	NONE	-	90	-	-	98
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	Dibenz(a,e)aceanthrylene
SVOC % Match	%	N/A	NONE	-	-	-	-	98
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	1,2:7,8-Dibenzophenanthrene
SVOC % Match	%	N/A	NONE	-	-	-	-	97
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	Naphthalene, 2,7-dimethyl-
SVOC % Match	%	N/A	NONE	-	-	-	-	97
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	Naphthalene, 2,3,6-trimethyl-
SVOC % Match	%	N/A	NONE	-	-	-	-	97
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	Dibenzothiophene
SVOC % Match	%	N/A	NONE	-	-	-	-	97

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664207	664208	664209	664210	664211
Sample Reference				TP103	TP104	TP105	TP106	TP107
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.30	1.30	0.10	0.10
Date Sampled				02/11/2016	02/11/2016	03/11/2016	03/11/2016	03/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	7.3	7.0	5.9	12	14
Total mass of sample received	kg	0.001	NONE	0.48	0.52	1.4	1.3	0.82
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	9.7	8.8	8.0	7.2	7.4
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.071	0.084	0.054	0.049	0.012
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	70.9	84.1	53.9	49.0	12.3
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0029	0.012	0.012	0.024	0.031
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	1.5	0.67	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	1.5	0.44	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	16	3.2	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	14	4.2	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	100	42	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	27	10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	110	56	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	87	41	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	43	23	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	36	24	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	40	23	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	30	16	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	41	20	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	17	10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	3.8	2.6	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	19	11	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	584	288	< 1.60	< 1.60
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	11	14	13	13
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.32	0.29	0.73	0.72	0.72
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	0.6	1.2	1.2	1.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.3	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	13	9.4	29	21	23
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	13	9.6	29	21	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	9.1	8.0	16	18	13
Lead (aqua regia extractable)	mg/kg	1	MCERTS	4.8	5.9	38	21	24
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	0.6	0.6
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	8.9	7.3	19	17	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	1.1
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	30	23	45	42	41
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	20	16	71	55	50

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664207	664208	664209	664210	664211
Sample Reference				TP103	TP104	TP105	TP106	TP107
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.30	1.30	0.10	0.10
Date Sampled				02/11/2016	02/11/2016	03/11/2016	03/11/2016	03/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	3.0	2.1	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	42	3.8	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	82	13	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	140	74	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	< 10	220	87	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	81	17	< 8.4	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	4.3	3.5	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	220	26	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	920	210	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	1300	190	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	420	65	< 8.4	< 8.4

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664207	664208	664209	664210	664211
Sample Reference				TP103	TP104	TP105	TP106	TP107
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.30	1.30	0.10	0.10
Date Sampled				02/11/2016	02/11/2016	03/11/2016	03/11/2016	03/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Chloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
1,1-dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1-dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,2-dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,2-dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Styrene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Tribromomethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
N-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664207	664208	664209	664210	664211
Sample Reference				TP103	TP104	TP105	TP106	TP107
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.30	1.30	0.10	0.10
Date Sampled				02/11/2016	02/11/2016	03/11/2016	03/11/2016	03/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs Compound Name		N/A	NONE	-	None Detected	None Detected	-	None Detected
VOC % Match	%	N/A	NONE	-	0	0	-	0
VOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
VOC % Match	%	N/A	NONE	-	-	-	-	-

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664207	664208	664209	664210	664211
Sample Reference				TP103	TP104	TP105	TP106	TP107
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.30	1.30	0.10	0.10
Date Sampled				02/11/2016	02/11/2016	03/11/2016	03/11/2016	03/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2	< 0.2	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2	< 0.2	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	1.5	0.67	-	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	2.8	0.6	-	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
Acenaphthylene	mg/kg	0.1	MCERTS	-	1.5	0.44	-	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	-	16	3.2	-	< 0.10
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	8.2	1.3	-	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	< 0.3	< 0.3	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
Fluorene	mg/kg	0.1	MCERTS	-	14	4.2	-	< 0.10
Azobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Phenanthrene	mg/kg	0.1	MCERTS	-	100	42	-	< 0.10
Anthracene	mg/kg	0.1	MCERTS	-	27	10	-	< 0.10
Carbazole	mg/kg	0.3	MCERTS	-	7.7	4.9	-	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	4.5	0.8	-	< 0.3
Fluoranthene	mg/kg	0.1	MCERTS	-	110	56	-	< 0.10
Pyrene	mg/kg	0.1	MCERTS	-	87	41	-	< 0.10
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	< 0.3	< 0.3	-	< 0.3
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	43	23	-	< 0.10
Chrysene	mg/kg	0.05	MCERTS	-	36	24	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	40	23	-	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	30	16	-	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	41	20	-	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	17	10	-	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	3.8	2.6	-	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	19	11	-	< 0.05

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664207	664208	664209	664210	664211
Sample Reference				TP103	TP104	TP105	TP106	TP107
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.30	1.30	0.10	0.10
Date Sampled				02/11/2016	02/11/2016	03/11/2016	03/11/2016	03/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	Benzo[e]pyrene	Benzo[e]pyrene	-	1,4-Methanoazulene, decahydro-4,8,8-trimethyl-9-methylene-, [1S-(1.alpha.,3a.beta.,4.alpha.,8a.beta.)]
SVOC % Match	%	N/A	NONE	-	99	99	-	99
SVOCs TICs Compound Name		N/A	NONE	-	3,4:9,10-Dibenzopyrene	Benzo[b]naphtho[2,1-d]thiophene	-	1,1-Dichloro-2,2-bis(p-chlorophenyl)ethane
SVOC % Match	%	N/A	NONE	-	99	98	-	98
SVOCs TICs Compound Name		N/A	NONE	-	Naphthalene, 2,6-dimethyl-	Triphenylene	-	Cyclotetracosane
SVOC % Match	%	N/A	NONE	-	98	98	-	98
SVOCs TICs Compound Name		N/A	NONE	-	Naphthalene, 1,3-dimethyl-	Chrysene, 2-methyl-	-	Octadecanal
SVOC % Match	%	N/A	NONE	-	98	98	-	94
SVOCs TICs Compound Name		N/A	NONE	-	Naphthalene, 1,6,7-trimethyl-	Dibenzothiophene	-	Antra-9,10-quinone, 1-(3-hydrohy-3-phenyl-1-triazenyl)-
SVOC % Match	%	N/A	NONE	-	98	97	-	92
SVOCs TICs Compound Name		N/A	NONE	-	Naphthalene, 2,3,6-trimethyl-	10,18-Bisnorabieta-8,11,13-triene	-	Cyclohexene, 1-pentyl-4-(4-propylcyclohexyl)-
SVOC % Match	%	N/A	NONE	-	98	97	-	90
SVOCs TICs Compound Name		N/A	NONE	-	Triphenylene	Dibenzo[a,e]cyclooctene	-	-
SVOC % Match	%	N/A	NONE	-	98	96	-	-
SVOCs TICs Compound Name		N/A	NONE	-	Benzo[b]triphenylene	Phenanthrene, 2-methyl-	-	-
SVOC % Match	%	N/A	NONE	-	98	96	-	-
SVOCs TICs Compound Name		N/A	NONE	-	Naphthalene, 1,4-dimethyl-	11H-Benzo[b]fluorene	-	-
SVOC % Match	%	N/A	NONE	-	97	96	-	-
SVOCs TICs Compound Name		N/A	NONE	-	Cyclopenta(def)phenanthrenone	Triphenylene, 2-methyl-	-	-
SVOC % Match	%	N/A	NONE	-	97	96	-	-

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664212	664213	664214		
Sample Reference				TP108	TP133	TP134		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.05	0.10	0.10		
Date Sampled				03/11/2016	08/11/2016	08/11/2016		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	7.8	11	11		
Total mass of sample received	kg	0.001	NONE	1.3	1.1	1.2		
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected		
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	9.3	7.3	7.6		
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.60	0.013	0.012		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	602	13.4	12.0		
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.011	0.025	0.020		
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10		
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10		
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10		
Phenanthrene	mg/kg	0.1	MCERTS	1.7	0.16	< 0.10		
Anthracene	mg/kg	0.1	MCERTS	0.57	< 0.10	< 0.10		
Fluoranthene	mg/kg	0.1	MCERTS	3.8	0.50	0.30		
Pyrene	mg/kg	0.1	MCERTS	3.7	0.46	0.27		
Benzo(a)anthracene	mg/kg	0.1	MCERTS	2.7	0.34	0.22		
Chrysene	mg/kg	0.05	MCERTS	2.2	0.37	0.20		
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	4.1	0.53	0.28		
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	1.4	0.23	0.13		
Benzo(a)pyrene	mg/kg	0.1	MCERTS	3.3	0.46	0.25		
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	1.6	0.23	< 0.10		
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	0.34	< 0.10	< 0.10		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.7	0.26	< 0.05		
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	27.0	3.54	1.65		
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	15	16		
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.51	0.91	0.81		
Boron (water soluble)	mg/kg	0.2	MCERTS	1.6	1.3	1.2		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2		
Chromium (III)	mg/kg	1	NONE	17	28	25		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	28	25		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	11	29	15		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	14	53	91		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	11	17	18		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	37	47	54		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	39	76	49		

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664212	664213	664214		
Sample Reference				TP108	TP133	TP134		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.05	0.10	0.10		
Date Sampled				03/11/2016	08/11/2016	08/11/2016		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	3.0	< 2.0	< 2.0		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	47	< 8.0	< 8.0		
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	47	< 10	< 10		
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	19	< 8.4	< 8.4		
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	3.2	< 1.0	< 1.0		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	12	< 2.0	< 2.0		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	40	< 10	< 10		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	100	< 10	< 10		
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	77	< 8.4	< 8.4		

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664212	664213	664214		
Sample Reference				TP108	TP133	TP134		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.05	0.10	0.10		
Date Sampled				03/11/2016	08/11/2016	08/11/2016		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-		
Chloroethane	µg/kg	1	NONE	-	-	-		
Bromomethane	µg/kg	1	ISO 17025	-	-	-		
Vinyl Chloride	µg/kg	1	NONE	-	-	-		
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-		
1,1-dichloroethene	µg/kg	1	NONE	-	-	-		
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-		
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-		
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	-		
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-		
Trichloromethane	µg/kg	1	MCERTS	-	-	-		
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-		
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	-		
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-		
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-		
Benzene	µg/kg	1	MCERTS	-	-	-		
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-		
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	-		
Trichloroethene	µg/kg	1	MCERTS	-	-	-		
Dibromomethane	µg/kg	1	MCERTS	-	-	-		
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-		
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-		
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-		
Toluene	µg/kg	1	MCERTS	-	-	-		
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-		
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-		
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-		
Tetrachloroethene	µg/kg	1	NONE	-	-	-		
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-		
Chlorobenzene	µg/kg	1	MCERTS	-	-	-		
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-		
Ethylbenzene	µg/kg	1	MCERTS	-	-	-		
p & m-xylene	µg/kg	1	MCERTS	-	-	-		
Styrene	µg/kg	1	MCERTS	-	-	-		
Tribromomethane	µg/kg	1	NONE	-	-	-		
o-xylene	µg/kg	1	MCERTS	-	-	-		
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-		
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-		
Bromobenzene	µg/kg	1	MCERTS	-	-	-		
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	-		
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-		
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-		
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-		
Tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-		
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-		
Sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-		
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	-		
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-		
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	-		
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	-		
Butylbenzene	µg/kg	1	MCERTS	-	-	-		
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-		
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-		
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-		
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-		

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664212	664213	664214		
Sample Reference				TP108	TP133	TP134		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.05	0.10	0.10		
Date Sampled				03/11/2016	08/11/2016	08/11/2016		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs Compound Name		N/A	NONE	-	-	-		
VOC % Match	%	N/A	NONE	-	-	-		
VOCs TICs Compound Name		N/A	NONE	-	-	-		
VOC % Match	%	N/A	NONE	-	-	-		

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664212	664213	664214		
Sample Reference				TP108	TP133	TP134		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.05	0.10	0.10		
Date Sampled				03/11/2016	08/11/2016	08/11/2016		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-		
Phenol	mg/kg	0.2	ISO 17025	-	-	-		
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-		
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-		
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-		
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-		
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-		
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-		
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-		
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-		
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-		
4-Methylphenol	mg/kg	0.2	NONE	-	-	-		
Isophorone	mg/kg	0.2	MCERTS	-	-	-		
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-		
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-		
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-		
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-		
Naphthalene	mg/kg	0.05	MCERTS	-	-	-		
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-		
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-		
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-		
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-		
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-		
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-		
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-		
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-		
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-		
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-		
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-		
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-		
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-		
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-		
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-		
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-		
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-		
Fluorene	mg/kg	0.1	MCERTS	-	-	-		
Azobenzene	mg/kg	0.3	MCERTS	-	-	-		
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-		
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-		
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-		
Anthracene	mg/kg	0.1	MCERTS	-	-	-		
Carbazole	mg/kg	0.3	MCERTS	-	-	-		
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-		
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-		
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-		
Pyrene	mg/kg	0.1	MCERTS	-	-	-		
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-		
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-		
Chrysene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-		
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-		
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-		
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-		
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-		

Analytical Report Number: 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)
Your Order No: POP002067

Lab Sample Number				664212	664213	664214		
Sample Reference				TP108	TP133	TP134		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.05	0.10	0.10		
Date Sampled				03/11/2016	08/11/2016	08/11/2016		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		

Analytical Report Number : 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
664197	TP02	None Supplied	0.20	Brown loam and sand with gravel.
664198	TP03	None Supplied	0.10	Brown loam and sand with gravel.
664199	TP03	None Supplied	0.55	Brown loam and sand with gravel.
664200	TP05	None Supplied	0.10	Brown loam and clay with gravel.
664201	TP07	None Supplied	0.25	Brown loam and sand with gravel.
664202	TP09	None Supplied	0.20	Brown loam and sand with gravel.
664203	TP11	None Supplied	0.15	Brown loam and sand with gravel.
664204	TP11	None Supplied	0.60	Brown loam and clay with gravel.
664205	TP14	None Supplied	0.10	Brown loam and clay with gravel.
664206	TP102	None Supplied	0.40	Black tar with gravel.**
664207	TP103	None Supplied	0.40	Brown sandy loam with gravel.
664208	TP104	None Supplied	0.30	Brown sandy loam with gravel.
664209	TP105	None Supplied	1.30	Brown loam and sand with gravel.
664210	TP106	None Supplied	0.10	Brown loam and sand with gravel.
664211	TP107	None Supplied	0.10	Brown loam and clay with gravel.
664212	TP108	None Supplied	0.05	Brown loam and clay with gravel.
664213	TP133	None Supplied	0.10	Brown loam and sand with gravel.
664214	TP134	None Supplied	0.10	Brown loam and sand with gravel.

**Non MCerts matrix

Analytical Report Number : 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	NONE
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE

Analytical Report Number : 16-33893

Project / Site name: Heyford Park - Main Site (Phase 9)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TPH Chromatogram	TPH Chromatogram.	In-house method	L064-PL	D	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
TP02		S	16-33893	664197	c	Free cyanide in soil	L080-PL	c
TP02		S	16-33893	664197	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP02		S	16-33893	664197	c	Monohydric phenols in soil	L080-PL	c
TP02		S	16-33893	664197	c	Organic matter in soil	L023-PL	c
TP02		S	16-33893	664197	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP02		S	16-33893	664197	c	TPH Chromatogram	L064-PL	c
TP02		S	16-33893	664197	c	TPH in (Soil)	L076-PL	c
TP02		S	16-33893	664197	c	TPHCWG (Soil)	L076-PL	c
TP03		S	16-33893	664198	c	Free cyanide in soil	L080-PL	c
TP03		S	16-33893	664198	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP03		S	16-33893	664198	c	Monohydric phenols in soil	L080-PL	c
TP03		S	16-33893	664198	c	Organic matter in soil	L023-PL	c
TP03		S	16-33893	664198	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP03		S	16-33893	664198	c	TPH Chromatogram	L064-PL	c
TP03		S	16-33893	664198	c	TPH in (Soil)	L076-PL	c
TP03		S	16-33893	664198	c	TPHCWG (Soil)	L076-PL	c
TP03		S	16-33893	664199	c	Free cyanide in soil	L080-PL	c
TP03		S	16-33893	664199	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP03		S	16-33893	664199	c	Monohydric phenols in soil	L080-PL	c
TP03		S	16-33893	664199	c	Organic matter in soil	L023-PL	c
TP03		S	16-33893	664199	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP03		S	16-33893	664199	c	TPH Chromatogram	L064-PL	c
TP03		S	16-33893	664199	c	TPH in (Soil)	L076-PL	c
TP03		S	16-33893	664199	c	TPHCWG (Soil)	L076-PL	c
TP05		S	16-33893	664200	c	Free cyanide in soil	L080-PL	c
TP05		S	16-33893	664200	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP05		S	16-33893	664200	c	Monohydric phenols in soil	L080-PL	c
TP05		S	16-33893	664200	c	Organic matter in soil	L023-PL	c
TP05		S	16-33893	664200	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP05		S	16-33893	664200	c	TPH Chromatogram	L064-PL	c
TP05		S	16-33893	664200	c	TPH in (Soil)	L076-PL	c
TP05		S	16-33893	664200	c	TPHCWG (Soil)	L076-PL	c
TP07		S	16-33893	664201	c	Free cyanide in soil	L080-PL	c
TP07		S	16-33893	664201	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP07		S	16-33893	664201	c	Monohydric phenols in soil	L080-PL	c
TP07		S	16-33893	664201	c	Organic matter in soil	L023-PL	c
TP07		S	16-33893	664201	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP07		S	16-33893	664201	c	TPH Chromatogram	L064-PL	c
TP07		S	16-33893	664201	c	TPH in (Soil)	L076-PL	c
TP07		S	16-33893	664201	c	TPHCWG (Soil)	L076-PL	c
TP09		S	16-33893	664202	c	Free cyanide in soil	L080-PL	c
TP09		S	16-33893	664202	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP09		S	16-33893	664202	c	Monohydric phenols in soil	L080-PL	c
TP09		S	16-33893	664202	c	Organic matter in soil	L023-PL	c
TP09		S	16-33893	664202	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP09		S	16-33893	664202	c	TPH Chromatogram	L064-PL	c
TP09		S	16-33893	664202	c	TPH in (Soil)	L076-PL	c
TP09		S	16-33893	664202	c	TPHCWG (Soil)	L076-PL	c
TP102		S	16-33893	664206	c	Free cyanide in soil	L080-PL	c
TP102		S	16-33893	664206	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP102		S	16-33893	664206	c	Monohydric phenols in soil	L080-PL	c

TP102		S	16-33893	664206	c	Organic matter in soil	L023-PL	c
TP102		S	16-33893	664206	c	Semi-volatile organic compounds in soil	L064-PL	c
TP102		S	16-33893	664206	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP102		S	16-33893	664206	c	TPH Chromatogram	L064-PL	c
TP102		S	16-33893	664206	c	TPH in (Soil)	L076-PL	c
TP102		S	16-33893	664206	c	TPHCWG (Soil)	L076-PL	c
TP102		S	16-33893	664206	c	Tentatively identified compounds (SVOC) in soil	L064-PL	c
TP102		S	16-33893	664206	c	Tentatively identified compounds (VOC) in soil	L073-PL	c
TP102		S	16-33893	664206	c	Volatile organic compounds in soil	L073B-PL	c
TP103		S	16-33893	664207	c	Free cyanide in soil	L080-PL	c
TP103		S	16-33893	664207	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP103		S	16-33893	664207	c	Monohydric phenols in soil	L080-PL	c
TP103		S	16-33893	664207	c	Organic matter in soil	L023-PL	c
TP103		S	16-33893	664207	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP103		S	16-33893	664207	c	TPH Chromatogram	L064-PL	c
TP103		S	16-33893	664207	c	TPH in (Soil)	L076-PL	c
TP103		S	16-33893	664207	c	TPHCWG (Soil)	L076-PL	c
TP104		S	16-33893	664208	c	Free cyanide in soil	L080-PL	c
TP104		S	16-33893	664208	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP104		S	16-33893	664208	c	Monohydric phenols in soil	L080-PL	c
TP104		S	16-33893	664208	c	Organic matter in soil	L023-PL	c
TP104		S	16-33893	664208	c	Semi-volatile organic compounds in soil	L064-PL	c
TP104		S	16-33893	664208	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP104		S	16-33893	664208	c	TPH Chromatogram	L064-PL	c
TP104		S	16-33893	664208	c	TPH in (Soil)	L076-PL	c
TP104		S	16-33893	664208	c	TPHCWG (Soil)	L076-PL	c
TP104		S	16-33893	664208	c	Tentatively identified compounds (SVOC) in soil	L064-PL	c
TP104		S	16-33893	664208	c	Tentatively identified compounds (VOC) in soil	L073-PL	c
TP104		S	16-33893	664208	c	Volatile organic compounds in soil	L073B-PL	c
TP105		S	16-33893	664209	c	Free cyanide in soil	L080-PL	c
TP105		S	16-33893	664209	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP105		S	16-33893	664209	c	Monohydric phenols in soil	L080-PL	c
TP105		S	16-33893	664209	c	Organic matter in soil	L023-PL	c
TP105		S	16-33893	664209	c	Semi-volatile organic compounds in soil	L064-PL	c
TP105		S	16-33893	664209	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP105		S	16-33893	664209	c	TPH Chromatogram	L064-PL	c
TP105		S	16-33893	664209	c	TPH in (Soil)	L076-PL	c
TP105		S	16-33893	664209	c	TPHCWG (Soil)	L076-PL	c
TP105		S	16-33893	664209	c	Tentatively identified compounds (SVOC) in soil	L064-PL	c
TP105		S	16-33893	664209	c	Tentatively identified compounds (VOC) in soil	L073-PL	c
TP105		S	16-33893	664209	c	Volatile organic compounds in soil	L073B-PL	c
TP106		S	16-33893	664210	c	Free cyanide in soil	L080-PL	c
TP106		S	16-33893	664210	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP106		S	16-33893	664210	c	Monohydric phenols in soil	L080-PL	c
TP106		S	16-33893	664210	c	Organic matter in soil	L023-PL	c
TP106		S	16-33893	664210	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP106		S	16-33893	664210	c	TPH Chromatogram	L064-PL	c
TP106		S	16-33893	664210	c	TPH in (Soil)	L076-PL	c
TP106		S	16-33893	664210	c	TPHCWG (Soil)	L076-PL	c
TP107		S	16-33893	664211	c	Free cyanide in soil	L080-PL	c
TP107		S	16-33893	664211	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP107		S	16-33893	664211	c	Monohydric phenols in soil	L080-PL	c
TP107		S	16-33893	664211	c	Organic matter in soil	L023-PL	c
TP107		S	16-33893	664211	c	Semi-volatile organic compounds in soil	L064-PL	c

TP107		S	16-33893	664211	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP107		S	16-33893	664211	c	TPH Chromatogram	L064-PL	c
TP107		S	16-33893	664211	c	TPH in (Soil)	L076-PL	c
TP107		S	16-33893	664211	c	TPHCWG (Soil)	L076-PL	c
TP107		S	16-33893	664211	c	Tentatively identified compounds (SVOC) in soil	L064-PL	c
TP107		S	16-33893	664211	c	Tentatively identified compounds (VOC) in soil	L073-PL	c
TP107		S	16-33893	664211	c	Volatile organic compounds in soil	L073B-PL	c
TP108		S	16-33893	664212	c	Free cyanide in soil	L080-PL	c
TP108		S	16-33893	664212	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP108		S	16-33893	664212	c	Monohydric phenols in soil	L080-PL	c
TP108		S	16-33893	664212	c	Organic matter in soil	L023-PL	c
TP108		S	16-33893	664212	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP108		S	16-33893	664212	c	TPH Chromatogram	L064-PL	c
TP108		S	16-33893	664212	c	TPH in (Soil)	L076-PL	c
TP108		S	16-33893	664212	c	TPHCWG (Soil)	L076-PL	c
TP11		S	16-33893	664203	c	Free cyanide in soil	L080-PL	c
TP11		S	16-33893	664203	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP11		S	16-33893	664203	c	Monohydric phenols in soil	L080-PL	c
TP11		S	16-33893	664203	c	Organic matter in soil	L023-PL	c
TP11		S	16-33893	664203	c	Semi-volatile organic compounds in soil	L064-PL	c
TP11		S	16-33893	664203	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP11		S	16-33893	664203	c	TPH Chromatogram	L064-PL	c
TP11		S	16-33893	664203	c	TPH in (Soil)	L076-PL	c
TP11		S	16-33893	664203	c	TPHCWG (Soil)	L076-PL	c
TP11		S	16-33893	664203	c	Tentatively identified compounds (SVOC) in soil	L064-PL	c
TP11		S	16-33893	664203	c	Tentatively identified compounds (VOC) in soil	L073-PL	c
TP11		S	16-33893	664203	c	Volatile organic compounds in soil	L073B-PL	c
TP11		S	16-33893	664204	bc	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	bc
TP11		S	16-33893	664204	bc	TPH Chromatogram	L064-PL	bc
TP11		S	16-33893	664204	bc	TPH in (Soil)	L076-PL	bc
TP11		S	16-33893	664204	bc	TPHCWG (Soil)	L076-PL	bc
TP133		S	16-33893	664213	c	Free cyanide in soil	L080-PL	c
TP133		S	16-33893	664213	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP133		S	16-33893	664213	c	Organic matter in soil	L023-PL	c
TP134		S	16-33893	664214	c	Free cyanide in soil	L080-PL	c
TP134		S	16-33893	664214	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP134		S	16-33893	664214	c	Organic matter in soil	L023-PL	c
TP14		S	16-33893	664205	c	Free cyanide in soil	L080-PL	c
TP14		S	16-33893	664205	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP14		S	16-33893	664205	c	Monohydric phenols in soil	L080-PL	c
TP14		S	16-33893	664205	c	Organic matter in soil	L023-PL	c
TP14		S	16-33893	664205	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP14		S	16-33893	664205	c	TPH Chromatogram	L064-PL	c
TP14		S	16-33893	664205	c	TPH in (Soil)	L076-PL	c
TP14		S	16-33893	664205	c	TPHCWG (Soil)	L076-PL	c

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Analytical Report Number : 16-33900

Project / Site name:	Heyford Park - Main Site (Phase 10)	**Samples received on:**	15/11/2016
Your job number:	C-04583-C	**Samples instructed on:**	25/11/2016
Your order number:	POP002067	**Analysis completed by:**	02/12/2016
Report Issue Number:	1	**Report issued on:**	02/12/2016
Samples Analysed:	10 soil samples		

Signed: [redacted]

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

Signed: [redacted]

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

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 16-33900

Project / Site name: Heyford Park - Main Site (Phase 10)
Your Order No: POP002067

Lab Sample Number				664238	664239	664240	664241	664242
Sample Reference				SA07	TP126	TP127	TP128	TP128
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.35	0.10	0.10	0.10	1.10
Date Sampled				09/11/2016	08/11/2016	08/11/2016	08/11/2016	08/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	13	9.3	10	17	12
Total mass of sample received	kg	0.001	NONE	1.2	1.3	1.2	1.0	0.79
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.7	7.6	7.6	7.5	-
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0086	0.011	0.013	0.016	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	8.6	10.6	12.6	16.4	-
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.014	0.023	0.028	0.035	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	-
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	-
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	-
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	-
Phenanthrene	mg/kg	0.1	MCERTS	1.9	0.25	0.36	1.1	-
Anthracene	mg/kg	0.1	MCERTS	0.22	< 0.10	0.11	0.31	-
Fluoranthene	mg/kg	0.1	MCERTS	2.2	0.74	0.76	3.7	-
Pyrene	mg/kg	0.1	MCERTS	1.7	0.71	0.67	3.5	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	0.78	0.42	0.38	2.4	-
Chrysene	mg/kg	0.05	MCERTS	0.72	0.42	0.33	1.9	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	0.71	0.50	0.35	2.7	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.36	0.27	0.25	1.2	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	0.63	0.36	0.39	2.1	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.22	0.25	< 0.10	1.1	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.24	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.26	0.33	< 0.05	1.3	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	9.64	4.25	3.60	21.5	-
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	17	17	15	14	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.62	0.51	0.64	0.76	-
Boron (water soluble)	mg/kg	0.2	MCERTS	0.8	0.8	0.8	2.0	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.2	0.2	< 0.2	0.4	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	-
Chromium (III)	mg/kg	1	NONE	21	19	21	25	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	19	21	25	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	12	22	17	20	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	15	24	21	35	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.5	< 0.3	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	12	16	17	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	51	37	47	46	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	39	54	44	89	-

Analytical Report Number: 16-33900

Project / Site name: Heyford Park - Main Site (Phase 10)
Your Order No: POP002067

Lab Sample Number				664238	664239	664240	664241	664242
Sample Reference				SA07	TP126	TP127	TP128	TP128
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.35	0.10	0.10	0.10	1.10
Date Sampled				09/11/2016	08/11/2016	08/11/2016	08/11/2016	08/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	17	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	< 10	17	< 10	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	22	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	13	< 10	16	43	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4

Analytical Report Number: 16-33900

Project / Site name: Heyford Park - Main Site (Phase 10)
Your Order No: POP002067

Lab Sample Number				664238	664239	664240	664241	664242
Sample Reference				SA07	TP126	TP127	TP128	TP128
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.35	0.10	0.10	0.10	1.10
Date Sampled				09/11/2016	08/11/2016	08/11/2016	08/11/2016	08/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Chloroethane	µg/kg	1	NONE	-	-	-	< 1.0	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Vinyl Chloride	µg/kg	1	NONE	-	-	-	< 1.0	-
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-	< 1.0	-
1,1-dichloroethene	µg/kg	1	NONE	-	-	-	< 1.0	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	< 1.0	-
Benzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Toluene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Tetrachloroethene	µg/kg	1	NONE	-	-	-	< 1.0	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Styrene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Tribromomethane	µg/kg	1	NONE	-	-	-	< 1.0	-
o-xylene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Butylbenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-

Analytical Report Number: 16-33900

Project / Site name: Heyford Park - Main Site (Phase 10)
Your Order No: POP002067

Lab Sample Number				664238	664239	664240	664241	664242
Sample Reference				SA07	TP126	TP127	TP128	TP128
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.35	0.10	0.10	0.10	1.10
Date Sampled				09/11/2016	08/11/2016	08/11/2016	08/11/2016	08/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs Compound Name		N/A	NONE	-	-	-	None Detected	-
VOC % Match	%	N/A	NONE	-	-	-	0	-

Analytical Report Number: 16-33900

Project / Site name: Heyford Park - Main Site (Phase 10)
Your Order No: POP002067

Lab Sample Number				664238	664239	664240	664241	664242
Sample Reference				SA07	TP126	TP127	TP128	TP128
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.35	0.10	0.10	0.10	1.10
Date Sampled				09/11/2016	08/11/2016	08/11/2016	08/11/2016	08/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	< 0.1	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	< 0.2	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	< 0.05	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	< 0.2	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	< 0.1	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	< 0.1	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	< 0.1	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	< 0.3	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	1.1	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	0.31	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	3.7	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	3.5	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	< 0.3	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	2.4	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	1.9	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	2.7	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	1.2	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	2.1	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	1.1	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	0.24	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	1.3	-

Analytical Report Number: 16-33900

Project / Site name: Heyford Park - Main Site (Phase 10)
Your Order No: POP002067

Lab Sample Number				664238	664239	664240	664241	664242
Sample Reference				SA07	TP126	TP127	TP128	TP128
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.35	0.10	0.10	0.10	1.10
Date Sampled				09/11/2016	08/11/2016	08/11/2016	08/11/2016	08/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	-	Benzo[e]pyrene	-
SVOC % Match	%	N/A	NONE	-	-	-	98	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	Benz[e]acephenanthrylene	-
SVOC % Match	%	N/A	NONE	-	-	-	98	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	Phenanthrene, 1-methyl-	-
SVOC % Match	%	N/A	NONE	-	-	-	95	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	11H-Benzo[a]fluoren-11-one	-
SVOC % Match	%	N/A	NONE	-	-	-	95	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	Chrysene, 1-methyl-	-
SVOC % Match	%	N/A	NONE	-	-	-	95	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	Fluoranthene, 2-methyl-	-
SVOC % Match	%	N/A	NONE	-	-	-	94	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	Tetradecane	-
SVOC % Match	%	N/A	NONE	-	-	-	93	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	Pyrene, 2-methyl-	-
SVOC % Match	%	N/A	NONE	-	-	-	93	-

Analytical Report Number: 16-33900

Project / Site name: Heyford Park - Main Site (Phase 10)
Your Order No: POP002067

Lab Sample Number				664243	664244	664245	664246	664247
Sample Reference				TP129	TP129	TP130	TP131	TP131
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.90	0.10	0.10	0.60
Date Sampled				08/11/2016	08/11/2016	08/11/2016	08/11/2016	08/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	12	17	10	12	13
Total mass of sample received	kg	0.001	NONE	1.1	1.0	1.2	1.1	0.78
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.6	-	7.6	7.5	-
Free Cyanide	mg/kg	1	MCERTS	< 1	-	< 1	< 1	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.027	-	0.011	0.011	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	26.9	-	10.7	11.4	-
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.032	-	0.025	0.027	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	-
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	-
Fluorene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	-
Phenanthrene	mg/kg	0.1	MCERTS	0.96	-	< 0.10	< 0.10	-
Anthracene	mg/kg	0.1	MCERTS	0.23	-	< 0.10	< 0.10	-
Fluoranthene	mg/kg	0.1	MCERTS	2.9	-	< 0.10	< 0.10	-
Pyrene	mg/kg	0.1	MCERTS	2.8	-	< 0.10	< 0.10	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	1.9	-	< 0.10	< 0.10	-
Chrysene	mg/kg	0.05	MCERTS	1.4	-	< 0.05	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	1.9	-	< 0.10	< 0.10	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.89	-	< 0.10	< 0.10	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	1.5	-	< 0.10	< 0.10	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.69	-	< 0.10	< 0.10	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.77	-	< 0.05	< 0.05	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	16.0	-	< 1.60	< 1.60	-
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	-	13	13	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.63	-	0.65	0.72	-
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	-	1.0	1.3	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.2	-	< 0.2	0.2	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	-	< 1.2	< 1.2	-
Chromium (III)	mg/kg	1	NONE	18	-	21	24	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	-	22	24	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	17	-	13	16	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	28	-	17	21	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	-	14	16	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	38	-	41	39	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	61	-	36	43	-

Analytical Report Number: 16-33900

Project / Site name: Heyford Park - Main Site (Phase 10)
Your Order No: POP002067

Lab Sample Number				664243	664244	664245	664246	664247
Sample Reference				TP129	TP129	TP130	TP131	TP131
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.90	0.10	0.10	0.60
Date Sampled				08/11/2016	08/11/2016	08/11/2016	08/11/2016	08/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	14	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	21	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4

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Project / Site name: Heyford Park - Main Site (Phase 10)
Your Order No: POP002067

Lab Sample Number				664243	664244	664245	664246	664247
Sample Reference				TP129	TP129	TP130	TP131	TP131
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.90	0.10	0.10	0.60
Date Sampled				08/11/2016	08/11/2016	08/11/2016	08/11/2016	08/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Chloroethane	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
Bromomethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Vinyl Chloride	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
1,1-dichloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Trichloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
Benzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Trichloroethene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Dibromomethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Tetrachloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Styrene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Tribromomethane	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Bromobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-

Analytical Report Number: 16-33900

Project / Site name: Heyford Park - Main Site (Phase 10)
Your Order No: POP002067

Lab Sample Number				664243	664244	664245	664246	664247
Sample Reference				TP129	TP129	TP130	TP131	TP131
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.90	0.10	0.10	0.60
Date Sampled				08/11/2016	08/11/2016	08/11/2016	08/11/2016	08/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs Compound Name		N/A	NONE	None Detected	-	None Detected	-	-
VOC % Match	%	N/A	NONE	0	-	0	-	-

Analytical Report Number: 16-33900

Project / Site name: Heyford Park - Main Site (Phase 10)
Your Order No: POP002067

Lab Sample Number				664243	664244	664245	664246	664247
Sample Reference				TP129	TP129	TP130	TP131	TP131
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.90	0.10	0.10	0.60
Date Sampled				08/11/2016	08/11/2016	08/11/2016	08/11/2016	08/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	-	< 0.1	-	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	-	< 0.2	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	-	< 0.2	-	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-	< 0.1	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-	< 0.1	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	-	< 0.1	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	-	< 0.3	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
Fluorene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
Phenanthrene	mg/kg	0.1	MCERTS	0.96	-	< 0.10	-	-
Anthracene	mg/kg	0.1	MCERTS	0.23	-	< 0.10	-	-
Carbazole	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
Fluoranthene	mg/kg	0.1	MCERTS	2.9	-	< 0.10	-	-
Pyrene	mg/kg	0.1	MCERTS	2.8	-	< 0.10	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	-	< 0.3	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	1.9	-	< 0.10	-	-
Chrysene	mg/kg	0.05	MCERTS	1.4	-	< 0.05	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	1.9	-	< 0.10	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.89	-	< 0.10	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	1.5	-	< 0.10	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.69	-	< 0.10	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.77	-	< 0.05	-	-

Analytical Report Number: 16-33900

Project / Site name: Heyford Park - Main Site (Phase 10)
Your Order No: POP002067

Lab Sample Number				664243	664244	664245	664246	664247
Sample Reference				TP129	TP129	TP130	TP131	TP131
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.90	0.10	0.10	0.60
Date Sampled				08/11/2016	08/11/2016	08/11/2016	08/11/2016	08/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	Benzo[e]pyrene	-	10,18-Bisnorabieta-8,11,13-triene	-	-
SVOC % Match	%	N/A	NONE	99	-	94	-	-
SVOCs TICs Compound Name		N/A	NONE	Benz[e]acephenanthrylene	-	Oxirane, heptadecyl-	-	-
SVOC % Match	%	N/A	NONE	98	-	94	-	-
SVOCs TICs Compound Name		N/A	NONE	Phenanthrene, 1-methyl-	-	-	-	-
SVOC % Match	%	N/A	NONE	95	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Triphenylene, 2-methyl-	-	-	-	-
SVOC % Match	%	N/A	NONE	95	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	1,10b(2H)-Dihydropyrano[3,4,5-jk]fluorene	-	-	-	-
SVOC % Match	%	N/A	NONE	93	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Pyrene, 1-methyl-	-	-	-	-
SVOC % Match	%	N/A	NONE	93	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-

Analytical Report Number : 16-33900

Project / Site name: Heyford Park - Main Site (Phase 10)

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
664238	SA07	None Supplied	0.00-0.35	Brown loam and clay with gravel and vegetation.
664239	TP126	None Supplied	0.10	Brown loam and sand with gravel and vegetation.
664240	TP127	None Supplied	0.10	Brown loam and sand with gravel and vegetation.
664241	TP128	None Supplied	0.10	Brown loam and sand with gravel and vegetation.
664242	TP128	None Supplied	1.10	Brown loam and clay with gravel and vegetation.
664243	TP129	None Supplied	0.10	Brown loam and sand with gravel and vegetation.
664244	TP129	None Supplied	0.90	Brown clay and sand.
664245	TP130	None Supplied	0.10	Brown loam and sand with gravel and vegetation.
664246	TP131	None Supplied	0.10	Brown loam and sand with gravel and vegetation.
664247	TP131	None Supplied	0.60	Brown clay and sand.

Analytical Report Number : 16-33900

Project / Site name: Heyford Park - Main Site (Phase 10)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	NONE
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE

Analytical Report Number : 16-33900

Project / Site name: Heyford Park - Main Site (Phase 10)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPH Chromatogram	TPH Chromatogram.	In-house method	L064-PL	D	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
SA07		S	16-33900	664238	c	Free cyanide in soil	L080-PL	c
SA07		S	16-33900	664238	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
SA07		S	16-33900	664238	c	Organic matter in soil	L023-PL	c
TP126		S	16-33900	664239	c	Free cyanide in soil	L080-PL	c
TP126		S	16-33900	664239	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP126		S	16-33900	664239	c	Organic matter in soil	L023-PL	c
TP127		S	16-33900	664240	c	Free cyanide in soil	L080-PL	c
TP127		S	16-33900	664240	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP127		S	16-33900	664240	c	Organic matter in soil	L023-PL	c
TP128		S	16-33900	664241	c	Free cyanide in soil	L080-PL	c
TP128		S	16-33900	664241	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP128		S	16-33900	664241	c	Organic matter in soil	L023-PL	c
TP128		S	16-33900	664241	c	Tentatively identified compounds (VOC) in soil	L073-PL	c
TP128		S	16-33900	664241	c	Volatile organic compounds in soil	L073B-PL	c
TP128		S	16-33900	664242	bc	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	bc
TP128		S	16-33900	664242	bc	TPH Chromatogram	L064-PL	b
TP128		S	16-33900	664242	bc	TPH in (Soil)	L076-PL	b
TP128		S	16-33900	664242	bc	TPHCWG (Soil)	L076-PL	b
TP129		S	16-33900	664243	c	Free cyanide in soil	L080-PL	c
TP129		S	16-33900	664243	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP129		S	16-33900	664243	c	Organic matter in soil	L023-PL	c
TP129		S	16-33900	664243	c	Tentatively identified compounds (VOC) in soil	L073-PL	c
TP129		S	16-33900	664243	c	Volatile organic compounds in soil	L073B-PL	c
TP129		S	16-33900	664244	bc	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	bc
TP129		S	16-33900	664244	bc	TPH Chromatogram	L064-PL	b
TP129		S	16-33900	664244	bc	TPH in (Soil)	L076-PL	b
TP129		S	16-33900	664244	bc	TPHCWG (Soil)	L076-PL	b
TP130		S	16-33900	664245	c	Free cyanide in soil	L080-PL	c
TP130		S	16-33900	664245	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP130		S	16-33900	664245	c	Organic matter in soil	L023-PL	c
TP130		S	16-33900	664245	c	Tentatively identified compounds (VOC) in soil	L073-PL	c
TP130		S	16-33900	664245	c	Volatile organic compounds in soil	L073B-PL	c
TP131		S	16-33900	664246	c	Free cyanide in soil	L080-PL	c
TP131		S	16-33900	664246	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP131		S	16-33900	664246	c	Organic matter in soil	L023-PL	c
TP131		S	16-33900	664247	bc	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	bc
TP131		S	16-33900	664247	bc	TPH Chromatogram	L064-PL	b
TP131		S	16-33900	664247	bc	TPH in (Soil)	L076-PL	b
TP131		S	16-33900	664247	bc	TPHCWG (Soil)	L076-PL	b

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Analytical Report Number : 16-33897

Project / Site name:	Heyford Park - Main Site (Phase 16)	**Samples received on:**	15/11/2016
Your job number:	C-04583-C	**Samples instructed on:**	25/11/2016
Your order number:	POP002067	**Analysis completed by:**	02/12/2016
Report Issue Number:	1	**Report issued on:**	02/12/2016
Samples Analysed:	10 soil samples		

Signed: [redacted]

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

Signed: [redacted]

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

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 16-33897

Project / Site name: Heyford Park - Main Site (Phase 16)
Your Order No: POP002067

Lab Sample Number				664223	664224	664225	664226	664230
Sample Reference				TP145	TP147	TP149	TP152	TP155
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.10	0.10	0.50	0.10
Date Sampled				10/11/2016	10/11/2016	10/11/2016	10/11/2016	14/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	18	15	16	12	15
Total mass of sample received	kg	0.001	NONE	1.3	1.1	1.2	1.3	1.2
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.5	7.7	7.7	7.9	7.7
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.016	0.011	0.017	0.0078	0.017
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	15.9	11.1	16.6	7.8	17.2
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.022	0.017	0.019	0.0061	0.020
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	21	18	20	8.7	15
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.2	0.90	0.73	0.58	0.71
Boron (water soluble)	mg/kg	0.2	MCERTS	1.7	1.4	1.6	0.5	1.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	0.3	< 0.2	0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	35	26	23	17	22
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	36	27	24	17	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	17	14	14	7.7	14
Lead (aqua regia extractable)	mg/kg	1	MCERTS	23	16	17	6.9	16
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	25	18	16	11	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	77	65	57	35	52
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	56	38	39	26	41

Analytical Report Number: 16-33897

Project / Site name: Heyford Park - Main Site (Phase 16)
Your Order No: POP002067

Lab Sample Number				664223	664224	664225	664226	664230
Sample Reference				TP145	TP147	TP149	TP152	TP155
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.10	0.10	0.50	0.10
Date Sampled				10/11/2016	10/11/2016	10/11/2016	10/11/2016	14/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4

Analytical Report Number: 16-33897

Project / Site name: Heyford Park - Main Site (Phase 16)
Your Order No: POP002067

Lab Sample Number				664223	664224	664225	664226	664230
Sample Reference				TP145	TP147	TP149	TP152	TP155
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.10	0.10	0.50	0.10
Date Sampled				10/11/2016	10/11/2016	10/11/2016	10/11/2016	14/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Chloroethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Vinyl Chloride	µg/kg	1	NONE	-	-	-	-	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-	-	< 1.0
1,1-dichloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
Benzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Styrene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Tribromomethane	µg/kg	1	NONE	-	-	-	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0

Analytical Report Number: 16-33897

Project / Site name: Heyford Park - Main Site (Phase 16)
Your Order No: POP002067

Lab Sample Number				664223	664224	664225	664226	664230
Sample Reference				TP145	TP147	TP149	TP152	TP155
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.10	0.10	0.50	0.10
Date Sampled				10/11/2016	10/11/2016	10/11/2016	10/11/2016	14/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs Compound Name		N/A	NONE	-	-	-	-	None Detected
VOC % Match	%	N/A	NONE	-	-	-	-	0

Analytical Report Number: 16-33897

Project / Site name: Heyford Park - Main Site (Phase 16)
Your Order No: POP002067

Lab Sample Number				664223	664224	664225	664226	664230
Sample Reference				TP145	TP147	TP149	TP152	TP155
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.10	0.10	0.50	0.10
Date Sampled				10/11/2016	10/11/2016	10/11/2016	10/11/2016	14/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	< 0.3
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05

Analytical Report Number: 16-33897

Project / Site name: Heyford Park - Main Site (Phase 16)
Your Order No: POP002067

Lab Sample Number				664223	664224	664225	664226	664230
Sample Reference				TP145	TP147	TP149	TP152	TP155
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.10	0.10	0.50	0.10
Date Sampled				10/11/2016	10/11/2016	10/11/2016	10/11/2016	14/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	None Detected
SVOC % Match	%	N/A	NONE	-	-	-	-	0

Analytical Report Number: 16-33897

Project / Site name: Heyford Park - Main Site (Phase 16)
Your Order No: POP002067

Lab Sample Number				664231	664232	664233	664234	664235
Sample Reference				TP158	TP160	TP163	TP166	TP168
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.10	0.10	0.10	0.10
Date Sampled				14/11/2016	14/11/2016	14/11/2016	14/11/2016	14/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	14	15	16	16	16
Total mass of sample received	kg	0.001	NONE	1.1	1.2	1.3	1.3	1.2
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.9	7.8	7.6	7.7	7.6
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0066	0.014	0.013	0.011	0.015
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	6.6	13.5	13.0	11.3	14.9
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0051	0.017	0.017	0.018	0.019
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	15	18	16	20
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.63	0.88	1.0	0.74	0.97
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	1.6	1.7	1.6	1.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.2	0.3	0.2	0.3
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	19	27	32	24	30
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	27	32	24	30
Copper (aqua regia extractable)	mg/kg	1	MCERTS	11	14	16	14	15
Lead (aqua regia extractable)	mg/kg	1	MCERTS	7.7	18	20	16	21
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	0.5	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	19	21	16	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	57	62	75	52	69
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	20	47	49	42	44

Analytical Report Number: 16-33897

Project / Site name: Heyford Park - Main Site (Phase 16)
Your Order No: POP002067

Lab Sample Number				664231	664232	664233	664234	664235
Sample Reference				TP158	TP160	TP163	TP166	TP168
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.10	0.10	0.10	0.10
Date Sampled				14/11/2016	14/11/2016	14/11/2016	14/11/2016	14/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4

Analytical Report Number: 16-33897

Project / Site name: Heyford Park - Main Site (Phase 16)
Your Order No: POP002067

Lab Sample Number				664231	664232	664233	664234	664235
Sample Reference				TP158	TP160	TP163	TP166	TP168
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.10	0.10	0.10	0.10
Date Sampled				14/11/2016	14/11/2016	14/11/2016	14/11/2016	14/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Chloroethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Vinyl Chloride	µg/kg	1	NONE	-	-	-	-	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-	-	< 1.0
1,1-dichloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
Benzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Styrene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Tribromomethane	µg/kg	1	NONE	-	-	-	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0

Analytical Report Number: 16-33897

Project / Site name: Heyford Park - Main Site (Phase 16)
Your Order No: POP002067

Lab Sample Number				664231	664232	664233	664234	664235
Sample Reference				TP158	TP160	TP163	TP166	TP168
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.10	0.10	0.10	0.10
Date Sampled				14/11/2016	14/11/2016	14/11/2016	14/11/2016	14/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs Compound Name		N/A	NONE	-	-	-	-	None Detected
VOC % Match	%	N/A	NONE	-	-	-	-	0

Analytical Report Number: 16-33897

Project / Site name: Heyford Park - Main Site (Phase 16)
Your Order No: POP002067

Lab Sample Number				664231	664232	664233	664234	664235
Sample Reference				TP158	TP160	TP163	TP166	TP168
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.10	0.10	0.10	0.10
Date Sampled				14/11/2016	14/11/2016	14/11/2016	14/11/2016	14/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	< 0.3
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05

Analytical Report Number: 16-33897

Project / Site name: Heyford Park - Main Site (Phase 16)
Your Order No: POP002067

Lab Sample Number				664231	664232	664233	664234	664235
Sample Reference				TP158	TP160	TP163	TP166	TP168
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.10	0.10	0.10	0.10
Date Sampled				14/11/2016	14/11/2016	14/11/2016	14/11/2016	14/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	None Detected
SVOC % Match	%	N/A	NONE	-	-	-	-	0

Analytical Report Number : 16-33897

Project / Site name: Heyford Park - Main Site (Phase 16)

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
664223	TP145	None Supplied	0.10	Brown loam and clay with gravel and vegetation.
664224	TP147	None Supplied	0.10	Brown loam and clay with gravel and vegetation.
664225	TP149	None Supplied	0.10	Brown loam and clay with gravel and vegetation.
664226	TP152	None Supplied	0.50	Light brown loam and clay with gravel.
664230	TP155	None Supplied	0.10	Brown loam and clay with gravel.
664231	TP158	None Supplied	0.40	Brown loam and clay with gravel.
664232	TP160	None Supplied	0.10	Brown loam and clay with gravel.
664233	TP163	None Supplied	0.10	Brown loam and clay with gravel.
664234	TP166	None Supplied	0.10	Brown loam and clay with gravel.
664235	TP168	None Supplied	0.10	Brown loam and clay with gravel.

The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 16-33897

Project / Site name: Heyford Park - Main Site (Phase 16)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	NONE
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE

Analytical Report Number : 16-33897

Project / Site name: Heyford Park - Main Site (Phase 16)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPH Chromatogram	TPH Chromatogram.	In-house method	L064-PL	D	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 16-33901

Project / Site name:	Heyford Park - Main Site (Phase 16A)	**Samples received on:**	25/11/2016
Your job number:	C-04583-C	**Samples instructed on:**	25/11/2016
Your order number:	POP002067	**Analysis completed by:**	02/12/2016
Report Issue Number:	1	**Report issued on:**	02/12/2016
Samples Analysed:	11 soil samples		

Signed: [redacted]

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed: [redacted]

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

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664248	664249	664250	664251	664252
Sample Reference				TP16	TP18	TP18	TP23	TP24
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.15	0.15	0.50	0.20	0.20
Date Sampled				04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	13	12	8.0	12	9.4
Total mass of sample received	kg	0.001	NONE	1.2	1.4	0.53	1.3	1.2
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.7	7.9	8.0	7.7	7.8
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.026	0.019	0.013	0.017	0.023
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	25.9	19.3	13.3	17.2	23.3
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.021	0.019	0.0082	0.016	0.013
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	12	9.1	13	12
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.77	0.67	0.41	0.83	0.51
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	1.4	0.8	1.3	1.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.3	0.2	< 0.2	0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	25	23	15	26	18
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	24	15	26	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	18	16	21	19
Lead (aqua regia extractable)	mg/kg	1	MCERTS	22	16	9.0	19	13
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	16	10	20	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	51	46	33	60	42
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	53	43	26	55	38

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664248	664249	664250	664251	664252
Sample Reference				TP16	TP18	TP18	TP23	TP24
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.15	0.15	0.50	0.20	0.20
Date Sampled				04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	18
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	< 10	< 10	< 10	< 10	18
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664248	664249	664250	664251	664252
Sample Reference				TP16	TP18	TP18	TP23	TP24
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.15	0.15	0.50	0.20	0.20
Date Sampled				04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Chloroethane	µg/kg	1	NONE	-	-	-	< 1.0	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Vinyl Chloride	µg/kg	1	NONE	-	-	-	< 1.0	-
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-	< 1.0	-
1,1-dichloroethene	µg/kg	1	NONE	-	-	-	< 1.0	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	< 1.0	-
Benzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Toluene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Tetrachloroethene	µg/kg	1	NONE	-	-	-	< 1.0	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Styrene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Tribromomethane	µg/kg	1	NONE	-	-	-	< 1.0	-
o-xylene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
Sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Butylbenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	< 1.0	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-	< 1.0	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-	< 1.0	-

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664248	664249	664250	664251	664252
Sample Reference				TP16	TP18	TP18	TP23	TP24
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.15	0.15	0.50	0.20	0.20
Date Sampled				04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs Compound Name		N/A	NONE	-	-	-	None Detected	-
VOC % Match	%	N/A	NONE	-	-	-	0	-

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664248	664249	664250	664251	664252
Sample Reference				TP16	TP18	TP18	TP23	TP24
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.15	0.15	0.50	0.20	0.20
Date Sampled				04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	< 0.1	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	< 0.2	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	< 0.05	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	< 0.2	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	< 0.1	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	< 0.1	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	< 0.1	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	< 0.3	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	< 0.2	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	< 0.3	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	< 0.3	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	-

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664248	664249	664250	664251	664252
Sample Reference				TP16	TP18	TP18	TP23	TP24
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.15	0.15	0.50	0.20	0.20
Date Sampled				04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	-	None Detected	-
SVOC % Match	%	N/A	NONE	-	-	-	0	-

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664253	664254	664255	664256	664257
Sample Reference				TP26	TP118	TP120	TP123	TP153
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.10	0.10	0.10	0.10
Date Sampled				04/11/2016	07/11/2016	07/11/2016	07/11/2016	10/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	14	13	14	13	16
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.3	1.4	1.3
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.9	7.6	7.4	7.5	7.5
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.029	0.016	0.025	0.015	0.013
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	28.5	16.1	25.1	15.1	13.0
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.020	0.021	0.019	0.018	0.014
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	18	15	15	17
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.71	0.92	0.91	0.82	0.89
Boron (water soluble)	mg/kg	0.2	MCERTS	1.7	1.6	1.7	2.0	1.0
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.3	0.2	0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	24	30	29	26	30
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	31	30	26	31
Copper (aqua regia extractable)	mg/kg	1	MCERTS	29	19	18	17	16
Lead (aqua regia extractable)	mg/kg	1	MCERTS	21	23	24	22	20
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	< 0.3	0.5	0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	23	23	18	22
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	50	66	67	52	56
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	52	60	59	49	49

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664253	664254	664255	664256	664257
Sample Reference				TP26	TP118	TP120	TP123	TP153
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.10	0.10	0.10	0.10
Date Sampled				04/11/2016	07/11/2016	07/11/2016	07/11/2016	10/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664253	664254	664255	664256	664257
Sample Reference				TP26	TP118	TP120	TP123	TP153
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.10	0.10	0.10	0.10
Date Sampled				04/11/2016	07/11/2016	07/11/2016	07/11/2016	10/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Chloroethane	µg/kg	1	NONE	-	-	< 1.0	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Vinyl Chloride	µg/kg	1	NONE	-	-	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	-	< 1.0	-	-
1,1-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	-
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Tetrachloroethene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Styrene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Tribromomethane	µg/kg	1	NONE	-	-	< 1.0	-	-
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Tert-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Sec-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664253	664254	664255	664256	664257
Sample Reference				TP26	TP118	TP120	TP123	TP153
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.10	0.10	0.10	0.10
Date Sampled				04/11/2016	07/11/2016	07/11/2016	07/11/2016	10/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs Compound Name		N/A	NONE	-	-	None Detected	-	-
VOC % Match	%	N/A	NONE	-	-	0	-	-

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664253	664254	664255	664256	664257
Sample Reference				TP26	TP118	TP120	TP123	TP153
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.10	0.10	0.10	0.10
Date Sampled				04/11/2016	07/11/2016	07/11/2016	07/11/2016	10/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664253	664254	664255	664256	664257
Sample Reference				TP26	TP118	TP120	TP123	TP153
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.10	0.10	0.10	0.10
Date Sampled				04/11/2016	07/11/2016	07/11/2016	07/11/2016	10/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	Methoxyacetic acid, heptadecyl ester	-	-
SVOC % Match	%	N/A	NONE	-	-	97	-	-

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664258				
Sample Reference				TP153				
Sample Number				None Supplied				
Depth (m)				0.80				
Date Sampled				10/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	9.8				
Total mass of sample received	kg	0.001	NONE	0.73				
Asbestos in Soil	Type	N/A	ISO 17025	-				
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	-				
Free Cyanide	mg/kg	1	MCERTS	-				
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-				
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-				
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	-				
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-				
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-				
Acenaphthylene	mg/kg	0.1	MCERTS	-				
Acenaphthene	mg/kg	0.1	MCERTS	-				
Fluorene	mg/kg	0.1	MCERTS	-				
Phenanthrene	mg/kg	0.1	MCERTS	-				
Anthracene	mg/kg	0.1	MCERTS	-				
Fluoranthene	mg/kg	0.1	MCERTS	-				
Pyrene	mg/kg	0.1	MCERTS	-				
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-				
Chrysene	mg/kg	0.05	MCERTS	-				
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-				
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-				
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-				
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-				
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-				
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	-				
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-				
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-				
Boron (water soluble)	mg/kg	0.2	MCERTS	-				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-				
Chromium (hexavalent)	mg/kg	1.2	MCERTS	-				
Chromium (III)	mg/kg	1	NONE	-				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-				
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-				

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664258				
Sample Reference				TP153				
Sample Number				None Supplied				
Depth (m)				0.80				
Date Sampled				10/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-xylene	µg/kg	1	MCERTS	< 1.0				
o-xylene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	< 10				
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4				
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4				

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664258				
Sample Reference				TP153				
Sample Number				None Supplied				
Depth (m)				0.80				
Date Sampled				10/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-				
Chloroethane	µg/kg	1	NONE	-				
Bromomethane	µg/kg	1	ISO 17025	-				
Vinyl Chloride	µg/kg	1	NONE	-				
Trichlorofluoromethane	µg/kg	1	NONE	-				
1,1-dichloroethene	µg/kg	1	NONE	-				
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-				
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-				
1,1-dichloroethane	µg/kg	1	MCERTS	-				
2,2-Dichloropropane	µg/kg	1	MCERTS	-				
Trichloromethane	µg/kg	1	MCERTS	-				
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-				
1,2-dichloroethane	µg/kg	1	MCERTS	-				
1,1-Dichloropropene	µg/kg	1	MCERTS	-				
Trans-1,2-dichloroethene	µg/kg	1	NONE	-				
Benzene	µg/kg	1	MCERTS	-				
Tetrachloromethane	µg/kg	1	MCERTS	-				
1,2-dichloropropane	µg/kg	1	MCERTS	-				
Trichloroethene	µg/kg	1	MCERTS	-				
Dibromomethane	µg/kg	1	MCERTS	-				
Bromodichloromethane	µg/kg	1	MCERTS	-				
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-				
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-				
Toluene	µg/kg	1	MCERTS	-				
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-				
1,3-Dichloropropane	µg/kg	1	ISO 17025	-				
Dibromochloromethane	µg/kg	1	ISO 17025	-				
Tetrachloroethene	µg/kg	1	NONE	-				
1,2-Dibromoethane	µg/kg	1	ISO 17025	-				
Chlorobenzene	µg/kg	1	MCERTS	-				
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-				
Ethylbenzene	µg/kg	1	MCERTS	-				
p & m-xylene	µg/kg	1	MCERTS	-				
Styrene	µg/kg	1	MCERTS	-				
Tribromomethane	µg/kg	1	NONE	-				
o-xylene	µg/kg	1	MCERTS	-				
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-				
Isopropylbenzene	µg/kg	1	MCERTS	-				
Bromobenzene	µg/kg	1	MCERTS	-				
N-Propylbenzene	µg/kg	1	ISO 17025	-				
2-Chlorotoluene	µg/kg	1	MCERTS	-				
4-Chlorotoluene	µg/kg	1	MCERTS	-				
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-				
Tert-Butylbenzene	µg/kg	1	MCERTS	-				
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-				
Sec-Butylbenzene	µg/kg	1	MCERTS	-				
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-				
P-Isopropyltoluene	µg/kg	1	ISO 17025	-				
1,2-dichlorobenzene	µg/kg	1	MCERTS	-				
1,4-dichlorobenzene	µg/kg	1	MCERTS	-				
Butylbenzene	µg/kg	1	MCERTS	-				
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-				
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-				
Hexachlorobutadiene	µg/kg	1	MCERTS	-				
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-				

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664258				
Sample Reference				TP153				
Sample Number				None Supplied				
Depth (m)				0.80				
Date Sampled				10/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs Compound Name		N/A	NONE	-				
VOC % Match	%	N/A	NONE	-				

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664258				
Sample Reference				TP153				
Sample Number				None Supplied				
Depth (m)				0.80				
Date Sampled				10/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-				
Phenol	mg/kg	0.2	ISO 17025	-				
2-Chlorophenol	mg/kg	0.1	MCERTS	-				
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-				
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-				
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-				
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-				
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-				
2-Methylphenol	mg/kg	0.3	MCERTS	-				
Hexachloroethane	mg/kg	0.05	MCERTS	-				
Nitrobenzene	mg/kg	0.3	MCERTS	-				
4-Methylphenol	mg/kg	0.2	NONE	-				
Isophorone	mg/kg	0.2	MCERTS	-				
2-Nitrophenol	mg/kg	0.3	MCERTS	-				
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-				
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-				
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-				
Naphthalene	mg/kg	0.05	MCERTS	-				
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-				
4-Chloroaniline	mg/kg	0.1	NONE	-				
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-				
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-				
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-				
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-				
2-Methylnaphthalene	mg/kg	0.1	NONE	-				
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-				
Dimethylphthalate	mg/kg	0.1	MCERTS	-				
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-				
Acenaphthylene	mg/kg	0.1	MCERTS	-				
Acenaphthene	mg/kg	0.1	MCERTS	-				
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-				
Dibenzofuran	mg/kg	0.2	MCERTS	-				
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-				
Diethyl phthalate	mg/kg	0.2	MCERTS	-				
4-Nitroaniline	mg/kg	0.2	MCERTS	-				
Fluorene	mg/kg	0.1	MCERTS	-				
Azobenzene	mg/kg	0.3	MCERTS	-				
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-				
Hexachlorobenzene	mg/kg	0.3	MCERTS	-				
Phenanthrene	mg/kg	0.1	MCERTS	-				
Anthracene	mg/kg	0.1	MCERTS	-				
Carbazole	mg/kg	0.3	MCERTS	-				
Dibutyl phthalate	mg/kg	0.2	MCERTS	-				
Anthraquinone	mg/kg	0.3	MCERTS	-				
Fluoranthene	mg/kg	0.1	MCERTS	-				
Pyrene	mg/kg	0.1	MCERTS	-				
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-				
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-				
Chrysene	mg/kg	0.05	MCERTS	-				
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-				
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-				
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-				
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-				
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-				

Analytical Report Number: 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)
Your Order No: POP002067

Lab Sample Number				664258				
Sample Reference				TP153				
Sample Number				None Supplied				
Depth (m)				0.80				
Date Sampled				10/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-				
SVOC % Match	%	N/A	NONE	-				

Analytical Report Number : 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
664248	TP16	None Supplied	0.15	Brown loam and sand with gravel.
664249	TP18	None Supplied	0.15	Brown loam and sand with gravel.
664250	TP18	None Supplied	0.50	Brown loam and sand with gravel.
664251	TP23	None Supplied	0.20	Brown loam and sand with gravel.
664252	TP24	None Supplied	0.20	Brown loam and sand with gravel.
664253	TP26	None Supplied	0.20	Brown loam and sand with gravel.
664254	TP118	None Supplied	0.10	Brown loam and sand with gravel.
664255	TP120	None Supplied	0.10	Brown loam and sand with gravel.
664256	TP123	None Supplied	0.10	Brown loam and sand with gravel.
664257	TP153	None Supplied	0.10	Brown loam and sand with gravel and vegetation.
664258	TP153	None Supplied	0.80	Brown sandy loam with gravel and vegetation.

Analytical Report Number : 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	NONE
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE

Analytical Report Number : 16-33901

Project / Site name: Heyford Park - Main Site (Phase 16A)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPH Chromatogram	TPH Chromatogram.	In-house method	L064-PL	D	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
TP118		S	16-33901	664254	c	Free cyanide in soil	L080-PL	c
TP118		S	16-33901	664254	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP118		S	16-33901	664254	c	Organic matter in soil	L023-PL	c
TP120		S	16-33901	664255	c	Free cyanide in soil	L080-PL	c
TP120		S	16-33901	664255	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP120		S	16-33901	664255	c	Organic matter in soil	L023-PL	c
TP120		S	16-33901	664255	c	Tentatively identified compounds (VOC) in soil	L073-PL	c
TP120		S	16-33901	664255	c	Volatile organic compounds in soil	L073B-PL	c
TP123		S	16-33901	664256	c	Free cyanide in soil	L080-PL	c
TP123		S	16-33901	664256	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP123		S	16-33901	664256	c	Organic matter in soil	L023-PL	c
TP153		S	16-33901	664257	c	Free cyanide in soil	L080-PL	c
TP153		S	16-33901	664257	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP153		S	16-33901	664257	c	Organic matter in soil	L023-PL	c
TP153		S	16-33901	664258	bc	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	bc
TP153		S	16-33901	664258	bc	TPH Chromatogram	L064-PL	b
TP153		S	16-33901	664258	bc	TPH in (Soil)	L076-PL	b
TP153		S	16-33901	664258	bc	TPHCWG (Soil)	L076-PL	b
TP16		S	16-33901	664248	c	Free cyanide in soil	L080-PL	c
TP16		S	16-33901	664248	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP16		S	16-33901	664248	c	Organic matter in soil	L023-PL	c
TP18		S	16-33901	664249	c	Free cyanide in soil	L080-PL	c
TP18		S	16-33901	664249	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP18		S	16-33901	664249	c	Organic matter in soil	L023-PL	c
TP18		S	16-33901	664250	c	Free cyanide in soil	L080-PL	c
TP18		S	16-33901	664250	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP18		S	16-33901	664250	c	Organic matter in soil	L023-PL	c
TP23		S	16-33901	664251	c	Free cyanide in soil	L080-PL	c
TP23		S	16-33901	664251	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP23		S	16-33901	664251	c	Organic matter in soil	L023-PL	c
TP23		S	16-33901	664251	c	Tentatively identified compounds (VOC) in soil	L073-PL	c
TP23		S	16-33901	664251	c	Volatile organic compounds in soil	L073B-PL	c
TP24		S	16-33901	664252	c	Free cyanide in soil	L080-PL	c
TP24		S	16-33901	664252	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP24		S	16-33901	664252	c	Organic matter in soil	L023-PL	c
TP26		S	16-33901	664253	c	Free cyanide in soil	L080-PL	c
TP26		S	16-33901	664253	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP26		S	16-33901	664253	c	Organic matter in soil	L023-PL	c

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
TP145		S	16-33897	664223	c	Free cyanide in soil	L080-PL	c
TP145		S	16-33897	664223	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP145		S	16-33897	664223	c	Organic matter in soil	L023-PL	c
TP147		S	16-33897	664224	c	Free cyanide in soil	L080-PL	c
TP147		S	16-33897	664224	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP147		S	16-33897	664224	c	Organic matter in soil	L023-PL	c
TP149		S	16-33897	664225	c	Free cyanide in soil	L080-PL	c
TP149		S	16-33897	664225	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP149		S	16-33897	664225	c	Organic matter in soil	L023-PL	c
TP152		S	16-33897	664226	c	Free cyanide in soil	L080-PL	c
TP152		S	16-33897	664226	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
TP152		S	16-33897	664226	c	Organic matter in soil	L023-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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Analytical Report Number : 16-33845

Project / Site name:	Heyford Park - Main Site (Phase 9)	**Samples received on:**	24/11/2016
Your job number:	C-04583-C	**Samples instructed on:**	24/11/2016
Your order number:	POP002069	**Analysis completed by:**	01/12/2016
Report Issue Number:	1	**Report issued on:**	01/12/2016
Samples Analysed:	4 water samples		

Signed: [redacted]

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed: [redacted]

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

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 16-33845

Project / Site name: Heyford Park - Main Site (Phase 9)

Your Order No: POP002069

Lab Sample Number				663859	663860	663861	663862	
Sample Reference				BH01	BH02	BH03	BH04	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				23/11/2016	23/11/2016	23/11/2016	23/11/2016	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.1	7.3	7.3	7.4	
Electrical Conductivity	µS/cm	10	NONE	970	590	670	570	
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	
Sulphate as SO_4	µg/l	45	ISO 17025	165000	43200	7240	30800	
Chloride	mg/l	0.15	ISO 17025	52	24	29	18	
Fluoride	µg/l	50	ISO 17025	110	110	110	110	
Ammonium as NH_4	µg/l	15	ISO 17025	86	110	160	< 15	
Nitrate as N	mg/l	0.01	ISO 17025	0.16	0.36	0.05	0.05	
Nitrate as NO_3	mg/l	0.05	ISO 17025	0.70	1.61	0.21	0.21	
Nitrite as N	µg/l	1	ISO 17025	6.0	88	5.0	23	
Nitrite as NO_2	µg/l	5	ISO 17025	20	290	16	76	
Hardness - Total	mgCaCO3/l	1	ISO 17025	581	361	427	312	
Bromate by IC	mg/l	0.002	ISO 17025	< 0.002	< 0.002	< 0.002	< 0.002	
Total Phenols								
Total Phenols	µg/l	0.5	NONE	< 0.50	< 0.50	< 0.50	< 0.50	
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Anthracene	µg/l	0.01	ISO 17025	< 0.01	2.22	< 0.01	< 0.01	
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	1.64	< 0.01	< 0.01	
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Indeno(1,2,3-cd)pyrene	µg/l	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	
Benzo(ghi)perylene	µg/l	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	
PAH Sums								
Sum of Benzo(b)fluoranthene & Benzo(k)fluoranthene	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
Sum of Benzo(ghi)fluoranthene & Indeno(1,2,3-cd)pyrene	µg/l	0.002	NONE	< 0.002	< 0.002	< 0.002	< 0.002	
Sum of Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)fluoranthene & Indeno(1,2,3-cd)pyrene	µg/l	0.022	NONE	< 0.02	< 0.02	< 0.02	< 0.02	

Analytical Report Number: 16-33845

Project / Site name: Heyford Park - Main Site (Phase 9)

Your Order No: POP002069

Lab Sample Number				663859	663860	663861	663862	
Sample Reference				BH01	BH02	BH03	BH04	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				23/11/2016	23/11/2016	23/11/2016	23/11/2016	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Zinc (total)	µg/l	0.5	ISO 17025	220	14	19	33	
Aluminium (dissolved)	mg/l	0.001	ISO 17025	0.0095	< 0.0010	0.0016	< 0.0010	
Antimony (dissolved)	µg/l	0.4	ISO 17025	< 0.4	< 0.4	< 0.4	< 0.4	
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.87	0.69	< 0.15	0.37	
Barium (dissolved)	µg/l	0.06	ISO 17025	48	22	16	37	
Boron (dissolved)	µg/l	10	ISO 17025	31	28	81	39	
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.09	< 0.02	< 0.02	< 0.02	
Calcium (dissolved)	mg/l	0.012	ISO 17025	220	140	160	120	
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.2	< 0.2	0.2	< 0.2	
Cobalt (dissolved)	µg/l	0.2	ISO 17025	4.4	5.0	0.6	1.7	
Copper (dissolved)	µg/l	0.5	ISO 17025	3.1	2.3	8.6	3.8	
Iron (dissolved)	mg/l	0.004	ISO 17025	0.013	0.17	0.045	0.005	
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	
Magnesium (dissolved)	mg/l	0.005	ISO 17025	8.0	2.6	5.9	5.3	
Manganese (dissolved)	µg/l	0.05	ISO 17025	190	66	350	76	
Mercury (dissolved) CV-AFS	µg/l	0.005	NONE	< 0.005	0.007	0.041	0.024	
Molybdenum (dissolved)	µg/l	0.05	ISO 17025	2.4	1.1	1.5	5.7	
Nickel (dissolved)	µg/l	0.5	ISO 17025	12	18	5.0	6.5	
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6	< 0.6	< 0.6	
Silver (dissolved)	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Sodium (dissolved)	mg/l	0.01	ISO 17025	15	14	20	12	
Tin (dissolved)	µg/l	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.3	< 0.2	< 0.2	0.2	
Zinc (dissolved)	µg/l	0.5	ISO 17025	140	6.0	6.3	11	
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/l	1	ISO 17025	26.4	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	1700	12000	< 10	< 10	
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	10000	40000	< 10	< 10	
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	13000	83000	< 10	< 10	
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	15000	< 10	< 10	
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C16 - C35	µg/l	10	NONE	< 10	15000	< 10	< 10	
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	26	< 10	< 10	< 10	
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	12	< 10	< 10	
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	12	< 10	< 10	
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	

Analytical Report Number: 16-33845

Project / Site name: Heyford Park - Main Site (Phase 9)

Your Order No: POP002069

Lab Sample Number				663859	663860	663861	663862	
Sample Reference				BH01	BH02	BH03	BH04	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				23/11/2016	23/11/2016	23/11/2016	23/11/2016	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					

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

Analytical Report Number : 16-33845

Project / Site name: Heyford Park - Main Site (Phase 9)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Bromate in Water	Determination of bromate in waters based on ion chromatography. Accredited matrices GW, PW, SW.	In house method based on Standard Methods for the Analysis of Water and Waste Water, method 4500	L008-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement.	In-house method	L031-PL	W	NONE
Fluoride in water	Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033-PL	W	ISO 17025
Free cyanide in water	Determination of free cyanide by distillation followed by colorimetry.Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Mercury Low Level (Dissolved) in Water	Mercury in water by millennium merlin AFS analyser	In-house method based on USEPA method 1631	L085-PL	W	NONE
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrite as N in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrite in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry).Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025

Analytical Report Number : 16-33845

Project / Site name: Heyford Park - Main Site (Phase 9)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH at 20oC in water (automated)	Determination of pH in water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Phenols, speciated, in water, by GCMS	Determination of speciated phenols in water by extraction in hexane followed by GC-MS.	In-house method based on USEPA 8270	L070-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L0102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in water (LOW LEVEL Dets)	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Specific PAH sums in water	Determination of PAH compounds in water by extraction in hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L070-PL	W	NONE
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPH Chromatogram	TPH Chromatogram.	In-house method	L070-PL	W	NONE
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 16-33847

Project / Site name:	Heyford Park - Main Site (Phase 10)	**Samples received on:**	24/11/2016
Your job number:	C-04583-C	**Samples instructed on:**	24/11/2016
Your order number:	POP002069	**Analysis completed by:**	02/12/2016
Report Issue Number:	1	**Report issued on:**	02/12/2016
Samples Analysed:	6 water samples		

Signed: _____

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed: [redacted]

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

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

Your Order No: POP002069

Lab Sample Number				663867	663868	663869	663870	663871
Sample Reference				BH05	BH10	BH11	BH12	BH13
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				23/11/2016	23/11/2016	23/11/2016	23/11/2016	23/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.5	7.0	7.6	7.1	7.3
Electrical Conductivity	µS/cm	10	NONE	510	660	410	760	630
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	45	ISO 17025	7730	24500	23400	34200	23700
Chloride	mg/l	0.15	ISO 17025	14	6.8	22	14	17
Fluoride	µg/l	50	ISO 17025	140	99	94	95	96
Ammonium as NH_4	µg/l	15	ISO 17025	18	280	44	72	< 15
Nitrate as N	mg/l	0.01	ISO 17025	0.04	0.22	0.15	0.05	0.04
Nitrate as NO_3	mg/l	0.05	ISO 17025	0.16	0.96	0.64	0.21	0.16
Nitrite as N	µg/l	1	ISO 17025	9.0	14	38	9.0	8.0
Nitrite as NO_2	µg/l	5	ISO 17025	30	46	120	30	26
Hardness - Total	mgCaCO3/l	1	ISO 17025	294	267	235	459	395
Bromate by IC	mg/l	0.002	ISO 17025	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Total Phenols								
Total Phenols (GC-MS)	µg/l	0.5	NONE	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	1.12	< 0.01	9.11	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	0.40	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	0.27	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	0.24	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	0.33	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.001	NONE	0.15	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(ghi)perylene	µg/l	0.001	NONE	0.21	< 0.001	< 0.001	< 0.001	< 0.001
PAH Sums								
Sum of Benzo(b)fluoranthene & Benzo(k)fluoranthene	µg/l	0.02	NONE	0.51	< 0.02	< 0.02	< 0.02	< 0.02
Sum of Benzo(ghi)fluoranthene & Indeno(1,2,3-cd)pyrene	µg/l	0.002	NONE	0.360	< 0.002	< 0.002	< 0.002	< 0.002
Sum of Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)fluoranthene & Indeno(1,2,3-cd)pyrene	µg/l	0.022	NONE	0.87	< 0.02	< 0.02	< 0.02	< 0.02

Analytical Report Number: 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

Your Order No: POP002069

Lab Sample Number				663867	663868	663869	663870	663871
Sample Reference				BH05	BH10	BH11	BH12	BH13
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				23/11/2016	23/11/2016	23/11/2016	23/11/2016	23/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Zinc (total)	µg/l	0.5	ISO 17025	22	15	27	26	15
Aluminium (dissolved)	mg/l	0.001	ISO 17025	< 0.0010	< 0.0010	< 0.0010	0.0012	0.0027
Antimony (dissolved)	µg/l	0.4	ISO 17025	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.96	4.40	< 0.15	0.93	2.99
Barium (dissolved)	µg/l	0.06	ISO 17025	17	18	11	41	36
Boron (dissolved)	µg/l	10	ISO 17025	37	55	21	53	34
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	0.05	0.02	< 0.02
Calcium (dissolved)	mg/l	0.012	ISO 17025	110	100	91	170	150
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cobalt (dissolved)	µg/l	0.2	ISO 17025	2.3	1.8	0.4	2.6	1.1
Copper (dissolved)	µg/l	0.5	ISO 17025	7.4	2.3	2.0	6.9	3.1
Iron (dissolved)	mg/l	0.004	ISO 17025	0.004	2.3	0.38	< 0.004	< 0.004
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.8	< 0.2	< 0.2	< 0.2
Magnesium (dissolved)	mg/l	0.005	ISO 17025	3.6	4.1	1.8	8.0	6.0
Manganese (dissolved)	µg/l	0.05	ISO 17025	220	340	27	360	120
Mercury (dissolved) CV-AFS	µg/l	0.005	NONE	0.007	0.009	< 0.005	< 0.005	< 0.005
Molybdenum (dissolved)	µg/l	0.05	ISO 17025	2.7	5.6	2.0	3.2	3.3
Nickel (dissolved)	µg/l	0.5	ISO 17025	5.7	0.9	2.6	7.0	4.0
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Silver (dissolved)	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Sodium (dissolved)	mg/l	0.01	ISO 17025	9.9	4.6	17	11	11
Tin (dissolved)	µg/l	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Vanadium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.7	4.6	1.8	19	4.5
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	12.2	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	< 10	480	< 10	40	< 10
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	< 10	3800	< 10	1500	< 10
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	240	2500	740	1400	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	1600	1700	790	1800	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	1200	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C35	µg/l	10	NONE	1200	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	< 10	< 10	< 10	12	< 10
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10	< 10	< 10	610	< 10
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	1600	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	1600	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

Analytical Report Number: 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

Your Order No: POP002069

Lab Sample Number				663867	663868	663869	663870	663871
Sample Reference				BH05	BH10	BH11	BH12	BH13
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				23/11/2016	23/11/2016	23/11/2016	23/11/2016	23/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	12.2	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	27.8	< 1.0
Bromobenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	29.9	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	33.4	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	86.5	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	22.1	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	15.2	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

Your Order No: POP002069

Lab Sample Number				663867	663868	663869	663870	663871
Sample Reference				BH05	BH10	BH11	BH12	BH13
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				23/11/2016	23/11/2016	23/11/2016	23/11/2016	23/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		10	NONE	-	Octane, 2,6-dimethyl-	None Detected	Benzene, 2-ethyl-1,4-dimethyl-	None Detected
VOC % Match	%	10	NONE	-	94	0	94	0
VOCs TICs Compound Name		10	NONE	-	-	-	Cyclohexane, 1,1,3-trimethyl-	-
VOC % Match	%	10	NONE	-	-	-	90	-

Analytical Report Number: 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

Your Order No: POP002069

Lab Sample Number				663867	663868	663869	663870	663871
Sample Reference				BH05	BH10	BH11	BH12	BH13
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				23/11/2016	23/11/2016	23/11/2016	23/11/2016	23/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	-	1.1	< 0.01	9.1	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	-	< 0.05	< 0.05	37	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01	0.36	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01	0.60	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	-	0.20	< 0.01	0.43	< 0.01
Azobenzene	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	-	0.18	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	-	0.20	< 0.01	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	-	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	-	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	-	< 0.01	< 0.01	< 0.01	< 0.01

Analytical Report Number: 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

Your Order No: POP002069

Lab Sample Number				663867	663868	663869	663870	663871
Sample Reference				BH05	BH10	BH11	BH12	BH13
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				23/11/2016	23/11/2016	23/11/2016	23/11/2016	23/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	Pentadecane, 2,6,10,14-tetramethyl-	Decahydro-4,4,8,9,10-pentamethylnaphthalene	Naphthalene, 2,6-dimethyl-	Phenol, 2-(1,1-dimethylethyl)-5-methyl-
SVOC % Match	%	N/A	NONE	-	97	97	98	97
SVOCs TICs Compound Name		N/A	NONE	-	Decahydro-4,4,8,9,10-pentamethylnaphthalene	Cyclooctane, methyl-	Naphthalene, 1,6,7-trimethyl-	Phenol, 4-(1,1-dimethylpropyl)-
SVOC % Match	%	N/A	NONE	-	95	95	98	97
SVOCs TICs Compound Name		N/A	NONE	-	Naphthalene, 2,3,6-trimethyl-	Naphthalene, decahydro-2-methyl-	Benzene, 1,2,3-trimethyl-	Benzene, 1,2,4,5-tetramethyl-
SVOC % Match	%	N/A	NONE	-	95	95	97	95
SVOCs TICs Compound Name		N/A	NONE	-	Cyclic octaatomic sulfur	1-Ethyl-2,2,6-trimethylcyclohexane	Naphthalene, 2,3-dimethyl-	Benzene, 1,2,3,5-tetramethyl-
SVOC % Match	%	N/A	NONE	-	95	93	97	95
SVOCs TICs Compound Name		N/A	NONE	-	Methanone, [4-(dimethylamino)phenyl]phenyl-	Cyclopentane, 1-pentyl-2-propyl-	Naphthalene, 1,4,6-trimethyl-	.alpha.,.beta.,.beta.-Trimethylstyrene
SVOC % Match	%	N/A	NONE	-	95	91	97	95
SVOCs TICs Compound Name		N/A	NONE	-	Benzene, 1,2,4,5-tetramethyl-	Decane, 4-methyl-	1-Ethyl-2,2,6-trimethylcyclohexane	1H-Indene, 2,3-dihydro-1,1,3-trimethyl-
SVOC % Match	%	N/A	NONE	-	94	90	96	95
SVOCs TICs Compound Name		N/A	NONE	-	Benzene, 1,2-diethyl-	Cyclohexane, 2-butyl-1,1,3-trimethyl-	Benzene, 2-ethyl-1,4-dimethyl-	Benzene, 1,2,3-trimethyl-
SVOC % Match	%	N/A	NONE	-	93	90	96	94
SVOCs TICs Compound Name		N/A	NONE	-	Cyclohexane, 2-butyl-1,1,3-trimethyl-	Cyclohexadecane	Benzene, 2-ethyl-1,3-dimethyl-	Benzene, 1,4-diethyl-
SVOC % Match	%	N/A	NONE	-	93	90	95	94
SVOCs TICs Compound Name		N/A	NONE	-	Dichloroacetic acid, heptadecyl ester	-	Benzene, 4-ethyl-1,2-dimethyl-	Benzene, 1-methyl-3-(1-methylethyl)-
SVOC % Match	%	N/A	NONE	-	93	-	95	94
SVOCs TICs Compound Name		N/A	NONE	-	Cyclotetradecane	-	Benzene, 1,2,4,5-tetramethyl-	Benzene, 1-methyl-4-propyl-
SVOC % Match	%	N/A	NONE	-	93	-	95	93

Analytical Report Number: 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

Your Order No: POP002069

Lab Sample Number				663867	663868	663869	663870	663871
Sample Reference				BH05	BH10	BH11	BH12	BH13
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				23/11/2016	23/11/2016	23/11/2016	23/11/2016	23/11/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Environmental Forensics								
Glycols								
Ethylene Glycol	mg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

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

Analytical Report Number: 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

Your Order No: POP002069

Lab Sample Number				663872				
Sample Reference				BH14				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				23/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.4				
Electrical Conductivity	µS/cm	10	NONE	500				
Total Cyanide	µg/l	10	ISO 17025	< 10				
Free Cyanide	µg/l	10	ISO 17025	< 10				
Sulphate as SO_4	µg/l	45	ISO 17025	30100				
Chloride	mg/l	0.15	ISO 17025	12				
Fluoride	µg/l	50	ISO 17025	120				
Ammonium as NH_4	µg/l	15	ISO 17025	220				
Nitrate as N	mg/l	0.01	ISO 17025	0.04				
Nitrate as NO_3	mg/l	0.05	ISO 17025	0.16				
Nitrite as N	µg/l	1	ISO 17025	9.0				
Nitrite as NO_2	µg/l	5	ISO 17025	30				
Hardness - Total	mgCaCO3/l	1	ISO 17025	290				
Bromate by IC	mg/l	0.002	ISO 17025	< 0.002				
Total Phenols								
Total Phenols (GC-MS)	µg/l	0.5	NONE	< 0.50				
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01				
Anthracene	µg/l	0.01	ISO 17025	< 0.01				
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Indeno(1,2,3-cd)pyrene	µg/l	0.001	NONE	< 0.001				
Benzo(ghi)perylene	µg/l	0.001	NONE	< 0.001				
PAH Sums								
Sum of Benzo(b)fluoranthene & Benzo(k)fluoranthene	µg/l	0.02	NONE	< 0.02				
Sum of Benzo(ghi)fluoranthene & Indeno(1,2,3-cd)pyrene	µg/l	0.002	NONE	< 0.002				
Sum of Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)fluoranthene & Indeno(1,2,3-cd)pyrene	µg/l	0.022	NONE	< 0.02				

Analytical Report Number: 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

Your Order No: POP002069

Lab Sample Number				663872				
Sample Reference				BH14				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				23/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Zinc (total)	µg/l	0.5	ISO 17025	11				
Aluminium (dissolved)	mg/l	0.001	ISO 17025	< 0.0010				
Antimony (dissolved)	µg/l	0.4	ISO 17025	< 0.4				
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.47				
Barium (dissolved)	µg/l	0.06	ISO 17025	18				
Boron (dissolved)	µg/l	10	ISO 17025	24				
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02				
Calcium (dissolved)	mg/l	0.012	ISO 17025	110				
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0				
Chromium (III)	µg/l	1	NONE	< 1.0				
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2				
Cobalt (dissolved)	µg/l	0.2	ISO 17025	1.7				
Copper (dissolved)	µg/l	0.5	ISO 17025	3.6				
Iron (dissolved)	mg/l	0.004	ISO 17025	0.006				
Lead (dissolved)	µg/l	0.2	ISO 17025	2.9				
Magnesium (dissolved)	mg/l	0.005	ISO 17025	2.7				
Manganese (dissolved)	µg/l	0.05	ISO 17025	60				
Mercury (dissolved) CV-AFS	µg/l	0.005	NONE	< 0.005				
Molybdenum (dissolved)	µg/l	0.05	ISO 17025	1.2				
Nickel (dissolved)	µg/l	0.5	ISO 17025	6.6				
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6				
Silver (dissolved)	µg/l	0.05	NONE	< 0.05				
Sodium (dissolved)	mg/l	0.01	ISO 17025	9.0				
Tin (dissolved)	µg/l	0.2	ISO 17025	< 0.20				
Vanadium (dissolved)	µg/l	0.2	ISO 17025	< 0.2				
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.8				
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0				
Toluene	µg/l	1	ISO 17025	< 1.0				
Ethylbenzene	µg/l	1	ISO 17025	< 1.0				
p & m-xylene	µg/l	1	ISO 17025	< 1.0				
o-xylene	µg/l	1	ISO 17025	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	130				
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	280				
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	1200				
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	1500				
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C16 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10				

Analytical Report Number: 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

Your Order No: POP002069

Lab Sample Number				663872				
Sample Reference				BH14				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				23/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0				
Chloroethane	µg/l	1	ISO 17025	< 1.0				
Bromomethane	µg/l	1	ISO 17025	< 1.0				
Vinyl Chloride	µg/l	1	NONE	< 1.0				
Trichlorofluoromethane	µg/l	1	NONE	< 1.0				
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0				
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0				
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0				
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0				
Trichloromethane	µg/l	1	ISO 17025	< 1.0				
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0				
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0				
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0				
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0				
Benzene	µg/l	1	ISO 17025	< 1.0				
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0				
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0				
Trichloroethene	µg/l	1	ISO 17025	< 1.0				
Dibromomethane	µg/l	1	ISO 17025	< 1.0				
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0				
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0				
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0				
Toluene	µg/l	1	ISO 17025	< 1.0				
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0				
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0				
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0				
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0				
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0				
Chlorobenzene	µg/l	1	ISO 17025	< 1.0				
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0				
Ethylbenzene	µg/l	1	ISO 17025	< 1.0				
p & m-Xylene	µg/l	1	ISO 17025	< 1.0				
Styrene	µg/l	1	ISO 17025	< 1.0				
Tribromomethane	µg/l	1	ISO 17025	< 1.0				
o-Xylene	µg/l	1	ISO 17025	< 1.0				
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0				
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0				
Bromobenzene	µg/l	1	ISO 17025	< 1.0				
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0				
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0				
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0				
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0				
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0				
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0				
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0				
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0				
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0				
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0				
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0				
Butylbenzene	µg/l	1	ISO 17025	< 1.0				
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0				
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0				
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0				
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0				

Analytical Report Number: 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

Your Order No: POP002069

Lab Sample Number				663872				
Sample Reference				BH14				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				23/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		10	NONE	None Detected				
VOC % Match	%	10	NONE	0				
VOCs TICs Compound Name		10	NONE	-				
VOC % Match	%	10	NONE	-				

Analytical Report Number: 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

Your Order No: POP002069

Lab Sample Number				663872				
Sample Reference				BH14				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				23/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05				
Phenol	µg/l	0.05	NONE	< 0.05				
2-Chlorophenol	µg/l	0.05	NONE	< 0.05				
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05				
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05				
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05				
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05				
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05				
2-Methylphenol	µg/l	0.05	NONE	< 0.05				
Hexachloroethane	µg/l	0.05	NONE	< 0.05				
Nitrobenzene	µg/l	0.05	NONE	< 0.05				
4-Methylphenol	µg/l	0.05	NONE	< 0.05				
Isophorone	µg/l	0.05	NONE	< 0.05				
2-Nitrophenol	µg/l	0.05	NONE	< 0.05				
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05				
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05				
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05				
Naphthalene	µg/l	0.01	ISO 17025	< 0.01				
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05				
4-Chloroaniline	µg/l	0.05	NONE	< 0.05				
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05				
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05				
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05				
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05				
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05				
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05				
Dimethylphthalate	µg/l	0.05	NONE	< 0.05				
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05				
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01				
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05				
Dibenzofuran	µg/l	0.05	NONE	< 0.05				
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05				
Diethyl phthalate	µg/l	0.05	NONE	< 0.05				
4-Nitroaniline	µg/l	0.05	NONE	< 0.05				
Fluorene	µg/l	0.01	ISO 17025	< 0.01				
Azobenzene	µg/l	0.05	NONE	< 0.05				
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05				
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05				
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01				
Anthracene	µg/l	0.01	ISO 17025	< 0.01				
Carbazole	µg/l	0.05	NONE	< 0.05				
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05				
Anthraquinone	µg/l	0.05	NONE	< 0.05				
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Pyrene	µg/l	0.01	ISO 17025	< 0.01				
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05				
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Chrysene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01				
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01				
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01				

Analytical Report Number: 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

Your Order No: POP002069

Lab Sample Number				663872				
Sample Reference				BH14				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				23/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	Decahydro-4,4,8,9,10-pentamethylnaphthalene				
SVOC % Match	%	N/A	NONE	95				
SVOCs TICs Compound Name		N/A	NONE	Octane, 2,6-dimethyl-				
SVOC % Match	%	N/A	NONE	94				
SVOCs TICs Compound Name		N/A	NONE	Cyclododecane				
SVOC % Match	%	N/A	NONE	92				
SVOCs TICs Compound Name		N/A	NONE	1-Ethyl-2,2,6-trimethylcyclohexane				
SVOC % Match	%	N/A	NONE	91				
SVOCs TICs Compound Name		N/A	NONE	cis-Decalin, 2-syn-methyl-				
SVOC % Match	%	N/A	NONE	91				
SVOCs TICs Compound Name		N/A	NONE	4-n-Hexylthiane, S,S-dioxide				
SVOC % Match	%	N/A	NONE	91				
SVOCs TICs Compound Name		N/A	NONE	4-Chlorobenzenesulfonamide, N-methyl-				
SVOC % Match	%	N/A	NONE	91				
SVOCs TICs Compound Name		N/A	NONE	Cyclohexane, 2-butyl-1,1,3-trimethyl-				
SVOC % Match	%	N/A	NONE	90				
SVOCs TICs Compound Name		N/A	NONE	1-Decanol, 2-hexyl-				
SVOC % Match	%	N/A	NONE	90				
SVOCs TICs Compound Name		N/A	NONE	-				
SVOC % Match	%	N/A	NONE	-				

Analytical Report Number: 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

Your Order No: POP002069

Lab Sample Number				663872				
Sample Reference				BH14				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				23/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Environmental Forensics								
Glycols								
Ethylene Glycol	mg/l	10	NONE	< 10				

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

Analytical Report Number : 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Bromate in Water	Determination of bromate in waters based on ion chromatography. Accredited matrices GW, PW, SW.	In house method based on Standard Methods for the Analysis of Water and Waste Water, method 4500	L008-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement.	In-house method	L031-PL	W	NONE
Fluoride in water	Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033-PL	W	ISO 17025
Free cyanide in water	Determination of free cyanide by distillation followed by colorimetry.Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Mercury Low Level (Dissolved) in Water	Mercury in water by millennium merlin AFS analyser	In-house method based on USEPA method 1631	L085-PL	W	NONE
Metals in water by ICP-MS (total)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrite as N in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrite in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry).Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025

Analytical Report Number : 16-33847

Project / Site name: Heyford Park - Main Site (Phase 10)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH at 20oC in water (automated)	Determination of pH in water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Phenols, speciated, in water, by GCMS	Determination of speciated phenols in water by extraction in hexane followed by GC-MS.	In-house method based on USEPA 8270	L070-PL	W	NONE
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L0102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in water (LOW LEVEL Dets)	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Specific PAH sums in water	Determination of PAH compounds in water by extraction in hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L070-PL	W	NONE
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Tentatively identified compounds (SVOC) in water	Determination of semi-volatile organic compounds total ion count in water by extraction with hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L070-PL	W	NONE
Tentatively identified compounds (VOC) in water	Determination of volatile organic compounds total ion count in water by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073B-PL	W	NONE
TO - Glycols in Water	Determination of glycols by GC-MS.	In-house method		W	NONE
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPH Chromatogram	TPH Chromatogram.	In-house method	L070-PL	W	NONE
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 16-33848

Project / Site name:	Heyford Park - Main Site (Phase 16)	**Samples received on:**	24/11/2016
Your job number:	C-04583-C	**Samples instructed on:**	24/11/2016
Your order number:	POP002069	**Analysis completed by:**	01/12/2016
Report Issue Number:	1	**Report issued on:**	01/12/2016
Samples Analysed:	2 water samples		

Signed: [redacted]

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed: [redacted]

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

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 16-33848

Project / Site name: Heyford Park - Main Site (Phase 16)

Your Order No: POP002069

Lab Sample Number				663873	663874			
Sample Reference				BH08	BH09			
Sample Number				None Supplied	None Supplied			
Depth (m)				None Supplied	None Supplied			
Date Sampled				23/11/2016	23/11/2016			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.6	7.3			
Electrical Conductivity	µS/cm	10	NONE	670	670			
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10			
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10			
Sulphate as SO_4	µg/l	45	ISO 17025	129000	36000			
Chloride	mg/l	0.15	ISO 17025	39	16			
Fluoride	µg/l	50	ISO 17025	110	120			
Ammonium as NH_4	µg/l	15	ISO 17025	160	< 15			
Nitrate as N	mg/l	0.01	ISO 17025	5.27	11.9			
Nitrate as NO_3	mg/l	0.05	ISO 17025	23.3	52.7			
Nitrite as N	µg/l	1	ISO 17025	190	34			
Nitrite as NO_2	µg/l	5	ISO 17025	630	110			
Hardness - Total	mgCaCO3/l	1	ISO 17025	318	438			
Bromate by IC	mg/l	0.002	ISO 17025	< 0.002	< 0.002			
Total Phenols								
Total Phenols	µg/l	0.5	NONE	< 0.50	< 0.50			
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Indeno(1,2,3-cd)pyrene	µg/l	0.001	NONE	< 0.001	< 0.001			
Benzo(ghi)perylene	µg/l	0.001	NONE	< 0.001	< 0.001			
PAH Sums								
Sum of Benzo(b)fluoranthene & Benzo(k)fluoranthene	µg/l	0.02	NONE	< 0.02	< 0.02			
Sum of Benzo(ghi)fluoranthene & Indeno(1,2,3-cd)pyrene	µg/l	0.002	NONE	< 0.002	< 0.002			
Sum of Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)fluoranthene & Indeno(1,2,3-cd)pyrene	µg/l	0.022	NONE	< 0.02	< 0.02			

Analytical Report Number: 16-33848

Project / Site name: Heyford Park - Main Site (Phase 16)

Your Order No: POP002069

Lab Sample Number				663873	663874			
Sample Reference				BH08	BH09			
Sample Number				None Supplied	None Supplied			
Depth (m)				None Supplied	None Supplied			
Date Sampled				23/11/2016	23/11/2016			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Zinc (total)	µg/l	0.5	ISO 17025	40	12			
Aluminium (dissolved)	mg/l	0.001	ISO 17025	< 0.0010	< 0.0010			
Antimony (dissolved)	µg/l	0.4	ISO 17025	< 0.4	< 0.4			
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.19	< 0.15			
Barium (dissolved)	µg/l	0.06	ISO 17025	25	19			
Boron (dissolved)	µg/l	10	ISO 17025	62	44			
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.02	0.03			
Calcium (dissolved)	mg/l	0.012	ISO 17025	120	170			
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0			
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0			
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.5	0.2			
Cobalt (dissolved)	µg/l	0.2	ISO 17025	0.5	0.6			
Copper (dissolved)	µg/l	0.5	ISO 17025	4.0	3.8			
Iron (dissolved)	mg/l	0.004	ISO 17025	0.050	0.016			
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2			
Magnesium (dissolved)	mg/l	0.005	ISO 17025	3.2	4.6			
Manganese (dissolved)	µg/l	0.05	ISO 17025	8.0	14			
Mercury (dissolved) CV-AFS	µg/l	0.005	NONE	0.008	< 0.005			
Molybdenum (dissolved)	µg/l	0.05	ISO 17025	1.6	0.77			
Nickel (dissolved)	µg/l	0.5	ISO 17025	4.3	8.9			
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6			
Silver (dissolved)	µg/l	0.05	NONE	< 0.05	< 0.05			
Sodium (dissolved)	mg/l	0.01	ISO 17025	30	8.2			
Tin (dissolved)	µg/l	0.2	ISO 17025	< 0.20	< 0.20			
Vanadium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2			
Zinc (dissolved)	µg/l	0.5	ISO 17025	7.3	6.6			
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0			
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C16 - C35	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10			

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

Analytical Report Number : 16-33848

Project / Site name: Heyford Park - Main Site (Phase 16)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Bromate in Water	Determination of bromate in waters based on ion chromatography. Accredited matrices GW, PW, SW.	In house method based on Standard Methods for the Analysis of Water and Waste Water, method 4500	L008-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement.	In-house method	L031-PL	W	NONE
Fluoride in water	Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033-PL	W	ISO 17025
Free cyanide in water	Determination of free cyanide by distillation followed by colorimetry.Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Mercury Low Level (Dissolved) in Water	Mercury in water by millennium merlin AFS analyser	In-house method based on USEPA method 1631	L085-PL	W	NONE
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrite as N in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrite in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry).Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025

Analytical Report Number : 16-33848

Project / Site name: Heyford Park - Main Site (Phase 16)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH at 20oC in water (automated)	Determination of pH in water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Phenols, speciated, in water, by GCMS	Determination of speciated phenols in water by extraction in hexane followed by GC-MS.	In-house method based on USEPA 8270	L070-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L0102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in water (LOW LEVEL Dets)	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Specific PAH sums in water	Determination of PAH compounds in water by extraction in hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L070-PL	W	NONE
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPH Chromatogram	TPH Chromatogram.	In-house method	L070-PL	W	NONE
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 16-33849

Project / Site name:	Heyford Park - Main Site (Phase 16A)	**Samples received on:**	24/11/2016
Your job number:	C-04583-C	**Samples instructed on:**	24/11/2016
Your order number:	POP002069	**Analysis completed by:**	01/12/2016
Report Issue Number:	1	**Report issued on:**	01/12/2016
Samples Analysed:	1 water sample		

Signed: [redacted]

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed: [redacted]

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

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 16-33849

Project / Site name: Heyford Park - Main Site (Phase 16A)

Your Order No: POP002069

Lab Sample Number				663875				
Sample Reference				BH07				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				23/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.3				
Electrical Conductivity	µS/cm	10	NONE	930				
Total Cyanide	µg/l	10	ISO 17025	< 10				
Free Cyanide	µg/l	10	ISO 17025	< 10				
Sulphate as SO_4	µg/l	45	ISO 17025	110000				
Chloride	mg/l	0.15	ISO 17025	80				
Fluoride	µg/l	50	ISO 17025	110				
Ammonium as NH_4	µg/l	15	ISO 17025	< 15				
Nitrate as N	mg/l	0.01	ISO 17025	14.5				
Nitrate as NO_3	mg/l	0.05	ISO 17025	64.3				
Nitrite as N	µg/l	1	ISO 17025	31				
Nitrite as NO_2	µg/l	5	ISO 17025	100				
Hardness - Total	mgCaCO3/l	1	ISO 17025	482				
Bromate by IC	mg/l	0.002	ISO 17025	< 0.002				
Total Phenols								
Total Phenols	µg/l	0.5	NONE	< 0.50				
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01				
Anthracene	µg/l	0.01	ISO 17025	< 0.01				
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Indeno(1,2,3-cd)pyrene	µg/l	0.001	NONE	< 0.001				
Benzo(ghi)perylene	µg/l	0.001	NONE	< 0.001				
PAH Sums								
Sum of Benzo(b)fluoranthene & Benzo(k)fluoranthene	µg/l	0.02	NONE	< 0.02				
Sum of Benzo(ghi)fluoranthene & Indeno(1,2,3-cd)pyrene	µg/l	0.002	NONE	< 0.002				
Sum of Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)fluoranthene & Indeno(1,2,3-cd)pyrene	µg/l	0.022	NONE	< 0.02				

Analytical Report Number: 16-33849

Project / Site name: Heyford Park - Main Site (Phase 16A)

Your Order No: POP002069

Lab Sample Number				663875				
Sample Reference				BH07				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				23/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Zinc (total)	µg/l	0.5	ISO 17025	200				
Aluminium (dissolved)	mg/l	0.001	ISO 17025	0.0026				
Antimony (dissolved)	µg/l	0.4	ISO 17025	< 0.4				
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.41				
Barium (dissolved)	µg/l	0.06	ISO 17025	46				
Boron (dissolved)	µg/l	10	ISO 17025	37				
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.28				
Calcium (dissolved)	mg/l	0.012	ISO 17025	180				
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0				
Chromium (III)	µg/l	1	NONE	< 1.0				
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.3				
Cobalt (dissolved)	µg/l	0.2	ISO 17025	2.3				
Copper (dissolved)	µg/l	0.5	ISO 17025	5.7				
Iron (dissolved)	mg/l	0.004	ISO 17025	0.017				
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2				
Magnesium (dissolved)	mg/l	0.005	ISO 17025	5.6				
Manganese (dissolved)	µg/l	0.05	ISO 17025	61				
Mercury (dissolved) CV-AFS	ug/l	0.005	NONE	0.017				
Molybdenum (dissolved)	µg/l	0.05	ISO 17025	2.2				
Nickel (dissolved)	µg/l	0.5	ISO 17025	14				
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6				
Silver (dissolved)	µg/l	0.05	NONE	< 0.05				
Sodium (dissolved)	mg/l	0.01	ISO 17025	18				
Tin (dissolved)	µg/l	0.2	ISO 17025	< 0.20				
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.3				
Zinc (dissolved)	µg/l	0.5	ISO 17025	110				

Analytical Report Number: 16-33849

Project / Site name: Heyford Park - Main Site (Phase 16A)

Your Order No: POP002069

Lab Sample Number				663875				
Sample Reference				BH07				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				23/11/2016				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0				
Toluene	µg/l	1	ISO 17025	< 1.0				
Ethylbenzene	µg/l	1	ISO 17025	< 1.0				
p & m-xylene	µg/l	1	ISO 17025	< 1.0				
o-xylene	µg/l	1	ISO 17025	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C16 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10				

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

Analytical Report Number : 16-33849

Project / Site name: Heyford Park - Main Site (Phase 16A)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Bromate in Water	Determination of bromate in waters based on ion chromatography. Accredited matrices GW, PW, SW.	In house method based on Standard Methods for the Analysis of Water and Waste Water, method 4500	L008-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement.	In-house method	L031-PL	W	NONE
Fluoride in water	Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033-PL	W	ISO 17025
Free cyanide in water	Determination of free cyanide by distillation followed by colorimetry.Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Mercury Low Level (Dissolved) in Water	Mercury in water by millennium merlin AFS analyser	In-house method based on USEPA method 1631	L085-PL	W	NONE
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrite as N in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrite in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry).Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025

Analytical Report Number : 16-33849

Project / Site name: Heyford Park - Main Site (Phase 16A)

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH at 20oC in water (automated)	Determination of pH in water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Phenols, speciated, in water, by GCMS	Determination of speciated phenols in water by extraction in hexane followed by GC-MS.	In-house method based on USEPA 8270	L070-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L0102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in water (LOW LEVEL Dets)	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Specific PAH sums in water	Determination of PAH compounds in water by extraction in hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L070-PL	W	NONE
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPH Chromatogram	TPH Chromatogram.	In-house method	L070-PL	W	NONE
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

All values in mg/kg unless otherwise stated								Soil Type	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG
								Location & Depth	TP02	TP03	TP03	TP05	TP07	TP09	TP14	TP102	TP103	TP104	TP105	TP106	TP107	TP108
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**US_{95}**	**Result of Significance Test**	**0.20**	**0.10**	**0.55**	**0.10**	**0.25**	**0.20**	**0.10**	**0.40**	**0.40**	**0.30**	**1.30**	**0.10**	**0.10**	**0.05**
Arsenic	1	24	8.7	32	0	37	19.612029	POTENTIALLY SUITABLE FOR USE	32	20	17	17	18	22	16	8.7	10	11	14	13	13	12
Beryllium	0.06	24	0.15	0.96	0	73	0.8116989	POTENTIALLY SUITABLE FOR USE	0.96	0.48	0.69	0.65	0.88	0.53	0.78	0.15	0.32	0.29	0.73	0.72	0.72	0.51
Boron	0.2	24	0.3	2	0	300	1.4417366	POTENTIALLY SUITABLE FOR USE	1	0.4	1	0.7	1	1.6	1.8	0.3	0.9	0.6	1.2	1.2	1.5	1.6
Cadmium	0.2	24	0.2	0.4	0	14	0.2524092	POTENTIALLY SUITABLE FOR USE	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2
Chromium (III)	1	24	3.7	30	0	890	26.911552	POTENTIALLY SUITABLE FOR USE	30	16	21	23	28	28	26	3.7	13	9.4	29	21	23	17
Chromium (VI)	1.2	24	1.2	1.2	0	6.1	1.2	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	24	8	29	0	2500	20.332702	POTENTIALLY SUITABLE FOR USE	16	16	17	16	17	18	18	22	9.1	8	16	18	13	11
Lead	2	24	3.7	91	0	200	40.110537	POTENTIALLY SUITABLE FOR USE	23	15	15	18	27	21	26	3.7	4.8	5.9	38	21	24	14
Mercury, inorganic	0.3	24	0.3	0.6	0	170	0.4243113	POTENTIALLY SUITABLE FOR USE	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.6	0.6	0.3
Nickel	2	24	3.8	24	0	130	19.157608	POTENTIALLY SUITABLE FOR USE	24	14	15	18	21	18	19	3.8	8.9	7.3	19	17	14	11
Selenium	1	24	1	2.6	0	360	1.5335545	POTENTIALLY SUITABLE FOR USE	1	2.6	1	1	1	1	1	2.3	1	1	1	1	1.1	1
Vanadium	1	24	9	60	0	410	53.32552	POTENTIALLY SUITABLE FOR USE	60	35	41	45	60	56	52	9	30	23	45	42	41	37
Zinc	2	24	16	110	0	3900	71.529498	POTENTIALLY SUITABLE FOR USE	77	39	38	49	58	57	110	17	20	16	71	55	50	39
Cyanide (free)	1	24	1	1	0	790	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Phenol (total)	1	24	1	2.1	0	560	1.2456667	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	2.1	1	1	1	1	1	1
Acenaphthene	0.1	24	0.1	130	0	520	30.060682	POTENTIALLY SUITABLE FOR USE	0.1	3.6	0.1	0.25	0.1	0.1	0.1	130	0.1	16	3.2	0.1	0.1	0.1
Acenaphthylene	0.1	24	0.1	4.3	0	430	1.1492017	POTENTIALLY SUITABLE FOR USE	0.1	0.35	0.1	0.1	0.1	0.1	0.1	4.3	0.1	1.5	0.44	0.1	0.1	0.1
Anthracene	0.1	24	0.1	170	0	5500	40.06381	POTENTIALLY SUITABLE FOR USE	0.1	8.1	0.1	0.86	0.1	0.16	0.15	170	0.1	27	10	0.1	0.1	0.57
Benz(a)anthracene	0.1	24	0.1	170	4	6.7	43.154265	FURTHER ASSESSMENT REQUIRED	0.55	28	0.1	3.1	0.27	0.61	0.5	170	0.1	43	23	0.1	0.1	2.7
Benzo(a)pyrene	0.1	24	0.1	140	8	1.5	36.24562	FURTHER ASSESSMENT REQUIRED	0.64	25	0.1	3.2	0.32	0.66	0.51	140	0.1	41	20	0.1	0.1	3.3
Benzo(b)fluoranthene	0.1	24	0.1	120	4	9.4	32.080178	FURTHER ASSESSMENT REQUIRED	0.69	23	0.1	3.6	0.36	0.83	0.56	120	0.1	40	23	0.1	0.1	4.1
Benzo(ghi)perylene	0.05	24	0.05	57	0	69	15.295945	POTENTIALLY SUITABLE FOR USE	0.38	12	0.05	1.7	0.05	0.39	0.32	57	0.05	19	11	0.05	0.05	1.7
Benzo(k)fluoranthene	0.1	24	0.1	110	4	14	28.212974	FURTHER ASSESSMENT REQUIRED	0.31	20	0.1	1.5	0.13	0.3	0.31	110	0.1	30	16	0.1	0.1	1.4
Chrysene	0.05	24	0.05	110	4	11	29.609809	FURTHER ASSESSMENT REQUIRED	0.56	24	0.05	2.8	0.28	0.7	0.43	110	0.05	36	24	0.05	0.05	2.2
Dibenz(a,h)anthracene	0.1	24	0.1	11	4	1.3	3.0281206	FURTHER ASSESSMENT REQUIRED	0.1	2.4	0.1	0.3	0.1	0.1	0.1	11	0.1	3.8	2.6	0.1	0.1	0.34
Fluoranthene	0.1	24	0.1	410	0	560	104.07648	POTENTIALLY SUITABLE FOR USE	1.1	64	0.1	6.6	0.44	1.3	0.93	410	0.1	110	56	0.1	0.1	3.8
Fluorene	0.1	24	0.1	130	0	410	29.922064	POTENTIALLY SUITABLE FOR USE	0.1	1.8	0.1	0.17	0.1	0.1	0.1	130	0.1	14	4.2	0.1	0.1	0.1
Indeno(1,2,3,cd)pyrene	0.1	24	0.1	50	4	5.5	13.513792	FURTHER ASSESSMENT REQUIRED	0.3	11	0.1	1.5	0.1	0.34	0.26	50	0.1	17	10	0.1	0.1	1.6
Naphthalene	0.05	24	0.05	180	1	5.2	40.309946	FURTHER ASSESSMENT REQUIRED	0.05	0.05	0.05	0.05	0.05	0.05	0.05	180	0.05	1.5	0.67	0.05	0.05	0.05
Phenanthrene	0.1	24	0.1	500	1	220	119.81375	POTENTIALLY SUITABLE FOR USE	0.38	25	0.1	2.9	0.1	0.59	0.42	500	0.1	100	42	0.1	0.1	1.7
Pyrene	0.1	24	0.1	330	0	1200	83.595101	POTENTIALLY SUITABLE FOR USE	0.96	53	0.1	5.6	0.4	1.1	0.85	330	0.1	87	41	0.1	0.1	3.7
Asbestos identified	Y/N								N	N	N	N	N	N	N	N	N	N	N	N	N	N
FOC (dimensionless)	0.020067	**(mean)**							0.017	0.016	0.0099	0.017	0.022	0.0098	0.027	0.017	0.0029	0.012	0.012	0.024	0.031	0.011
SOM (calculated)	3.46%	**(mean)**							2.93%	2.76%	1.71%	2.93%	3.79%	1.69%	4.65%	2.93%	0.50%	2.07%	2.07%	4.14%	5.34%	1.90%
pH (su)	8.2	**(mean)**							7.9	10.7	8	8	7.9	10.3	7.7	9.2	9.7	8.8	8	7.2	7.4	9.3

Risk parameter: Human health - residential with plant uptake (2.5%SOM)
Data set: Phase 9 & 10
Client: Dorchester Living
Site: Heyford Park
Job no.: C-04583-C
Lab. report no(s).: 16-33893, 16-33900

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

All values in mg/kg unless otherwise stated								Soil Type	MG	MG	MG	MG	MG	MG	MG	MG	Topsoil	Topsoil
								Location & Depth	TP133	SA07	TP126	TP127	TP128	TP129	TP130	TP131	TP11	TP134
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**US_{95}**	**Result of Significance Test**	**0.10**	**0.00-0.35**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**	**0.15**	**0.10**
Arsenic	1	24	8.7	32	0	37	19.612029	POTENTIALLY SUITABLE FOR USE	15	17	17	15	14	14	13	13	14	16
Beryllium	0.06	24	0.15	0.96	0	73	0.8116989	POTENTIALLY SUITABLE FOR USE	0.91	0.62	0.51	0.64	0.76	0.63	0.65	0.72	0.68	0.81
Boron	0.2	24	0.3	2	0	300	1.4417366	POTENTIALLY SUITABLE FOR USE	1.3	0.8	0.8	0.8	2	0.7	1	1.3	0.8	1.2
Cadmium	0.2	24	0.2	0.4	0	14	0.2524092	POTENTIALLY SUITABLE FOR USE	0.2	0.2	0.2	0.2	0.4	0.2	0.2	0.2	0.2	0.2
Chromium (III)	1	24	3.7	30	0	890	26.911552	POTENTIALLY SUITABLE FOR USE	28	21	19	21	25	18	21	24	21	25
Chromium (VI)	1.2	24	1.2	1.2	0	6.1	1.2	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	24	8	29	0	2500	20.332702	POTENTIALLY SUITABLE FOR USE	29	12	22	17	20	17	13	16	18	15
Lead	2	24	3.7	91	0	200	40.110537	POTENTIALLY SUITABLE FOR USE	53	15	24	21	35	28	17	21	22	91
Mercury, inorganic	0.3	24	0.3	0.6	0	170	0.4243113	POTENTIALLY SUITABLE FOR USE	0.3	0.3	0.5	0.3	0.3	0.3	0.3	0.3	0.4	0.3
Nickel	2	24	3.8	24	0	130	19.157608	POTENTIALLY SUITABLE FOR USE	17	13	12	16	17	14	14	16	18	18
Selenium	1	24	1	2.6	0	360	1.5335545	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1.7	1
Vanadium	1	24	9	60	0	410	53.32552	POTENTIALLY SUITABLE FOR USE	47	51	37	47	46	38	41	39	55	54
Zinc	2	24	16	110	0	3900	71.529498	POTENTIALLY SUITABLE FOR USE	76	39	54	44	89	61	36	43	59	49
Cyanide (free)	1	24	1	1	0	790	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1
Phenol (total)	1	24	1	2.1	0	560	1.2456667	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1
Acenaphthene	0.1	24	0.1	130	0	520	30.060682	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Acenaphthylene	0.1	24	0.1	4.3	0	430	1.1492017	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Anthracene	0.1	24	0.1	170	0	5500	40.06381	POTENTIALLY SUITABLE FOR USE	0.1	0.22	0.1	0.11	0.31	0.23	0.1	0.1	0.15	0.1
Benz(a)anthracene	0.1	24	0.1	170	4	6.7	43.154265	FURTHER ASSESSMENT REQUIRED	0.34	0.78	0.42	0.38	2.4	1.9	0.1	0.1	0.59	0.22
Benzo(a)pyrene	0.1	24	0.1	140	8	1.5	36.24562	FURTHER ASSESSMENT REQUIRED	0.46	0.63	0.36	0.39	2.1	1.5	0.1	0.1	0.6	0.25
Benzo(b)fluoranthene	0.1	24	0.1	120	4	9.4	32.080178	FURTHER ASSESSMENT REQUIRED	0.53	0.71	0.5	0.35	2.7	1.9	0.1	0.1	0.66	0.28
Benzo(ghi)perylene	0.05	24	0.05	57	0	69	15.295945	POTENTIALLY SUITABLE FOR USE	0.26	0.26	0.33	0.05	1.3	0.77	0.05	0.05	0.36	0.05
Benzo(k)fluoranthene	0.1	24	0.1	110	4	14	28.212974	FURTHER ASSESSMENT REQUIRED	0.23	0.36	0.27	0.25	1.2	0.89	0.1	0.1	0.29	0.13
Chrysene	0.05	24	0.05	110	4	11	29.609809	FURTHER ASSESSMENT REQUIRED	0.37	0.72	0.42	0.33	1.9	1.4	0.05	0.05	0.51	0.2
Dibenz(a,h)anthracene	0.1	24	0.1	11	4	1.3	3.0281206	FURTHER ASSESSMENT REQUIRED	0.1	0.1	0.1	0.1	0.24	0.1	0.1	0.1	0.1	0.1
Fluoranthene	0.1	24	0.1	410	0	560	104.07648	POTENTIALLY SUITABLE FOR USE	0.5	2.2	0.74	0.76	3.7	2.9	0.1	0.1	1.1	0.3
Fluorene	0.1	24	0.1	130	0	410	29.922064	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Indeno(1,2,3,cd)pyrene	0.1	24	0.1	50	4	5.5	13.513792	FURTHER ASSESSMENT REQUIRED	0.23	0.22	0.25	0.1	1.1	0.69	0.1	0.1	0.29	0.1
Naphthalene	0.05	24	0.05	180	1	5.2	40.309946	FURTHER ASSESSMENT REQUIRED	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Phenanthrene	0.1	24	0.1	500	1	220	119.81375	POTENTIALLY SUITABLE FOR USE	0.16	1.9	0.25	0.36	1.1	0.96	0.1	0.1	0.68	0.1
Pyrene	0.1	24	0.1	330	0	1200	83.595101	POTENTIALLY SUITABLE FOR USE	0.46	1.7	0.71	0.67	3.5	2.8	0.1	0.1	0.89	0.27
Asbestos identified	Y/N								N	N	N	N	N	N	N	N	N	N
FOC (dimensionless)	0.020067	**(mean)**							0.025	0.014	0.023	0.028	0.035	0.032	0.025	0.027	0.024	0.02
SOM (calculated)	3.46%	**(mean)**							4.31%	2.41%	3.97%	4.83%	6.03%	5.52%	4.31%	4.65%	4.14%	3.45%
pH (su)	8.2	**(mean)**							7.3	7.7	7.6	7.6	7.5	7.6	7.6	7.5	7.8	7.6

Risk parameter: **Human health - residential with plant uptake (2.5%SOM)**
Data set: Phase 9 & 10
Client: Dorchester Living
Site: Heyford Park
Job no.: C-04583-C
Lab. report no(s).: 16-33893, 16-33900

Assessment of Chemicals of Potential Concern to Plant Life

Hydrock

All values in mg/kg unless otherwise stated								Soil Type	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG
								Location & Depth	TP02	TP03	TP03	TP05	TP07	TP09	TP14	TP102	TP103	TP104	TP105	TP106	TP107	TP108
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**US_{95}**	**Result of Significance Test**	**0.20**	**0.10**	**0.55**	**0.10**	**0.25**	**0.20**	**0.10**	**0.40**	**0.40**	**0.30**	**1.30**	**0.10**	**0.10**	**0.05**
Arsenic	1	24	8.7	32	0	250	19.61203	POTENTIALLY SUITABLE FOR USE	32	20	17	17	18	22	16	8.7	10	11	14	13	13	12
Boron	0.2	24	0.3	2	0	3	1.441737	POTENTIALLY SUITABLE FOR USE	1	0.4	1	0.7	1	1.6	1.8	0.3	0.9	0.6	1.2	1.2	1.5	1.6
Chromium (III)	1	24	3.7	30	0	400	26.91155	POTENTIALLY SUITABLE FOR USE	30	16	21	23	28	28	26	3.7	13	9.4	29	21	23	17
Chromium (VI)	1.2	24	1.2	1.2	0	25	1.2	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	24	8	29	0	135	20.3327	POTENTIALLY SUITABLE FOR USE	16	16	17	16	17	18	18	22	9.1	8	16	18	13	11
Nickel	2	24	3.8	24	0	75	19.15761	POTENTIALLY SUITABLE FOR USE	24	14	15	18	21	18	19	3.8	8.9	7.3	19	17	14	11
Zinc	2	24	16	110	0	300	71.5295	POTENTIALLY SUITABLE FOR USE	77	39	38	49	58	57	110	17	20	16	71	55	50	39
	Mean																					
pH (su)	8.2								7.9	10.7	8	8	7.9	10.3	7.7	9.2	9.7	8.8	8	7.2	7.4	9.3

Risk parameter: Plant life pH 7
Data set: Phase 9 & 10
Client: Dorchester Living
Site: Heyford Park
Job no.: C-04583-C
Lab. report no(s).: 16-33893, 16-33900

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Plant Life

Hydrock

All values in mg/kg unless otherwise stated																	
								Soil Type	MG	MG	MG	MG	MG	MG	MG	MG	Topsoil	Topsoil
								Location & Depth	TP133	SA07	TP126	TP127	TP128	TP129	TP130	TP131	TP11	TP134
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**US_{95}**	**Result of Significance Test**	**0.10**	**0.00-0.35**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**	**0.15**	**0.10**
Arsenic	1	24	8.7	32	0	250	19.61203	POTENTIALLY SUITABLE FOR USE	15	17	17	15	14	14	13	13	14	16
Boron	0.2	24	0.3	2	0	3	1.441737	POTENTIALLY SUITABLE FOR USE	1.3	0.8	0.8	0.8	2	0.7	1	1.3	0.8	1.2
Chromium (III)	1	24	3.7	30	0	400	26.91155	POTENTIALLY SUITABLE FOR USE	28	21	19	21	25	18	21	24	21	25
Chromium (VI)	1.2	24	1.2	1.2	0	25	1.2	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	24	8	29	0	135	20.3327	POTENTIALLY SUITABLE FOR USE	29	12	22	17	20	17	13	16	18	15
Nickel	2	24	3.8	24	0	75	19.15761	POTENTIALLY SUITABLE FOR USE	17	13	12	16	17	14	14	16	18	18
Zinc	2	24	16	110	0	300	71.5295	POTENTIALLY SUITABLE FOR USE	76	39	54	44	89	61	36	43	59	49
	Mean																	
pH (su)	8.2								7.3	7.7	7.6	7.6	7.5	7.6	7.6	7.5	7.8	7.6

Risk parameter: Plant life pH 7
Data set: Phase 9 & 10
Client: Dorchester Living
Site: Heyford Park
Job no.: C-04583-C
Lab. report no(s).: 16-33893, 16-33900

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

All values in mg/kg unless otherwise stated								Soil Type	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG
								Location & Depth	TP02	TP03	TP03	TP05	TP07	TP09	TP14	TP102	TP103	TP104	TP105	TP106	TP107	TP108
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**US_{95}**	**Result of Significance Test**	**0.20**	**0.10**	**0.55**	**0.10**	**0.25**	**0.20**	**0.10**	**0.40**	**0.40**	**0.30**	**1.30**	**0.10**	**0.10**	**0.05**
Aliphatics EC5-EC6	0.1	25	0.1	0.1	0	78	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aliphatics >EC6-EC8	0.1	25	0.1	0.1	0	230	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aliphatics >EC8-EC10	0.1	25	0.1	0.1	0	65	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aliphatics >EC10-EC12	1	25	1	29	0	120	7.147851	POTENTIALLY SUITABLE FOR USE	1	1.8	1	1	1	1	1	29	1	3	2.1	1	1	1
Aliphatics >EC12-EC16	2	25	2	56	0	59	18.22622	POTENTIALLY SUITABLE FOR USE	2.5	19	2	2	2	2	2	56	2	42	3.8	2	2	3
Aliphatics >EC16-EC35	10	25	10	220	0	92000	79.50632	POTENTIALLY SUITABLE FOR USE	130	51	10	10	10	10	10	120	10	220	87	10	10	47
Aliphatics >EC35-EC44	8.4	25	8.4	210	0	92000	56.89828	POTENTIALLY SUITABLE FOR USE	210	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	81	17	8.4	8.4	19
Aromatics EC5-EC7	0.1	25	0.1	0.1	0	150	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aromatics >EC7-EC8	0.1	25	0.1	0.1	0	300	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aromatics >EC8-EC10	0.1	25	0.1	0.1	0	84	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aromatics >EC10-EC12	1	25	1	240	1	180	52.56036	POTENTIALLY SUITABLE FOR USE	1	2.5	1	1	1	1	1	240	1	4.3	3.5	1	1	3.2
Aromatics >EC12-EC16	2	25	2	1100	1	330	252.1663	POTENTIALLY SUITABLE FOR USE	6.8	65	2	12	2	2	2	1100	2	220	26	2	2	12
Aromatics >EC16-EC21	10	25	10	2500	2	550	624.1144	FURTHER ASSESSMENT REQUIRED	15	310	10	45	10	10	10	2500	10	920	210	10	10	40
Aromatics >EC21-EC35	10	25	10	2800	1	1500	735.3747	POTENTIALLY SUITABLE FOR USE	140	430	10	61	10	21	12	2800	10	1300	190	10	10	100
Aromatics >EC35-EC44	8.4	25	8.4	650	0	1500	207.3234	POTENTIALLY SUITABLE FOR USE	310	85	8.4	11	8.4	8.4	8.4	650	8.4	420	65	8.4	8.4	77
ADDITIVITY CHECK								**HAZARD QUOTIENTS FOR EACH FRACTION**														
								Aliphatics EC5-EC6	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
								Aliphatics >EC6-EC8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
								Aliphatics >EC8-EC10	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Considered additive								Aliphatics >EC10-EC12	0.008	0.015	0.008	0.008	0.008	0.008	0.008	0.242	0.008	0.025	0.018	0.008	0.008	0.008
								Aliphatics >EC12-EC16	0.042	0.322	0.034	0.034	0.034	0.034	0.034	0.949	0.034	0.712	0.064	0.034	0.034	0.051
								Aliphatics >EC16-EC35	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.002	0.001	0.000	0.000	0.001
								Aliphatics >EC35-EC44	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000
								Aromatics EC5-EC7	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
								Aromatics >EC7-EC8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
								Aromatics >EC8-EC10	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Considered additive								Aromatics >EC10-EC12	0.006	0.014	0.006	0.006	0.006	0.006	0.006	1.333	0.006	0.024	0.019	0.006	0.006	0.018
								Aromatics >EC12-EC16	0.021	0.197	0.006	0.036	0.006	0.006	0.006	3.333	0.006	0.667	0.079	0.006	0.006	0.036
								Aromatics >EC16-EC21	0.027	0.564	0.018	0.082	0.018	0.018	0.018	4.545	0.018	1.673	0.382	0.018	0.018	0.073
Considered additive								Aromatics >EC21-EC35	0.093	0.287	0.007	0.041	0.007	0.014	0.008	1.867	0.007	0.867	0.127	0.007	0.007	0.067
								Aromatics >EC35-EC44	0.207	0.057	0.006	0.007	0.006	0.006	0.006	0.433	0.006	0.280	0.043	0.006	0.006	0.051
								Hazard Index for ali>C8-C16	**0.052**	**0.339**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**1.192**	**0.044**	**0.738**	**0.083**	**0.044**	**0.044**	**0.061**
								Hazard Index for aro>C8-C16	**0.027**	**0.212**	**0.013**	**0.043**	**0.013**	**0.013**	**0.013**	**4.668**	**0.013**	**0.692**	**0.099**	**0.013**	**0.013**	**0.055**
								Hazard Index for aro>C16-C35	**0.121**	**0.850**	**0.025**	**0.122**	**0.025**	**0.032**	**0.026**	**6.412**	**0.025**	**2.539**	**0.508**	**0.025**	**0.025**	**0.139**

Risk parameter: Human health - residential with plant uptake (2.5%SOM)
Data set: Phase 9 & 10
Client: Dorchester Living
Site: Heyford Park
Job no.: C-04583-C
Lab. report no(s).: 16-33893, 16-33900

Hazard Index table - HI or HQ greater than 1 highlighted with yellow shading.

Legend: Main table values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Main table alues in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

All values in mg/kg unless otherwise stated								Soil Type	MG	MG	MG	MG	MG	MG	MG	MG	MG	Topsoil	Topsoil
								Location & Depth	TP133	SA07	TP126	TP127	TP128	TP129	TP130	TP131	TP131	TP11	TP134
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**US_{95}**	**Result of Significance Test**	**0.10**	**0.00-0.35**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**	**0.60**	**0.15**	**0.10**
Aliphatics EC5-EC6	0.1	25	0.1	0.1	0	78	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aliphatics >EC6-EC8	0.1	25	0.1	0.1	0	230	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aliphatics >EC8-EC10	0.1	25	0.1	0.1	0	65	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aliphatics >EC10-EC12	1	25	1	29	0	120	7.147851	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1
Aliphatics >EC12-EC16	2	25	2	56	0	59	18.22622	POTENTIALLY SUITABLE FOR USE	2	2	2	2	2	2	2	2	2	2	2
Aliphatics >EC16-EC35	10	25	10	220	0	92000	79.50632	POTENTIALLY SUITABLE FOR USE	10	10	17	10	10	10	10	10	10	10	10
Aliphatics >EC35-EC44	8.4	25	8.4	210	0	92000	56.89828	POTENTIALLY SUITABLE FOR USE	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
Aromatics EC5-EC7	0.1	25	0.1	0.1	0	150	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aromatics >EC7-EC8	0.1	25	0.1	0.1	0	300	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aromatics >EC8-EC10	0.1	25	0.1	0.1	0	84	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aromatics >EC10-EC12	1	25	1	240	1	180	52.56036	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1
Aromatics >EC12-EC16	2	25	2	1100	1	330	252.1663	POTENTIALLY SUITABLE FOR USE	2	2	2	2	2	2	2	2	2	2	2
Aromatics >EC16-EC21	10	25	10	2500	2	550	624.1144	FURTHER ASSESSMENT REQUIRED	10	10	10	10	22	14	10	10	10	10	10
Aromatics >EC21-EC35	10	25	10	2800	1	1500	735.3747	POTENTIALLY SUITABLE FOR USE	10	13	10	16	43	21	10	10	10	21	10
Aromatics >EC35-EC44	8.4	25	8.4	650	0	1500	207.3234	POTENTIALLY SUITABLE FOR USE	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
								ADDITIVITY CHECK											
								Aliphatics EC5-EC6	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
								Aliphatics >EC6-EC8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
								Aliphatics >EC8-EC10	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
								Aliphatics >EC10-EC12	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008
								Aliphatics >EC12-EC16	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034
								Aliphatics >EC16-EC35	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
								Aliphatics >EC35-EC44	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
								Aromatics EC5-EC7	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
								Aromatics >EC7-EC8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
								Aromatics >EC8-EC10	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
								Aromatics >EC10-EC12	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
								Aromatics >EC12-EC16	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
								Aromatics >EC16-EC21	0.018	0.018	0.018	0.018	0.040	0.025	0.018	0.018	0.018	0.018	0.018
								Aromatics >EC21-EC35	0.007	0.009	0.007	0.011	0.029	0.014	0.007	0.007	0.007	0.014	0.007
								Aromatics >EC35-EC44	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
								Hazard Index for ali>C8-C16	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**
								Hazard Index for aro>C8-C16	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**
								Hazard Index for aro>C16-C35	**0.025**	**0.027**	**0.025**	**0.029**	**0.069**	**0.039**	**0.025**	**0.025**	**0.025**	**0.032**	**0.025**

Considered additive (Aliphatics >EC8-EC10, Aliphatics >EC10-EC12, Aliphatics >EC12-EC16)

Considered additive (Aromatics >EC8-EC10, Aromatics >EC10-EC12, Aromatics >EC12-EC16)

Considered additive (Aromatics >EC16-EC21, Aromatics >EC21-EC35)

Risk parameter: **Human health - residential with plant uptake (2.5%SOM)**
Data set: Phase 9 & 10
Client: Dorchester Living
Site: Heyford Park
Job no.: C-04583-C
Lab. report no(s).: 16-33893, 16-33900

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

All values in mg/kg unless otherwise stated								Soil Type	MG													
								Location & Depth	TP02	TP03	TP03	TP05	TP07	TP09	TP11	TP11	TP14	TP102	TP103	TP104	TP105	TP106
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**US_{95}**	**Result of Significance Test**	**0.20**	**0.10**	**0.55**	**0.10**	**0.25**	**0.20**	**0.15**	**0.60**	**0.10**	**0.40**	**0.40**	**0.30**	**1.30**	**0.10**
Benzene	1	28	1	1	28	0.7	1	FURTHER ASSESSMENT REQUIRED	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Toluene	1	28	1	1	0	1800	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ethylbenzene	1	28	1	1	0	540	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Xylene, o-	1	28	1	1	0	200	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Xylene, m- & p-	1	28	1	1	0	180	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MTBE	1	28	1	1	0	170	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Iso-propylbenzene	1	8	1	1	0	40	1	POTENTIALLY SUITABLE FOR USE							1			1		1	1	
Propylbenzene	1	8	1	1	0	140	1	POTENTIALLY SUITABLE FOR USE							1			1		1	1	
1,2,4-Trimethylbenzene	1	8	1	4.6	1	1.4	3.412	FURTHER ASSESSMENT REQUIRED							1			4.6		1	1	
Bromobenzene	1	8	1	1	0	3	1	POTENTIALLY SUITABLE FOR USE							1			1		1	1	
Chlorobenzene	1	8	1	1	0	1.1	1	POTENTIALLY SUITABLE FOR USE							1			1		1	1	
1,2-Dichlorobenzene	1	8	1	1	0	57	1	POTENTIALLY SUITABLE FOR USE							1			1		1	1	
1,3-Dichlorobenzene	1	8	1	1	0	1.1	1	POTENTIALLY SUITABLE FOR USE							1			1		1	1	
1,4-Dichlorobenzene	1	8	1	1	0	140	1	POTENTIALLY SUITABLE FOR USE							1			1		1	1	
1,2,3-trichlorobenzene	1	8	1	1	0	3.7	1	POTENTIALLY SUITABLE FOR USE							1			1		1	1	
1,2,4-trichlorobenzene	1	8	1	1	0	3.4	1	POTENTIALLY SUITABLE FOR USE							1			1		1	1	

Risk parameter: Human health - residential without plant uptake (2.5%SOM)
Data set: Phase 9 & 10
Client: Dorchester Living
Site: Heyford Park
Job no.: C-04583
Lab. report no(s).: 16-33893, 16-33900

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

All values in mg/kg unless otherwise stated								Soil Type													
								Location & Depth	TP107	TP108	TP133	TP134	SA07	TP126	TP127	TP128	TP128	TP129	TP129	TP130	TP131	TP131
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**US_{95}**	**Result of Significance Test**	**0.10**	**0.05**	**0.10**	**0.10**	**0.00-0.35**	**0.10**	**0.10**	**0.10**	**1.10**	**0.10**	**0.90**	**0.10**	**0.10**	**0.60**
Benzene	1	28	1	1	28	0.7	1	FURTHER ASSESSMENT REQUIRED	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Toluene	1	28	1	1	0	1800	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ethylbenzene	1	28	1	1	0	540	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Xylene, o-	1	28	1	1	0	200	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Xylene, m- & p-	1	28	1	1	0	180	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MTBE	1	28	1	1	0	170	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Iso-propylbenzene	1	8	1	1	0	40	1	POTENTIALLY SUITABLE FOR USE	1							1		1		1		
Propylbenzene	1	8	1	1	0	140	1	POTENTIALLY SUITABLE FOR USE	1							1		1		1		
1,2,4-Trimethylbenzene	1	8	1	4.6	1	1.4	3.412	FURTHER ASSESSMENT REQUIRED	1							1		1		1		
Bromobenzene	1	8	1	1	0	3	1	POTENTIALLY SUITABLE FOR USE	1							1		1		1		
Chlorobenzene	1	8	1	1	0	1.1	1	POTENTIALLY SUITABLE FOR USE	1							1		1		1		
1,2-Dichlorobenzene	1	8	1	1	0	57	1	POTENTIALLY SUITABLE FOR USE	1							1		1		1		
1,3-Dichlorobenzene	1	8	1	1	0	1.1	1	POTENTIALLY SUITABLE FOR USE	1							1		1		1		
1,4-Dichlorobenzene	1	8	1	1	0	140	1	POTENTIALLY SUITABLE FOR USE	1							1		1		1		
1,2,3-trichlorobenzene	1	8	1	1	0	3.7	1	POTENTIALLY SUITABLE FOR USE	1							1		1		1		
1,2,4-trichlorobenzene	1	8	1	1	0	3.4	1	POTENTIALLY SUITABLE FOR USE	1							1		1		1		

Risk parameter: **Human health - residential without plant uptake (2.5%SOM)**
Data set: Phase 9 & 10
Client: Dorchester Living
Site: Heyford Park
Job no.: C-04583
Lab. report no(s).: 16-33893, 16-33900

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

All values in mg/kg unless otherwise stated																						
								Soil Type	Topsoil	Topsoil	Topsoil	GOG	Topsoil	GOG	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	GOG	Topsoil
								Location & Depth	TP145	TP147	TP149	TP152	TP155	TP158	TP160	TP163	TP166	TP168	TP16	TP18	TP18	TP23
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**US_{95}**	**Result of Significance Test**	**0.10**	**0.10**	**0.10**	**0.50**	**0.10**	**0.40**	**0.10**	**0.10**	**0.10**	**0.10**	**0.15**	**0.15**	**0.50**	**0.20**
Arsenic	1	20	8.7	21	0	37	18.605698	POTENTIALLY SUITABLE FOR USE	21	18	20	8.7	15	15	15	18	16	20	14	12	9.1	13
Beryllium	0.06	20	0.41	1.2	0	73	0.9671994	POTENTIALLY SUITABLE FOR USE	1.2	0.9	0.73	0.58	0.71	0.63	0.88	1	0.74	0.97	0.77	0.67	0.41	0.83
Boron	0.2	20	0.5	2	0	300	1.7815281	POTENTIALLY SUITABLE FOR USE	1.7	1.4	1.6	0.5	1.3	0.9	1.6	1.7	1.6	1.5	1.8	1.4	0.8	1.3
Cadmium	0.2	20	0.2	0.3	0	14	0.2890022	POTENTIALLY SUITABLE FOR USE	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.2	0.2
Chromium (III)	1	20	15	35	0	890	30.125481	POTENTIALLY SUITABLE FOR USE	35	26	23	17	22	19	27	32	24	30	25	23	15	26
Chromium (VI)	1.2	20	1.2	1.2	0	6.1	1.2	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	20	7.7	29	0	2500	20.658496	POTENTIALLY SUITABLE FOR USE	17	14	14	7.7	14	11	14	16	14	15	20	18	16	21
Lead	2	20	6.9	24	0	200	22.495536	POTENTIALLY SUITABLE FOR USE	23	16	17	6.9	16	7.7	18	20	16	21	22	16	9	19
Mercury, inorganic	0.3	20	0.3	0.5	0	170	0.3940474	POTENTIALLY SUITABLE FOR USE	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.3	0.3	0.3	0.3	0.3
Nickel	2	20	10	25	0	130	21.813216	POTENTIALLY SUITABLE FOR USE	25	18	16	11	14	13	19	21	16	21	18	16	10	20
Selenium	1	20	1	1	0	360	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Vanadium	1	20	33	77	0	410	67.824467	POTENTIALLY SUITABLE FOR USE	77	65	57	35	52	57	62	75	52	69	51	46	33	60
Zinc	2	20	20	60	0	3900	55.045618	POTENTIALLY SUITABLE FOR USE	56	38	39	26	41	20	47	49	42	44	53	43	26	55
Cyanide (free)	1	20	1	1	0	790	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Phenol (total)	1	20	1	1	0	560	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Acenaphthene	0.1	20	0.1	0.1	0	520	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Acenaphthylene	0.1	20	0.1	0.1	0	430	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Anthracene	0.1	20	0.1	0.1	0	5500	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Benz(a)anthracene	0.1	20	0.1	0.1	0	6.7	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Benzo(a)pyrene	0.1	20	0.1	0.1	0	1.5	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Benzo(b)fluoranthene	0.1	20	0.1	0.1	0	9.4	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Benzo(ghi)perylene	0.05	20	0.05	0.05	0	69	0.05	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Benzo(k)fluoranthene	0.1	20	0.1	0.1	0	14	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Chrysene	0.05	20	0.05	0.05	0	11	0.05	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Dibenz(a,h)anthracene	0.1	20	0.1	0.1	0	1.3	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Fluoranthene	0.1	20	0.1	0.1	0	560	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Fluorene	0.1	20	0.1	0.1	0	410	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Indeno(1,2,3,cd)pyrene	0.1	20	0.1	0.1	0	5.5	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Naphthalene	0.05	20	0.05	0.05	0	5.2	0.05	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Phenanthrene	0.1	20	0.1	0.1	0	220	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Pyrene	0.1	20	0.1	0.1	0	1200	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Asbestos identified	Y/N								N	N	N	N	N	N	N	N	N	N	N	N	N	N
FOC (dimensionless)	0.01647	**(mean)**							0.022	0.017	0.019	0.0061	0.02	0.0051	0.017	0.017	0.018	0.019	0.021	0.019	0.0082	0.016
SOM (calculated)	2.84%	**(mean)**							3.79%	2.93%	3.28%	1.05%	3.45%	0.88%	2.93%	2.93%	3.10%	3.28%	3.62%	3.28%	1.41%	2.76%
pH (su)	7.7	**(mean)**							7.5	7.7	7.7	7.9	7.7	7.9	7.8	7.6	7.7	7.6	7.7	7.9	8	7.7

Risk parameter: **Human health - residential with plant uptake (2.5%SOM)**
Data set: Phase 16 & 16A Natural Material
Client: Dorchester Living
Site: Heyford Park
Job no.: C-04583-C
Lab. report no(s).: 16-33897

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

All values in mg/kg unless otherwise stated

Chemical of Potential Concern	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC	US_{95}	Result of Significance Test	Soil Type: Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil
								Location & Depth:	TP24	TP26	TP118	TP120	TP123	TP153
									0.20	0.20	0.10	0.10	0.10	0.10
Arsenic	1	20	8.7	21	0	37	18.605698	POTENTIALLY SUITABLE FOR USE	12	15	18	15	15	17
Beryllium	0.06	20	0.41	1.2	0	73	0.9671994	POTENTIALLY SUITABLE FOR USE	0.51	0.71	0.92	0.91	0.82	0.89
Boron	0.2	20	0.5	2	0	300	1.7815281	POTENTIALLY SUITABLE FOR USE	1.2	1.7	1.6	1.7	2	1
Cadmium	0.2	20	0.2	0.3	0	14	0.2890022	POTENTIALLY SUITABLE FOR USE	0.2	0.3	0.3	0.2	0.2	0.2
Chromium (III)	1	20	15	35	0	890	30.125481	POTENTIALLY SUITABLE FOR USE	18	24	30	29	26	30
Chromium (VI)	1.2	20	1.2	1.2	0	6.1	1.2	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	20	7.7	29	0	2500	20.658496	POTENTIALLY SUITABLE FOR USE	19	29	19	18	17	16
Lead	2	20	6.9	24	0	200	22.495536	POTENTIALLY SUITABLE FOR USE	13	21	23	24	22	20
Mercury, inorganic	0.3	20	0.3	0.5	0	170	0.3940474	POTENTIALLY SUITABLE FOR USE	0.3	0.4	0.3	0.5	0.3	0.3
Nickel	2	20	10	25	0	130	21.813216	POTENTIALLY SUITABLE FOR USE	12	18	23	23	18	22
Selenium	1	20	1	1	0	360	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1
Vanadium	1	20	33	77	0	410	67.824467	POTENTIALLY SUITABLE FOR USE	42	50	66	67	52	56
Zinc	2	20	20	60	0	3900	55.045618	POTENTIALLY SUITABLE FOR USE	38	52	60	59	49	49
Cyanide (free)	1	20	1	1	0	790	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1
Phenol (total)	1	20	1	1	0	560	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1
Acenaphthene	0.1	20	0.1	0.1	0	520	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1
Acenaphthylene	0.1	20	0.1	0.1	0	430	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1
Anthracene	0.1	20	0.1	0.1	0	5500	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1
Benz(a)anthracene	0.1	20	0.1	0.1	0	6.7	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1
Benzo(a)pyrene	0.1	20	0.1	0.1	0	1.5	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1
Benzo(b)fluoranthene	0.1	20	0.1	0.1	0	9.4	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1
Benzo(ghi)perylene	0.05	20	0.05	0.05	0	69	0.05	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05
Benzo(k)fluoranthene	0.1	20	0.1	0.1	0	14	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1
Chrysene	0.05	20	0.05	0.05	0	11	0.05	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05
Dibenz(a,h)anthracene	0.1	20	0.1	0.1	0	1.3	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1
Fluoranthene	0.1	20	0.1	0.1	0	560	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1
Fluorene	0.1	20	0.1	0.1	0	410	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1
Indeno(1,2,3,cd)pyrene	0.1	20	0.1	0.1	0	5.5	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1
Naphthalene	0.05	20	0.05	0.05	0	5.2	0.05	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05
Phenanthrene	0.1	20	0.1	0.1	0	220	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1
Pyrene	0.1	20	0.1	0.1	0	1200	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1
Asbestos identified	Y/N								N	N	N	N	N	N
FOC (dimensionless)	0.01647	**(mean)**							0.013	0.02	0.021	0.019	0.018	0.014
SOM (calculated)	2.84%	**(mean)**							2.24%	3.45%	3.62%	3.28%	3.10%	2.41%
pH (su)	7.7	**(mean)**							7.8	7.9	7.6	7.4	7.5	7.5

Risk parameter: **Human health - residential with plant uptake (2.5%SOM)**
Data set: Phase 16 & 16A Natural Material
Client: Dorchester Living
Site: Heyford Park
Job no.: C-04583-C
Lab. report no(s).: 16-33897

Assessment of Chemicals of Potential Concern to Plant Life

Hydrock

All values in mg/kg unless otherwise stated								Soil Type	Topsoil	Topsoil	Topsoil	GOG	Topsoil	GOG	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	GOG	Topsoil
								Location & Depth	TP145	TP147	TP149	TP152	TP155	TP158	TP160	TP163	TP166	TP168	TP16	TP18	TP18	TP23
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**US_{95}**	**Result of Significance Test**	**0.10**	**0.10**	**0.10**	**0.50**	**0.10**	**0.40**	**0.10**	**0.10**	**0.10**	**0.10**	**0.15**	**0.15**	**0.50**	**0.20**
Arsenic	1	20	8.7	21	0	250	18.6057	POTENTIALLY SUITABLE FOR USE	21	18	20	8.7	15	15	15	18	16	20	14	12	9.1	13
Boron	0.2	20	0.5	2	0	3	1.781528	POTENTIALLY SUITABLE FOR USE	1.7	1.4	1.6	0.5	1.3	0.9	1.6	1.7	1.6	1.5	1.8	1.4	0.8	1.3
Chromium (III)	1	20	15	35	0	400	30.12548	POTENTIALLY SUITABLE FOR USE	35	26	23	17	22	19	27	32	24	30	25	23	15	26
Chromium (VI)	1.2	20	1.2	1.2	0	25	1.2	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	20	7.7	29	0	135	20.6585	POTENTIALLY SUITABLE FOR USE	17	14	14	7.7	14	11	14	16	14	15	20	18	16	21
Nickel	2	20	10	25	0	75	21.81322	POTENTIALLY SUITABLE FOR USE	25	18	16	11	14	13	19	21	16	21	18	16	10	20
Zinc	2	20	20	60	0	300	55.04562	POTENTIALLY SUITABLE FOR USE	56	38	39	26	41	20	47	49	42	44	53	43	26	55
	Mean																					
pH (su)	7.7								7.5	7.7	7.7	7.9	7.7	7.9	7.8	7.6	7.7	7.6	7.7	7.9	8	7.7

Risk parameter: Plant life pH 7
Data set: Phase 16 & 16A Natural Material
Client: Dorchester Living
Site: Heyford Park
Job no.: C-04583-C
Lab. report no(s).: 16-33897

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Plant Life

Hydrock

All values in mg/kg unless otherwise stated								Soil Type	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil
								Location & Depth	TP24	TP26	TP118	TP120	TP123	TP153
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**US_{95}**	**Result of Significance Test**	**0.20**	**0.20**	**0.10**	**0.10**	**0.10**	**0.10**
Arsenic	1	20	8.7	21	0	250	18.6057	POTENTIALLY SUITABLE FOR USE	12	15	18	15	15	17
Boron	0.2	20	0.5	2	0	3	1.781528	POTENTIALLY SUITABLE FOR USE	1.2	1.7	1.6	1.7	2	1
Chromium (III)	1	20	15	35	0	400	30.12548	POTENTIALLY SUITABLE FOR USE	18	24	30	29	26	30
Chromium (VI)	1.2	20	1.2	1.2	0	25	1.2	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	20	7.7	29	0	135	20.6585	POTENTIALLY SUITABLE FOR USE	19	29	19	18	17	16
Nickel	2	20	10	25	0	75	21.81322	POTENTIALLY SUITABLE FOR USE	12	18	23	23	18	22
Zinc	2	20	20	60	0	300	55.04562	POTENTIALLY SUITABLE FOR USE	38	52	60	59	49	49
	Mean													
pH (su)	7.7								7.8	7.9	7.6	7.4	7.5	7.5

Risk parameter: Plant life pH 7
Data set: Phase 16 & 16A Natural Material
Client: Dorchester Living
Site: Heyford Park
Job no.: C-04583-C
Lab. report no(s).: 16-33897

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

All values in mg/kg unless otherwise stated								Soil Type	Topsoil	Topsoil	Topsoil	GOG	Topsoil	GOG	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	GOG	Topsoil
								Location & Depth	TP145	TP147	TP149	TP152	TP155	TP158	TP160	TP163	TP166	TP168	TP16	TP18	TP18	TP23
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**US_{95}**	**Result of Significance Test**	**0.10**	**0.10**	**0.10**	**0.50**	**0.10**	**0.40**	**0.10**	**0.10**	**0.10**	**0.10**	**0.15**	**0.15**	**0.50**	**0.20**
Aliphatics EC5-EC6	0.1	21	0.1	0.1	0	78	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aliphatics >EC6-EC8	0.1	21	0.1	0.1	0	230	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aliphatics >EC8-EC10	0.1	21	0.1	0.1	0	65	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aliphatics >EC10-EC12	1	21	1	1	0	120	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Aliphatics >EC12-EC16	2	21	2	2	0	59	2	POTENTIALLY SUITABLE FOR USE	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Aliphatics >EC16-EC35	10	21	10	18	0	92000	12.0419	POTENTIALLY SUITABLE FOR USE	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Aliphatics >EC35-EC44	8.4	21	8.4	8.4	0	92000	8.4	POTENTIALLY SUITABLE FOR USE	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
Aromatics EC5-EC7	0.1	21	0.1	0.1	0	150	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aromatics >EC7-EC8	0.1	21	0.1	0.1	0	300	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aromatics >EC8-EC10	0.1	21	0.1	0.1	0	84	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aromatics >EC10-EC12	1	21	1	1	0	180	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Aromatics >EC12-EC16	2	21	2	2	0	330	2	POTENTIALLY SUITABLE FOR USE	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Aromatics >EC16-EC21	10	21	10	10	0	550	10	POTENTIALLY SUITABLE FOR USE	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Aromatics >EC21-EC35	10	21	10	10	0	1500	10	POTENTIALLY SUITABLE FOR USE	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Aromatics >EC35-EC44	8.4	21	8.4	8.4	0	1500	8.4	POTENTIALLY SUITABLE FOR USE	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
								ADDITIVITY CHECK	**HAZARD QUOTIENTS FOR EACH FRACTION**													
								Aliphatics EC5-EC6	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
								Aliphatics >EC6-EC8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
								Aliphatics >EC8-EC10	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
								Aliphatics >EC10-EC12	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008
								Aliphatics >EC12-EC16	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034
								Aliphatics >EC16-EC35	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
								Aliphatics >EC35-EC44	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
								Aromatics EC5-EC7	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
								Aromatics >EC7-EC8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
								Aromatics >EC8-EC10	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
								Aromatics >EC10-EC12	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
								Aromatics >EC12-EC16	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
								Aromatics >EC16-EC21	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
								Aromatics >EC21-EC35	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
								Aromatics >EC35-EC44	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
								Hazard Index for ali>C8-C16	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**
								Hazard Index for aro>C8-C16	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**
								Hazard Index for aro>C16-C35	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**

Considered additive: Aliphatics >EC8-EC10, Aliphatics >EC10-EC12, Aliphatics >EC12-EC16

Considered additive: Aromatics >EC8-EC10, Aromatics >EC10-EC12, Aromatics >EC12-EC16

Considered additive: Aromatics >EC16-EC21, Aromatics >EC21-EC35

Risk parameter: Human health - residential with plant uptake (2.5%SOM)
Data set: Phase 16 & 16A Natural Material
Client: Dorchester Living
Site: Heyford Park
Job no.: C-04583-C
Lab. report no(s).: 16-33897

Legend:
Hazard Index table - HI or HQ greater than 1 highlighted with yellow shading.
Main table values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Main table alues in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

Hydrock

All values in mg/kg unless otherwise stated								Soil Type	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	GOG
								Location & Depth	TP24	TP26	TP118	TP120	TP123	TP153	TP153
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**US_{95}**	**Result of Significance Test**	**0.20**	**0.20**	**0.10**	**0.10**	**0.10**	**0.10**	**0.80**
Aliphatics EC5-EC6	0.1	21	0.1	0.1	0	78	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aliphatics >EC6-EC8	0.1	21	0.1	0.1	0	230	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aliphatics >EC8-EC10	0.1	21	0.1	0.1	0	65	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aliphatics >EC10-EC12	1	21	1	1	0	120	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1
Aliphatics >EC12-EC16	2	21	2	2	0	59	2	POTENTIALLY SUITABLE FOR USE	2	2	2	2	2	2	2
Aliphatics >EC16-EC35	10	21	10	18	0	92000	12.0419	POTENTIALLY SUITABLE FOR USE	18	10	10	10	10	10	10
Aliphatics >EC35-EC44	8.4	21	8.4	8.4	0	92000	8.4	POTENTIALLY SUITABLE FOR USE	8.4	8.4	8.4	8.4	8.4	8.4	8.4
Aromatics EC5-EC7	0.1	21	0.1	0.1	0	150	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aromatics >EC7-EC8	0.1	21	0.1	0.1	0	300	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aromatics >EC8-EC10	0.1	21	0.1	0.1	0	84	0.1	POTENTIALLY SUITABLE FOR USE	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aromatics >EC10-EC12	1	21	1	1	0	180	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1
Aromatics >EC12-EC16	2	21	2	2	0	330	2	POTENTIALLY SUITABLE FOR USE	2	2	2	2	2	2	2
Aromatics >EC16-EC21	10	21	10	10	0	550	10	POTENTIALLY SUITABLE FOR USE	10	10	10	10	10	10	10
Aromatics >EC21-EC35	10	21	10	10	0	1500	10	POTENTIALLY SUITABLE FOR USE	10	10	10	10	10	10	10
Aromatics >EC35-EC44	8.4	21	8.4	8.4	0	1500	8.4	POTENTIALLY SUITABLE FOR USE	8.4	8.4	8.4	8.4	8.4	8.4	8.4
								ADDITIVITY CHECK							
								Aliphatics EC5-EC6	0.001	0.001	0.001	0.001	0.001	0.001	0.001
								Aliphatics >EC6-EC8	0.000	0.000	0.000	0.000	0.000	0.000	0.000
								Aliphatics >EC8-EC10	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Considered additive								Aliphatics >EC10-EC12	0.008	0.008	0.008	0.008	0.008	0.008	0.008
								Aliphatics >EC12-EC16	0.034	0.034	0.034	0.034	0.034	0.034	0.034
								Aliphatics >EC16-EC35	0.000	0.000	0.000	0.000	0.000	0.000	0.000
								Aliphatics >EC35-EC44	0.000	0.000	0.000	0.000	0.000	0.000	0.000
								Aromatics EC5-EC7	0.001	0.001	0.001	0.001	0.001	0.001	0.001
								Aromatics >EC7-EC8	0.000	0.000	0.000	0.000	0.000	0.000	0.000
								Aromatics >EC8-EC10	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Considered additive								Aromatics >EC10-EC12	0.006	0.006	0.006	0.006	0.006	0.006	0.006
								Aromatics >EC12-EC16	0.006	0.006	0.006	0.006	0.006	0.006	0.006
								Aromatics >EC16-EC21	0.018	0.018	0.018	0.018	0.018	0.018	0.018
Considered additive								Aromatics >EC21-EC35	0.007	0.007	0.007	0.007	0.007	0.007	0.007
								Aromatics >EC35-EC44	0.006	0.006	0.006	0.006	0.006	0.006	0.006
								Hazard Index for ali>C8-C16	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**	**0.044**
								Hazard Index for aro>C8-C16	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**	**0.013**
								Hazard Index for aro>C16-C35	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**

Risk parameter: **Human health - residential with plant uptake (2.5%SOM)**
Data set: Phase 16 & 16A Natural Material
Client: Dorchester Living
Site: Heyford Park
Job no.: C-04583-C
Lab. report no(s).: 16-33897

Scenario B - Summary of Remedial Targets Methodology

Hydrock

RTM Level 2 - Groundwater Beneath Source Assessment - groundwater samples

Water body receptor(s): Groundwater and surface water
Secondary receptor(s):
Data set: Groundwater
Client: Dorchester Living
Site: Heyford Park
Job no: C-04583-C

2008/105/EC Annex II: [P]= priority substance, [PH] = priority hazardous substances.

Chemicals of Potential Concern (concentrations in µg/l)	Summary of Sample Data					Value Being Compared to Target = Maximum Value	Water Quality Target (Exceeded if Red Text)		No. Samples Exceeding Water Quality Target		Notes
	No. of Samples	Limit of Detection	Minimum Value	Maximum Value	95-%ile Value		Inland Waters EQS		Inland Waters EQS		EQS compared to dissolved metals as an initial screen, with no adjustment for bioavailability or ABC.
Hardness as mg/l CaCO3	-	-	581	-	-	-	-				Used with some EQS.
Ag (dissolved)	13	0.05	0.05	0.05	0.05	0.05	0.05		0		
Al (dissolved)	13	1	1	9.5	5.42	9.5	n/a		0		
As (dissolved)	13	0.15	0.15	4.4	3.554	4.4	50		0		
B (dissolved)	13	10	21	81	69.6	81	2000		0		
Ba (dissolved)	13	0.06	11	48	46.8	48	n/a		0		
Cd (dissolved) [PH]	13	0.02	0.02	0.28	0.166	0.28	0.25		1		
Co (dissolved)	13	0.2	0.4	5	4.64	5	3		2		
Cr (VI) (dissolved)	13	5	5	5	5	5	3.4		13		
Cr (III) (dissolved)	13	1	1	1	1	1	4.7		0		
Cr (total) (dissolved)	13	0.2	0.2	0.5	0.38	0.5	n/a		0		
Cu (dissolved)	13	0.5	2	8.6	7.88	8.6	1		13		EQS based on bioavailable fraction.
Fe (dissolved)	11	4	4	2300	1340	2300	1000		1		
Hg (dissolved) [PH]	13	0.005	0.005	0.041	0.0308	0.041	0.07		0		
Mn (dissolved)	13	0.05	8	360	354	360	123		5		EQS based on bioavailable fraction.
Mo (dissolved)	13	0.05	0.77	5.7	5.64	5.7	n/a		0		
Na (dissolved)	13	10	4600	30000	24000	30000	n/a		0		
Ni (dissolved) [P]	13	0.5	0.9	18	15.6	18	4		10		EQS based on bioavailable fraction.
Pb (dissolved) [P]	13	0.2	0.2	2.9	1.64	2.9	1.2		1		EQS based on bioavailable fraction.
Sb (dissolved)	13	0.4	0.4	0.4	0.4	0.4	n/a		0		
Se (dissolved)	13	0.6	0.6	0.6	0.6	0.6	n/a		0		
Sn (dissolved)	13	0.2	0.2	0.2	0.2	0.2	25		0		
V (dissolved)	13	0.2	0.2	0.3	0.3	0.3	60		0		
Zn (dissolved)	13	0.5	1.8	140	122	140	10.9		4		EQS based on bioavailable fraction and is added to ambient background conc..
Cyanide (free)	13	10	10	10	10	10	1		13		
Cyanide (total)	13	10	10	10	10	10	n/a		0		
Ammonium (NH4+)	13	15	15	280	244	280	n/a		0		
Bromate (BrO3)	0	0.001	0	0		0	n/a		0		
Chloride (Cl-)	13	150	6800	80000	63200	80000	250000		0		
Fluoride (F-)	13	50	94	140	128	140	5000		0		
Nitrate (NO3-)	13	50	160	64300	57340	64300	n/a		0		
Nitrite (NO2-)	13	5	16	630	426	630	n/a		0		
Sulfate (SO42-)	13	45	7240	165000	143400	165000	400000		0		
pH (min.) (su)	13	0	7.6	7	7.6	7	6.0		0		Max & Min interchanged to compare min. value.
pH (max.) (su)	13	0	7	7.6	7.6	7.6	9.0		0		
Electrical conductivity (µS/cm)	13	10	410	970	946	970	n/a		0		

Scenario B - Summary of Remedial Targets Methodology

Hydrock

RTM Level 2 - Groundwater Beneath Source Assessment - groundwater samples

Water body receptor(s): Groundwater and surface water
Secondary receptor(s):
Data set: Groundwater
Client: Dorchester Living
Site: Heyford Park
Job no: C-04583-C

2008/105/EC Annex II: [P]= priority substance, [PH] = priority hazardous substances.

Chemicals of Potential Concern (concentrations in µg/l)	Summary of Sample Data					Value Being Compared to Target = Maximum Value	Water Quality Target (Exceeded if Red Text)		No. Samples Exceeding Water Quality Target		Notes
	No. of Samples	Limit of Detection	Minimum Value	Maximum Value	95-%ile Value		Inland Waters EQS		Inland Waters EQS		EQS compared to dissolved metals as an initial screen, with no adjustment for bioavailability or ABC.
Anthracene [PH]	13	0.01	0.01	2.22	0.894	2.22	0.1		1		
Benzo(a)pyrene [PH]	13	0.01	0.01	0.33	0.138	0.33	0.00017		13		Limit of detection above EQS.
Fluoranthene [P]	13	0.01	0.01	1.64	0.896	1.64	0.0063		13		Limit of detection above EQS.
Naphthalene [P]	13	0.01	0.01	9.11	4.316	9.11	2		1		
PAHs = sum of benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene [PH]	13	0.022	0.02	0.87	0.36	0.87	n/a		0		
Phenol	13	0.5	0.5	0.5	0.5	0.5	7.7		0		
Ammonia (unionised)	0	0	0	0		0	n/a		0		
Bromine	0	0	0	0		0	2		0		
Chlorine (total free available)	0	0	0	0		0	2		0		
Chlorate	0	0	0	0		0	n/a		0		
Chlorite	0	0	0	0		0	n/a		0		
Benzene [P]	13	0	1	1	1	1	10		0		
Toluene	13	0	1	26.4	17.88	26.4	74		0		
Ethylbenzene	13	0	1	1	1	1	20		0		
Xylenes	13	0	1	1	1	1	30		0		

Scenario B - Summary of Remedial Targets Methodology

Hydrock

RTM Level 2 - Groundwater Beneath Source Assessment - groundwater samples

Water body receptor(s): Groundwater and surface water
Secondary receptor(s):
Data set: Gallos Brook - Surface Water Samples
Client: Dorchester Living
Site: Heyford Park
Job no: C-04583-C

2008/105/EC Annex II: [P]= priority substance, [PH] = priority hazardous substances.

Chemicals of Potential Concern (concentrations in µg/l)	Summary of Sample Data					Value Being Compared to Target = Maximum Value	Water Quality Target (Exceeded if Red Text)		No. Samples Exceeding Water Quality Target		Notes
	No. of Samples	Limit of Detection	Minimum Value	Maximum Value	95-%ile Value		Inland Waters EQS		Inland Waters EQS		EQS compared to dissolved metals as an initial screen, with no adjustment for bioavailability or ABC.
Hardness as mg/l CaCO3	-	-	223	-	-	-	-				Used with some EQS.
Ag (dissolved)	2	0.05	0.05	0.05	0.05	0.05	0.05		0		
Al (dissolved)	2	1	1	1	1	1	n/a		0		
As (dissolved)	2	0.15	0.18	0.34	0.332	0.34	50		0		
B (dissolved)	2	10	23	24	23.95	24	2000		0		
Ba (dissolved)	2	0.06	16	16	16	16	n/a		0		
Cd (dissolved) [PH]	2	0.02	0.02	0.02	0.02	0.02	0.25		0		
Co (dissolved)	2	0.2	0.4	0.5	0.495	0.5	3		0		
Cr (VI) (dissolved)	2	5	5	5	5	5	3.4		2		
Cr (III) (dissolved)	2	1	1	1	1	1	4.7		0		
Cr (total) (dissolved)	2	0.2	0.2	0.2	0.2	0.2	n/a		0		
Cu (dissolved)	2	0.5	5.1	5.9	5.86	5.9	1		2		EQS based on bioavailable fraction.
Fe (dissolved)	2	4	150	210	207	210	1000		0		
Hg (dissolved) [PH]	2	0.005	0.005	0.005	0.005	0.005	0.07		0		
Mn (dissolved)	2	0.05	1.8	31	29.54	31	123		0		EQS based on bioavailable fraction.
Mo (dissolved)	2	0.05	0.05	0.05	0.05	0.05	n/a		0		
Na (dissolved)	2	10	17000	17000	17000	17000	n/a		0		
Ni (dissolved) [P]	2	0.5	2.1	2.9	2.86	2.9	4		0		EQS based on bioavailable fraction.
Pb (dissolved) [P]	2	0.2	0.2	0.3	0.295	0.3	1.2		0		EQS based on bioavailable fraction.
Sb (dissolved)	2	0.4	0.5	0.6	0.595	0.6	n/a		0		
Se (dissolved)	2	0.6	0.8	0.9	0.895	0.9	n/a		0		
Sn (dissolved)	2	0.2	0.2	0.27	0.2665	0.27	25		0		
V (dissolved)	2	0.2	0.2	0.2	0.2	0.2	60		0		
Zn (dissolved)	2	0.5	4	4.2	4.19	4.2	10.9		0		EQS based on bioavailable fraction and is added to ambient background conc..
Cyanide (free)	2	10	10	10	10	10	1		2		
Cyanide (total)	2	10	10	10	10	10	n/a		0		
Ammonium (NH4+)	2	15	21	76	73.25	76	n/a		0		
Bromate (BrO3)	0	0.001	0	0		0	n/a		0		
Chloride (Cl-)	2	150	23000	24000	23950	24000	250000		0		
Fluoride (F-)	2	50	190	200	199.5	200	5000		0		
Nitrate (NO3-)	2	50	5410	5730	5714	5730	n/a		0		
Nitrite (NO2-)	2	5	13	23	22.5	23	n/a		0		
Sulfate (SO42-)	2	45	18600	19400	19360	19400	400000		0		
pH (min.) (su)	2	0	8.1	8.1	8.1	8.1	6.0		0		Max & Min interchanged to compare min. value.
pH (max.) (su)	2	0	8.1	8.1	8.1	8.1	9.0		0		
Electrical conductivity (µS/cm)	2	10	540	570	568.5	570	n/a		0		

Scenario B - Summary of Remedial Targets Methodology

Hydrock

RTM Level 2 - Groundwater Beneath Source Assessment - groundwater samples

Water body receptor(s): Groundwater and surface water
Secondary receptor(s):
Data set: Gallos Brook - Surface Water Samples
Client: Dorchester Living
Site: Heyford Park
Job no: C-04583-C

2008/105/EC Annex II: [P]= priority substance, [PH] = priority hazardous substances.

Chemicals of Potential Concern (concentrations in µg/l)	Summary of Sample Data					Value Being Compared to Target = Maximum Value	Water Quality Target (Exceeded if Red Text)		No. Samples Exceeding Water Quality Target		Notes
	No. of Samples	Limit of Detection	Minimum Value	Maximum Value	95-%ile Value		Inland Waters EQS		Inland Waters EQS		EQS compared to dissolved metals as an initial screen, with no adjustment for bioavailability or ABC.
Anthracene [PH]	2	0.01	0.01	0.01	0.01	0.01	0.1		0		
Benzo(a)pyrene [PH]	2	0.01	0.01	0.01	0.01	0.01	0.00017		2		Limit of detection above EQS.
Fluoranthene [P]	2	0.01	0.01	0.01	0.01	0.01	0.0063		2		Limit of detection above EQS.
Naphthalene [P]	2	0.01	0.01	0.01	0.01	0.01	2		0		
PAHs = sum of benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene [PH]	2	0.02	0.02	0.02	0.02	0.02	n/a		0		
Phenol	2	0.5	0.5	0.5	0.5	0.5	7.7		0		
Ammonia (unionised)	0	0	0	0		0	n/a		0		
Bromine	0	0	0	0		0	2		0		
Chlorine (total free available)	0	0	0	0		0	2		0		
Chlorate	0	0	0	0		0	n/a		0		
Chlorite	0	0	0	0		0	n/a		0		
Benzene [P]	2	0	1	1	1	1	10		0		
Toluene	2	0	1	1	1	1	74		0		
Ethylbenzene	2	0	1	1	1	1	20		0		
Xylenes	2	0	1	1	1	1	30		0		

Hydrock

Petroleum Hydrocarbons in Water
RTM Level 2 Groundwater Below Source Assessment (from Groundwater Analyses)

Data set: Groundwater
Client: Dorchester Living
Site: Heyford Park
Job no: C-04583

Chemical of Potential Concern (concentrations in µg/l)	Water Quality Target (WQT) (µg/l)	Basis of WQT	Limit of Detection	No. of Samples	Minimum Value (µg/l) (=LoD if blue)	Maximum Value (µg/l) (=LoD if blue)	No. Samples Exceeding WQT	Water Solubility (µg/l) (Exceeded if red)
Ali EC5-EC6	10	Withdrawn PWS Regs 1991	10	13	10	10	0	35900
Ali >EC6-EC8	10	Withdrawn PWS Regs 1991	10	13	10	480	3	5370
Ali >EC8-EC10	10	Withdrawn PWS Regs 1991	10	13	10	12000	5	427
Ali >EC10-EC12	10	Withdrawn PWS Regs 1991	10	13	10	40000	7	33.9
Ali >EC12-EC16	10	Withdrawn PWS Regs 1991	10	13	10	83000	7	0.759
Ali >EC16-EC35	10	Withdrawn PWS Regs 1991	10	13	10	15000	2	0.00254
Ali >EC35-EC44	10	Withdrawn PWS Regs 1991	10	13	10	10	0	0.00254
Aro EC5-EC7	10	Withdrawn PWS Regs 1991	10	13	10	10	0	1780000
Aro >EC7-EC8	10	Withdrawn PWS Regs 1991	10	13	10	26	2	590000
Aro >EC8-EC10	10	Withdrawn PWS Regs 1991	10	13	10	610	1	64600
Aro >EC10-EC12	10	Withdrawn PWS Regs 1991	10	13	10	1600	1	24500
Aro > EC12-EC16	10	Withdrawn PWS Regs 1991	10	13	10	1600	2	5750
Aro >EC16-EC21	10	Withdrawn PWS Regs 1991	10	13	10	12	1	653
Aro >EC21-EC35	10	Withdrawn PWS Regs 1991	10	13	10	10	0	6.61
Aro >EC35-EC44	10	Withdrawn PWS Regs 1991	10	13	10	10	0	6.61
Benzene	1	UK/EU DWS	1	13	1	1	0	1780000
Toluene	700	WHO (2004) DWS	1	13	1	26.4	0	590000
Ethylbenzene	300	WHO (2004) DWS	1	13	1	1	0	180000
Xylenes	500	WHO (2004) DWS	1	13	1	1	0	191000
MTBE	15	WHO (2004) DWS	1	13	1	1	0	48000000

The Water Supply Regulations 1989 and the Private Water Supply Regulations 1991 both contained a prescribed concentration of 10 µg/l for "dissolved or emulsified hydrocarbons (after extraction with petroleum ether); mineral oils". This was removed when these Regulations were updated in 2000 (consolidated 2007) and 2009, respectively. However 10 µg/l is used as an initial screening assessment (per fraction) as it is frequently the preferred approach of the Environment Agency.

Appendix J

Waste Classification

Hydrock

HazWasteOnline™

Waste Classification Report

RMCHN-PNX8V-6TJC6

Job name

Heyford Phase 9

Description/Comments

Phase 9

Project

Heyford

Site

Heyford

Waste Stream Template

Hydrock Standard plus Cresol (ammended Lead)

Classified by

Name:
Ian Burton
Date:
06/02/2017 15:27:03 UTC
Telephone:
01694 842 888

Company:
Hydrock Contracting Ltd
3 Hawthorn Park, Holdenby Road
Spratton
Northampton
NN6 8LD

Report

Created by: Ian Burton
Created date: 06/02/2017 15:27 UTC

Job summary

Classification of sample: TP02

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
TP02
Sample Depth:
0.20 m
Moisture content:
0%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.0158%)
TPH (C6 to C40) petroleum group: (conc.: 0.0554%)

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		32	mg/kg	1.32	42.25	mg/kg	0.00423 %		
2		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.55	mg/kg		0.55	mg/kg	0.000055 %		
3		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.64	mg/kg		0.64	mg/kg	0.000064 %		
4		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.69	mg/kg		0.69	mg/kg	0.000069 %		
5		benzo[ghi]perylene		205-883-8	191-24-2		0.38	mg/kg		0.38	mg/kg	0.000038 %		
6		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.31	mg/kg		0.31	mg/kg	0.000031 %		
7		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.96	mg/kg	2.78	2.664	mg/kg	0.000266 %		
8		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1	mg/kg	13.43	13.43	mg/kg	0.00134 %		
9		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		30	mg/kg	1.46	43.847	mg/kg	0.00438 %		
10		chrysene	601-048-00-0	205-923-4	218-01-9		0.56	mg/kg		0.56	mg/kg	0.000056 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
11		copper { dicopper oxide; copper (I) oxide }				16	mg/kg	1.13	18.014	mg/kg	0.0018 %		
		029-002-00-X	215-270-7	1317-39-1									
12		diesel petroleum group				157.63333	mg/kg		157.633	mg/kg	0.0158 %		
				68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9									
13		fluoranthene				1.1	mg/kg		1.1	mg/kg	0.00011 %		
			205-912-4	206-44-0									
14		indeno[123-cd]pyrene				0.3	mg/kg		0.3	mg/kg	0.00003 %		
			205-893-2	193-39-5									
15		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	23	mg/kg		23	mg/kg	0.0023 %		
		082-001-00-6											
16		nickel { nickel dihydroxide }				24	mg/kg	1.58	37.908	mg/kg	0.00379 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
17		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
18		phenanthrene				0.38	mg/kg		0.38	mg/kg	0.000038 %		
			201-581-5	85-01-8									
19		pyrene				0.96	mg/kg		0.96	mg/kg	0.000096 %		
			204-927-3	129-00-0									
20		TPH (C6 to C40) petroleum group				554.3	mg/kg		554.3	mg/kg	0.0554 %		
				TPH									
21		zinc { zinc oxide }				77	mg/kg	1.24	95.843	mg/kg	0.00958 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0995 %		

Key

	User supplied data
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP03

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
TP03
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 14: Ecotoxic "waste which presents or may present immediate or delayed risks for one or more sectors of the environment"

Risk phrases hit:

R52/53 "Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment"

Because of determinand:

benzo[a]anthracene: (conc.: 0.0028%)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.0576%)
TPH (C6 to C40) petroleum group: (conc.: 0.0922%)

Determinands

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

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		acenaphthene				3.6	mg/kg		3.6	mg/kg	0.00036 %		
			201-469-6	83-32-9									
2		acenaphthylene				0.35	mg/kg		0.35	mg/kg	0.000035 %		
			205-917-1	208-96-8									
3		anthracene				8.1	mg/kg		8.1	mg/kg	0.00081 %		
			204-371-1	120-12-7									
4		arsenic { arsenic trioxide }				20	mg/kg	1.32	26.407	mg/kg	0.00264 %		
		033-003-00-0	215-481-4	1327-53-3									
5		benzo[a]anthracene				28	mg/kg		28	mg/kg	0.0028 %		
		601-033-00-9	200-280-6	56-55-3									
6		benzo[a]pyrene; benzo[def]chrysene				25	mg/kg		25	mg/kg	0.0025 %		
		601-032-00-3	200-028-5	50-32-8									
7		benzo[b]fluoranthene				23	mg/kg		23	mg/kg	0.0023 %		
		601-034-00-4	205-911-9	205-99-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
8		benzo[ghi]perylene				12	mg/kg		12	mg/kg	0.0012 %		
			205-883-8	191-24-2									
9		benzo[k]fluoranthene				20	mg/kg		20	mg/kg	0.002 %		
		601-036-00-5	205-916-6	207-08-9									
10		beryllium { beryllium oxide }				0.48	mg/kg	2.78	1.332	mg/kg	0.000133 %		
		004-003-00-8	215-133-1	1304-56-9									
11		boron { boron tribromide/trichloride/trifluoride (combined) }				0.4	mg/kg	13.43	5.372	mg/kg	0.000537 %		
				10294-33-4, 10294-34-5, 7637-07-2									
12		cadmium { cadmium sulfide }			1	0.2	mg/kg	1.29	0.257	mg/kg	0.00002 %		
		048-010-00-4	215-147-8	1306-23-6									
13		chromium in chromium(III) compounds { chromium(III) oxide }				16	mg/kg	1.46	23.385	mg/kg	0.00234 %		
			215-160-9	1308-38-9									
14		chrysene				24	mg/kg		24	mg/kg	0.0024 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { dicopper oxide; copper (I) oxide }				16	mg/kg	1.13	18.014	mg/kg	0.0018 %		
		029-002-00-X	215-270-7	1317-39-1									
16		dibenz[a,h]anthracene				2.4	mg/kg		2.4	mg/kg	0.00024 %		
		601-041-00-2	200-181-8	53-70-3									
17		diesel petroleum group				575.63333	mg/kg		575.633	mg/kg	0.0576 %		
				68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9									
18		fluoranthene				64	mg/kg		64	mg/kg	0.0064 %		
			205-912-4	206-44-0									
19		fluorene				1.8	mg/kg		1.8	mg/kg	0.00018 %		
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				11	mg/kg		11	mg/kg	0.0011 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	15	mg/kg		15	mg/kg	0.0015 %		
		082-001-00-6											
22		nickel { nickel dihydroxide }				14	mg/kg	1.58	22.113	mg/kg	0.00221 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
23		pH				10.7	pH		10.7	pH	10.7 pH		
				PH									
24		phenanthrene				25	mg/kg		25	mg/kg	0.0025 %		
			201-581-5	85-01-8									
25		pyrene				53	mg/kg		53	mg/kg	0.0053 %		
			204-927-3	129-00-0									
26		TPH (C6 to C40) petroleum group				921.8	mg/kg		921.8	mg/kg	0.0922 %		
				TPH									
27		zinc { zinc oxide }				39	mg/kg	1.24	48.544	mg/kg	0.00485 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.196 %		

Key

- User supplied data
- Hazardous result
- Potentially Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: TP03[1]

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

Sample details

Sample Name:
TP03[1]
Sample Depth:
0.55 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17	mg/kg	1.32	22.446	mg/kg	0.00224 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.69	mg/kg	2.78	1.915	mg/kg	0.000191 %		
3		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1	mg/kg	13.43	13.43	mg/kg	0.00134 %		
4		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		21	mg/kg	1.46	30.693	mg/kg	0.00307 %		
5		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17	mg/kg	1.13	19.14	mg/kg	0.00191 %		
6		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	15	mg/kg		15	mg/kg	0.0015 %		
7		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		15	mg/kg	1.58	23.692	mg/kg	0.00237 %		
8		pH			PH		8	pH		8	pH	8pH		
9		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		38	mg/kg	1.24	47.299	mg/kg	0.00473 %		
											Total:	0.0174 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP05

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
TP05
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.00773%)
TPH (C6 to C40) petroleum group: (conc.: 0.0124%)

Determinands

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

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		acenaphthene				0.25	mg/kg		0.25	mg/kg	0.000025 %		
			201-469-6	83-32-9									
2		anthracene				0.86	mg/kg		0.86	mg/kg	0.000086 %		
			204-371-1	120-12-7									
3		arsenic { arsenic trioxide }				17	mg/kg	1.32	22.446	mg/kg	0.00224 %		
		033-003-00-0	215-481-4	1327-53-3									
4		benzo[a]anthracene				3.1	mg/kg		3.1	mg/kg	0.00031 %		
		601-033-00-9	200-280-6	56-55-3									
5		benzo[a]pyrene; benzo[def]chrysene				3.2	mg/kg		3.2	mg/kg	0.00032 %		
		601-032-00-3	200-028-5	50-32-8									
6		benzo[b]fluoranthene				3.6	mg/kg		3.6	mg/kg	0.00036 %		
		601-034-00-4	205-911-9	205-99-2									
7		benzo[ghi]perylene				1.7	mg/kg		1.7	mg/kg	0.00017 %		
			205-883-8	191-24-2									
8		benzo[k]fluoranthene				1.5	mg/kg		1.5	mg/kg	0.00015 %		
		601-036-00-5	205-916-6	207-08-9									
9		beryllium { beryllium oxide }				0.65	mg/kg	2.78	1.804	mg/kg	0.00018 %		
		004-003-00-8	215-133-1	1304-56-9									
10		boron { boron tribromide/trichloride/trifluoride (combined) }				0.7	mg/kg	13.43	9.401	mg/kg	0.00094 %		
				10294-33-4, 10294-34-5, 7637-07-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
11		cadmium { cadmium sulfide }			1	0.2	mg/kg	1.29	0.257	mg/kg	0.00002 %		
		048-010-00-4	215-147-8	1306-23-6									
12		chromium in chromium(III) compounds { chromium(III) oxide }				23	mg/kg	1.46	33.616	mg/kg	0.00336 %		
			215-160-9	1308-38-9									
13		chrysene				2.8	mg/kg		2.8	mg/kg	0.00028 %		
		601-048-00-0	205-923-4	218-01-9									
14		copper { dicopper oxide; copper (I) oxide }				16	mg/kg	1.13	18.014	mg/kg	0.0018 %		
		029-002-00-X	215-270-7	1317-39-1									
15		dibenz[a,h]anthracene				0.3	mg/kg		0.3	mg/kg	0.00003 %		
		601-041-00-2	200-181-8	53-70-3									
16		diesel petroleum group				77.33333	mg/kg		77.333	mg/kg	0.00773 %		
				68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9									
17		fluoranthene				6.6	mg/kg		6.6	mg/kg	0.00066 %		
			205-912-4	206-44-0									
18		fluorene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
			201-695-5	86-73-7									
19		indeno[123-cd]pyrene				1.5	mg/kg		1.5	mg/kg	0.00015 %		
			205-893-2	193-39-5									
20		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	18	mg/kg		18	mg/kg	0.0018 %		
		082-001-00-6											
21		nickel { nickel dihydroxide }				18	mg/kg	1.58	28.431	mg/kg	0.00284 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
22		pH				8	pH		8	pH	8pH		
				PH									
23		phenanthrene				2.9	mg/kg		2.9	mg/kg	0.00029 %		
			201-581-5	85-01-8									
24		pyrene				5.6	mg/kg		5.6	mg/kg	0.00056 %		
			204-927-3	129-00-0									
25		TPH (C6 to C40) petroleum group				123.5	mg/kg		123.5	mg/kg	0.0124 %		
				TPH									
26		zinc { zinc oxide }				49	mg/kg	1.24	60.991	mg/kg	0.0061 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0428 %		

Key

	User supplied data
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP07

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

Sample details

Sample Name:
TP07
Sample Depth:
0.25 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18 mg/kg	1.32	23.766 mg/kg	0.00238 %		
2	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.27 mg/kg		0.27 mg/kg	0.000027 %		
3	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.32 mg/kg		0.32 mg/kg	0.000032 %		
4	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.36 mg/kg		0.36 mg/kg	0.000036 %		
5	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.13 mg/kg		0.13 mg/kg	0.000013 %		
6	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.88 mg/kg	2.78	2.442 mg/kg	0.000244 %		
7	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1 mg/kg	13.43	13.43 mg/kg	0.00134 %		
8	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.2 mg/kg	1.29	0.257 mg/kg	0.00002 %		
9	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		28 mg/kg	1.46	40.924 mg/kg	0.00409 %		
10	chrysene	601-048-00-0	205-923-4	218-01-9		0.28 mg/kg		0.28 mg/kg	0.000028 %		
11	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17 mg/kg	1.13	19.14 mg/kg	0.00191 %		
12	fluoranthene		205-912-4	206-44-0		0.44 mg/kg		0.44 mg/kg	0.000044 %		
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	27 mg/kg		27 mg/kg	0.0027 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		nickel { nickel dihydroxide }				21	mg/kg	1.58	33.169	mg/kg	0.00332 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
15		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
16		pyrene				0.4	mg/kg		0.4	mg/kg	0.00004 %		
			204-927-3	129-00-0									
17		zinc { zinc oxide }				58	mg/kg	1.24	72.193	mg/kg	0.00722 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0234 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP09

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
TP09
Sample Depth:
0.20 m
Moisture content:
0%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.0007%)
TPH (C6 to C40) petroleum group: (conc.: 0.0021%)

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	anthracene		204-371-1	120-12-7		0.16 mg/kg		0.16 mg/kg	0.000016 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		22 mg/kg	1.32	29.047 mg/kg	0.0029 %		
3	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.61 mg/kg		0.61 mg/kg	0.000061 %		
4	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.66 mg/kg		0.66 mg/kg	0.000066 %		
5	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.83 mg/kg		0.83 mg/kg	0.000083 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.39 mg/kg		0.39 mg/kg	0.000039 %		
7	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.3 mg/kg		0.3 mg/kg	0.00003 %		
8	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.53 mg/kg	2.78	1.471 mg/kg	0.000147 %		
9	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.6 mg/kg	13.43	21.488 mg/kg	0.00215 %		
10	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		28 mg/kg	1.46	40.924 mg/kg	0.00409 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
11		chrysene				0.7	mg/kg		0.7	mg/kg	0.00007 %		
		601-048-00-0	205-923-4	218-01-9									
12		copper { dicopper oxide; copper (I) oxide }				18	mg/kg	1.13	20.266	mg/kg	0.00203 %		
		029-002-00-X	215-270-7	1317-39-1									
13		diesel petroleum group				7	mg/kg		7	mg/kg	0.0007 %		
				68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9									
14		fluoranthene				1.3	mg/kg		1.3	mg/kg	0.00013 %		
			205-912-4	206-44-0									
15		indeno[123-cd]pyrene				0.34	mg/kg		0.34	mg/kg	0.000034 %		
			205-893-2	193-39-5									
16		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	21	mg/kg		21	mg/kg	0.0021 %		
		082-001-00-6											
17		nickel { nickel dihydroxide }				18	mg/kg	1.58	28.431	mg/kg	0.00284 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
18		pH				10.3	pH		10.3	pH	10.3 pH		
				PH									
19		phenanthrene				0.59	mg/kg		0.59	mg/kg	0.000059 %		
			201-581-5	85-01-8									
20		pyrene				1.1	mg/kg		1.1	mg/kg	0.00011 %		
			204-927-3	129-00-0									
21		TPH (C6 to C40) petroleum group				21	mg/kg		21	mg/kg	0.0021 %		
				TPH									
22		zinc { zinc oxide }				57	mg/kg	1.24	70.949	mg/kg	0.00709 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0269 %		

Key

	User supplied data
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP11

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
TP11
Sample Depth:
0.15 m
Moisture content:
0%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.0007%)
TPH (C6 to C40) petroleum group: (conc.: 0.0021%)

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	anthracene		204-371-1	120-12-7		0.15 mg/kg		0.15 mg/kg	0.000015 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	18.485 mg/kg	0.00185 %		
3	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.59 mg/kg		0.59 mg/kg	0.000059 %		
4	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.6 mg/kg		0.6 mg/kg	0.00006 %		
5	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.66 mg/kg		0.66 mg/kg	0.000066 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.36 mg/kg		0.36 mg/kg	0.000036 %		
7	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.29 mg/kg		0.29 mg/kg	0.000029 %		
8	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.68 mg/kg	2.78	1.887 mg/kg	0.000189 %		
9	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.8 mg/kg	13.43	10.744 mg/kg	0.00107 %		
10	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.2 mg/kg	1.29	0.257 mg/kg	0.00002 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
11		chromium in chromium(III) compounds { chromium(III) oxide }				21	mg/kg	1.46	30.693	mg/kg	0.00307 %		
			215-160-9	1308-38-9									
12		chrysene				0.51	mg/kg		0.51	mg/kg	0.000051 %		
		601-048-00-0	205-923-4	218-01-9									
13		copper { dicopper oxide; copper (I) oxide }				18	mg/kg	1.13	20.266	mg/kg	0.00203 %		
		029-002-00-X	215-270-7	1317-39-1									
14		diesel petroleum group				7	mg/kg		7	mg/kg	0.0007 %		
				68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9									
15		fluoranthene				1.1	mg/kg		1.1	mg/kg	0.00011 %		
			205-912-4	206-44-0									
16		indeno[123-cd]pyrene				0.29	mg/kg		0.29	mg/kg	0.000029 %		
			205-893-2	193-39-5									
17		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	22	mg/kg		22	mg/kg	0.0022 %		
		082-001-00-6											
18		mercury { mercury dichloride }				0.4	mg/kg	1.35	0.541	mg/kg	0.000054 %		
		080-010-00-X	231-299-8	7487-94-7									
19		nickel { nickel dihydroxide }				18	mg/kg	1.58	28.431	mg/kg	0.00284 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
20		pH				7.8	pH		7.8	pH	7.8 pH		
				PH									
21		phenanthrene				0.68	mg/kg		0.68	mg/kg	0.000068 %		
			201-581-5	85-01-8									
22		pyrene				0.89	mg/kg		0.89	mg/kg	0.000089 %		
			204-927-3	129-00-0									
23		TPH (C6 to C40) petroleum group				21	mg/kg		21	mg/kg	0.0021 %		
				TPH									
24		zinc { zinc oxide }				59	mg/kg	1.24	73.438	mg/kg	0.00734 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0241 %		

Key

	User supplied data
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP11[1]

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

Sample details

Sample Name:
TP11[1]
Sample Depth:
0.60 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: TP14

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
TP14
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.0004%)
TPH (C6 to C40) petroleum group: (conc.: 0.0012%)

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	anthracene		204-371-1	120-12-7		0.15 mg/kg		0.15 mg/kg	0.000015 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16 mg/kg	1.32	21.125 mg/kg	0.00211 %		
3	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.5 mg/kg		0.5 mg/kg	0.00005 %		
4	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.51 mg/kg		0.51 mg/kg	0.000051 %		
5	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.56 mg/kg		0.56 mg/kg	0.000056 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.32 mg/kg		0.32 mg/kg	0.000032 %		
7	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.31 mg/kg		0.31 mg/kg	0.000031 %		
8	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.78 mg/kg	2.78	2.165 mg/kg	0.000216 %		
9	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.8 mg/kg	13.43	24.174 mg/kg	0.00242 %		
10	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.2 mg/kg	1.29	0.257 mg/kg	0.00002 %		

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
11		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		26	mg/kg	1.46	38.00045	mg/kg	0.0038 %		
12		chrysene	601-048-00-0	205-923-4	218-01-9		0.43	mg/kg		0.43	mg/kg	0.000043 %		
13		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		18	mg/kg	1.13	20.266	mg/kg	0.00203 %		
14		diesel petroleum group			68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9		4	mg/kg		4	mg/kg	0.0004 %		
15		fluoranthene		205-912-4	206-44-0		0.93	mg/kg		0.93	mg/kg	0.000093 %		
16		indeno[123-cd]pyrene		205-893-2	193-39-5		0.26	mg/kg		0.26	mg/kg	0.000026 %		
17		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	26	mg/kg		26	mg/kg	0.0026 %		
18		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.4	mg/kg	1.35	0.541	mg/kg	0.000054 %		
19		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		19	mg/kg	1.58	30.01	mg/kg	0.003 %		
20		pH			PH		7.7	pH		7.7	pH	7.7 pH		
21		phenanthrene		201-581-5	85-01-8		0.42	mg/kg		0.42	mg/kg	0.000042 %		
22		pyrene		204-927-3	129-00-0		0.85	mg/kg		0.85	mg/kg	0.000085 %		
23		TPH (C6 to C40) petroleum group			TPH		12	mg/kg		12	mg/kg	0.0012 %		
24		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		110	mg/kg	1.24	136.919	mg/kg	0.0137 %		
											Total:	0.0321 %		

Key

	User supplied data
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP102

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample Name:	LoW Code:	
TP102	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
0.40 m	Entry:	17 05 03 * (Soil and stones containing hazardous substances)
Moisture content:		
0% (no correction)		

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.717%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.717%)

HP 14: Ecotoxic "waste which presents or may present immediate or delayed risks for one or more sectors of the environment"

Risk phrases hit:

R52/53 "Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment"

Because of determinand:

benzo[a]anthracene: (conc.: 0.017%)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.494%)
TPH (C6 to C40) petroleum group: (conc.: 0.717%)

Determinands

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

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		acenaphthene				130	mg/kg		130	mg/kg	0.013 %		
			201-469-6	83-32-9									
2		acenaphthylene				4.3	mg/kg		4.3	mg/kg	0.00043 %		
			205-917-1	208-96-8									
3		anthracene				170	mg/kg		170	mg/kg	0.017 %		
			204-371-1	120-12-7									
4		arsenic { arsenic trioxide }				8.7	mg/kg	1.32	11.487	mg/kg	0.00115 %		
		033-003-00-0	215-481-4	1327-53-3									
5		benzo[a]anthracene				170	mg/kg		170	mg/kg	0.017 %		
		601-033-00-9	200-280-6	56-55-3									
6		benzo[a]pyrene; benzo[def]chrysene				140	mg/kg		140	mg/kg	0.014 %		
		601-032-00-3	200-028-5	50-32-8									
7		benzo[b]fluoranthene				120	mg/kg		120	mg/kg	0.012 %		
		601-034-00-4	205-911-9	205-99-2									
8		benzo[ghi]perylene				57	mg/kg		57	mg/kg	0.0057 %		
			205-883-8	191-24-2									
9		benzo[k]fluoranthene				110	mg/kg		110	mg/kg	0.011 %		
		601-036-00-5	205-916-6	207-08-9									
10		beryllium { beryllium oxide }				0.15	mg/kg	2.78	0.416	mg/kg	0.000042 %		
		004-003-00-8	215-133-1	1304-56-9									
11		boron { boron tribromide/trichloride/trifluoride (combined) }				0.3	mg/kg	13.43	4.029	mg/kg	0.000403 %		
				10294-33-4, 10294-34-5, 7637-07-2									
12		chromium in chromium(III) compounds { chromium(III) oxide }				3.7	mg/kg	1.46	5.408	mg/kg	0.000541 %		
			215-160-9	1308-38-9									
13		chrysene				110	mg/kg		110	mg/kg	0.011 %		
		601-048-00-0	205-923-4	218-01-9									
14		copper { dicopper oxide; copper (I) oxide }				22	mg/kg	1.13	24.77	mg/kg	0.00248 %		
		029-002-00-X	215-270-7	1317-39-1									
15		dibenz[a,h]anthracene				11	mg/kg		11	mg/kg	0.0011 %		
		601-041-00-2	200-181-8	53-70-3									
16		diesel petroleum group				4938.33333	mg/kg		4938.333	mg/kg	0.494 %		
				68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9									
17		fluoranthene				410	mg/kg		410	mg/kg	0.041 %		
			205-912-4	206-44-0									
18		fluorene				130	mg/kg		130	mg/kg	0.013 %		
			201-695-5	86-73-7									
19		indeno[123-cd]pyrene				50	mg/kg		50	mg/kg	0.005 %		
			205-893-2	193-39-5									
20		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	3.7	mg/kg		3.7	mg/kg	0.00037 %		
		082-001-00-6											
21		naphthalene				180	mg/kg		180	mg/kg	0.018 %		
		601-052-00-2	202-049-5	91-20-3									
22		nickel { nickel dihydroxide }				3.8	mg/kg	1.58	6.002	mg/kg	0.0006 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
23		pH				9.2	pH		9.2	pH	9.2 pH		
				PH									
24		phenanthrene				500	mg/kg		500	mg/kg	0.05 %		
			201-581-5	85-01-8									
25		phenol				2.1	mg/kg		2.1	mg/kg	0.00021 %		
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
26		pyrene				330	mg/kg		330	mg/kg	0.033 %		
			204-927-3	129-00-0									
27		TPH (C6 to C40) petroleum group				7170	mg/kg		7170	mg/kg	0.717 %		
				TPH									
28		zinc { zinc oxide }				17	mg/kg	1.24	21.16	mg/kg	0.00212 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	1.481 %		

Key

	User supplied data
	Hazardous result
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP103

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

Sample details

Sample Name:
TP103
Sample Depth:
0.40 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10	mg/kg	1.32	13.203	mg/kg	0.00132 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.32	mg/kg	2.78	0.888	mg/kg	0.000089 %		
3		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.9	mg/kg	13.43	12.087	mg/kg	0.00121 %		
4		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		13	mg/kg	1.46	19.000225	mg/kg	0.0019 %		
5		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9.1	mg/kg	1.13	10.246	mg/kg	0.00102 %		
6		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	4.8	mg/kg		4.8	mg/kg	0.00048 %		
7		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		8.9	mg/kg	1.58	14.058	mg/kg	0.00141 %		
8		pH			PH		9.7	pH		9.7	pH	9.7 pH		
9		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		20	mg/kg	1.24	24.894	mg/kg	0.00249 %		
											Total:	0.00992 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP104

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample Name:	LoW Code:	
TP104	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
0.30 m	Entry:	17 05 03 * (Soil and stones containing hazardous substances)
Moisture content:		
0% (no correction)		

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.296%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.296%)

HP 14: Ecotoxic "waste which presents or may present immediate or delayed risks for one or more sectors of the environment"

Risk phrases hit:

R52/53 "Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment"

Because of determinand:

benzo[a]anthracene: (conc.: 0.0043%)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.177%)
TPH (C6 to C40) petroleum group: (conc.: 0.296%)

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		16	mg/kg		16	mg/kg	0.0016 %		
2		acenaphthylene		205-917-1	208-96-8		1.5	mg/kg		1.5	mg/kg	0.00015 %		
3		anthracene		204-371-1	120-12-7		27	mg/kg		27	mg/kg	0.0027 %		
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	14.524	mg/kg	0.00145 %		
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		43	mg/kg		43	mg/kg	0.0043 %		
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		41	mg/kg		41	mg/kg	0.0041 %		
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		40	mg/kg		40	mg/kg	0.004 %		
8		benzo[ghi]perylene		205-883-8	191-24-2		19	mg/kg		19	mg/kg	0.0019 %		
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		30	mg/kg		30	mg/kg	0.003 %		
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.29	mg/kg	2.78	0.805	mg/kg	0.00008 %		
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.6	mg/kg	13.43	8.058	mg/kg	0.000806 %		
12		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		9.4	mg/kg	1.46	13.739	mg/kg	0.00137 %		
13		chrysene	601-048-00-0	205-923-4	218-01-9		36	mg/kg		36	mg/kg	0.0036 %		
14		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		8	mg/kg	1.13	9.007	mg/kg	0.000901 %		
15		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		3.8	mg/kg		3.8	mg/kg	0.00038 %		
16		diesel petroleum group			68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9		1769.3	mg/kg		1769.3	mg/kg	0.177 %		
17		fluoranthene		205-912-4	206-44-0		110	mg/kg		110	mg/kg	0.011 %		
18		fluorene		201-695-5	86-73-7		14	mg/kg		14	mg/kg	0.0014 %		
19		indeno[123-cd]pyrene		205-893-2	193-39-5		17	mg/kg		17	mg/kg	0.0017 %		
20		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	5.9	mg/kg		5.9	mg/kg	0.00059 %		
21		naphthalene	601-052-00-2	202-049-5	91-20-3		1.5	mg/kg		1.5	mg/kg	0.00015 %		
22		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		7.3	mg/kg	1.58	11.53	mg/kg	0.00115 %		
23		pH			PH		8.8	pH		8.8	pH	8.8 pH		
24		phenanthrene		201-581-5	85-01-8		100	mg/kg		100	mg/kg	0.01 %		
25		pyrene		204-927-3	129-00-0		87	mg/kg		87	mg/kg	0.0087 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
26		TPH (C6 to C40) petroleum group				2959.8	mg/kg		2959.8	mg/kg	0.296 %		
				TPH									
27		zinc { zinc oxide }				16	mg/kg	1.24	19.915	mg/kg	0.00199 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.54 %		

Key

	User supplied data
	Hazardous result
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP105

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
TP105
Sample Depth:
1.30 m
Moisture content:
0%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.0367%)
TPH (C6 to C40) petroleum group: (conc.: 0.0563%)

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		3.2	mg/kg		3.2	mg/kg	0.00032 %		
2		acenaphthylene		205-917-1	208-96-8		0.44	mg/kg		0.44	mg/kg	0.000044 %		
3		anthracene		204-371-1	120-12-7		10	mg/kg		10	mg/kg	0.001 %		
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14	mg/kg	1.32	18.485	mg/kg	0.00185 %		
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		23	mg/kg		23	mg/kg	0.0023 %		
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		20	mg/kg		20	mg/kg	0.002 %		
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		23	mg/kg		23	mg/kg	0.0023 %		
8		benzo[ghi]perylene		205-883-8	191-24-2		11	mg/kg		11	mg/kg	0.0011 %		
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		16	mg/kg		16	mg/kg	0.0016 %		
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.73	mg/kg	2.78	2.026	mg/kg	0.000203 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
11		boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		1.2	mg/kg	13.43	16.116	mg/kg	0.00161 %		
12		cadmium { cadmium sulfide }											
		048-010-00-4	215-147-8	1306-23-6	1	0.3	mg/kg	1.29	0.386	mg/kg	0.00003 %		
13		chromium in chromium(III) compounds { chromium(III) oxide }											
			215-160-9	1308-38-9		29	mg/kg	1.46	42.385	mg/kg	0.00424 %		
14		chrysene											
		601-048-00-0	205-923-4	218-01-9		24	mg/kg		24	mg/kg	0.0024 %		
15		copper { dicopper oxide; copper (I) oxide }											
		029-002-00-X	215-270-7	1317-39-1		16	mg/kg	1.13	18.014	mg/kg	0.0018 %		
16		dibenz[a,h]anthracene											
		601-041-00-2	200-181-8	53-70-3		2.6	mg/kg		2.6	mg/kg	0.00026 %		
17		diesel petroleum group											
				68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9		366.73333	mg/kg		366.733	mg/kg	0.0367 %		
18		fluoranthene											
			205-912-4	206-44-0		56	mg/kg		56	mg/kg	0.0056 %		
19		fluorene											
			201-695-5	86-73-7		4.2	mg/kg		4.2	mg/kg	0.00042 %		
20		indeno[123-cd]pyrene											
			205-893-2	193-39-5		10	mg/kg		10	mg/kg	0.001 %		
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }											
		082-001-00-6			1	38	mg/kg		38	mg/kg	0.0038 %		
22		naphthalene											
		601-052-00-2	202-049-5	91-20-3		0.67	mg/kg		0.67	mg/kg	0.000067 %		
23		nickel { nickel dihydroxide }											
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		19	mg/kg	1.58	30.01	mg/kg	0.003 %		
24		pH											
				PH		8	pH		8	pH	8pH		
25		phenanthrene											
			201-581-5	85-01-8		42	mg/kg		42	mg/kg	0.0042 %		
26		pyrene											
			204-927-3	129-00-0		41	mg/kg		41	mg/kg	0.0041 %		
27		TPH (C6 to C40) petroleum group											
				TPH		563.4	mg/kg		563.4	mg/kg	0.0563 %		
28		zinc { zinc oxide }											
		030-013-00-7	215-222-5	1314-13-2		71	mg/kg	1.24	88.375	mg/kg	0.00884 %		
										Total:	0.147 %		

Key

	User supplied data
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP106

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

Sample details

Sample Name:
TP106
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	17.164	mg/kg	0.00172 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.72	mg/kg	2.78	1.998	mg/kg	0.0002 %		
3		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.2	mg/kg	13.43	16.116	mg/kg	0.00161 %		
4		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		21	mg/kg	1.46	30.693	mg/kg	0.00307 %		
5		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		18	mg/kg	1.13	20.266	mg/kg	0.00203 %		
6		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	21	mg/kg		21	mg/kg	0.0021 %		
7		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.6	mg/kg	1.35	0.812	mg/kg	0.000081 %		
8		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		17	mg/kg	1.58	26.851	mg/kg	0.00269 %		
9		pH			PH		7.2	pH		7.2	pH	7.2 pH		
10		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		55	mg/kg	1.24	68.459	mg/kg	0.00685 %		
											Total:	0.0203 %		

Key	
	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP107

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

Sample details

Sample Name:
TP107
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	17.164	mg/kg	0.00172 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.72	mg/kg	2.78	1.998	mg/kg	0.0002 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.5	mg/kg	13.43	20.145	mg/kg	0.00201 %		
4	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		23	mg/kg	1.46	33.616	mg/kg	0.00336 %		
5	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13	mg/kg	1.13	14.637	mg/kg	0.00146 %		
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	24	mg/kg		24	mg/kg	0.0024 %		
7	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.6	mg/kg	1.35	0.812	mg/kg	0.000081 %		
8	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		14	mg/kg	1.58	22.113	mg/kg	0.00221 %		
9	pH			PH		7.4	pH		7.4	pH	7.4 pH		
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		50	mg/kg	1.24	62.236	mg/kg	0.00622 %		
										Total:	0.0197 %		

Key	
	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP108

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
TP108
Sample Depth:
0.05 m
Moisture content:
0%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.0123%)
TPH (C6 to C40) petroleum group: (conc.: 0.0253%)

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
2		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		2.7	mg/kg		2.7	mg/kg	0.00027 %		
3		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		3.3	mg/kg		3.3	mg/kg	0.00033 %		
4		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		4.1	mg/kg		4.1	mg/kg	0.00041 %		
5		benzo[ghi]perylene		205-883-8	191-24-2		1.7	mg/kg		1.7	mg/kg	0.00017 %		
6		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		1.4	mg/kg		1.4	mg/kg	0.00014 %		
7		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.51	mg/kg	2.78	1.415	mg/kg	0.000142 %		
8		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.6	mg/kg	13.43	21.488	mg/kg	0.00215 %		
9		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		17	mg/kg	1.46	24.846	mg/kg	0.00248 %		
10		chrysene	601-048-00-0	205-923-4	218-01-9		2.2	mg/kg		2.2	mg/kg	0.00022 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
11		copper { dicopper oxide; copper (I) oxide }				11	mg/kg	1.13	12.385	mg/kg	0.00124 %		
		029-002-00-X	215-270-7	1317-39-1									
12		dibenz[a,h]anthracene				0.34	mg/kg		0.34	mg/kg	0.000034 %		
		601-041-00-2	200-181-8	53-70-3									
13		diesel petroleum group				122.86667	mg/kg		122.867	mg/kg	0.0123 %		
				68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9									
14		fluoranthene				3.8	mg/kg		3.8	mg/kg	0.00038 %		
			205-912-4	206-44-0									
15		indeno[123-cd]pyrene				1.6	mg/kg		1.6	mg/kg	0.00016 %		
			205-893-2	193-39-5									
16		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	14	mg/kg		14	mg/kg	0.0014 %		
		082-001-00-6											
17		nickel { nickel dihydroxide }				11	mg/kg	1.58	17.374	mg/kg	0.00174 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
18		pH				9.3	pH		9.3	pH	9.3 pH		
				PH									
19		phenanthrene				1.7	mg/kg		1.7	mg/kg	0.00017 %		
			201-581-5	85-01-8									
20		pyrene				3.7	mg/kg		3.7	mg/kg	0.00037 %		
			204-927-3	129-00-0									
21		TPH (C6 to C40) petroleum group				253.2	mg/kg		253.2	mg/kg	0.0253 %		
				TPH									
22		zinc { zinc oxide }				39	mg/kg	1.24	48.544	mg/kg	0.00485 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0559 %		

Key

	User supplied data
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP133

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

Sample details

Sample Name:
TP133
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15 mg/kg	1.32	19.805 mg/kg	0.00198 %		
2	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.34 mg/kg		0.34 mg/kg	0.000034 %		
3	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.46 mg/kg		0.46 mg/kg	0.000046 %		
4	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.53 mg/kg		0.53 mg/kg	0.000053 %		
5	benzo[ghi]perylene		205-883-8	191-24-2		0.26 mg/kg		0.26 mg/kg	0.000026 %		
6	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.23 mg/kg		0.23 mg/kg	0.000023 %		
7	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.91 mg/kg	2.78	2.526 mg/kg	0.000253 %		
8	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.3 mg/kg	13.43	17.459 mg/kg	0.00175 %		
9	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		28 mg/kg	1.46	40.924 mg/kg	0.00409 %		
10	chrysene	601-048-00-0	205-923-4	218-01-9		0.37 mg/kg		0.37 mg/kg	0.000037 %		
11	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		29 mg/kg	1.13	32.651 mg/kg	0.00327 %		
12	fluoranthene		205-912-4	206-44-0		0.5 mg/kg		0.5 mg/kg	0.00005 %		
13	indeno[123-cd]pyrene		205-893-2	193-39-5		0.23 mg/kg		0.23 mg/kg	0.000023 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	53	mg/kg		53	mg/kg	0.0053 %		
		082-001-00-6											
15		nickel { nickel dihydroxide }				17	mg/kg	1.58	26.851	mg/kg	0.00269 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
16		pH				7.3	pH		7.3	pH	7.3 pH		
				PH									
17		phenanthrene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
			201-581-5	85-01-8									
18		pyrene				0.46	mg/kg		0.46	mg/kg	0.000046 %		
			204-927-3	129-00-0									
19		zinc { zinc oxide }				76	mg/kg	1.24	94.598	mg/kg	0.00946 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0291 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP134

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

Sample details

Sample Name:
TP134
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16 mg/kg	1.32	21.125 mg/kg	0.00211 %		
2	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.22 mg/kg		0.22 mg/kg	0.000022 %		
3	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.25 mg/kg		0.25 mg/kg	0.000025 %		
4	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.28 mg/kg		0.28 mg/kg	0.000028 %		
5	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.13 mg/kg		0.13 mg/kg	0.000013 %		
6	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.81 mg/kg	2.78	2.248 mg/kg	0.000225 %		
7	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.2 mg/kg	13.43	16.116 mg/kg	0.00161 %		
8	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		25 mg/kg	1.46	36.539 mg/kg	0.00365 %		
9	chrysene	601-048-00-0	205-923-4	218-01-9		0.2 mg/kg		0.2 mg/kg	0.00002 %		
10	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15 mg/kg	1.13	16.888 mg/kg	0.00169 %		
11	fluoranthene		205-912-4	206-44-0		0.3 mg/kg		0.3 mg/kg	0.00003 %		
12	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	91 mg/kg		91 mg/kg	0.0091 %		
13	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		18 mg/kg	1.58	28.431 mg/kg	0.00284 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		pH				7.6	pH		7.6	pH	7.6 pH		
				PH									
15		pyrene				0.27	mg/kg		0.27	mg/kg	0.000027 %		
			204-927-3	129-00-0									
16		zinc { zinc oxide }				49	mg/kg	1.24	60.991	mg/kg	0.0061 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0275 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non CLP determinands

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

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23/07/2015
Risk Phrases: N R50/53
Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

- **boron tribromide/trichloride/trifluoride (combined)** (CAS Number: 10294-33-4, 10294-34-5, 7637-07-2)

Conversion factor: 13.43
Description/Comments: Combines the hazard statements and the average of the conversion factors for boron tribromide, boron trichloride and boron trifluoride
Data source: N/A
Data source date: 06/08/2015
Risk Phrases: R14 , T+ R26/28 , C R34 , C R35
Hazard Statements: EUH014 , Acute Tox. 2 H330 , Acute Tox. 2 H300 , Skin Corr. 1A H314 , Skin Corr. 1B H314

- **chromium(III) oxide** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R20 , R22 , R36 , R37 , R38 , R42 , R43 , R50/53 , R60 , R61
Hazard Statements: Acute Tox. 4 H332 , Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Resp. Sens. 1 H334 , Skin Sens. 1 H317 , Repr. 1B H360FD , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

- **dicopper oxide; copper (I) oxide** (EC Number: 215-270-7, CAS Number: 1317-39-1)

CLP index number: 029-002-00-X
Data source: Regulation (EU) 2016/1179 of 19 July 2016 (ATP9)
Additional Risk Phrases: N R50/53 , N R50/53 >= 0.25 %
Additional Hazard Statement(s): None.
Reason for additional Hazards Statement(s)/Risk Phrase(s):
10/10/2016 - N R50/53 risk phrase sourced from: WM3 v1 still uses ecotoxic risk phrases
10/10/2016 - N R50/53 >= 0.25 % risk phrase sourced from: WM3 v1 still uses ecotoxic risk phrases

- **diesel petroleum group** (CAS Number: 68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: R40 , R51/53 , R65 , R66
Hazard Statements: Flam. Liq. 3 H226 , Skin Irrit. 2 H315 , Acute Tox. 4 H332 , Carc. 2 H351 , Asp. Tox. 1 H304 , STOT RE 2 H373 , Aquatic Chronic 2 H411

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21/08/2015
Risk Phrases: Xn R22 , N R50/53
Hazard Statements: Acute Tox. 4 H302 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: R40
Hazard Statements: Carc. 2 H351

- **lead compounds with the exception of those specified elsewhere in this Annex**

CLP index number: 082-001-00-6
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Risk Phrases: None.
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s)/Risk Phrase(s):
03/06/2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: None.
Hazard Statements: None.

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: R22 , R36 , R37 , R38 , R40 , R43 , N R50/53
Hazard Statements: Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Carc. 2 H351 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Skin Irrit. 2 H315

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

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21/08/2015
Risk Phrases: Xi R36/37/38 , N R50/53
Hazard Statements: Skin Irrit. 2 H315 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: R10 , R45 , R46 , R51/53 , R63 , R65
Hazard Statements: Flam. Liq. 3 H226 , Asp. Tox. 1 H304 , STOT RE 2 H373 , Muta. 1B H340 , Carc. 1B H350 , Repr. 2 H361d , Aquatic Chronic 2 H411

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R36 , R37 , R38 , N R50/53 , N R51/53
Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Aquatic Chronic 2 H411

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R22 , R26 , R27 , R36 , R37 , R38
Hazard Statements: Acute Tox. 4 H302 , Acute Tox. 1 H330 , Acute Tox. 1 H310 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R36 , R37 , R38 , R43 , N R50/53
Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: N R50/53
Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on hazard statements

beryllium {beryllium oxide}

Worst case species based on hazard statements

boron {boron tribromide/trichloride/trifluoride (combined)}

Worst case species based on hazard statements

chromium in chromium(III) compounds {chromium(III) oxide}

Worst case species based on hazard statements

copper {dicopper oxide; copper (I) oxide}

Most likely common species

lead {lead compounds with the exception of those specified elsewhere in this Annex}

Worst case species based on hazard statements

nickel {nickel dihydroxide}

Worst case species based on hazard statements

zinc {zinc oxide}

Worst case species based on hazard statements

cadmium {cadmium sulfide}

Worst case species based on hazard statements

mercury {mercury dichloride}

Worst case species based on hazard statements

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition, May 2015
HazWasteOnline Classification Engine Version: 2016.305.3149.6253 (25 Jan 2017)
HazWasteOnline Database: 2017.9.3184.6334 (09 Jan 2017)

This classification utilises the following guidance and legislation:
WM3 - Waste Classification - May 2015
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

Hydrock

HazWasteOnline™

Waste Classification Report

NP4GR-EXGHB-8WWZE

Job name

Heyford Park Phase 10

Description/Comments

Phase 10

Project

Heyford Park

Site

Heyford

Waste Stream Template

Hydrock Standard plus Cresol (ammended Lead)

Classified by

Name:
Ian Burton
Date:
06/02/2017 16:29:45 UTC
Telephone:
01694 842 888

Company:
Hydrock Contracting Ltd
3 Hawthorn Park, Holdenby Road
Spratton
Northampton
NN6 8LD

Report

Created by: Ian Burton
Created date: 06/02/2017 16:29 UTC

Job summary

Classification of sample: SA07

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
SA07
Sample Depth:
0.00-0.35 m
Moisture content:
0%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.000433%)
TPH (C6 to C40) petroleum group: (conc.: 0.0013%)

Determinands

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

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		anthracene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
			204-371-1	120-12-7									
2		arsenic { arsenic trioxide }				17	mg/kg	1.32	22.446	mg/kg	0.00224 %		
		033-003-00-0	215-481-4	1327-53-3									
3		benzo[a]anthracene				0.78	mg/kg		0.78	mg/kg	0.000078 %		
		601-033-00-9	200-280-6	56-55-3									
4		benzo[a]pyrene; benzo[def]chrysene				0.63	mg/kg		0.63	mg/kg	0.000063 %		
		601-032-00-3	200-028-5	50-32-8									
5		benzo[b]fluoranthene				0.71	mg/kg		0.71	mg/kg	0.000071 %		
		601-034-00-4	205-911-9	205-99-2									
6		benzo[ghi]perylene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
			205-883-8	191-24-2									
7		benzo[k]fluoranthene				0.36	mg/kg		0.36	mg/kg	0.000036 %		
		601-036-00-5	205-916-6	207-08-9									
8		beryllium { beryllium oxide }				0.62	mg/kg	2.78	1.721	mg/kg	0.000172 %		
		004-003-00-8	215-133-1	1304-56-9									
9		boron { boron tribromide/trichloride/trifluoride (combined) }				0.8	mg/kg	13.43	10.744	mg/kg	0.00107 %		
				10294-33-4, 10294-34-5, 7637-07-2									
10		cadmium { cadmium sulfide }			1	0.2	mg/kg	1.29	0.257	mg/kg	0.00002 %		
		048-010-00-4	215-147-8	1306-23-6									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
11		chromium in chromium(III) compounds { chromium(III) oxide }				21	mg/kg	1.46	30.693	mg/kg	0.00307 %		
			215-160-9	1308-38-9									
12		chrysene				0.72	mg/kg		0.72	mg/kg	0.000072 %		
		601-048-00-0	205-923-4	218-01-9									
13		copper { dicopper oxide; copper (I) oxide }				12	mg/kg	1.13	13.511	mg/kg	0.00135 %		
		029-002-00-X	215-270-7	1317-39-1									
14		diesel petroleum group				4.33333	mg/kg		4.333	mg/kg	0.000433 %		
				68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9									
15		fluoranthene				2.2	mg/kg		2.2	mg/kg	0.00022 %		
			205-912-4	206-44-0									
16		indeno[123-cd]pyrene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
			205-893-2	193-39-5									
17		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	15	mg/kg		15	mg/kg	0.0015 %		
		082-001-00-6											
18		nickel { nickel dihydroxide }				13	mg/kg	1.58	20.533	mg/kg	0.00205 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
19		pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
20		phenanthrene				1.9	mg/kg		1.9	mg/kg	0.00019 %		
			201-581-5	85-01-8									
21		pyrene				1.7	mg/kg		1.7	mg/kg	0.00017 %		
			204-927-3	129-00-0									
22		TPH (C6 to C40) petroleum group				13	mg/kg		13	mg/kg	0.0013 %		
				TPH									
23		zinc { zinc oxide }				39	mg/kg	1.24	48.544	mg/kg	0.00485 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.019 %		

Key

	User supplied data
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP126

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
TP126
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.00113%)
TPH (C6 to C40) petroleum group: (conc.: 0.0017%)

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17 mg/kg	1.32	22.446 mg/kg	0.00224 %		
2	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.42 mg/kg		0.42 mg/kg	0.000042 %		
3	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.36 mg/kg		0.36 mg/kg	0.000036 %		
4	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.5 mg/kg		0.5 mg/kg	0.00005 %		
5	benzo[ghi]perylene		205-883-8	191-24-2		0.33 mg/kg		0.33 mg/kg	0.000033 %		
6	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.27 mg/kg		0.27 mg/kg	0.000027 %		
7	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.51 mg/kg	2.78	1.415 mg/kg	0.000142 %		
8	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.8 mg/kg	13.43	10.744 mg/kg	0.00107 %		
9	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.2 mg/kg	1.29	0.257 mg/kg	0.00002 %		
10	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		19 mg/kg	1.46	27.77 mg/kg	0.00278 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
11		chrysene				0.42	mg/kg		0.42	mg/kg	0.000042 %		
		601-048-00-0	205-923-4	218-01-9									
12		copper { dicopper oxide; copper (I) oxide }				22	mg/kg	1.13	24.77	mg/kg	0.00248 %		
		029-002-00-X	215-270-7	1317-39-1									
13		diesel petroleum group				11.33333	mg/kg		11.333	mg/kg	0.00113 %		
				68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9									
14		fluoranthene				0.74	mg/kg		0.74	mg/kg	0.000074 %		
			205-912-4	206-44-0									
15		indeno[123-cd]pyrene				0.25	mg/kg		0.25	mg/kg	0.000025 %		
			205-893-2	193-39-5									
16		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	24	mg/kg		24	mg/kg	0.0024 %		
		082-001-00-6											
17		mercury { mercury dichloride }				0.5	mg/kg	1.35	0.677	mg/kg	0.000068 %		
		080-010-00-X	231-299-8	7487-94-7									
18		nickel { nickel dihydroxide }				12	mg/kg	1.58	18.954	mg/kg	0.0019 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
19		pH				7.6	pH		7.6	pH	7.6 pH		
				PH									
20		phenanthrene				0.25	mg/kg		0.25	mg/kg	0.000025 %		
			201-581-5	85-01-8									
21		pyrene				0.71	mg/kg		0.71	mg/kg	0.000071 %		
			204-927-3	129-00-0									
22		TPH (C6 to C40) petroleum group				17	mg/kg		17	mg/kg	0.0017 %		
				TPH									
23		zinc { zinc oxide }				54	mg/kg	1.24	67.215	mg/kg	0.00672 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0231 %		

Key

	User supplied data
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP127

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
TP127
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.000533%)
TPH (C6 to C40) petroleum group: (conc.: 0.0016%)

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	anthracene		204-371-1	120-12-7		0.11 mg/kg		0.11 mg/kg	0.000011 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15 mg/kg	1.32	19.805 mg/kg	0.00198 %		
3	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.38 mg/kg		0.38 mg/kg	0.000038 %		
4	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.39 mg/kg		0.39 mg/kg	0.000039 %		
5	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.35 mg/kg		0.35 mg/kg	0.000035 %		
6	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.25 mg/kg		0.25 mg/kg	0.000025 %		
7	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.64 mg/kg	2.78	1.776 mg/kg	0.000178 %		
8	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.8 mg/kg	13.43	10.744 mg/kg	0.00107 %		
9	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		21 mg/kg	1.46	30.693 mg/kg	0.00307 %		
10	chrysene	601-048-00-0	205-923-4	218-01-9		0.33 mg/kg		0.33 mg/kg	0.000033 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
11		copper { dicopper oxide; copper (I) oxide }				17	mg/kg	1.13	19.14	mg/kg	0.00191 %		
		029-002-00-X	215-270-7	1317-39-1									
12		diesel petroleum group				5.33333	mg/kg		5.333	mg/kg	0.000533 %		
				68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9									
13		fluoranthene				0.76	mg/kg		0.76	mg/kg	0.000076 %		
			205-912-4	206-44-0									
14		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	21	mg/kg		21	mg/kg	0.0021 %		
		082-001-00-6											
15		nickel { nickel dihydroxide }				16	mg/kg	1.58	25.272	mg/kg	0.00253 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
16		pH				7.6	pH		7.6	pH	7.6 pH		
				PH									
17		phenanthrene				0.36	mg/kg		0.36	mg/kg	0.000036 %		
			201-581-5	85-01-8									
18		pyrene				0.67	mg/kg		0.67	mg/kg	0.000067 %		
			204-927-3	129-00-0									
19		TPH (C6 to C40) petroleum group				16	mg/kg		16	mg/kg	0.0016 %		
				TPH									
20		zinc { zinc oxide }				44	mg/kg	1.24	54.767	mg/kg	0.00548 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0208 %		

Key

	User supplied data
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP128

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
TP128
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.00363%)
TPH (C6 to C40) petroleum group: (conc.: 0.0065%)

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	anthracene		204-371-1	120-12-7		0.31 mg/kg		0.31 mg/kg	0.000031 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	18.485 mg/kg	0.00185 %		
3	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		2.4 mg/kg		2.4 mg/kg	0.00024 %		
4	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		2.1 mg/kg		2.1 mg/kg	0.00021 %		
5	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2.7 mg/kg		2.7 mg/kg	0.00027 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		1.3 mg/kg		1.3 mg/kg	0.00013 %		
7	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		1.2 mg/kg		1.2 mg/kg	0.00012 %		
8	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.76 mg/kg	2.78	2.109 mg/kg	0.000211 %		
9	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		2 mg/kg	13.43	26.86 mg/kg	0.00269 %		
10	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.4 mg/kg	1.29	0.514 mg/kg	0.00004 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
11		chromium in chromium(III) compounds { chromium(III) oxide }				25	mg/kg	1.46	36.539	mg/kg	0.00365 %		
			215-160-9	1308-38-9									
12		chrysene				1.9	mg/kg		1.9	mg/kg	0.00019 %		
		601-048-00-0	205-923-4	218-01-9									
13		copper { dicopper oxide; copper (I) oxide }				20	mg/kg	1.13	22.518	mg/kg	0.00225 %		
		029-002-00-X	215-270-7	1317-39-1									
14		dibenz[a,h]anthracene				0.24	mg/kg		0.24	mg/kg	0.000024 %		
		601-041-00-2	200-181-8	53-70-3									
15		diesel petroleum group				36.33333	mg/kg		36.333	mg/kg	0.00363 %		
				68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9									
16		fluoranthene				3.7	mg/kg		3.7	mg/kg	0.00037 %		
			205-912-4	206-44-0									
17		indeno[123-cd]pyrene				1.1	mg/kg		1.1	mg/kg	0.00011 %		
			205-893-2	193-39-5									
18		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	35	mg/kg		35	mg/kg	0.0035 %		
		082-001-00-6											
19		nickel { nickel dihydroxide }				17	mg/kg	1.58	26.851	mg/kg	0.00269 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
20		pH				7.5	pH		7.5	pH	7.5 pH		
				PH									
21		phenanthrene				1.1	mg/kg		1.1	mg/kg	0.00011 %		
			201-581-5	85-01-8									
22		pyrene				3.5	mg/kg		3.5	mg/kg	0.00035 %		
			204-927-3	129-00-0									
23		TPH (C6 to C40) petroleum group				65	mg/kg		65	mg/kg	0.0065 %		
				TPH									
24		zinc { zinc oxide }				89	mg/kg	1.24	110.78	mg/kg	0.0111 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0402 %		

Key

	User supplied data
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP129

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
TP129
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.0021%)
TPH (C6 to C40) petroleum group: (conc.: 0.0035%)

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	anthracene		204-371-1	120-12-7		0.23 mg/kg		0.23 mg/kg	0.000023 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	18.485 mg/kg	0.00185 %		
3	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.9 mg/kg		1.9 mg/kg	0.00019 %		
4	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.5 mg/kg		1.5 mg/kg	0.00015 %		
5	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.9 mg/kg		1.9 mg/kg	0.00019 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.77 mg/kg		0.77 mg/kg	0.000077 %		
7	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.89 mg/kg		0.89 mg/kg	0.000089 %		
8	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.63 mg/kg	2.78	1.748 mg/kg	0.000175 %		
9	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.7 mg/kg	13.43	9.401 mg/kg	0.00094 %		
10	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.2 mg/kg	1.29	0.257 mg/kg	0.00002 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
11		chromium in chromium(III) compounds { chromium(III) oxide }				18	mg/kg	1.46	26.308	mg/kg	0.00263 %		
			215-160-9	1308-38-9									
12		chrysene				1.4	mg/kg		1.4	mg/kg	0.00014 %		
		601-048-00-0	205-923-4	218-01-9									
13		copper { dicopper oxide; copper (I) oxide }				17	mg/kg	1.13	19.14	mg/kg	0.00191 %		
		029-002-00-X	215-270-7	1317-39-1									
14		diesel petroleum group				21	mg/kg		21	mg/kg	0.0021 %		
				68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9									
15		fluoranthene				2.9	mg/kg		2.9	mg/kg	0.00029 %		
			205-912-4	206-44-0									
16		indeno[123-cd]pyrene				0.69	mg/kg		0.69	mg/kg	0.000069 %		
			205-893-2	193-39-5									
17		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	28	mg/kg		28	mg/kg	0.0028 %		
		082-001-00-6											
18		nickel { nickel dihydroxide }				14	mg/kg	1.58	22.113	mg/kg	0.00221 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
19		pH				7.6	pH		7.6	pH	7.6 pH		
				PH									
20		phenanthrene				0.96	mg/kg		0.96	mg/kg	0.000096 %		
			201-581-5	85-01-8									
21		pyrene				2.8	mg/kg		2.8	mg/kg	0.00028 %		
			204-927-3	129-00-0									
22		TPH (C6 to C40) petroleum group				35	mg/kg		35	mg/kg	0.0035 %		
				TPH									
23		zinc { zinc oxide }				61	mg/kg	1.24	75.928	mg/kg	0.00759 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0273 %		

Key

	User supplied data
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP130

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

Sample details

Sample Name:
TP130
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	17.164	mg/kg	0.00172 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.65	mg/kg	2.78	1.804	mg/kg	0.00018 %		
3		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1	mg/kg	13.43	13.43	mg/kg	0.00134 %		
4		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		21	mg/kg	1.46	30.693	mg/kg	0.00307 %		
5		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13	mg/kg	1.13	14.637	mg/kg	0.00146 %		
6		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	17	mg/kg		17	mg/kg	0.0017 %		
7		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		14	mg/kg	1.58	22.113	mg/kg	0.00221 %		
8		pH			PH		7.6	pH		7.6	pH	7.6 pH		
9		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		36	mg/kg	1.24	44.81	mg/kg	0.00448 %		
											Total:	0.0162 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP131

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

Sample details

Sample Name:
TP131
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13 mg/kg	1.32	17.164 mg/kg	0.00172 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.72 mg/kg	2.78	1.998 mg/kg	0.0002 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.3 mg/kg	13.43	17.459 mg/kg	0.00175 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.2 mg/kg	1.29	0.257 mg/kg	0.00002 %		
5	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		24 mg/kg	1.46	35.077 mg/kg	0.00351 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16 mg/kg	1.13	18.014 mg/kg	0.0018 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	21 mg/kg		21 mg/kg	0.0021 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.3 mg/kg	1.35	0.406 mg/kg	0.000041 %		
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		16 mg/kg	1.58	25.272 mg/kg	0.00253 %		
10	pH			PH		7.5 pH		7.5 pH	7.5 pH		
11	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		43 mg/kg	1.24	53.523 mg/kg	0.00535 %		
								Total:	0.019 %		

Key	
	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non CLP determinands

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R36 , R37 , R38 , R43 , N R50/53
Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

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

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23/07/2015
Risk Phrases: N R50/53
Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

boron tribromide/trichloride/trifluoride (combined) (CAS Number: 10294-33-4, 10294-34-5, 7637-07-2)

Conversion factor: 13.43
Description/Comments: Combines the hazard statements and the average of the conversion factors for boron tribromide, boron trichloride and boron trifluoride
Data source: N/A
Data source date: 06/08/2015
Risk Phrases: R14 , T+ R26/28 , C R34 , C R35
Hazard Statements: EUH014 , Acute Tox. 2 H330 , Acute Tox. 2 H300 , Skin Corr. 1A H314 , Skin Corr. 1B H314

chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R20 , R22 , R36 , R37 , R38 , R42 , R43 , R50/53 , R60 , R61
Hazard Statements: Acute Tox. 4 H332 , Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Resp. Sens. 1 H334 , Skin Sens. 1 H317 , Repr. 1B H360FD , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

dicopper oxide; copper (I) oxide (EC Number: 215-270-7, CAS Number: 1317-39-1)

CLP index number: 029-002-00-X
Data source: Regulation (EU) 2016/1179 of 19 July 2016 (ATP9)
Additional Risk Phrases: N R50/53 , N R50/53 >= 0.25 %
Additional Hazard Statement(s): None.
Reason for additional Hazards Statement(s)/Risk Phrase(s):
10/10/2016 - N R50/53 risk phrase sourced from: WM3 v1 still uses ecotoxic risk phrases
10/10/2016 - N R50/53 >= 0.25 % risk phrase sourced from: WM3 v1 still uses ecotoxic risk phrases

diesel petroleum group (CAS Number: 68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: R40 , R51/53 , R65 , R66
Hazard Statements: Flam. Liq. 3 H226 , Skin Irrit. 2 H315 , Acute Tox. 4 H332 , Carc. 2 H351 , Asp. Tox. 1 H304 , STOT RE 2 H373 , Aquatic Chronic 2 H411

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21/08/2015
Risk Phrases: Xn R22 , N R50/53
Hazard Statements: Acute Tox. 4 H302 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: R40
Hazard Statements: Carc. 2 H351

lead compounds with the exception of those specified elsewhere in this Annex

CLP index number: 082-001-00-6
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Risk Phrases: None.
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s)/Risk Phrase(s):
03/06/2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: None.
Hazard Statements: None.

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: R22 , R36 , R37 , R38 , R40 , R43 , N R50/53
Hazard Statements: Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Carc. 2 H351 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Skin Irrit. 2 H315

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

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21/08/2015
Risk Phrases: Xi R36/37/38 , N R50/53
Hazard Statements: Skin Irrit. 2 H315 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: R10 , R45 , R46 , R51/53 , R63 , R65
Hazard Statements: Flam. Liq. 3 H226 , Asp. Tox. 1 H304 , STOT RE 2 H373 , Muta. 1B H340 , Carc. 1B H350 , Repr. 2 H361d , Aquatic Chronic 2 H411

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on hazard statements

beryllium {beryllium oxide}

Worst case species based on hazard statements

boron {boron tribromide/trichloride/trifluoride (combined)}

Worst case species based on hazard statements

cadmium {cadmium sulfide}

Worst case species based on hazard statements

chromium in chromium(III) compounds {chromium(III) oxide}

Worst case species based on hazard statements

copper {dicopper oxide; copper (I) oxide}

Most likely common species

lead {lead compounds with the exception of those specified elsewhere in this Annex}

Worst case species based on hazard statements

nickel {nickel dihydroxide}

Worst case species based on hazard statements

zinc {zinc oxide}

Worst case species based on hazard statements

mercury {mercury dichloride}

Worst case species based on hazard statements

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition, May 2015
HazWasteOnline Classification Engine Version: 2016.305.3149.6253 (25 Jan 2017)
HazWasteOnline Database: 2017.9.3184.6334 (09 Jan 2017)

This classification utilises the following guidance and legislation:
WM3 - Waste Classification - May 2015
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

Hydrock

HazWasteOnline™

Waste Classification Report

NVPUE-ZEMMK-DDDN4

Job name

Heyford Park Phases 16 and 16a

Description/Comments

Phases 16 and 16a

Project

Heyford Phase 16 and 16a

Site

Heyford

Waste Stream Template

Hydrock Standard plus Cresol (ammended Lead)

Classified by

Name:
Ian Burton
Date:
06/02/2017 16:34:30 UTC
Telephone:
01694 842 888

Company:
Hydrock Contracting Ltd
3 Hawthorn Park, Holdenby Road
Spratton
Northampton
NN6 8LD

Report

Created by: Ian Burton
Created date: 06/02/2017 16:34 UTC

Job summary

Classification of sample: TP145

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

Sample details

Sample Name:
TP145
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		21 mg/kg	1.32	27.727 mg/kg	0.00277 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.2 mg/kg	2.78	3.33 mg/kg	0.000333 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.7 mg/kg	13.43	22.831 mg/kg	0.00228 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.3 mg/kg	1.29	0.386 mg/kg	0.00003 %		
5	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		35 mg/kg	1.46	51.154 mg/kg	0.00512 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17 mg/kg	1.13	19.14 mg/kg	0.00191 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	23 mg/kg		23 mg/kg	0.0023 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.4 mg/kg	1.35	0.541 mg/kg	0.000054 %		
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		25 mg/kg	1.58	39.487 mg/kg	0.00395 %		
10	pH			PH		7.5 pH		7.5 pH	7.5 pH		
11	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		56 mg/kg	1.24	69.704 mg/kg	0.00697 %		
								Total:	0.0257 %		

Key	
	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP147

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

Sample details

Sample Name:
TP147
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18 mg/kg	1.32	23.766 mg/kg	0.00238 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.78	2.498 mg/kg	0.00025 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.4 mg/kg	13.43	18.802 mg/kg	0.00188 %		
4	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		26 mg/kg	1.46	38.00045 mg/kg	0.0038 %		
5	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14 mg/kg	1.13	15.762 mg/kg	0.00158 %		
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	16 mg/kg		16 mg/kg	0.0016 %		
7	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.3 mg/kg	1.35	0.406 mg/kg	0.000041 %		
8	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		18 mg/kg	1.58	28.431 mg/kg	0.00284 %		
9	pH			PH		7.7 pH		7.7 pH	7.7 pH		
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		38 mg/kg	1.24	47.299 mg/kg	0.00473 %		
								Total:	0.0191 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP149

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

Sample details

Sample Name:
TP149
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		20 mg/kg	1.32	26.407 mg/kg	0.00264 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.73 mg/kg	2.78	2.026 mg/kg	0.000203 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.6 mg/kg	13.43	21.488 mg/kg	0.00215 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.3 mg/kg	1.29	0.386 mg/kg	0.00003 %		
5	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		23 mg/kg	1.46	33.616 mg/kg	0.00336 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14 mg/kg	1.13	15.762 mg/kg	0.00158 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	17 mg/kg		17 mg/kg	0.0017 %		
8	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		16 mg/kg	1.58	25.272 mg/kg	0.00253 %		
9	pH			PH		7.7 pH		7.7 pH	7.7 pH		
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		39 mg/kg	1.24	48.544 mg/kg	0.00485 %		
								Total:	0.019 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP152

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

Sample details

Sample Name:
TP152
Sample Depth:
0.50 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.7	mg/kg	1.32	11.487	mg/kg	0.00115 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.58	mg/kg	2.78	1.61	mg/kg	0.000161 %		
3		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.5	mg/kg	13.43	6.715	mg/kg	0.000672 %		
4		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		17	mg/kg	1.46	24.846	mg/kg	0.00248 %		
5		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7.7	mg/kg	1.13	8.669	mg/kg	0.000867 %		
6		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	6.9	mg/kg		6.9	mg/kg	0.00069 %		
7		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		11	mg/kg	1.58	17.374	mg/kg	0.00174 %		
8		pH			PH		7.9	pH		7.9	pH	7.9 pH		
9		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		26	mg/kg	1.24	32.363	mg/kg	0.00324 %		
											Total:	0.011 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP155

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

Sample details

Sample Name:
TP155
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15	mg/kg	1.32	19.805	mg/kg	0.00198 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.71	mg/kg	2.78	1.97	mg/kg	0.000197 %		
3		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.3	mg/kg	13.43	17.459	mg/kg	0.00175 %		
4		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.2	mg/kg	1.29	0.257	mg/kg	0.00002 %		
5		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		22	mg/kg	1.46	32.154	mg/kg	0.00322 %		
6		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14	mg/kg	1.13	15.762	mg/kg	0.00158 %		
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	16	mg/kg		16	mg/kg	0.0016 %		
8		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		14	mg/kg	1.58	22.113	mg/kg	0.00221 %		
9		pH			PH		7.7	pH		7.7	pH	7.7 pH		
10		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		41	mg/kg	1.24	51.033	mg/kg	0.0051 %		
											Total:	0.0176 %		

Key	
	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP158

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

Sample details

Sample Name:
TP158
Sample Depth:
0.40 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number									
1		arsenic { arsenic trioxide }		15	mg/kg	1.32	19.805	mg/kg	0.00198 %		
		033-003-00-0 / 215-481-4 / 1327-53-3									
2		beryllium { beryllium oxide }		0.63	mg/kg	2.78	1.748	mg/kg	0.000175 %		
		004-003-00-8 / 215-133-1 / 1304-56-9									
3		boron { boron tribromide/trichloride/trifluoride (combined) }		0.9	mg/kg	13.43	12.087	mg/kg	0.00121 %		
		/ / 10294-33-4, 10294-34-5, 7637-07-2									
4		chromium in chromium(III) compounds { chromium(III) oxide }		19	mg/kg	1.46	27.77	mg/kg	0.00278 %		
		/ 215-160-9 / 1308-38-9									
5		copper { dicopper oxide; copper (I) oxide }		11	mg/kg	1.13	12.385	mg/kg	0.00124 %		
		029-002-00-X / 215-270-7 / 1317-39-1									
6		lead { lead compounds with the exception of those specified elsewhere in this Annex }	1	7.7	mg/kg		7.7	mg/kg	0.00077 %		
		082-001-00-6 / /									
7		nickel { nickel dihydroxide }		13	mg/kg	1.58	20.533	mg/kg	0.00205 %		
		028-008-00-X / 235-008-5 [1] 234-348-1 [2] / 12054-48-7 [1] 11113-74-9 [2]									
8		pH		7.9	pH		7.9	pH	7.9 pH		
		/ / PH									
9		zinc { zinc oxide }		20	mg/kg	1.24	24.894	mg/kg	0.00249 %		
		030-013-00-7 / 215-222-5 / 1314-13-2									
								Total:	0.0127 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP160

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

Sample details

Sample Name:
TP160
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15 mg/kg	1.32	19.805 mg/kg	0.00198 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.88 mg/kg	2.78	2.442 mg/kg	0.000244 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.6 mg/kg	13.43	21.488 mg/kg	0.00215 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.2 mg/kg	1.29	0.257 mg/kg	0.00002 %		
5	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		27 mg/kg	1.46	39.462 mg/kg	0.00395 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14 mg/kg	1.13	15.762 mg/kg	0.00158 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	18 mg/kg		18 mg/kg	0.0018 %		
8	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		19 mg/kg	1.58	30.01 mg/kg	0.003 %		
9	pH			PH		7.8 pH		7.8 pH	7.8 pH		
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		47 mg/kg	1.24	58.502 mg/kg	0.00585 %		
								Total:	0.0206 %		

Key	
	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP163

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

Sample details

Sample Name:
TP163
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18 mg/kg	1.32	23.766 mg/kg	0.00238 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1 mg/kg	2.78	2.775 mg/kg	0.000278 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.7 mg/kg	13.43	22.831 mg/kg	0.00228 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.3 mg/kg	1.29	0.386 mg/kg	0.00003 %		
5	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		32 mg/kg	1.46	46.77 mg/kg	0.00468 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16 mg/kg	1.13	18.014 mg/kg	0.0018 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	20 mg/kg		20 mg/kg	0.002 %		
8	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		21 mg/kg	1.58	33.169 mg/kg	0.00332 %		
9	pH			PH		7.6 pH		7.6 pH	7.6 pH		
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		49 mg/kg	1.24	60.991 mg/kg	0.0061 %		
								Total:	0.0229 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP166

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

Sample details

Sample Name:
TP166
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16	mg/kg	1.32	21.125	mg/kg	0.00211 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.74	mg/kg	2.78	2.054	mg/kg	0.000205 %		
3		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.6	mg/kg	13.43	21.488	mg/kg	0.00215 %		
4		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.2	mg/kg	1.29	0.257	mg/kg	0.00002 %		
5		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		24	mg/kg	1.46	35.077	mg/kg	0.00351 %		
6		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14	mg/kg	1.13	15.762	mg/kg	0.00158 %		
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	16	mg/kg		16	mg/kg	0.0016 %		
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.5	mg/kg	1.35	0.677	mg/kg	0.000068 %		
9		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		16	mg/kg	1.58	25.272	mg/kg	0.00253 %		
10		pH			PH		7.7	pH		7.7	pH	7.7 pH		
11		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		42	mg/kg	1.24	52.278	mg/kg	0.00523 %		
											Total:	0.019 %		

Key	
	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP168

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

Sample details

Sample Name:
TP168
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		20 mg/kg	1.32	26.407 mg/kg	0.00264 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.97 mg/kg	2.78	2.692 mg/kg	0.000269 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.5 mg/kg	13.43	20.145 mg/kg	0.00201 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.3 mg/kg	1.29	0.386 mg/kg	0.00003 %		
5	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		30 mg/kg	1.46	43.847 mg/kg	0.00438 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15 mg/kg	1.13	16.888 mg/kg	0.00169 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	21 mg/kg		21 mg/kg	0.0021 %		
8	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		21 mg/kg	1.58	33.169 mg/kg	0.00332 %		
9	pH			PH		7.6 pH		7.6 pH	7.6 pH		
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		44 mg/kg	1.24	54.767 mg/kg	0.00548 %		
								Total:	0.0219 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP16

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

Sample details

Sample Name:
TP16
Sample Depth:
0.15 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14	mg/kg	1.32	18.485	mg/kg	0.00185 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.77	mg/kg	2.78	2.137	mg/kg	0.000214 %		
3		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.8	mg/kg	13.43	24.174	mg/kg	0.00242 %		
4		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.3	mg/kg	1.29	0.386	mg/kg	0.00003 %		
5		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		25	mg/kg	1.46	36.539	mg/kg	0.00365 %		
6		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		20	mg/kg	1.13	22.518	mg/kg	0.00225 %		
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	22	mg/kg		22	mg/kg	0.0022 %		
8		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		18	mg/kg	1.58	28.431	mg/kg	0.00284 %		
9		pH			PH		7.7	pH		7.7	pH	7.7 pH		
10		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		53	mg/kg	1.24	65.97	mg/kg	0.0066 %		
											Total:	0.0221 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP18

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

Sample details

Sample Name:
TP18
Sample Depth:
0.15 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12 mg/kg	1.32	15.844 mg/kg	0.00158 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.67 mg/kg	2.78	1.859 mg/kg	0.000186 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.4 mg/kg	13.43	18.802 mg/kg	0.00188 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.3 mg/kg	1.29	0.386 mg/kg	0.00003 %		
5	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		23 mg/kg	1.46	33.616 mg/kg	0.00336 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		18 mg/kg	1.13	20.266 mg/kg	0.00203 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	16 mg/kg		16 mg/kg	0.0016 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.3 mg/kg	1.35	0.406 mg/kg	0.000041 %		
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		16 mg/kg	1.58	25.272 mg/kg	0.00253 %		
10	pH			PH		7.9 pH		7.9 pH	7.9 pH		
11	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		43 mg/kg	1.24	53.523 mg/kg	0.00535 %		
								Total:	0.0186 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP18[1]

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

Sample details

Sample Name:
TP18[1]
Sample Depth:
0.50 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.1 mg/kg	1.32	12.015 mg/kg	0.0012 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.41 mg/kg	2.78	1.138 mg/kg	0.000114 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.8 mg/kg	13.43	10.744 mg/kg	0.00107 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.2 mg/kg	1.29	0.257 mg/kg	0.00002 %		
5	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		15 mg/kg	1.46	21.923 mg/kg	0.00219 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16 mg/kg	1.13	18.014 mg/kg	0.0018 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	9 mg/kg		9 mg/kg	0.0009 %		
8	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		10 mg/kg	1.58	15.795 mg/kg	0.00158 %		
9	pH			PH		8 pH		8 pH	8pH		
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		26 mg/kg	1.24	32.363 mg/kg	0.00324 %		
								Total:	0.0121 %		

Key	
	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP23

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

Sample details

Sample Name:
TP23
Sample Depth:
0.20 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	17.164	mg/kg	0.00172 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.83	mg/kg	2.78	2.304	mg/kg	0.00023 %		
3		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.3	mg/kg	13.43	17.459	mg/kg	0.00175 %		
4		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		26	mg/kg	1.46	38.00045	mg/kg	0.0038 %		
5		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		21	mg/kg	1.13	23.644	mg/kg	0.00236 %		
6		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	19	mg/kg		19	mg/kg	0.0019 %		
7		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		20	mg/kg	1.58	31.59	mg/kg	0.00316 %		
8		pH			PH		7.7	pH		7.7	pH	7.7 pH		
9		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		55	mg/kg	1.24	68.459	mg/kg	0.00685 %		
											Total:	0.0218 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP24

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
TP24
Sample Depth:
0.20 m
Moisture content:
0%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

diesel petroleum group: (conc.: 0.0012%)
TPH (C6 to C40) petroleum group: (conc.: 0.0018%)

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.51	mg/kg	2.78	1.415	mg/kg	0.000142 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.2	mg/kg	13.43	16.116	mg/kg	0.00161 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.2	mg/kg	1.29	0.257	mg/kg	0.00002 %		
5	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		18	mg/kg	1.46	26.308	mg/kg	0.00263 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		19	mg/kg	1.13	21.392	mg/kg	0.00214 %		
7	diesel petroleum group			68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9		12	mg/kg		12	mg/kg	0.0012 %		
8	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	13	mg/kg		13	mg/kg	0.0013 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
9		nickel { nickel dihydroxide }				12	mg/kg	1.58	18.954	mg/kg	0.0019 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
10		pH				7.8	pH		7.8	pH	7.8 pH		
				PH									
11		TPH (C6 to C40) petroleum group				18	mg/kg		18	mg/kg	0.0018 %		
				TPH									
12		zinc { zinc oxide }				38	mg/kg	1.24	47.299	mg/kg	0.00473 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0191 %		

Key

	User supplied data
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP26

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

Sample details

Sample Name:
TP26
Sample Depth:
0.20 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15	mg/kg	1.32	19.805	mg/kg	0.00198 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.71	mg/kg	2.78	1.97	mg/kg	0.000197 %		
3		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.7	mg/kg	13.43	22.831	mg/kg	0.00228 %		
4		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.3	mg/kg	1.29	0.386	mg/kg	0.00003 %		
5		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		24	mg/kg	1.46	35.077	mg/kg	0.00351 %		
6		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		29	mg/kg	1.13	32.651	mg/kg	0.00327 %		
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	21	mg/kg		21	mg/kg	0.0021 %		
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.4	mg/kg	1.35	0.541	mg/kg	0.000054 %		
9		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		18	mg/kg	1.58	28.431	mg/kg	0.00284 %		
10		pH			PH		7.9	pH		7.9	pH	7.9 pH		
11		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		52	mg/kg	1.24	64.725	mg/kg	0.00647 %		
											Total:	0.0227 %		

Key	
	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP118

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

Sample details

Sample Name:
TP118
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18 mg/kg	1.32	23.766 mg/kg	0.00238 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.92 mg/kg	2.78	2.553 mg/kg	0.000255 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.6 mg/kg	13.43	21.488 mg/kg	0.00215 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.3 mg/kg	1.29	0.386 mg/kg	0.00003 %		
5	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		30 mg/kg	1.46	43.847 mg/kg	0.00438 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		19 mg/kg	1.13	21.392 mg/kg	0.00214 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	23 mg/kg		23 mg/kg	0.0023 %		
8	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		23 mg/kg	1.58	36.328 mg/kg	0.00363 %		
9	pH			PH		7.6 pH		7.6 pH	7.6 pH		
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		60 mg/kg	1.24	74.683 mg/kg	0.00747 %		
								Total:	0.0247 %		

Key	
	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP120

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

Sample details

Sample Name:
TP120
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15 mg/kg	1.32	19.805 mg/kg	0.00198 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.91 mg/kg	2.78	2.526 mg/kg	0.000253 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.7 mg/kg	13.43	22.831 mg/kg	0.00228 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.2 mg/kg	1.29	0.257 mg/kg	0.00002 %		
5	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		29 mg/kg	1.46	42.385 mg/kg	0.00424 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		18 mg/kg	1.13	20.266 mg/kg	0.00203 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	24 mg/kg		24 mg/kg	0.0024 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.5 mg/kg	1.35	0.677 mg/kg	0.000068 %		
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		23 mg/kg	1.58	36.328 mg/kg	0.00363 %		
10	pH			PH		7.4 pH		7.4 pH	7.4 pH		
11	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		59 mg/kg	1.24	73.438 mg/kg	0.00734 %		
								Total:	0.0242 %		

Key	
	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP123

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

Sample details

Sample Name:
TP123
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15 mg/kg	1.32	19.805 mg/kg	0.00198 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.82 mg/kg	2.78	2.276 mg/kg	0.000228 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		2 mg/kg	13.43	26.86 mg/kg	0.00269 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.2 mg/kg	1.29	0.257 mg/kg	0.00002 %		
5	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		26 mg/kg	1.46	38.00045 mg/kg	0.0038 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17 mg/kg	1.13	19.14 mg/kg	0.00191 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	22 mg/kg		22 mg/kg	0.0022 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.3 mg/kg	1.35	0.406 mg/kg	0.000041 %		
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		18 mg/kg	1.58	28.431 mg/kg	0.00284 %		
10	pH			PH		7.5 pH		7.5 pH	7.5 pH		
11	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		49 mg/kg	1.24	60.991 mg/kg	0.0061 %		
								Total:	0.0218 %		

Key	
	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP153

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

Sample details

Sample Name:
TP153
Sample Depth:
0.10 m
Moisture content:
0%
(no correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17	mg/kg	1.32	22.446	mg/kg	0.00224 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.89	mg/kg	2.78	2.47	mg/kg	0.000247 %		
3		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1	mg/kg	13.43	13.43	mg/kg	0.00134 %		
4		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		30	mg/kg	1.46	43.847	mg/kg	0.00438 %		
5		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16	mg/kg	1.13	18.014	mg/kg	0.0018 %		
6		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	20	mg/kg		20	mg/kg	0.002 %		
7		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		22	mg/kg	1.58	34.749	mg/kg	0.00347 %		
8		pH			PH		7.5	pH		7.5	pH	7.5 pH		
9		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		49	mg/kg	1.24	60.991	mg/kg	0.0061 %		
											Total:	0.0216 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non CLP determinands

boron tribromide/trichloride/trifluoride (combined) (CAS Number: 10294-33-4, 10294-34-5, 7637-07-2)

Conversion factor: 13.43
Description/Comments: Combines the hazard statements and the average of the conversion factors for boron tribromide, boron trichloride and boron trifluoride
Data source: N/A
Data source date: 06/08/2015
Risk Phrases: R14 , T+ R26/28 , C R34 , C R35
Hazard Statements: EUH014 , Acute Tox. 2 H330 , Acute Tox. 2 H300 , Skin Corr. 1A H314 , Skin Corr. 1B H314

chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R20 , R22 , R36 , R37 , R38 , R42 , R43 , R50/53 , R60 , R61
Hazard Statements: Acute Tox. 4 H332 , Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Resp. Sens. 1 H334 , Skin Sens. 1 H317 , Repr. 1B H360FD , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

dicopper oxide; copper (I) oxide (EC Number: 215-270-7, CAS Number: 1317-39-1)

CLP index number: 029-002-00-X
Data source: Regulation (EU) 2016/1179 of 19 July 2016 (ATP9)
Additional Risk Phrases: N R50/53 , N R50/53 >= 0.25 %
Additional Hazard Statement(s): None.
Reason for additional Hazards Statement(s)/Risk Phrase(s):
10/10/2016 - N R50/53 risk phrase sourced from: WM3 v1 still uses ecotoxic risk phrases
10/10/2016 - N R50/53 >= 0.25 % risk phrase sourced from: WM3 v1 still uses ecotoxic risk phrases

lead compounds with the exception of those specified elsewhere in this Annex

CLP index number: 082-001-00-6
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Risk Phrases: None.
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s)/Risk Phrase(s):
03/06/2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: None.
Hazard Statements: None.

diesel petroleum group (CAS Number: 68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: R40 , R51/53 , R65 , R66
Hazard Statements: Flam. Liq. 3 H226 , Skin Irrit. 2 H315 , Acute Tox. 4 H332 , Carc. 2 H351 , Asp. Tox. 1 H304 , STOT RE 2 H373 , Aquatic Chronic 2 H411

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: R10 , R45 , R46 , R51/53 , R63 , R65
Hazard Statements: Flam. Liq. 3 H226 , Asp. Tox. 1 H304 , STOT RE 2 H373 , Muta. 1B H340 , Carc. 1B H350 , Repr. 2 H361d , Aquatic Chronic 2 H411

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on hazard statements

beryllium {beryllium oxide}

Worst case species based on hazard statements

boron {boron tribromide/trichloride/trifluoride (combined)}

Worst case species based on hazard statements

cadmium {cadmium sulfide}

Worst case species based on hazard statements

chromium in chromium(III) compounds {chromium(III) oxide}

Worst case species based on hazard statements

copper {dicopper oxide; copper (I) oxide}

Most likely common species

lead {lead compounds with the exception of those specified elsewhere in this Annex}

Worst case species based on hazard statements

nickel {nickel dihydroxide}

Worst case species based on hazard statements

zinc {zinc oxide}

Worst case species based on hazard statements

mercury {mercury dichloride}

Worst case species based on hazard statements

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition, May 2015
HazWasteOnline Classification Engine Version: 2016.305.3149.6253 (25 Jan 2017)
HazWasteOnline Database: 2017.9.3184.6334 (09 Jan 2017)

This classification utilises the following guidance and legislation:
WM3 - Waste Classification - May 2015
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010