

# SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m <sup>3</sup> Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
TP101	1	B	0.45		13			54	25	29	63	High Plasticity CH
TP103	1	LB	0.10		17		2.48	40	22	18	25	Intermediate Plasticity CI
TP103	2	LB	2.60		23		2.68	47	23	24	43	Intermediate Plasticity CI
TP104	1	B	0.30		14			51	24	27	52	High Plasticity CH
TP106	1	B	0.30		16			56	25	31	85	High Plasticity CH
TP106	1	LB	1.30		13		2.69	37	20	17	32	Intermediate Plasticity CI
TP108	1	B	0.30		14			53	26	27	89	High Plasticity CH
TP110	1	D	0.30		11			49	24	25	92	Intermediate Plasticity CI
WS102	1	D	0.50		14			36	19	17	97	Intermediate Plasticity CI
WS107	1	B	0.60		23			43	20	23	85	Intermediate Plasticity CI

SYMBOLS : NP : Non Plastic

\* : Liquid Limit and Plastic Limit Wet Sieved.



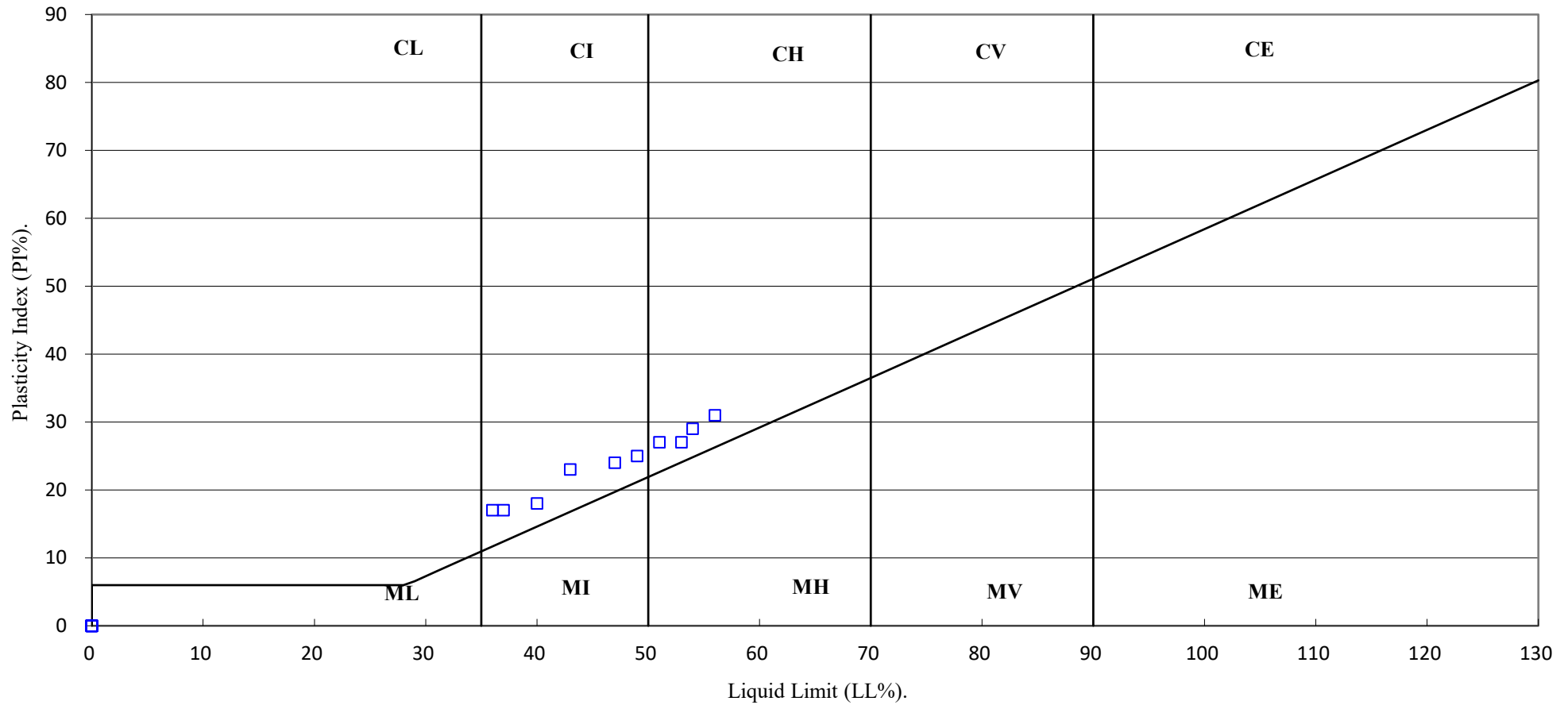
Bicester Motion

Contract No:

PSL23/9066

Client Ref:

# PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



**Bicester Motion**

**Contract No:**

**PSL23/9066**

**Client Ref:**



# SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
TP103	1	LB	0.10		8.2	>150		
TP103	1	LB	0.10		11	>150		
TP103	1	LB	0.10		14	>150		
TP103	1	LB	0.10		17	142		
TP103	1	LB	0.10		20	118		
TP103	2	LB	2.60		8.4	>150		
TP103	2	LB	2.60		11	>150		
TP103	2	LB	2.60		14	147		
TP103	2	LB	2.60		17	71		
TP103	2	LB	2.60		20	46		
TP106	1	LB	1.30		3.7	>150		
TP106	1	LB	1.30		6.8	>150		
TP106	1	LB	1.30		9.7	>150		
TP106	1	LB	1.30		13	130		
TP106	1	LB	1.30		16	106		

\* This test is out of our UKAS scope

 <p><b>PSL</b> PROFESSIONAL SOILS LABORATORY <small>A PHENNA GROUP COMPANY</small></p>	<p><b>Bicester Motion</b></p>	Contract No:
		PSL23/9066
		Client Ref:



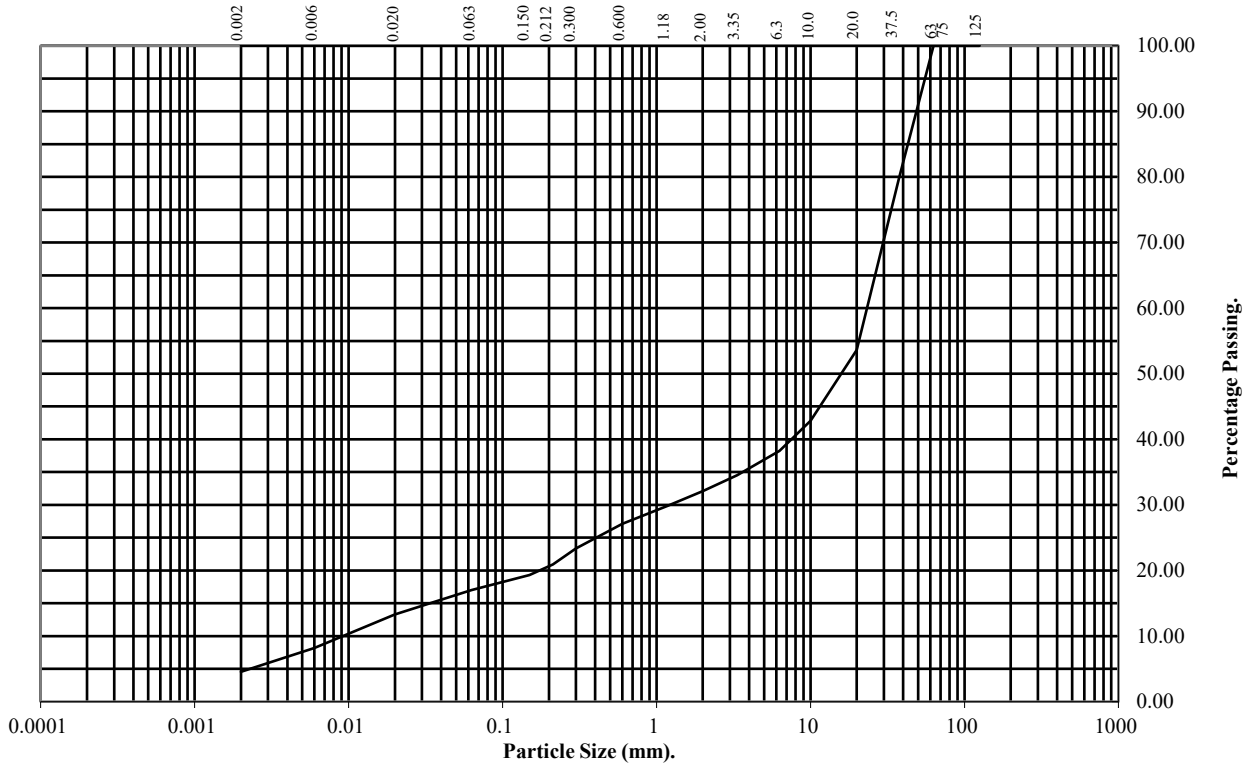
# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**  
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

**Hole Number:** TP103 **Top Depth (m):** 0.10

**Sample Number:** 1 **Base Depth(m):**

**Sample Type:** LB



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	80
20	54
10	43
6.3	38
3.35	35
2	32
1.18	30
0.6	27
0.3	23
0.212	21
0.15	19
0.063	17

Particle Diameter	Percentage Passing
0.02	13
0.006	8
0.002	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	68
Sand	15
Silt	12
Clay	5

**Remarks:**  
See Summary of Soil Descriptions



Bicester Motion

<b>Contract No:</b>
<b>PSL23/9066</b>
<b>Client Ref:</b>

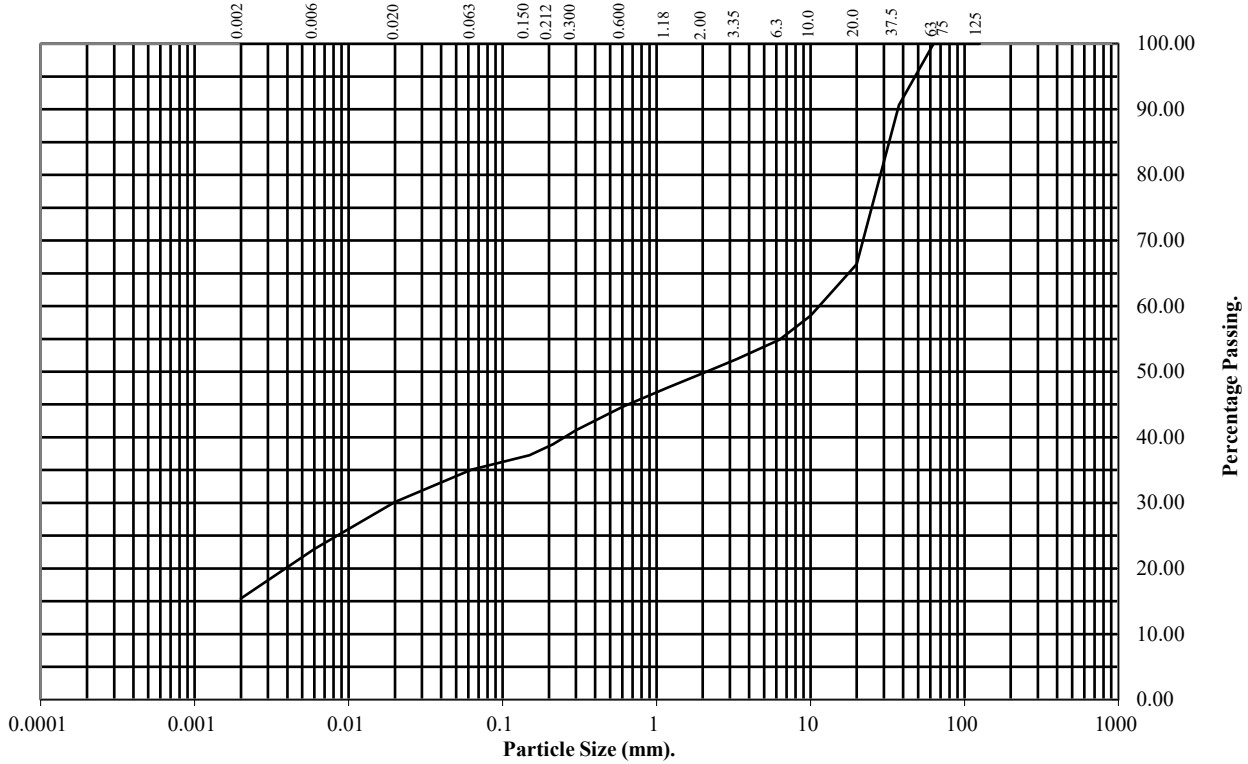
# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**  
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

**Hole Number:** TP103 **Top Depth (m):** 2.60

**Sample Number:** 2 **Base Depth(m):**

**Sample Type:** LB



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	91
20	66
10	59
6.3	55
3.35	52
2	50
1.18	48
0.6	45
0.3	41
0.212	39
0.15	37
0.063	35

Particle Diameter	Percentage Passing
0.02	30
0.006	23
0.002	15

Soil Fraction	Total Percentage
Cobbles	0
Gravel	50
Sand	15
Silt	20
Clay	15

**Remarks:**  
See Summary of Soil Descriptions



**Bicester Motion**

<b>Contract No:</b>
<b>PSL23/9066</b>
<b>Client Ref:</b>

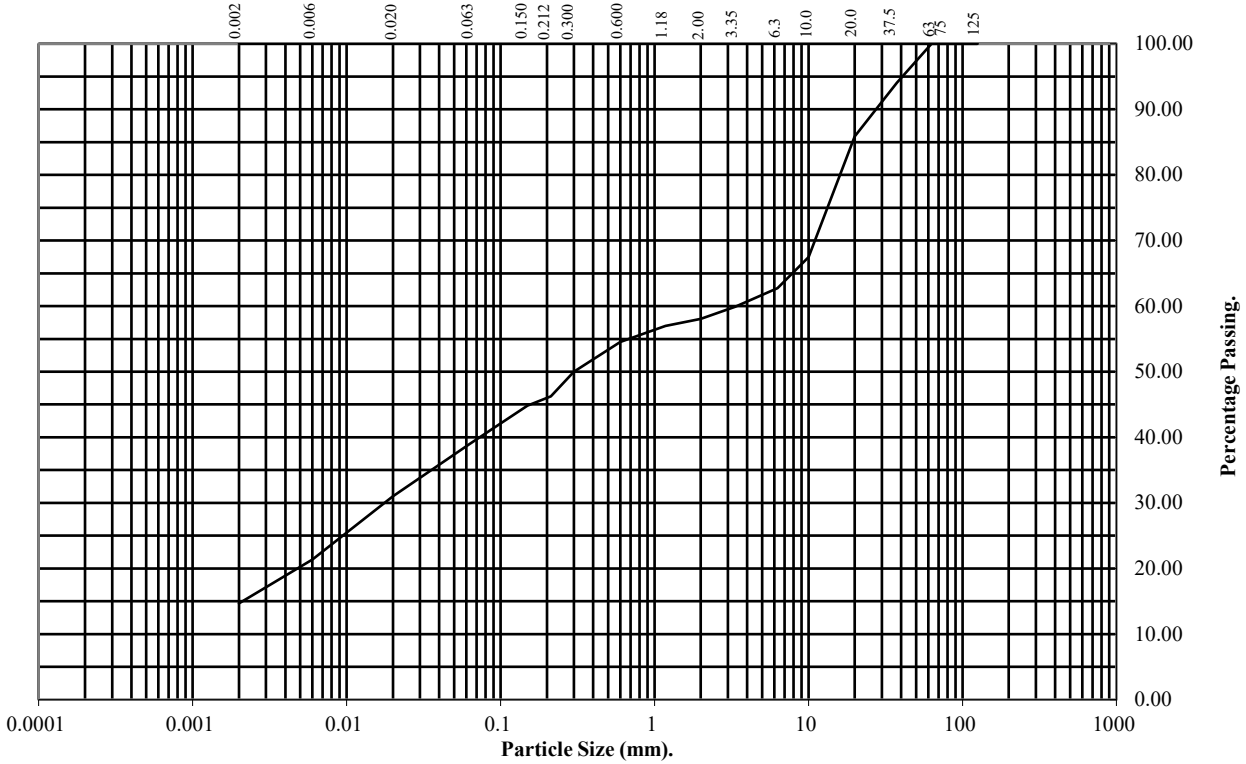
# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**  
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

**Hole Number:** TP104 **Top Depth (m):** 0.30

**Sample Number:** 1 **Base Depth(m):**

**Sample Type:** B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	94
20	86
10	67
6.3	63
3.35	60
2	58
1.18	57
0.6	55
0.3	50
0.212	46
0.15	45
0.063	39

Particle Diameter	Percentage Passing
0.02	31
0.006	21
0.002	15

Soil Fraction	Total Percentage
Cobbles	0
Gravel	42
Sand	19
Silt	24
Clay	15

**Remarks:**  
See Summary of Soil Descriptions



**Bicester Motion**

<b>Contract No:</b>
<b>PSL23/9066</b>
<b>Client Ref:</b>

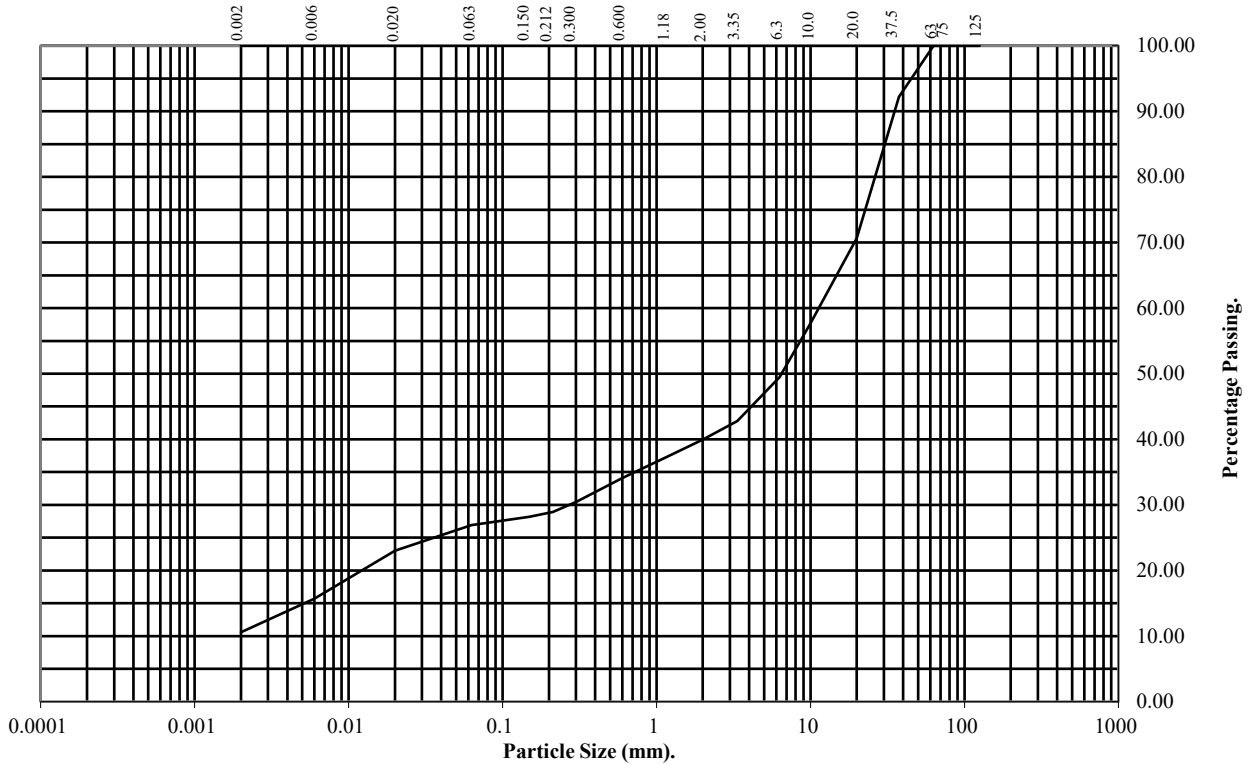
# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**  
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

**Hole Number:** TP106                      **Top Depth (m):** 1.30

**Sample Number:** 1                      **Base Depth(m):**

**Sample Type:** LB



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	92
20	71
10	58
6.3	49
3.35	43
2	40
1.18	37
0.6	34
0.3	30
0.212	29
0.15	28
0.063	27

Particle Diameter	Percentage Passing
0.02	23
0.006	16
0.002	11

Soil Fraction	Total Percentage
Cobbles	0
Gravel	60
Sand	13
Silt	16
Clay	11

**Remarks:**  
See Summary of Soil Descriptions



**Bicester Motion**

<b>Contract No:</b>
<b>PSL23/9066</b>
<b>Client Ref:</b>



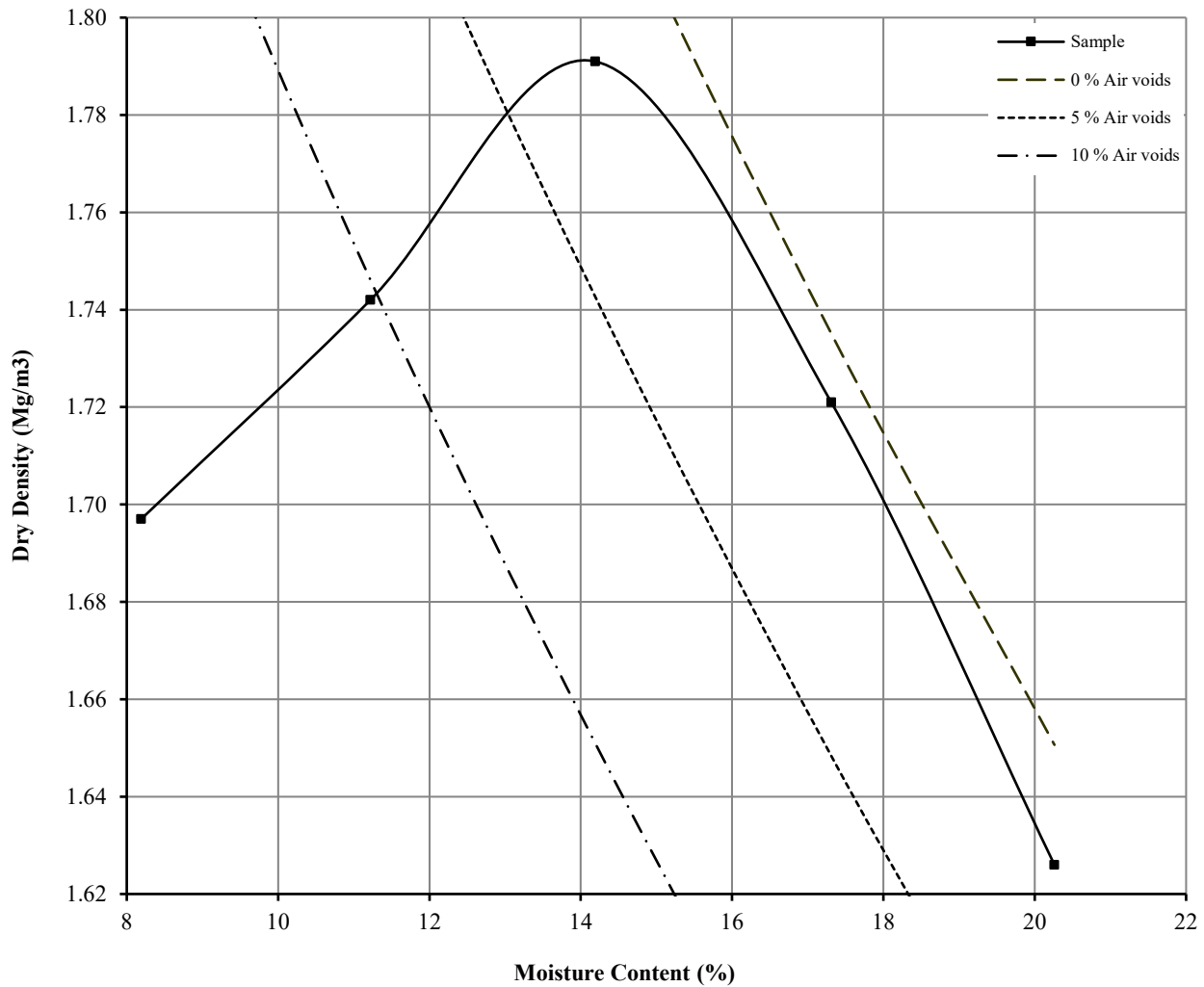
# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Non compliance with BS 1377 : Part 4 : Clause 3.6 : 1990

Hole Number: TP103 Top Depth (m) : 0.10

Sample Number: 1 Base Depth (m) :

Sample Type: LB



Initial Moisture Content:	17	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m <sup>3</sup> ):	2.48	Measured	Material Retained on 37.5 mm Test Sieve (%):	20
Maximum Dry Density (Mg/m <sup>3</sup> ):	1.79		Material Retained on 20.0 mm Test Sieve (%):	26
Optimum Moisture Content (%):	14			
Remarks See summary of soil descriptions				

 	<h2>Bicester Motion</h2>	Contract
		PSL23/9066
		Client Ref

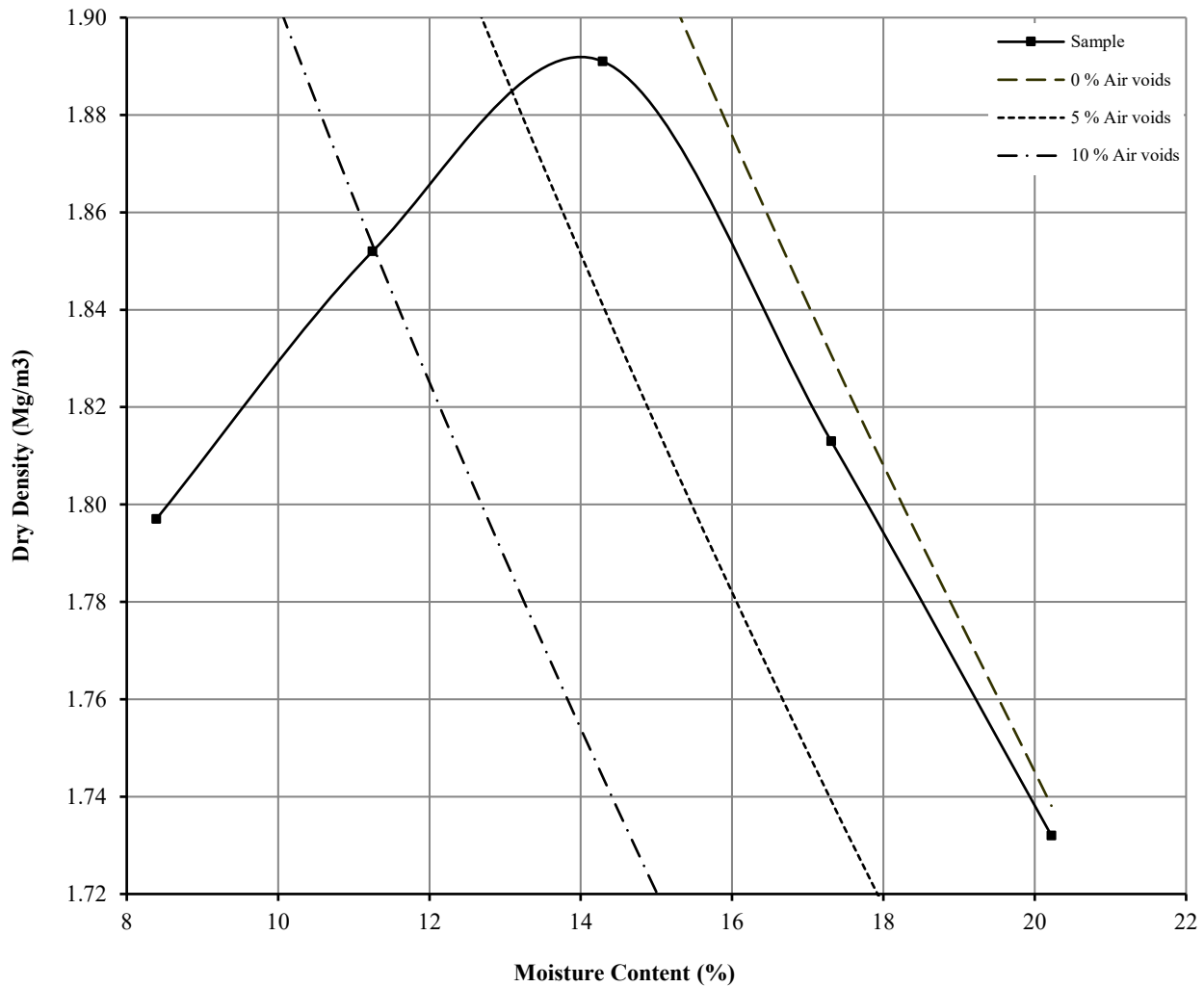
# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Non compliance with BS 1377 : Part 4 : Clause 3.6 : 1990

Hole Number: TP103 Top Depth (m) : 2.60

Sample Number: 2 Base Depth (m) :

Sample Type: LB



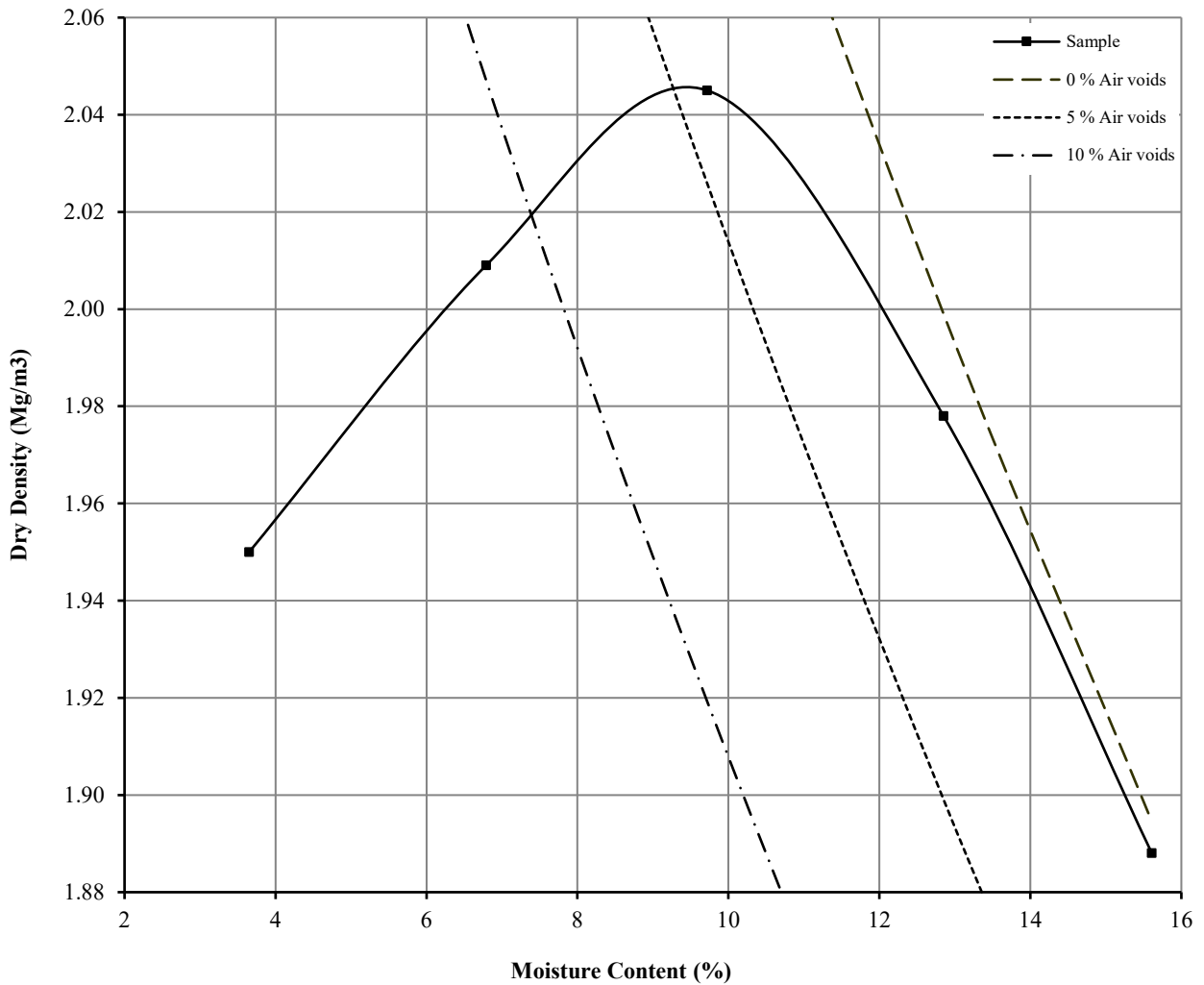
Initial Moisture Content:	23	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m <sup>3</sup> ):	2.68	Measured	Material Retained on 37.5 mm Test Sieve (%):	9
Maximum Dry Density (Mg/m <sup>3</sup> ):	1.89		Material Retained on 20.0 mm Test Sieve (%):	25
Optimum Moisture Content (%):	14			
Remarks See summary of soil descriptions				

 	<h2>Bicester Motion</h2>	Contract
		PSL23/9066
		Client Ref

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.6 : 1990

Hole Number: TP106 Top Depth (m) : 1.30  
 Sample Number: 1 Base Depth (m) :  
 Sample Type: LB



Initial Moisture Content:	13	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m <sup>3</sup> ):	2.69	Measured	Material Retained on 37.5 mm Test Sieve (%):	8
Maximum Dry Density (Mg/m <sup>3</sup> ):	2.05		Material Retained on 20.0 mm Test Sieve (%):	21
Optimum Moisture Content (%):	10			
Remarks See summary of soil descriptions				

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		Client Ref



# CALIFORNIA BEARING RATIO TEST

Non compliance with BS 1377 : Part 4 : 1990

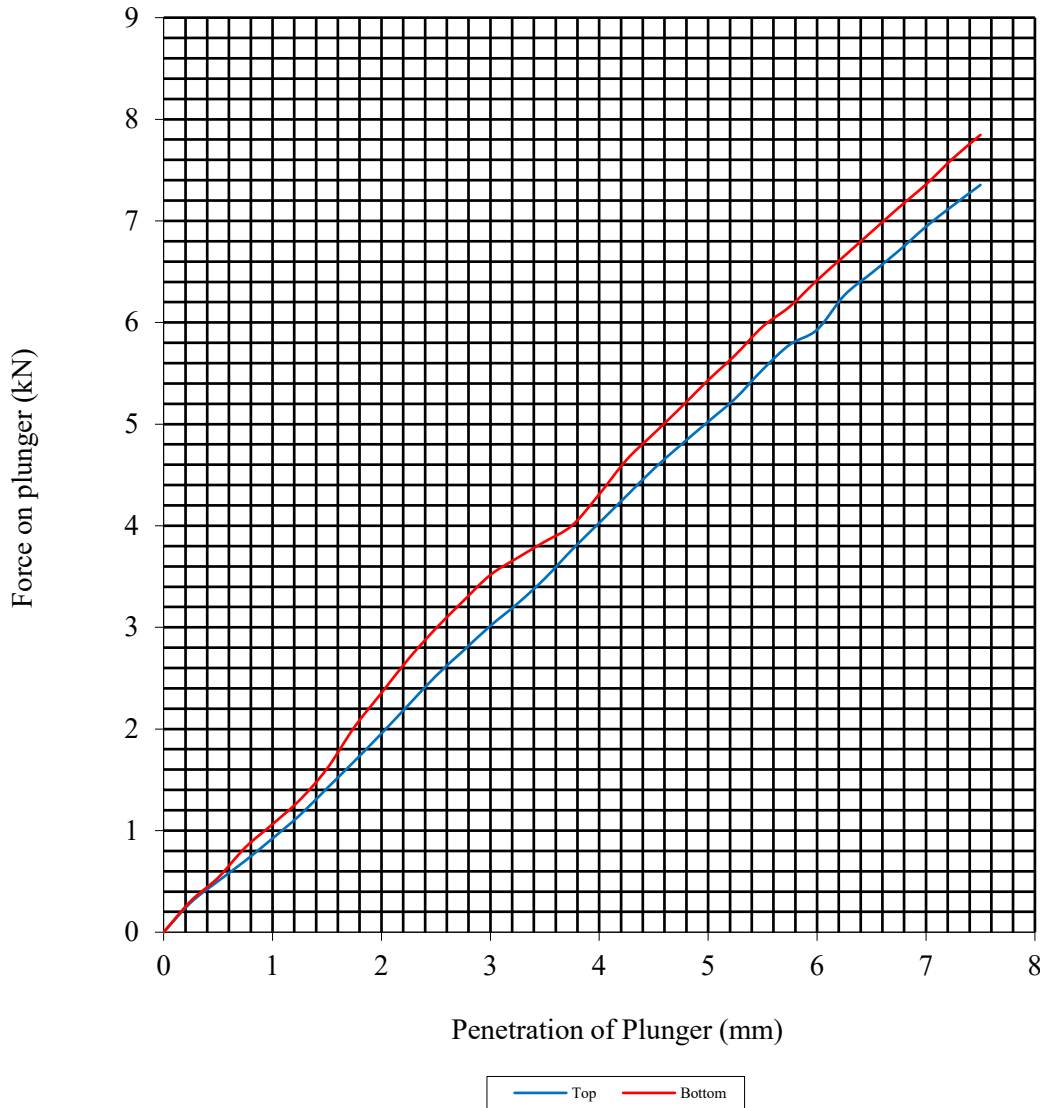
Hole Number: TP103

Top Depth (m): 0.10

Sample Number: 1

Base Depth (m):

Sample Type: LB



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	14	Surcharge Kg:	4.00	Sample Top	14	Sample Top	25.1
Bulk Density Mg/m <sup>3</sup> :	2.05	Soaking Time hrs	0	Sample Bottom	14	Sample Bottom	27.2
Dry Density Mg/m <sup>3</sup> :	1.79	Swelling mm:	0	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:		46					
Compaction Conditions		4.5kg at OMC					



Bicester Motion

Contract No:  
PSL23/9066  
Client Ref:

# CALIFORNIA BEARING RATIO TEST

Non compliance with BS 1377 : Part 4 : 1990

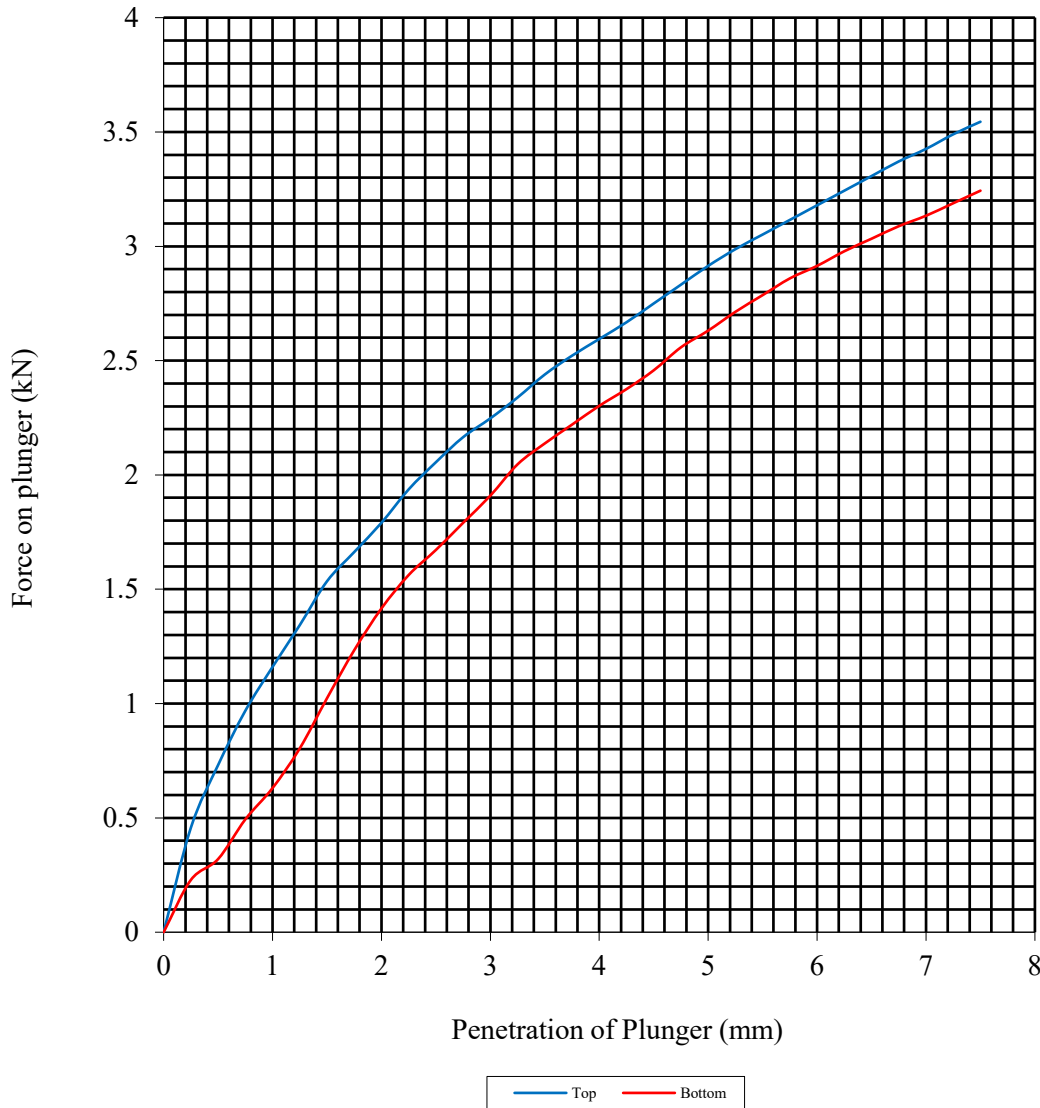
Hole Number: TP103

Top Depth (m): 2.60

Sample Number: 2

Base Depth (m):

Sample Type: LB



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	14	Surcharge Kg:	4.00	Sample Top	14	Sample Top	15.6
Bulk Density Mg/m <sup>3</sup> :	2.16	Soaking Time hrs	0	Sample Bottom	14	Sample Bottom	13.2
Dry Density Mg/m <sup>3</sup> :	1.89	Swelling mm:	0	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:		34					
Compaction Conditions		4.5kg at OMC					



Bicester Motion

<b>Contract No:</b>
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<b>Client Ref:</b>

# CALIFORNIA BEARING RATIO TEST

Non compliance with BS 1377 : Part 4 : 1990

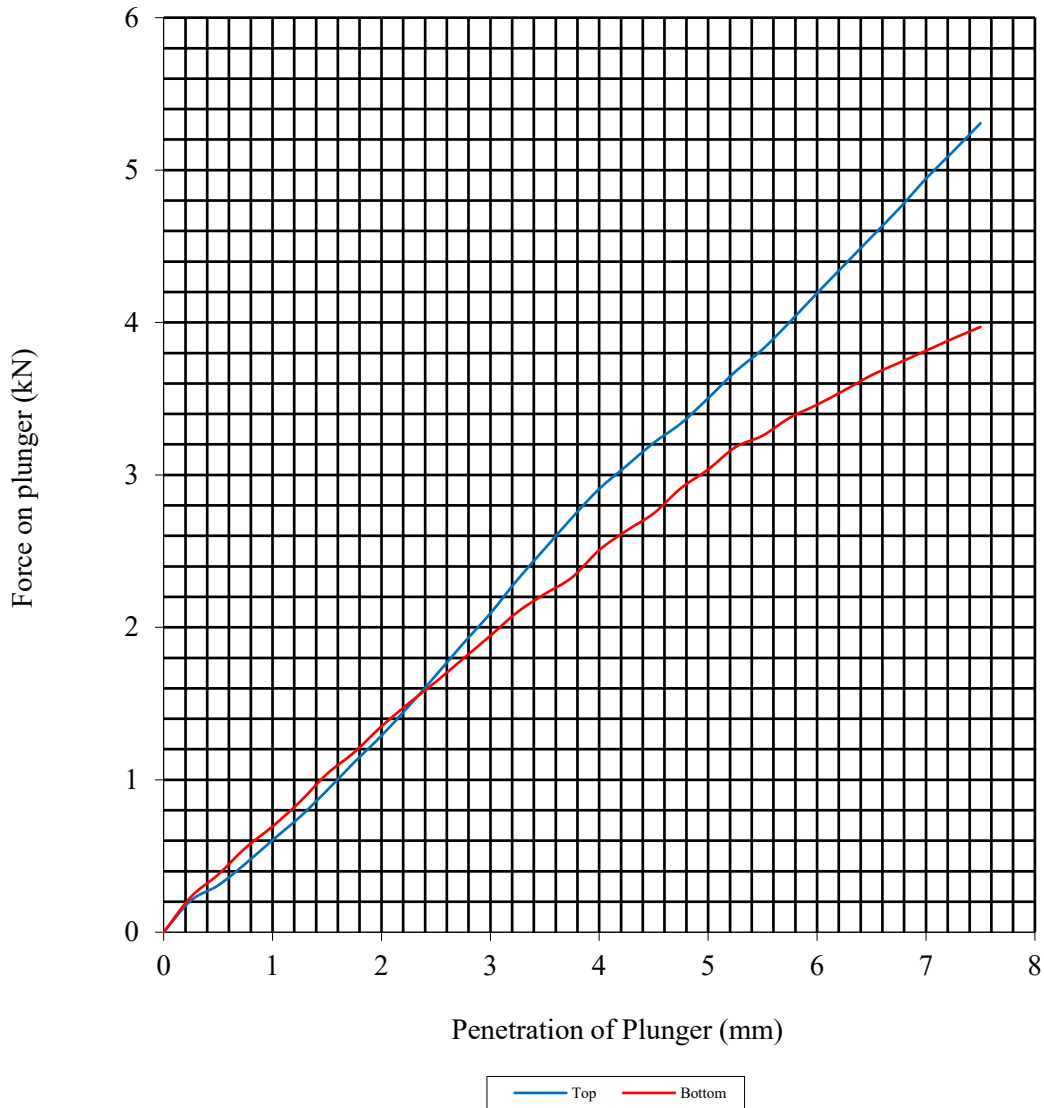
Hole Number: TP106

Top Depth (m): 1.30

Sample Number: 1

Base Depth (m):

Sample Type: LB



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	10	Surcharge Kg:	4.00	Sample Top	10	Sample Top	17.5
Bulk Density Mg/m3:	2.26	Soaking Time hrs	0	Sample Bottom	10	Sample Bottom	15.2
Dry Density Mg/m3:	2.05	Swelling mm:	0	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:		29					
Compaction Conditions		4.5kg at OMC					



Bicester Motion

Contract No:  
PSL23/9066  
Client Ref:

# UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

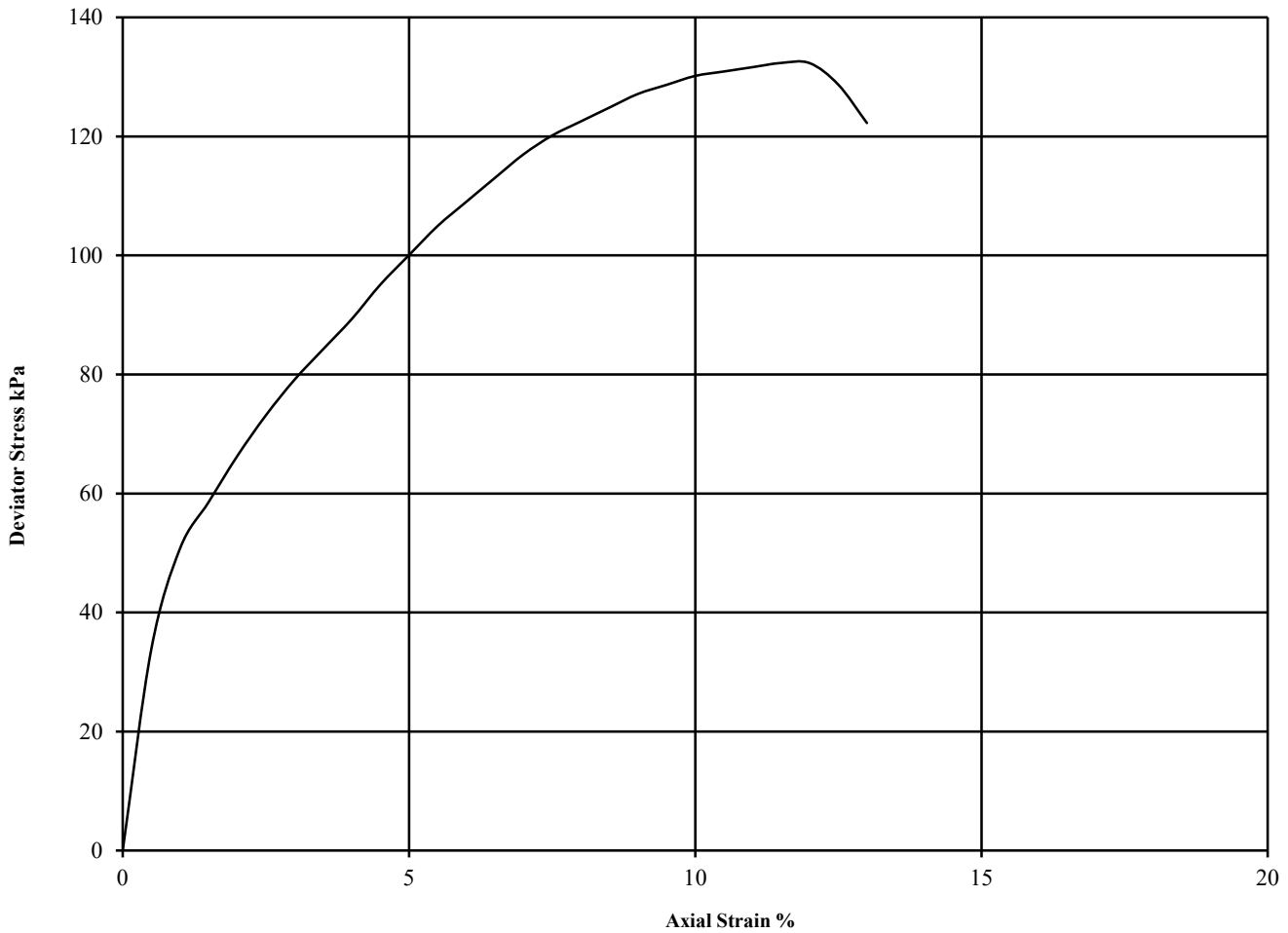
Hole Number: TP103

Top Depth (m): 0.10

Sample Number: 1

Base Depth (m):

Sample Type LB



Diameter (mm):		100		Height (mm):		200		Test:		UU Single Stage		Remarks:	
Specimen	Moisture Content (%)	Bulk Density (Mg/m <sup>3</sup> )	Dry Density (Mg/m <sup>3</sup> )	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Disturbed Sample Remoulded at OMC Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.36 See summary of soil descriptions				
1	14	2.05	1.79	50	132	66	11.5	Brittle					



Bicester Motion

Contract No:  
PSL23/9066  
Client Ref:

# UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

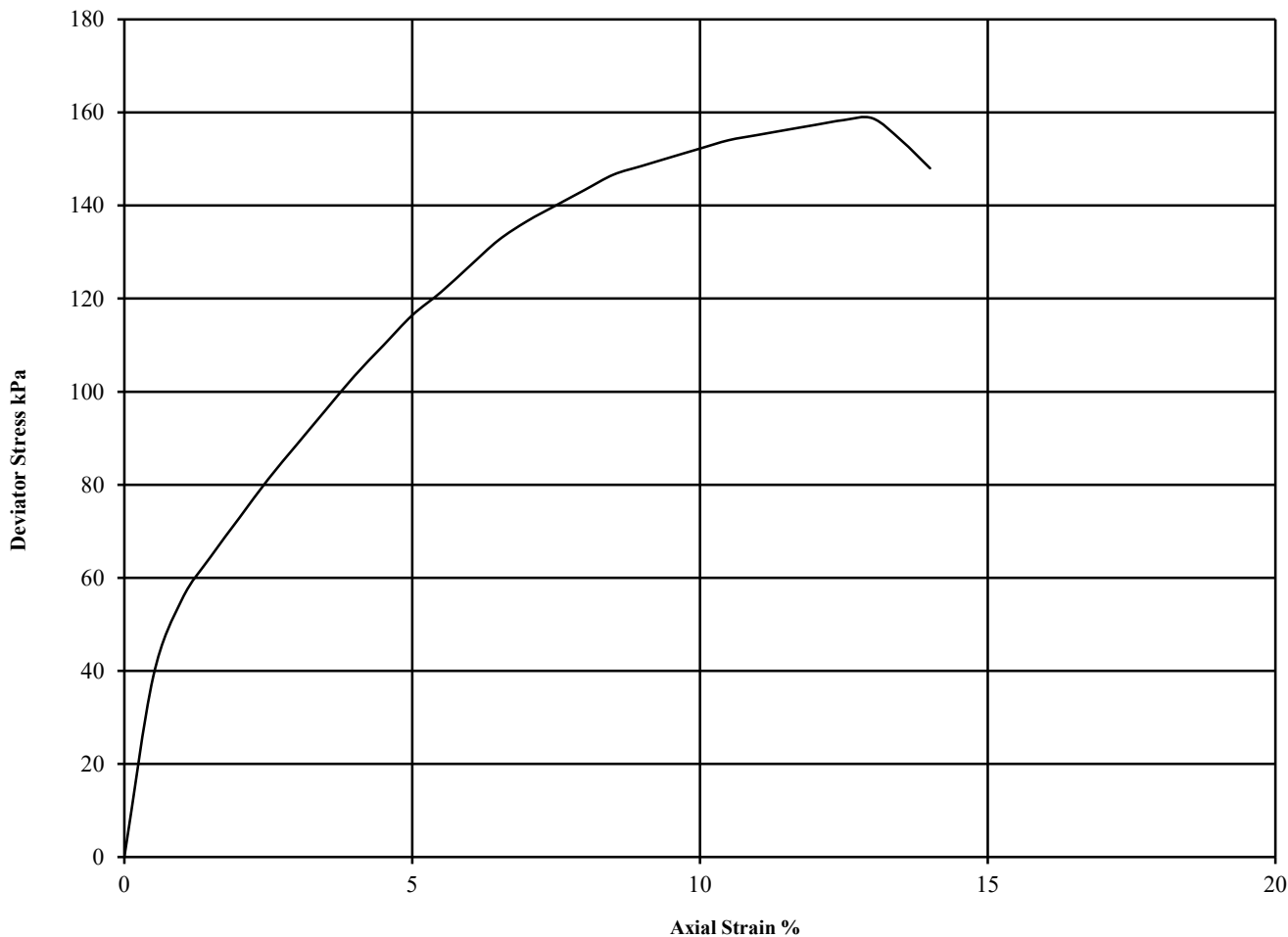
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number: TP103 Top Depth (m): 2.60

Sample Number: 2 Base Depth (m):

Sample Type LB



Diameter (mm):		100		Height (mm):		200		Test:		UU Single Stage		Remarks:	
Specimen	Moisture Content (%)	Bulk Density (Mg/m <sup>3</sup> )	Dry Density (Mg/m <sup>3</sup> )	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Disturbed Sample	Remoulded at OMC	Rate of strain = 2 %/min	Latex Membrane used 0.2 mm thick,	Correction applied 0.35
1	14	2.16	1.89	50	159	79	13.0	Brittle	See summary of soil descriptions				



Bicester Motion

Contract No:

PSL23/9066

Client Ref:

# UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

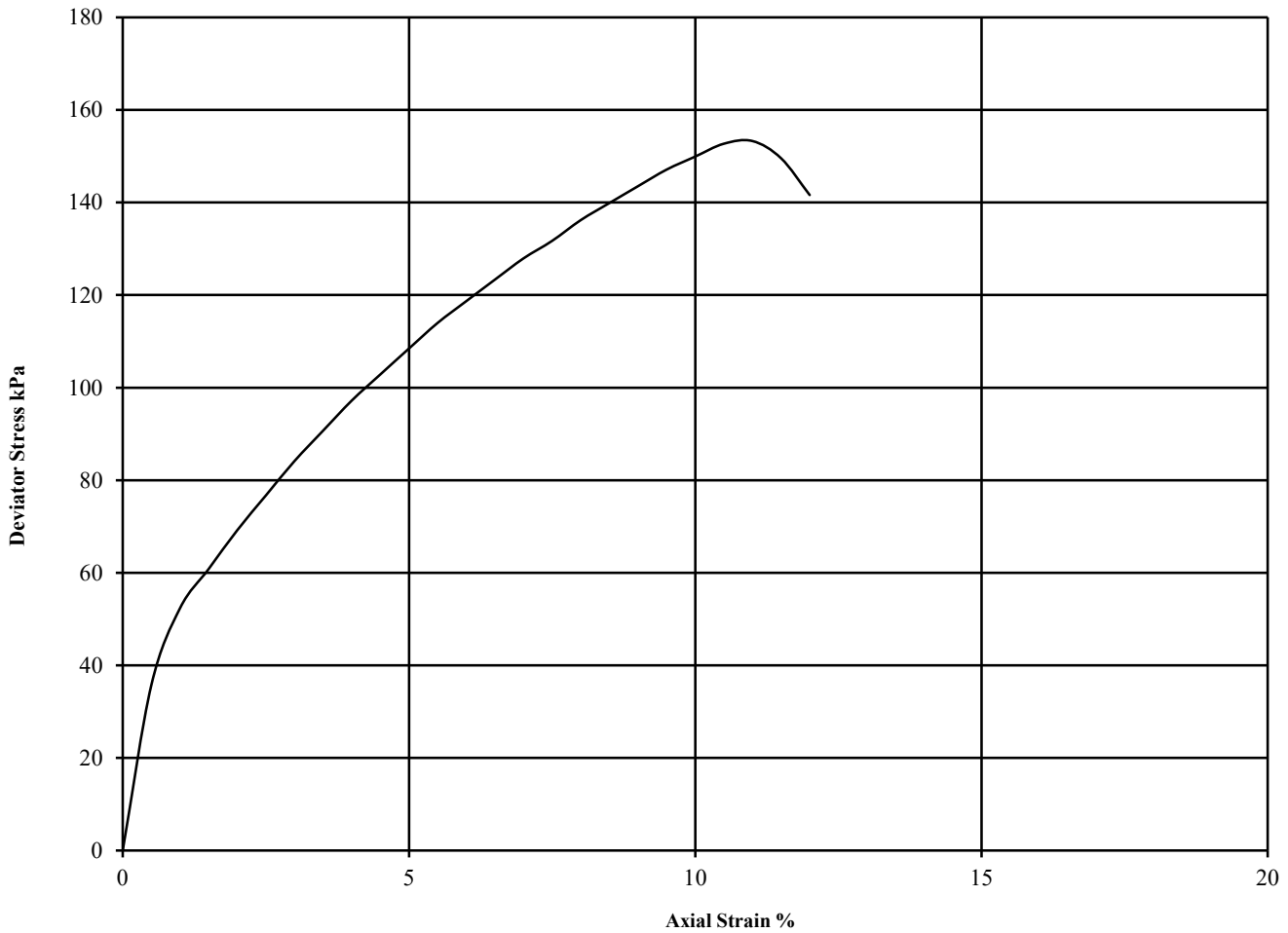
Hole Number: TP106

Top Depth (m): 1.30

Sample Number: 1

Base Depth (m):

Sample Type LB



Diameter (mm):		100		Height (mm):		200		Test:		UU Single Stage		Remarks:	
Specimen	Moisture Content (%)	Bulk Density (Mg/m <sup>3</sup> )	Dry Density (Mg/m <sup>3</sup> )	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Disturbed Sample Remoulded at OMC Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.36 See summary of soil descriptions				
1	10	2.26	2.05	50	153	77	11.0	Brittle					



Bicester Motion

Contract No:  
PSL23/9066  
Client Ref:



**Nathan Thompson**  
Hydrock Consultants Ltd  
2-4 Hawthorne Park  
Holdenby Road  
Spratton  
Northamptonshire  
NN6 8LD

t: 01604842888  
f: 01604842666  
e: nathanthompson@hydrock.com

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 : 23-64825**

<b>Project / Site name:</b>	Bicester Motion	<b>Samples received on:</b>	23/10/2023
<b>Your job number:</b>	27280	<b>Samples instructed on/ Analysis started on:</b>	23/10/2023
<b>Your order number:</b>	PO29513	<b>Analysis completed by:</b>	31/10/2023
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	31/10/2023
<b>Samples Analysed:</b>	5 soil samples		

**Signed:** 

Dominika Warjan  
Reporting Specialist  
**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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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-64825  
 Project / Site name: Bicester Motion  
 Your Order No: PO29513

Lab Sample Number	2857351	2857352	2857353	2857354	2857355			
Sample Reference	TP101	TP105	TP109	TP112	TP113			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)	0.60-0.70	0.70	0.40	0.55	0.70			
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating			
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	%	0.01	NONE	5.6	8	12	5.9	11
Total mass of sample received	kg	0.001	NONE	2	1.9	1.9	2	2

#### General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.6	8.4	8.1	8.4	8.3
Total Sulphate as SO4	mg/kg	50	MCERTS	800	940	900	970	990
Total Sulphate as SO4	%	0.005	MCERTS	0.08	0.094	0.09	0.097	0.099
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.009	0.0083	0.0085	0.0115	0.0085
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	9	8.3	8.5	11.5	8.5
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	3.3	1.9	2.1	3.2	2
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	1.6	0.9	1	1.6	1
Total Sulphur	mg/kg	50	MCERTS	390	460	570	370	460
Total Sulphur	%	0.005	MCERTS	0.039	0.046	0.057	0.037	0.046
Ammoniacal Nitrogen as NH4	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ammonium as NH4 (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	3.4	2.7	< 2.0	7.3	< 2.0
Water Soluble Nitrate (2:1) as NO3 (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	6.1	5.4	< 5.0
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5	< 2.5	3.1	2.7	< 2.5

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



**Analytical Report Number : 23-64825**  
**Project / Site name: Bicester Motion**

\* 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 *
2857351	TP101	None Supplied	0.60-0.70	Brown clay and sand with gravel.
2857352	TP105	None Supplied	0.7	Brown clay and sand with gravel.
2857353	TP109	None Supplied	0.4	Brown clay and loam with gravel and vegetation.
2857354	TP112	None Supplied	0.55	Brown clay and sand with gravel and vegetation.
2857355	TP113	None Supplied	0.7	Brown clay and sand with gravel.

Analytical Report Number : 23-64825  
Project / Site name: Bicester Motion

**Water matrix abbreviations:**

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L038-PL	D	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	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. (30 oC)	In house method.	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 Wastewater & 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.	L099-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.	L038-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
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.	L038-PL	D	MCERTS
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
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' 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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

## Sample Deviation Report



**Analytical Report Number : 23-64825**

**Project / Site name: Bicester Motion**

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP101	None Supplied	S	2857351	a	None Supplied	None Supplied	None Supplied
TP105	None Supplied	S	2857352	a	None Supplied	None Supplied	None Supplied
TP109	None Supplied	S	2857353	a	None Supplied	None Supplied	None Supplied
TP112	None Supplied	S	2857354	a	None Supplied	None Supplied	None Supplied
TP113	None Supplied	S	2857355	a	None Supplied	None Supplied	None Supplied



**Nathan Thompson**  
Hydrock Consultants Ltd  
2-4 Hawthorne Park  
Holdenby Road  
Spratton  
Northamptonshire  
NN6 8LD

t: 01604842888  
f: 01604842666  
e: nathanthompson@hydrock.com

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 : 23-64540**

<b>Project / Site name:</b>	Bicester Motion	<b>Samples received on:</b>	23/10/2023
<b>Your job number:</b>	27280	<b>Samples instructed on/ Analysis started on:</b>	23/10/2023
<b>Your order number:</b>	PO29513	<b>Analysis completed by:</b>	30/10/2023
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	30/10/2023
<b>Samples Analysed:</b>	2 soil samples		

**Signed:** \_\_\_\_\_

Dominika Warjan  
Reporting Specialist  
**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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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.  
Application of uncertainty of measurement would provide a range within which the true result lies.  
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-64540  
 Project / Site name: Bicester Motion  
 Your Order No: PO29513

Lab Sample Number				2855551	2855552
Sample Reference				WS108	WS110
Sample Number				None Supplied	None Supplied
Depth (m)				0.60-1.00	0.40-0.85
Date Sampled				Deviating	Deviating
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	%	0.01	NONE	8.9	7.4
Total mass of sample received	kg	0.001	NONE	0.5	0.5

#### General Inorganics

	pH Units	N/A	MCERTS		
pH - Automated				8.1	8
Total Sulphate as SO4	mg/kg	50	MCERTS	740	780
Total Sulphate as SO4	%	0.005	MCERTS	0.074	0.078
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.01	0.0118
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	10	11.8
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	1.5	2.9
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	0.7	1.5
Total Sulphur	mg/kg	50	MCERTS	380	410
Total Sulphur	%	0.005	MCERTS	0.038	0.041
Ammoniacal Nitrogen as NH4	mg/kg	0.5	MCERTS	< 0.5	< 0.5
Ammonium as NH4 (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	< 0.05
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	5.3	2.8
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0

#### Heavy Metals / Metalloids

	mg/kg	5	NONE	7.4	6.2
Magnesium (water soluble)	mg/kg	5	NONE	7.4	6.2
Magnesium (leachate equivalent)	mg/l	2.5	NONE	3.7	3.1

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



**Analytical Report Number : 23-64540**

**Project / Site name: Bicester Motion**

\* 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 *
2855551	WS108	None Supplied	0.60-1.00	Brown clay and sand with gravel.
2855552	WS110	None Supplied	0.40-0.85	Brown clay and sand with gravel.

**Analytical Report Number : 23-64540**

**Project / Site name: Bicester Motion**

**Water matrix abbreviations:**

**Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L038-PL	D	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	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. (30 oC)	In house method.	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 Wastewater & 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.	L099-PL	D	MCERTS
Total sulphate (as SO <sub>4</sub> in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-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
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.	L038-PL	D	MCERTS
Ammonium as NH <sub>4</sub> 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
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE

**Analytical Report Number : 23-64540**

**Project / Site name: Bicester Motion**

**Water matrix abbreviations:**

**Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

**For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).**

**For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).**

**For method numbers ending in 'PL or B' 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.**

**Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.**



## Sample Deviation Report



**Analytical Report Number : 23-64540**

**Project / Site name: Bicester Motion**

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS108	None Supplied	S	2855551	a	None Supplied	None Supplied	None Supplied
WS110	None Supplied	S	2855552	a	None Supplied	None Supplied	None Supplied

## *Geotechnical plots*

Client <b>Bicester Motion</b>	Location or material to which this assessment applies <b>Made Ground</b>
Project <b>Bicester Motion Innovation Centre</b>	
Job number <b>27280</b>	

## 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	0
No. tests in 20% data set	0	0	
No. tests with suspected pyrite		0	
Maximum value	8.5	0.2	
Mean of highest two values	9	0	
Mean of highest 20%			
<b>Characteristic Value</b>	<b>8.5</b>	<b>0.2</b>	

**Mg not required**

	[no pyrite]	[pyrite suspected]
<b>DS Class</b>	<b>DS-1</b>	<b>DS-1</b>
If pyrite suspected, DS Class limited to		<b>DS-1</b>
Is pyrite assumed to be present?	<b>No</b>	<b>Adopted DS Class = DS-1</b>

### Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
<b>Characteristic Value (Maximum Level)</b>	0	0
		<b>Mg not required</b>
<b>DS Class</b>		

### pH data

	Soil	Water
Number of tests	1	0
No. tests in 20% data set	0	
Lowest pH	8.1	
Mean of lowest 20%		
<b>Characteristic value</b>	<b>8.1</b>	
<b>Design value</b>	<b>8.1</b>	
Number of soil pH results less than 5.5	0	

### DS Class design value

Based on higher of soil and water data

### ACEC Class design value

Brownfield  
Mobile groundwater **AC-1**

**DS-1**

Client <b>Bicester Motion</b>	Location or material to which this assessment applies <b>Cornbrash Limestone Formation</b>
Project <b>Bicester Motion Innovation Centre</b>	
Job number <b>27280</b>	

## 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	17	6	0
No. tests in 20% data set	3	1	
No. tests with suspected pyrite		0	
Maximum value	78	0.1	
Mean of highest two values	64	0	
Mean of highest 20%	52		
<b>Characteristic Value</b>	<b>52</b>	<b>0</b>	

	[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)
<b>Characteristic Value (Maximum Level)</b>	0	0

DS Class

### pH data

	Soil	Water
Number of tests	17	0
No. tests in 20% data set	3	
Lowest pH	7.8	
Mean of lowest 20%	7.9	
<b>Characteristic value</b>	<b>7.9</b>	

**Design value** 7.9

Number of soil pH results less than 5.5 0

### DS Class design value

Based on higher of soil and water data

### ACEC Class design value

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

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

Client <b>Bicester Motion</b>	Location or material to which this assessment applies <b>Forest Mable Formation</b>
Project <b>Bicester Motion Innovation Centre</b>	
Job number <b>27280</b>	

## 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	6	0	0
No. tests in 20% data set	1		
No. tests with suspected pyrite		0	
Maximum value	630		
Mean of highest two values	495		
Mean of highest 20%			
<b>Characteristic Value</b>	<b>495</b>		

	[no pyrite]	[pyrite suspected]
<b>DS Class</b>	<b>DS-1</b>	

If pyrite suspected, DS Class limited to

Is pyrite assumed to be present?

**No**

**Adopted DS Class = DS-1**

### Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
<b>Characteristic Value (Maximum Level)</b>	<b>0</b>	<b>0</b>
<b>DS Class</b>		

### pH data

	Soil	Water
Number of tests	4	0
No. tests in 20% data set	1	
Lowest pH	7.6	
Mean of lowest 20%	7.6	
<b>Characteristic value</b>	<b>7.6</b>	

**Design value** **7.6**

Number of soil pH results less than 5.5 0

**DS Class design value**

**ACEC Class design value**

**Based on higher of soil and water data**

**DS-1**

Natural ground

Mobile groundwater

**AC-1 \***

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

# Appendix F Site monitoring data and ground gas risk assessment

*Site monitoring data*

Gas Monitoring Record



Monitoring round		Borehole details					Pressure and flow							Concentrations							GSV		Local conditions					
Date	Time	Borehole	Single or dual gas tap	Depth to water (or NAPL) (or base of well if dry) (m)	Depth to base of response zone (m)	"D" denotes dry hole	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow (L/hr)		" < " denotes flow less than LOD	Gas flow* (absolute value) (L/hr)	CH <sub>4</sub> (%v/v)		CH <sub>4</sub> (%LEL)		CO <sub>2</sub> (%v/v)		O <sub>2</sub> (%v/v)		Other gases		VOC	Gas Screening Value (CH <sub>4</sub> ) (L/hr)	Gas Screening Value (CO <sub>2</sub> ) (L/hr)	Notes on condition of borehole (including any leak test), condition of surrounding ground, and operation of monitoring instrument (as applicable)	
										Initial	Steady			Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	CO (ppm)	H <sub>2</sub> S (ppm)					PID (ppm)
		<b>Readings taken from top of Standpipe.</b>					Max. individual values:							0.2    0.1    2.0    2.2    22.1							0.0002    0.0026		<b>Summary statistics for this monitoring period'.</b>					
		<b>Height of Standpipe in row</b>					Min. individual values:							0.1    0.1    2.0    0.1    17.0							0.0001    0.0001		[* Not applicable if wells are screened in different strata or zones]					
							Worst-case GSVs based on max. individual flow and max. individual conc. over the duration of this table:							0.0002    0.0044														
26/10/23	-	WS101	S	-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Groundwater in hole covering bung, unable to monitor.
26/10/23	-	WS102	S	-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Groundwater in hole covering bung, unable to monitor.	
26/10/23	11:54	WS103	S	0.74	0.74	D	982	F	0.05	-0.2	0.1	<	0.2	0.1	0.1	2	2	1.3	1.3	18.6	18.6	0	1		0.0002	0.0026	Damp ground	
26/10/23	11:15	WS104	S	0.7	0.7	D	980	F	0.09	-0.1	-0.1		0.1	0.1	0.1	2	2	0.1	0.1	19.8	19.8	1	1		0.0001	0.0001	Damp ground	
26/10/23	11:29	WS106	S	1.27	1.27	D	981	F	0.02	-0.1	-0.1		0.1	0.1	0.1	2	2	1.5	1.5	18.5	18.5	0	1		0.0001	0.0015	Damp ground	
26/10/23	11:38	WS107	S	0.41	0.7		982	F	0.09	-0.1	-0.1		0.1	0.1	0.1	2	2	0.3	1	20	19.7	0	1		0.0001	0.001	Damp ground	
31/10/23	11:10	WS101	S	0.5	1.09		991	R	0.05	0.1	0.1	<	0.1	0.1	0.1	2	2	1.3	1.3	17.3	17.2	2	1		0.0001	0.0013	FULL OF WATER. PRESSURE HISS WHEN SAMPLE PIPE REMOVED	
31/10/23	11:19	WS103	S	0.74	0.74	D	991	R	0.09	0.1	0.1	<	0.1	0.1	0.1	2	2	1.4	1.4	18.2	18.2	0	1		0.0001	0.0014	DRY	
31/10/23	11:28	WS104	S	0.47	0.47	D	992	R	0.02	0.0	-0.1		0.1	0.1	0.1	2	2	0	0.1	19.9	19.9	1	1		0.0001	0.0001	DRY	
31/10/23	11:36	WS106	S	1.27	1.27	D	992	R	-0.02	0.1	0.1	<	0.1	0.1	0.1	2	2	1.5	1.5	18.8	18.8	0	1		0.0001	0.0015	DRY	
31/10/23	11:42	WS107	S	0.41	0.7		992	R	0.00	0.1	0.1	<	0.1	0.1	0.1	2	2	0.4	0.7	20.5	20.2	1	1		0.0001	0.0007	OK	
09/11/23	10:30	WS101	S	0.59	1.09		992	S	-1.96	0.1	0.1		0.1	0.1	0.1	2	2	1	1	18.8	18.8	2	1		0.0001	0.001	OK	
09/11/23	10:39	WS103	S	0.72	0.72	D	992	S	0.07	0.1	0.1		0.1	0.1	0.1	2	2	1.3	1.3	18.4	18.4	0	1		0.0001	0.0013	DRY	
09/11/23	10:47	WS104	S	0.45	0.45	D	991	S	0.05	0.1	0.1		0.1	0.1	0.1	2	2	0.1	0.1	20	20	0	1		0.0001	0.0001	BOTTOM VISIBLE WITH WATER - NOT DEEP ENOUGH TO COVER SENSOR	
09/11/23	10:56	WS106	S	1.21	1.31		992	S	0.00	0.1	0.1		0.1	0.1	0.1	2	2	1.8	1.8	19.1	19	0	1		0.0001	0.0018	OK	
09/11/23	11:09	WS107	S	0.3	0.9		992	S	0.26	0.1	0.1		0.1	0.1	0.1	2	2	0.8	1.7	20.1	19.9	0	1		0.0001	0.0017	OK	
16/11/23	09:22	WS101	S	0.65	1.08		1011	S	-1.90	0.1	0.1	<	0.1	0.1	0.1	2	2	1.1	1.1	18	18	1	0		0.0001	0.0011	OK	
16/11/23	09:31	WS103	S	0.72	0.72	D	1011	S	0.05	0.1	0.1	<	0.1	0.1	0.1	2	2	1.4	1.4	18.5	18.4	0	0		0.0001	0.0014	DRY	
16/11/23	09:37	WS104	S	0.45	0.45	D	1011	S	0.04	0.1	0.1	<	0.1	0.1	0.1	2	2	0.1	0.1	20.1	20	0	0		0.0001	0.0001	WATER AT BOTTOM	
16/11/23	09:46	WS106	S	1.28	1.32		1011	S	0.00	0.1	0.1	<	0.1	0.1	0.1	2	2	1.5	1.5	19.4	19	0	0		0.0001	0.0015	OK	
16/11/23	09:59	WS107	S	0.36	0.98		1011	S	0.09	0.1	0.1	<	0.1	0.1	0.1	2	2	0.9	0.9	20.5	20.5	1	0		0.0001	0.0009	OK	
22/11/23	11:42	WS101	S	0.72	1.08		1019	S	-1.84	-0.1	-0.1		0.1	0.1	0.1	2	2	2.2	2.2	17	17	0	0		0.0001	0.0022	OK	
22/11/23	11:50	WS103	S	0.71	0.74		1020	S	0.04	0.1	0.1	<	0.1	0.1	0.1	2	2	1.6	1.6	19	19	0	0		0.0001	0.0016	OK	
22/11/23	12:26	WS104	S	0.45	0.45	D	1020	S	-0.05	0.1	0.1	<	0.1	0.1	0.1	2	2	0.1	0.1	20.2	20.3	0	0		0.0001	0.0001	WATER AT BOTTOM	
22/11/23	13:27	WS106	S	1.29	1.32		1020	S	0.00	0.1	0.1	<	0.1	0.1	0.1	2	2	1.4	1.4	19.5	19.5	0	0		0.0001	0.0014	OK	
22/11/23	13:38	WS107	S	0.38	0.98		1020	S	1.45	0.1	0.1	<	0.1	0.1	0.1	2	2	1.2	0.7	20.4	20.6	1	0		0.0001	0.0007	OK	



Gas Monitoring Record



Monitoring round		Borehole details					Pressure and flow							Concentrations							GSV		Local conditions				
Date	Time	Borehole	Single or dual gas tap	Depth to water (or NAPL) (or base of well if dry) (m)	Depth to base of response zone (m)	"D" denotes dry hole	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow (L/hr)		"<" denotes flow less than LOD	Gas flow* (absolute value) (L/hr)	CH <sub>4</sub> (%v/v)		CH <sub>4</sub> (%LEL)		CO <sub>2</sub> (%v/v)		O <sub>2</sub> (%v/v)		Other gases		VOC	Gas Screening Value (CH <sub>4</sub> ) (L/hr)	Gas Screening Value (CO <sub>2</sub> ) (L/hr)	Notes on condition of borehole (including any leak test), condition of surrounding ground, and operation of monitoring instrument (as applicable)
										Initial	Steady			Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	CO (ppm)	H <sub>2</sub> S (ppm)	PID (ppm)			
29/11/23	14:35	WS101	S	0.88	1.08		995	F	0.48	0.1	0.1	<	0.1	0.1	0.1	2	2	0.4	0.2	20.4	20.9	0	0		0.0001	0.0002	OK
29/11/23	15:05	WS103	S	0.7	0.74		995	F	0.08	0.1	0.1		0.1	0.1	0.1	2	2	0.1	0.1	21.6	21.5	0	0		0.0001	0.0001	OK
29/11/23	15:34	WS104	S	0.4	0.45	D	995	F	0.00	0.1	0.1	<	0.1	0.1	0.1	2	2	0.1	0.1	21.6	21.7	0	0		0.0001	0.0001	OK
29/11/23	15:56	WS106	S	1.28	1.32		995	F	0.00	0.1	0.1	<	0.1	0.1	0.1	2	2	0.1	0.1	21.9	22	0	0		0.0001	0.0001	OK
29/11/23	16:12	WS107	S	0.9	0.98		995	F	0.45	0.1	0.1	<	0.1	0.1	0.1	2	2	0.1	0.1	22	22.1	0	0		0.0001	0.0001	OK

## *Ground gas risk assessment*

### CIRIA Ground Gas Risk Assessment



Number of Monitoring Rounds	12
Number of Locations	19

Max CH <sub>4</sub>	Worst Case Flow
0.1	0.2

Worst Case Site GSV CH <sub>4</sub>
0.0002

	CH <sub>4</sub>	CO <sub>2</sub>
	Visit GSVs	Visit GSVs
CS1	83	83
CS2	0	0
CS3	0	0
CS4	0	0
CS5	0	0
CS6	0	0

Number of Readings	87
Number of Readings with Flow Rate	87

Max CO <sub>2</sub>	Worst Case Flow
4.9	0.2

Worst Case Site GSV CO <sub>2</sub>
0.0098

Location	Strata	Date	Pressure Trend	Relative Pressure	Flow Rate (l/hr)	Atmos. Pressure	CH <sub>4</sub> (% vol)		(%LEL)		CO <sub>2</sub> (% vol)		O <sub>2</sub> (% vol)		Visit GSV – CH <sub>4</sub>	Visit GSV – CO <sub>2</sub>
							Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady		
WS01	Cornbrash Limestone Formation	21/05/21	F	0.59	0.1	986	0.1	0.1	2.0	2.0	0.1	0.3	21.6	19.9	0.0001	0.0003
		01/06/21	R	0.43	0.1	1009	0.1	0.1	2.0	2.0	0.1	0.3	21.4	19.9	0.0001	0.0003
		09/06/21	F	0.05	0.1	1015	0.1	0.1	2.0	2.0	0.1	0.8	20.4	19.1	0.0001	0.0008
		15/06/21	F	0.14	0.1	1015	0.1	0.1	2.0	2.0	0.6	1.1	19.7	19.4	0.0001	0.0011
		18/06/21	S	0.10	0.1	1008	0.1	0.1	2.0	2.0	0.1	0.8	21.4	19.3	0.0001	0.0008
WS03	Cornbrash Limestone Formation	21/05/21	F	0.05	0.1	987	0.1	0.1	2.0	2.0	1.0	2.1	21.1	18.4	0.0001	0.0021
		01/06/21	R	0.07	0.1	1009	0.1	0.1	2.0	2.0	0.1	1.8	19.4	17.9	0.0001	0.0018
		09/06/21	F	0.12	0.1	1015	0.1	0.1	2.0	2.0	2.3	2.5	17.4	16.0	0.0001	0.0025
		15/06/21	F	0.03	0.1	1015	0.1	0.1	2.0	2.0	2.3	3.0	17.9	17.0	0.0001	0.0030
		18/06/21	S	0.11	0.1	1008	0.1	0.1	2.0	2.0	2.8	3.8	21.2	18.7	0.0001	0.0038
WS06	Cornbrash Limestone Formation	21/05/21	F	0.05	0.1	986	0.1	0.1	2.0	2.0	0.1	1.5	21.4	21.1	0.0001	0.0015
		01/06/21	R	0.05	0.1	1009	0.1	0.1	2.0	2.0	2.5	2.6	17.2	17.1	0.0001	0.0026
		09/06/21	F	0.05	0.1	1015	0.1	0.1	2.0	2.0	3.4	3.6	16.2	15.5	0.0001	0.0036
		15/06/21	F	0.10	0.1	1015	0.1	0.1	2.0	2.0	3.6	4.0	17.9	16.8	0.0001	0.0040
		18/06/21	S	0.04	0.1	1008	0.1	0.1	2.0	2.0	0.4	4.9	20.5	17.7	0.0001	0.0049
WS07	Cornbrash Limestone Formation	21/05/21	F	0.09	0.1	987	0.1	0.1	2.0	2.0	0.1	0.1	21.7	21.7	0.0001	0.0001
		01/06/21	R	0.10	0.1	1010	0.1	0.1	2.0	2.0	0.1	0.1	20.2	20.3	0.0001	0.0001
		09/06/21	F	0.03	0.1	1015	0.1	0.1	2.0	2.0	0.1	0.1	20.2	20.2	0.0001	0.0001
		15/06/21	F	0.07	0.1	1015	0.1	0.1	2.0	2.0	0.1	0.1	20.3	20.4	0.0001	0.0001
		18/06/21	S	0.05	0.1	1008	0.1	0.1	2.0	2.0	0.1	0.1	21.5	21.5	0.0001	0.0001
WS12	Forest Marble Formation	21/05/21	F	0.07	0.1	986	0.1	0.1	2.0	2.0	0.1	0.2	20.8	20.8	0.0001	0.0002
		01/06/21	R	0.07	0.1	1009	0.1	0.1	2.0	2.0	0.1	0.4	20.4	19.8	0.0001	0.0004
		09/06/21	F	0.05	0.1	1015	0.1	0.1	2.0	2.0	0.2	0.3	20.3	19.9	0.0001	0.0003
		15/06/21	F	0.05	0.1	1015	0.1	0.1	2.0	2.0	0.1	0.5	20.4	19.8	0.0001	0.0005
		18/06/21	S	0.05	0.1	1008	0.1	0.1	2.0	2.0	0.1	1.4	20.8	18.7	0.0001	0.0014
WS15	Cornbrash Limestone Formation	21/05/21	F	0.16	0.1	986	0.1	0.1	2.0	2.0	2.7	3.1	20.1	17.1	0.0001	0.0031
		01/06/21	R	0.09	0.1	1010	0.1	0.1	2.0	2.0	2.0	1.9	19.0	17.9	0.0001	0.0019
		09/06/21	F	0.02	0.1	1015	0.1	0.1	2.0	2.0	0.1	3.8	18.4	18.0	0.0001	0.0038
		15/06/21	F	0.09	0.1	1015	0.1	0.1	2.0	2.0	0.5	3.3	19.8	17.7	0.0001	0.0033
		18/06/21	S	0.10	0.1	1008	0.1	0.1	2.0	2.0	0.9	1.8	20.1	19.6	0.0001	0.0018
25/06/21	S	0.09	0.1	1015	0.1	0.1	2.0	2.0	0.9	1.3	20.9	16.6	0.0001	0.0013		

### CIRIA Ground Gas Risk Assessment



Location	Strata	Date	Pressure Trend	Relative Pressure	Flow Rate (l/hr)	Atmos. Pressure	CH <sub>4</sub> (% vol)		(%LEL)		CO <sub>2</sub> (% vol)		O <sub>2</sub> (% vol)		Visit GSV – CH <sub>4</sub>	Visit GSV – CO <sub>2</sub>
							Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady		
BH01	Cornbrash Limestone Formation / Forest Marble Formation	21/05/21	F	0.02	0.1	986	0.1	0.1	2.0	2.0	0.2	0.4	19.2	10.6	0.0001	0.0004
		01/06/21	R	0.02	0.1	1009	0.1	0.1	2.0	2.0	0.3	0.7	19.4	16.9	0.0001	0.0007
		09/06/21	F	0.05	0.1	1015	0.1	0.1	2.0	2.0	1.3	1.3	18.4	18.0	0.0001	0.0013
		15/06/21	F	0.03	0.1	1015	0.1	0.1	2.0	2.0	0.6	1.1	19.0	19.1	0.0001	0.0011
		18/06/21	S	0.03	0.1	1008	0.1	0.1	2.0	2.0	0.6	0.9	20.1	19.5	0.0001	0.0009
BH02	Cornbrash Limestone Formation / Forest Marble Formation	25/06/21	S	0.05	0.1	1015	0.1	0.1	2.0	2.0	0.9	1.3	20.1	18.5	0.0001	0.0013
		09/06/21	F	0.26	0.1	1015	0.1	0.1	2.0	2.0	0.1	2.1	18.1	16.2	0.0001	0.0021
		15/06/21	F	0.10	0.1	1015	0.1	0.1	2.0	2.0	1.4	2.0	18.5	18.0	0.0001	0.0020
		18/06/21	S	0.02	0.1	1008	0.1	0.1	2.0	2.0	0.1	2.8	21.2	18.7	0.0001	0.0028
BH03	Forest Marble Formation	25/06/21	S	0.03	0.1	1015	0.1	0.1	2.0	2.0	0.6	2.7	19.2	17.3	0.0001	0.0027
		21/05/21	F	0.48	0.2	986	0.1	0.1	2.0	2.0	0.1	0.1	21.8	21.5	0.0002	0.0002
		01/06/21	R	0.14	0.1	1009	0.1	0.1	2.0	2.0	0.1	0.1	20.2	20.1	0.0001	0.0001
		09/06/21	F	0.10	0.1	1015	0.1	0.1	2.0	2.0	0.1	0.1	19.8	19.6	0.0001	0.0001
		15/06/21	F	0.10	0.1	1015	0.1	0.1	2.0	2.0	0.2	0.1	19.6	9.2	0.0001	0.0001
BH04	Cornbrash Limestone Formation / Forest Marble Formation	18/06/21	S	0.38	0.1	1008	0.1	0.1	2.0	2.0	0.2	0.1	19.5	21.7	0.0001	0.0001
		25/06/21	S	0.07	0.1	1015	0.1	0.1	2.0	2.0	0.1	0.1	21.3	21.2	0.0001	0.0001
		21/05/21	F	1.77	0.1	986	0.1	0.1	2.0	2.0	0.6	1.6	20.8	18.8	0.0001	0.0016
		01/06/21	R	1.21	0.1	1009	0.1	0.1	2.0	2.0	1.6	2.7	17.3	13.7	0.0001	0.0027
		09/06/21	F	0.03	0.1	1015	0.1	0.1	2.0	2.0	0.4	2.3	20.1	16.4	0.0001	0.0023
EBH1	N/A	15/06/21	F	0.07	0.1	1015	0.1	0.1	2.0	2.0	1.1	3.3	18.7	15.2	0.0001	0.0033
		18/06/21	S	0.07	0.1	1008	0.1	0.1	2.0	2.0	1.8	4.7	17.8	14.6	0.0001	0.0047
		25/06/21	S	0.05	0.1	1015	0.1	0.1	2.0	2.0	0.1	4.4	21.2	13.8	0.0001	0.0044
		21/05/21	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		01/06/21	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EBH2	N/A	09/06/21	-	-	-	-	-	-	-	-	-	-	-	-	-	
		15/06/21	-	-	-	-	-	-	-	-	-	-	-	-	-	
		18/06/21	-	-	-	-	-	-	-	-	-	-	-	-	-	
		25/06/21	-	-	-	-	-	-	-	-	-	-	-	-	-	
		21/05/21	-	-	-	-	-	-	-	-	-	-	-	-	-	
EBH3	N/A	01/06/21	-	-	-	-	-	-	-	-	-	-	-	-	-	
		09/06/21	-	-	-	-	-	-	-	-	-	-	-	-	-	
		15/06/21	-	-	-	-	-	-	-	-	-	-	-	-	-	
		18/06/21	-	-	-	-	-	-	-	-	-	-	-	-	-	
		25/06/21	-	-	-	-	-	-	-	-	-	-	-	-	-	
EBH4	N/A	01/06/21	-	-	-	-	-	-	-	-	-	-	-	-	-	
		09/06/21	-	-	-	-	-	-	-	-	-	-	-	-	-	
		15/06/21	-	-	-	-	-	-	-	-	-	-	-	-	-	
		18/06/21	-	-	-	-	-	-	-	-	-	-	-	-	-	
		25/06/21	-	-	-	-	-	-	-	-	-	-	-	-	-	
WS101	Made Ground	31/10/23	R	0.05	0.1	991	0.1	0.1	2.0	2.0	1.3	1.3	17.3	17.2	0.0001	0.0013
		09/11/23	S	-1.96	0.1	992	0.1	0.1	2.0	2.0	1.0	1.0	18.8	18.8	0.0001	0.0010
		16/11/23	S	-1.90	0.1	1011	0.1	0.1	2.0	2.0	1.1	1.1	18.0	18.0	0.0001	0.0011
		22/11/23	S	-1.84	-0.1	1019	0.1	0.1	2.0	2.0	2.2	2.2	17.0	17.0	-0.0001	-0.0022
		29/11/23	F	0.48	0.1	995	0.1	0.1	2.0	2.0	0.4	0.2	20.4	20.9	0.0001	0.0002

### CIRIA Ground Gas Risk Assessment

Location	Strata	Date	Pressure Trend	Relative Pressure	Flow Rate (l/hr)	Atmos. Pressure	CH <sub>4</sub> (% vol)		(%LEL)		CO <sub>2</sub> (% vol)		O <sub>2</sub> (% vol)		Visit GSV – CH <sub>4</sub>	Visit GSV – CO <sub>2</sub>
							Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady		
WS103	Cornbrash Limestone Formation	26/10/23	F	0.05	0.2	982	0.1	0.1	2.0	2.0	1.3	1.3	18.6	18.6	0.0002	0.0026
		31/10/23	R	0.09	0.1	991	0.1	0.1	2.0	2.0	1.4	1.4	18.2	18.2	0.0001	0.0014
		09/11/23	S	0.07	0.1	992	0.1	0.1	2.0	2.0	1.3	1.3	18.4	18.4	0.0001	0.0013
		16/11/23	S	0.05	0.1	1011	0.1	0.1	2.0	2.0	1.4	1.4	18.5	18.4	0.0001	0.0014
		22/11/23	S	0.04	0.1	1020	0.1	0.1	2.0	2.0	1.6	1.6	19.0	19.0	0.0001	0.0016
		29/11/23	F	0.08	0.1	995	0.1	0.1	2.0	2.0	0.1	0.1	21.6	21.5	0.0001	0.0001
WS104	Made Ground	26/10/23	F	0.09	0.1	980	0.1	0.1	2.0	2.0	0.1	0.1	19.8	19.8	0.0001	0.0001
		31/10/23	R	0.02	0.1	992	0.1	0.1	2.0	2.0	0.0	0.1	19.9	19.9	0.0001	0.0001
		09/11/23	S	0.05	0.1	991	0.1	0.1	2.0	2.0	0.1	0.1	20.0	20.0	0.0001	0.0001
		16/11/23	S	0.04	0.1	1011	0.1	0.1	2.0	2.0	0.1	0.1	20.1	20.0	0.0001	0.0001
		22/11/23	S	-0.05	0.1	1020	0.1	0.1	2.0	2.0	0.1	0.1	20.2	20.3	0.0001	0.0001
		29/11/23	F	0.00	0.1	995	0.1	0.1	2.0	2.0	0.1	0.1	21.6	21.7	0.0001	0.0001
WS106	Cornbrash Limestone Formation	26/10/23	F	0.02	0.1	981	0.1	0.1	2.0	2.0	1.5	1.5	18.5	18.5	0.0001	0.0015
		31/10/23	R	-0.02	0.1	992	0.1	0.1	2.0	2.0	1.5	1.5	18.8	18.8	0.0001	0.0015
		09/11/23	S	0.00	0.1	992	0.1	0.1	2.0	2.0	1.8	1.8	19.1	19.0	0.0001	0.0018
		16/11/23	S	0.00	0.1	1011	0.1	0.1	2.0	2.0	1.5	1.5	19.4	19.0	0.0001	0.0015
		22/11/23	S	0.00	0.1	1020	0.1	0.1	2.0	2.0	1.4	1.4	19.5	19.5	0.0001	0.0014
		29/11/23	F	0.00	0.1	995	0.1	0.1	2.0	2.0	0.1	0.1	21.9	22.0	0.0001	0.0001
WS107	Cornbrash Limestone Formation	26/10/23	F	0.09	0.1	982	0.1	0.1	2.0	2.0	0.3	1.0	20.0	19.7	0.0001	0.0010
		31/10/23	R	0.00	0.1	992	0.1	0.1	2.0	2.0	0.4	0.7	20.5	20.2	0.0001	0.0007
		09/11/23	S	0.26	0.1	992	0.1	0.1	2.0	2.0	0.8	1.7	20.1	19.9	0.0001	0.0017
		16/11/23	S	0.09	0.1	1011	0.1	0.1	2.0	2.0	0.9	0.9	20.5	20.5	0.0001	0.0009
		22/11/23	S	1.45	0.1	1020	0.1	0.1	2.0	2.0	1.2	0.7	20.4	20.6	0.0001	0.0007
		29/11/23	F	0.45	0.1	995	0.1	0.1	2.0	2.0	0.1	0.1	22.0	22.1	0.0001	0.0001

# Hydrock Bulk Gases Ternary Plot Analysis



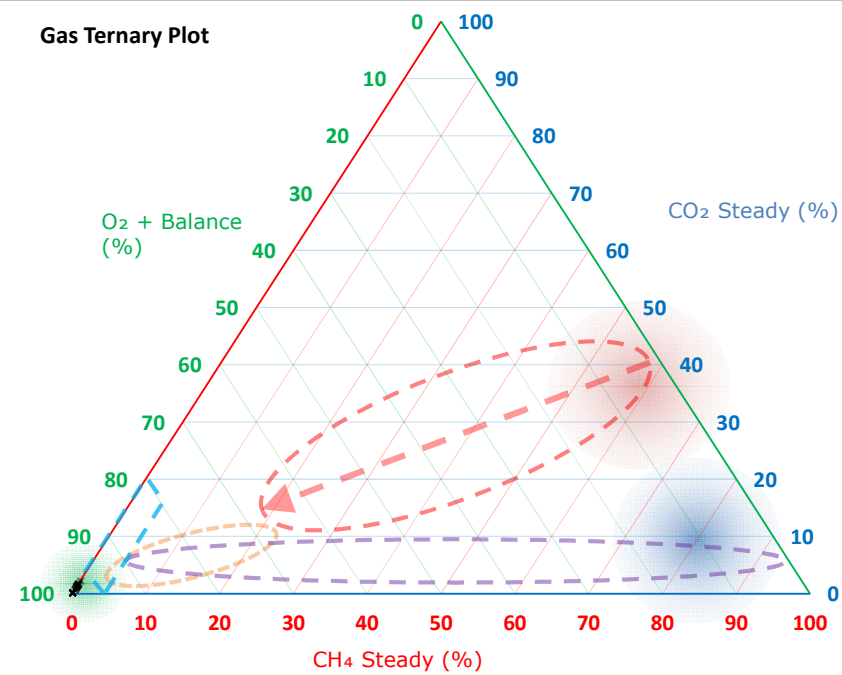
Client:	Bicester Motion
Site Name:	Bicester Motion Innovation Centre
Contract Number:	27280
Assessment Date:	29/11/2023

Screened Strata:	All Strata
Site Zone:	Whole Site (Hydrock Data)

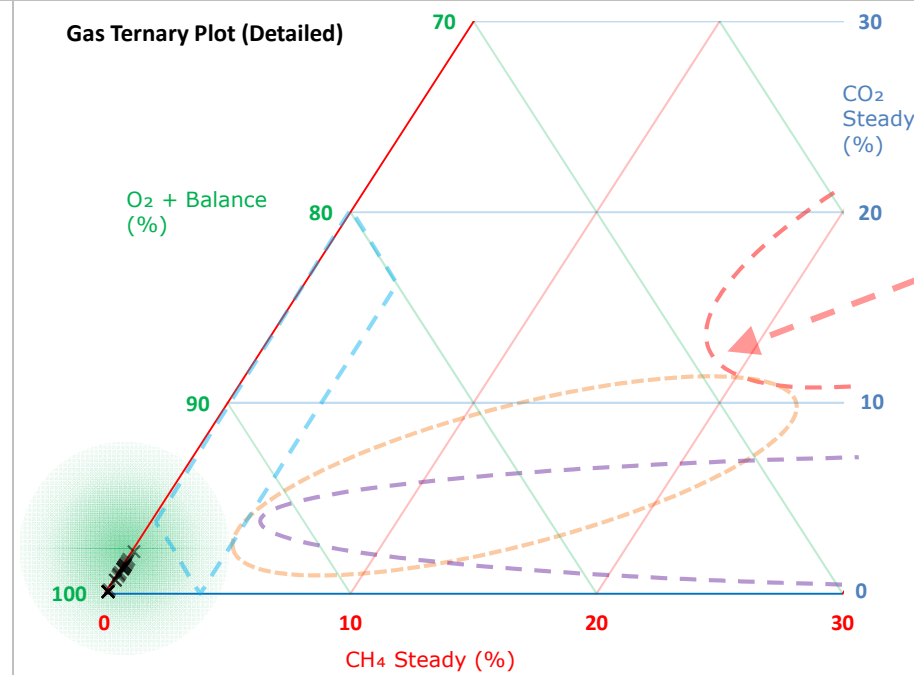
### Locations

WS101	WS103	WS104	WS106	WS107	(blank)
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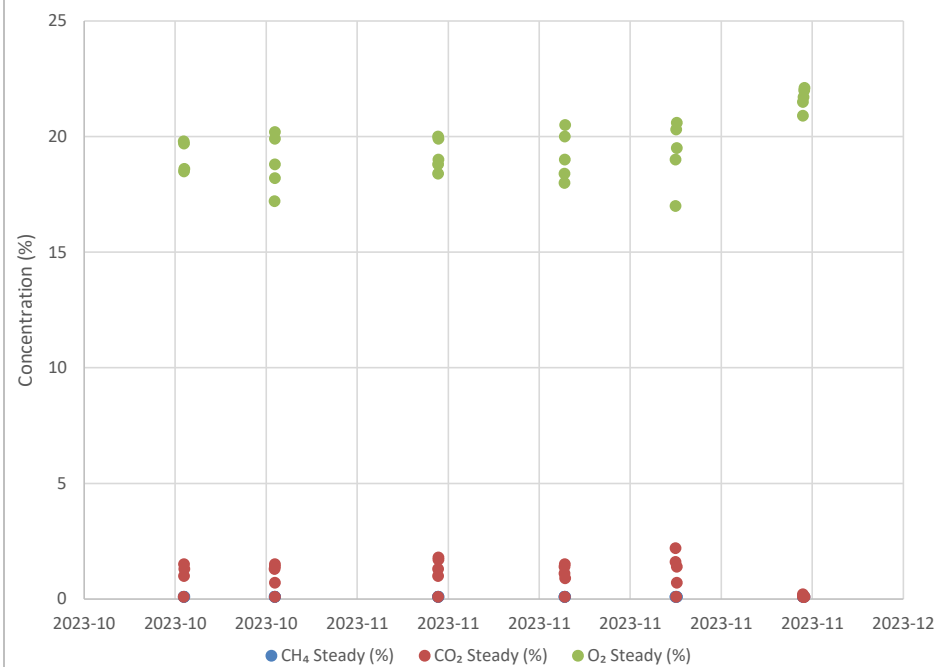
Gas Ternary Plot



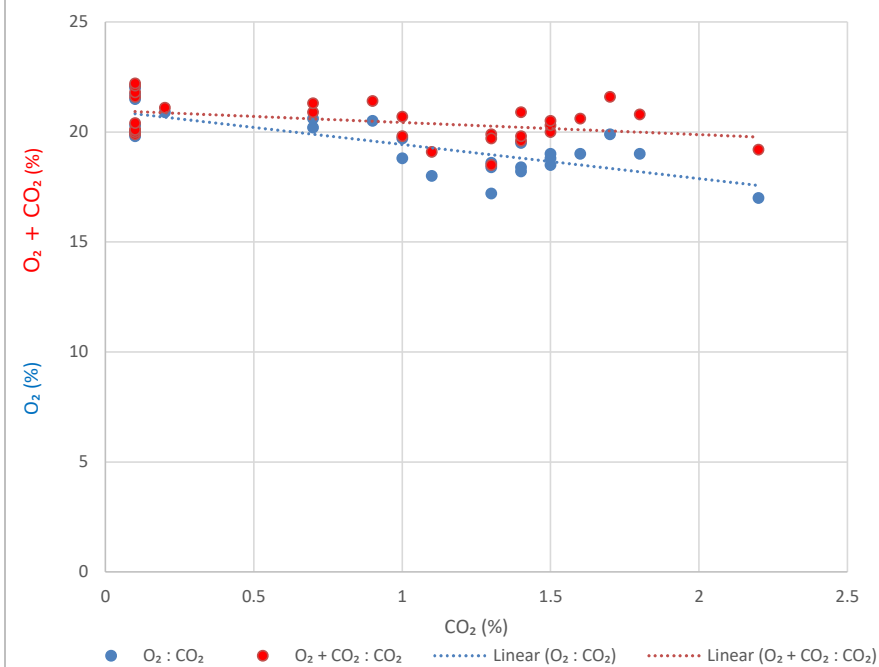
Gas Ternary Plot (Detailed)



Bulk Gases Time-Plot



CO<sub>2</sub> / O<sub>2</sub> relationship



### Key:

	Indicative of landfill gas migration (assuming source composition 60% methane / 40% carbon dioxide) as it displaces air from the ground. Assumes no chemical changes. Below 20% methane and 13% carbon dioxide relationship for landfill gas migration unclear. Arrow shows direction of dilution with fresh air
	Microbial respiration of organic material in soil. Zero methane and low flow. (Direct consumption of oxygen to produce carbon dioxide)
	Potentially indicative of methane outgassing from groundwater to borehole headspace (Hydrock dataset).
	Potentially indicative of microbial degradation of LNAPL vapours in unsaturated zone. (Hydrock dataset)
	Indicative of a landfill gas source (e.g 60% CH <sub>4</sub> / 40% CO <sub>2</sub> )
	Indicative of geogenic gas (e.g mine-workings)
	Fresh air

### Additional Notes

A direct linear downwards relationship between CO<sub>2</sub> and O<sub>2</sub> indicates depletion of oxygen to produce carbon dioxide via microbial respiration using the following equation:  
 $CH_2O + O_2 \rightarrow CO_2 + H_2O$  In this scenario CO<sub>2</sub> + O<sub>2</sub> should be around 21% (i.e. the O<sub>2</sub> concentration in the atmosphere)

There may also be trace amounts of methane up to about 3% caused by anaerobic decomposition in small anaerobic hotspots or the reduction of carbon dioxide by methanogens. Oxygen concentrations may be depleted but in this scenario oxygen deficient air is not likely to be emitted quickly from the ground and it does not pose a risk.

After: Wilson et al, 2018. Ground Gas Information Sheet No. 1  
 Hydrock datasets (methane outgassing / LNAPL vapour degradation)

# Appendix G Contamination test results and GQRA

## *Contamination test results*





**Nathan Thompson**  
Hydrock Consultants Ltd  
Nunn Mill Rd  
Northampton  
NN1 5PA

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

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

**e:** Group Northampton cc engineer

## **Analytical Report Number : 23-64799**

<b>Project / Site name:</b>	Bicester Motion	<b>Samples received on:</b>	23/10/2023
<b>Your job number:</b>	27280	<b>Samples instructed on/ Analysis started on:</b>	25/10/2023
<b>Your order number:</b>	PO29514	<b>Analysis completed by:</b>	03/11/2023
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	03/11/2023
<b>Samples Analysed:</b>	1 soil sample		

**Signed:** 

Joanna Szwagrzak  
Junior Reporting Specialist  
**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.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.



4041



Environmental Science

**i2 Analytical**7 Woodshots Meadow  
Croxley Green Business Park  
Watford, WD18 8YS

Telephone: 01923 225404

Fax: 01923 237404

email:reception@i2analytical.com

Certificate of Analysis									
BS 3882:2015 Specification For Topsoil									
Pass BS 3882 for Multipurpose Topsoil; Calcareous;							client		
Report No:	23-64799						Hydrock Consultants Ltd		
Location	Bicester Motion								
Lab Reference (Sample Number)	2857193								
Sampling Date	12/10/2023								
Sample ID	TP110								
Depth (m)	0.10			Compliant with range (Y/N)					
Soil texture	<2mm fraction	unit	Result	Multi-P	Acid	Calc	Low-F	Low-F(a)	Low-F(c)
		%m/m	CLAY LOAM	Y	Y	Y	Y	Y	Y
Maximum coarse fragment content:	>2mm	%m/m	2.40	Y	Y	Y	Y	Y	Y
	>20mm	%m/m	0.00	Y	Y	Y	Y	Y	Y
	>50mm	%m/m	0.00	Y	Y	Y	Y	Y	Y
Mass loss on ignition		%	8.70						
	Clay 5-20%		-	-	-	-	-	-	-
	Clay 20-35%		Y	Y	Y	Y	Y	Y	Y
Soil pH:		pH	8.00	Y	N	Y	Y	N	Y
Carbonate:		%m/m	7.00	-	-	Y	-	-	Y
Available plant nutrients	Nitrogen	%m/m	0.38	Y	Y	Y	-	-	-
	Extractable Phosphate (as P)	mg/l	29.00	Y	Y	Y	N	N	N
	Extractable Potassium	mg/l	134.00	Y	Y	Y	-	-	-
	Extractable Magnesium	mg/l	66.00	Y	Y	Y	-	-	-
Carbon: Nitrogen Ratio:		:1	14.00	Y	Y	Y	Y	Y	Y
Conductivity		us/cm	1700.00	Y	-	-	-	-	-
Phytotoxic contaminants:	** Total Zinc	mg/kg	120.00	Y	Y	Y	Y	Y	Y
	** Total Copper	mg/kg	23.00	Y	Y	Y	Y	Y	Y
	** Total Nickel	mg/kg	32.00	Y	Y	Y	Y	Y	Y
Visible contaminants:	>2mm	%m/m	0.00	Y	Y	Y	Y	Y	Y
	Plastics	%m/m	0.00	Y	Y	Y	Y	Y	Y
	Sharps	no. in 1 kg	0.00	Y	Y	Y	Y	Y	Y
Compliance:				Pass	Fail	Pass	Fail	Fail	Fail

Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and I2 cannot be held responsible for any discrepancies with current legislation

\*\* = MCERTS accredited



**Analytical Report Number : 23-64799**  
**Project / Site name: Bicester Motion**

\* 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 *
2857193	TP110	None Supplied	0.1	Brown loam and sand with gravel and vegetation.

**Analytical Report Number : 23-64799**  
**Project / Site name: Bicester Motion**

**Water matrix abbreviations:**

**Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Geotechnical Testing in Soil	See attached geotechnical report	See attached geotechnical report		W	NONE
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
Textural Classification Diagram	Textural classification Diagram	BS3882:2015		D	NONE
Carbon to Nitrogen Ratio (Topsoil - BS3882:2015)	Carbon to Nitrogen ratio (:1) calculated using Loss on Ignition.	BS3882:2015	L01TS2015	W	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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
Kjeldahl nitrogen in soil	Determination of total nitrogen using the Kjeldahl-digestion method and colorimetric determination.	In house method based on BS 7755-3.7:1995 &	L087-PL	D	NONE
Topsoil		BS 3882: 2015	PL		NONE
Mass loss on ignition (Topsoil - BS3882)	Determination of Loss on Ignition as per BS 3882:2015.	BS3882:2015	L047-PL	D	NONE
Carbonate (Topsoil - BS3882)	Determination of Carbonate as per BS 3882:2015.	BS3882:2015	L034-PL	D	NONE
Phosphorus as PO4 (BS3882/BS8601)	Determination of the extractable phosphorus in soil, in accordance with BS3882:2007 methodology.	BS3882:2015 & BS8601:2013	L048-PL	D	NONE
Coarse Fragment and Contaminant Analysis	Determination of >2mm contaminants	BS3882:2007 & BS8601:2013 & PAS 100:2005	L01TS	D	NONE
Nitrogen (TKN)	Determination of total nitrogen by Kjeldahl method.	BS3882:2007	L087-PL	D	NONE
Conductivity (BS3882/BS8601)	Determination of the conductivity of soil in accordance with BS 3882:2007 methodology	BS3882:2007 & BS8601:2013	L099-PL	D	NONE
pH (BS3882/BS8601)	Determination of the pH of soil in accordance with BS 3882:2007 methodology	BS3882:2007 & BS8601:2013	L099-PL	D	NONE
Extractable/Available Metals (BS3882/BS8601)	Determination of the extractable metals in soil, in accordance with BS3882:2007 methodology.	BS3882:2007 & BS8601:2013	L038-PL	D	NONE

Analytical Report Number : 23-64799  
 Project / Site name: Bicester Motion

**Water matrix abbreviations:**

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sodium (exchangeable %)	Determination of exchangeable sodium (%) by calculation, in accordance with BS3882:2007 methodology.	BS3882:2007	L038-PL	D	NONE
Textural Classification	Determination of the textural classification of soil following BS3882:2015 methodology.	BS3882:2015 & BS8601:2013	L01TS	D	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' 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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.



**Nathan Thompson**  
Hydrock Consultants Ltd  
2-4 Hawthorne Park  
Holdenby Road  
Spratton  
Northamptonshire  
NN6 8LD

**t:** 01604842888  
**f:** 01604842666  
**e:** nathanthompson@hydrock.com

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 : 23-64537**

<b>Project / Site name:</b>	Bicester Motion	<b>Samples received on:</b>	23/10/2023
<b>Your job number:</b>	27280	<b>Samples instructed on/ Analysis started on:</b>	23/10/2023
<b>Your order number:</b>	PO29514	<b>Analysis completed by:</b>	31/10/2023
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	31/10/2023
<b>Samples Analysed:</b>	1 bulk sample - 15 soil samples		

**Signed:** 

Izabela Wójcik  
Reporting Specialist  
**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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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-64537  
 Project / Site name: Bicester Motion  
 Your Order No: PO29514

Lab Sample Number	2855531	2855532	2855533	2855534	2855535			
Sample Reference	TP102	TP103	TP103	TP103	TP103			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)	0.30	0.10	0.50	1.70	3.00			
Date Sampled	11/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023			
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	%	0.01	NONE	8.4	14	7.2	10	19
Total mass of sample received	kg	0.001	NONE	0.8	0.8	0.9	0.9	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KWB	KWB	KWB	KWB	KWB

#### General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.2	8.2	8.4	8.2	7.6
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0359	0.0331	0.0216	0.0441	0.744
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.0096	0.032	0.01	0.0073	0.026

#### Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.2	1.5	0.09	0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.16	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.4	3.7	0.31	0.13	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.34	3.3	0.33	0.11	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.23	2.6	0.25	0.08	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.33	3.9	0.28	0.11	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.51	6.6	0.47	0.11	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.18	2.3	0.16	0.08	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.31	4.6	0.36	0.11	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.27	4.2	0.2	0.07	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.9	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.42	5.5	0.28	0.07	< 0.05

#### Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	3.19	39.2	2.73	0.92	< 0.80
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#### Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	20	51	16	19	12
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.9	4	0.75	0.71	1
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	0.5	0.9	0.4	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	17	39	18	18	22
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	40	19	18	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	56	600	140	29	18
Lead (aqua regia extractable)	mg/kg	1	MCERTS	130	1500	45	19	15
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	20	74	17	19	25
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	47	85	43	47	56

Analytical Report Number: 23-64537  
 Project / Site name: Bicester Motion  
 Your Order No: PO29514

Lab Sample Number	2855531	2855532	2855533	2855534	2855535			
Sample Reference	TP102	TP103	TP103	TP103	TP103			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)	0.30	0.10	0.50	1.70	3.00			
Date Sampled	11/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023			
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	250	1500	56	41	51

**Monoaromatics & Oxygenates**

Compound	Units	Limit of detection	Accreditation Status					
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	-	-	-

**Petroleum Hydrocarbons**

Parameter	Units	Limit of detection	Accreditation Status					
TPH-CWG - Aliphatic >EC5 - EC6 <sub>HS,1D,AL</sub>	mg/kg	0.02	NONE	< 0.020	< 0.020	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8 <sub>HS,1D,AL</sub>	mg/kg	0.02	NONE	< 0.020	< 0.020	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10 <sub>HS,1D,AL</sub>	mg/kg	0.05	NONE	< 0.050	< 0.050	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12 <sub>EH,CU,1D,AL</sub>	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16 <sub>EH,CU,1D,AL</sub>	mg/kg	2	MCERTS	< 2.0	< 2.0	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21 <sub>EH,CU,1D,AL</sub>	mg/kg	8	MCERTS	< 8.0	< 8.0	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35 <sub>EH,CU,1D,AL</sub>	mg/kg	8	MCERTS	< 8.0	26	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35 <sub>EH,CU,1D,AL</sub>	mg/kg	10	MCERTS	< 10	26	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44 <sub>EH,CU,1D,AL</sub>	mg/kg	8.4	NONE	< 8.4	35	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35) <sub>EH,CU+HS,1D,AL</sub>	mg/kg	10	NONE	< 10	26	-	-	-
TPH-CWG - Aliphatic (EC5 - EC44) <sub>EH,CU+HS,1D,AL</sub>	mg/kg	10	NONE	< 10	62	-	-	-

Parameter	Units	Limit of detection	Accreditation Status					
TPH-CWG - Aromatic >EC5 - EC7 <sub>HS,1D,AR</sub>	mg/kg	0.01	NONE	< 0.010	< 0.010	-	-	-
TPH-CWG - Aromatic >EC7 - EC8 <sub>HS,1D,AR</sub>	mg/kg	0.01	NONE	< 0.010	< 0.010	-	-	-
TPH-CWG - Aromatic >EC8 - EC10 <sub>HS,1D,AR</sub>	mg/kg	0.05	NONE	< 0.050	< 0.050	-	-	-
TPH-CWG - Aromatic >EC10 - EC12 <sub>EH,CU,1D,AR</sub>	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
TPH-CWG - Aromatic >EC12 - EC16 <sub>EH,CU,1D,AR</sub>	mg/kg	2	MCERTS	< 2.0	< 2.0	-	-	-
TPH-CWG - Aromatic >EC16 - EC21 <sub>EH,CU,1D,AR</sub>	mg/kg	10	MCERTS	< 10	13	-	-	-
TPH-CWG - Aromatic >EC21 - EC35 <sub>EH,CU,1D,AR</sub>	mg/kg	10	MCERTS	< 10	120	-	-	-
TPH-CWG - Aromatic > EC35 - EC44 <sub>EH,CU,1D,AR</sub>	mg/kg	8.4	NONE	< 8.4	81	-	-	-
TPH-CWG - Aromatic (EC5 - EC35) <sub>EH,CU+HS,1D,AR</sub>	mg/kg	10	NONE	< 10	130	-	-	-
TPH-CWG - Aromatic (EC5 - EC44) <sub>EH,CU+HS,1D,AR</sub>	mg/kg	10	NONE	< 10	210	-	-	-

TPH Total C5 - C44 <sub>EH,CU+HS,1D,TOTAL</sub>	mg/kg	10	NONE	< 10	270	-	-	-
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number: 23-64537  
 Project / Site name: Bicester Motion  
 Your Order No: PO29514

Lab Sample Number	2855536	2855537	2855538	2855539	2855540			
Sample Reference	TP105	TP107	TP108	TP109	TP110			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)	0.10	0.10	0.10	0.80	0.30			
Date Sampled	11/10/2023	12/10/2023	12/10/2023	12/10/2023	12/10/2023			
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	%	0.01	NONE	13	14	15	6	7.9
Total mass of sample received	kg	0.001	NONE	0.9	0.8	0.9	0.8	0.9

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KWB	KWB	KWB	KWB	KWB

#### General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8	8	8	8.3	7.9
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0143	0.0568	0.0152	0.0116	0.0119
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.025	0.029	0.038	0.0035	0.014

#### Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.06	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.07	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.23	0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.17	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.69	2.2	0.56	0.55	0.6
Anthracene	mg/kg	0.05	MCERTS	0.16	0.67	0.12	0.05	0.1
Fluoranthene	mg/kg	0.05	MCERTS	1.8	6.8	1.1	0.69	0.7
Pyrene	mg/kg	0.05	MCERTS	1.7	6.6	1	0.58	0.61
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.89	3.6	0.47	0.18	0.24
Chrysene	mg/kg	0.05	MCERTS	1	3.9	0.58	0.28	0.29
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.2	5.5	0.65	0.25	0.3
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.62	2.1	0.33	0.14	0.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1	4.9	0.52	0.19	0.24
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.52	2.5	0.31	0.11	0.12
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.13	0.46	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.64	2.9	0.36	0.13	0.15

#### Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	10.3	42.6	6.11	3.15	3.45
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#### Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	16	17	11	20
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.64	0.66	0.68	0.45	0.88
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	1	< 0.2	0.3	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6	< 0.2	0.6	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	15	16	18	10	22
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	17	18	11	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	14	14	10	18
Lead (aqua regia extractable)	mg/kg	1	MCERTS	33	37	29	7.8	25
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	16	16	17	11	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	44	41	44	37	56

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Lab Sample Number	2855536	2855537	2855538	2855539	2855540			
Sample Reference	TP105	TP107	TP108	TP109	TP110			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)	0.10	0.10	0.10	0.80	0.30			
Date Sampled	11/10/2023	12/10/2023	12/10/2023	12/10/2023	12/10/2023			
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	70	66	140	22	74

**Monoaromatics & Oxygenates**

Compound	Units	Limit of detection	Accreditation Status	2855536	2855537	2855538	2855539	2855540
Benzene	µg/kg	5	MCERTS	-	< 5.0	-	-	< 5.0
Toluene	µg/kg	5	MCERTS	-	< 5.0	-	-	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	-	< 5.0	-	-	< 5.0
p & m-xylene	µg/kg	5	MCERTS	-	< 5.0	-	-	< 5.0
o-xylene	µg/kg	5	MCERTS	-	< 5.0	-	-	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	< 5.0	-	-	< 5.0

**Petroleum Hydrocarbons**

Parameter	Units	Limit of detection	Accreditation Status	2855536	2855537	2855538	2855539	2855540
TPH-CWG - Aliphatic >EC5 - EC6 <sub>HS,1D,AL</sub>	mg/kg	0.02	NONE	-	< 0.020	-	-	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 <sub>HS,1D,AL</sub>	mg/kg	0.02	NONE	-	< 0.020	-	-	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 <sub>HS,1D,AL</sub>	mg/kg	0.05	NONE	-	< 0.050	-	-	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 <sub>EH,CU,1D,AL</sub>	mg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 <sub>EH,CU,1D,AL</sub>	mg/kg	2	MCERTS	-	< 2.0	-	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 <sub>EH,CU,1D,AL</sub>	mg/kg	8	MCERTS	-	< 8.0	-	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 <sub>EH,CU,1D,AL</sub>	mg/kg	8	MCERTS	-	< 8.0	-	-	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35 <sub>EH,CU,1D,AL</sub>	mg/kg	10	MCERTS	-	< 10	-	-	< 10
TPH-CWG - Aliphatic > EC35 - EC44 <sub>EH,CU,1D,AL</sub>	mg/kg	8.4	NONE	-	< 8.4	-	-	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35) <sub>EH,CU+HS,1D,AL</sub>	mg/kg	10	NONE	-	< 10	-	-	< 10
TPH-CWG - Aliphatic (EC5 - EC44) <sub>EH,CU+HS,1D,AL</sub>	mg/kg	10	NONE	-	< 10	-	-	< 10

Parameter	Units	Limit of detection	Accreditation Status	2855536	2855537	2855538	2855539	2855540
TPH-CWG - Aromatic >EC5 - EC7 <sub>HS,1D,AR</sub>	mg/kg	0.01	NONE	-	< 0.010	-	-	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 <sub>HS,1D,AR</sub>	mg/kg	0.01	NONE	-	< 0.010	-	-	< 0.010
TPH-CWG - Aromatic >EC8 - EC10 <sub>HS,1D,AR</sub>	mg/kg	0.05	NONE	-	< 0.050	-	-	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 <sub>EH,CU,1D,AR</sub>	mg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 <sub>EH,CU,1D,AR</sub>	mg/kg	2	MCERTS	-	2.8	-	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 <sub>EH,CU,1D,AR</sub>	mg/kg	10	MCERTS	-	14	-	-	< 10
TPH-CWG - Aromatic >EC21 - EC35 <sub>EH,CU,1D,AR</sub>	mg/kg	10	MCERTS	-	31	-	-	< 10
TPH-CWG - Aromatic > EC35 - EC44 <sub>EH,CU,1D,AR</sub>	mg/kg	8.4	NONE	-	< 8.4	-	-	< 8.4
TPH-CWG - Aromatic (EC5 - EC35) <sub>EH,CU+HS,1D,AR</sub>	mg/kg	10	NONE	-	48	-	-	< 10
TPH-CWG - Aromatic (EC5 - EC44) <sub>EH,CU+HS,1D,AR</sub>	mg/kg	10	NONE	-	51	-	-	< 10

TPH Total C5 - C44 <sub>EH,CU+HS,1D,TOTAL</sub>	mg/kg	10	NONE	-	51	-	-	< 10
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Lab Sample Number	2855541	2855542	2855543	2855544	2855545			
Sample Reference	TP111	TP113	WS101	WS104	WS110			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)	0.70	0.10	0.40	0.05	0.35			
Date Sampled	12/10/2023	12/10/2023	11/10/2023	10/10/2023	11/10/2023			
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	%	0.01	NONE	7.6	14	11	11	8.9
Total mass of sample received	kg	0.001	NONE	0.8	0.9	0.9	0.9	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS	EWS	EWS	EWS

#### General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.3	8.3	8	8.1	8
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0267	0.228	0.0167	0.0092	0.0089
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.0063	0.04	0.011	0.023	0.017

#### Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.51	0.1	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.39	0.06	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.17	3.4	0.25	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.12	2.6	0.17	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	2.3	43	2.9	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.26	7.2	1.4	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	2.9	53	13	0.06	0.07
Pyrene	mg/kg	0.05	MCERTS	2.5	44	13	0.07	0.07
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.94	23	7	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	1.1	23	7.1	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.1	25	8.3	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.61	11	3	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.99	23	7.3	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.5	10	3.4	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.08	1.9	0.71	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.49	10	3.7	< 0.05	< 0.05

#### Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	14.1	281	71	< 0.80	< 0.80
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#### Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	31	15	19	33
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.81	2.1	1.3	0.78	0.68
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	2.3	0.4	< 0.2	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.5	1.7	0.6	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	33	29	37	19	26
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	34	30	38	20	27
Copper (aqua regia extractable)	mg/kg	1	MCERTS	75	65	47	16	30
Lead (aqua regia extractable)	mg/kg	1	MCERTS	160	53	130	22	21
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.6	< 0.3	0.4	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	23	26	20	19
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	35	57	74	52	50

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Lab Sample Number	2855541			2855542			2855543			2855544			2855545		
Sample Reference	TP111			TP113			WS101			WS104			WS110		
Sample Number	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Depth (m)	0.70			0.10			0.40			0.05			0.35		
Date Sampled	12/10/2023			12/10/2023			11/10/2023			10/10/2023			11/10/2023		
Time Taken	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status												
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	210	160	150	66	57							

**Monoaromatics & Oxygenates**

Compound	Units	Limit of detection	Accreditation Status	2855541	2855542	2855543	2855544	2855545
Benzene	µg/kg	5	MCERTS	-	-	-	-	< 5.0
Toluene	µg/kg	5	MCERTS	-	-	-	-	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	-	< 5.0
p & m-xylene	µg/kg	5	MCERTS	-	-	-	-	< 5.0
o-xylene	µg/kg	5	MCERTS	-	-	-	-	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	-	< 5.0

**Petroleum Hydrocarbons**

Parameter	Units	Limit of detection	Accreditation Status	2855541	2855542	2855543	2855544	2855545
TPH-CWG - Aliphatic >EC5 - EC6 <sub>HS,1D,AL</sub>	mg/kg	0.02	NONE	-	-	-	-	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 <sub>HS,1D,AL</sub>	mg/kg	0.02	NONE	-	-	-	-	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 <sub>HS,1D,AL</sub>	mg/kg	0.05	NONE	-	-	-	-	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 <sub>EH,CU,1D,AL</sub>	mg/kg	1	MCERTS	-	-	-	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 <sub>EH,CU,1D,AL</sub>	mg/kg	2	MCERTS	-	-	-	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 <sub>EH,CU,1D,AL</sub>	mg/kg	8	MCERTS	-	-	-	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 <sub>EH,CU,1D,AL</sub>	mg/kg	8	MCERTS	-	-	-	-	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35 <sub>EH,CU,1D,AL</sub>	mg/kg	10	MCERTS	-	-	-	-	< 10
TPH-CWG - Aliphatic > EC35 - EC44 <sub>EH,CU,1D,AL</sub>	mg/kg	8.4	NONE	-	-	-	-	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35) <sub>EH,CU+HS,1D,AL</sub>	mg/kg	10	NONE	-	-	-	-	< 10
TPH-CWG - Aliphatic (EC5 - EC44) <sub>EH,CU+HS,1D,AL</sub>	mg/kg	10	NONE	-	-	-	-	< 10

Parameter	Units	Limit of detection	Accreditation Status	2855541	2855542	2855543	2855544	2855545
TPH-CWG - Aromatic >EC5 - EC7 <sub>HS,1D,AR</sub>	mg/kg	0.01	NONE	-	-	-	-	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 <sub>HS,1D,AR</sub>	mg/kg	0.01	NONE	-	-	-	-	< 0.010
TPH-CWG - Aromatic >EC8 - EC10 <sub>HS,1D,AR</sub>	mg/kg	0.05	NONE	-	-	-	-	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 <sub>EH,CU,1D,AR</sub>	mg/kg	1	MCERTS	-	-	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 <sub>EH,CU,1D,AR</sub>	mg/kg	2	MCERTS	-	-	-	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 <sub>EH,CU,1D,AR</sub>	mg/kg	10	MCERTS	-	-	-	-	< 10
TPH-CWG - Aromatic >EC21 - EC35 <sub>EH,CU,1D,AR</sub>	mg/kg	10	MCERTS	-	-	-	-	< 10
TPH-CWG - Aromatic > EC35 - EC44 <sub>EH,CU,1D,AR</sub>	mg/kg	8.4	NONE	-	-	-	-	< 8.4
TPH-CWG - Aromatic (EC5 - EC35) <sub>EH,CU+HS,1D,AR</sub>	mg/kg	10	NONE	-	-	-	-	< 10
TPH-CWG - Aromatic (EC5 - EC44) <sub>EH,CU+HS,1D,AR</sub>	mg/kg	10	NONE	-	-	-	-	< 10

TPH Total C5 - C44 <sub>EH,CU+HS,1D,TOTAL</sub>	mg/kg	10	NONE	-	-	-	-	< 10
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



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Project / Site name: Bicester Motion

Your Order No: PO29514

Lab Sample Number				2855546
Sample Reference				WS108
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				10/10/2023
Time Taken				None Supplied
Analytical Parameter (Bulk Analysis)	Units	Limit of detection	Accreditation Status	

Asbestos Identification	Type	N/A	ISO 17025	Chrysotile-Asbestos Cement
Asbestos Analyst ID	N/A	N/A	N/A	EWS

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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\* 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 *
2855531	TP102	None Supplied	0.3	Brown sandy loam with gravel and vegetation.
2855532	TP103	None Supplied	0.1	Brown loam and sand with gravel and vegetation.
2855533	TP103	None Supplied	0.5	Brown sand with gravel.
2855534	TP103	None Supplied	1.7	Brown clay and sand with gravel.
2855535	TP103	None Supplied	3	Grey clay.
2855536	TP105	None Supplied	0.1	Brown loam and clay with gravel and vegetation.
2855537	TP107	None Supplied	0.1	Brown loam and sand with gravel and vegetation.
2855538	TP108	None Supplied	0.1	Brown loam and sand with gravel and vegetation.
2855539	TP109	None Supplied	0.8	Brown clay and sand with gravel.
2855540	TP110	None Supplied	0.3	Brown loam and sand with gravel and vegetation.
2855541	TP111	None Supplied	0.7	Brown clay and sand with gravel.
2855542	TP113	None Supplied	0.1	Brown loam and sand with gravel and vegetation.
2855543	WS101	None Supplied	0.4	Brown clay and sand with gravel.
2855544	WS104	None Supplied	0.05	Brown loam and clay with gravel and vegetation.
2855545	WS110	None Supplied	0.35	Brown loam and clay with gravel and vegetation.

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**Water matrix abbreviations:**

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L038-PL	D	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
Asbestos identification in Bults	Asbestos Identification in bulk material with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	W	ISO 17025
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion 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
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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	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
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. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	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
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	In-house method	L064-PL	D	NONE
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS

Analytical Report Number : 23-64537  
 Project / Site name: Bicester Motion

**Water matrix abbreviations:**

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Fraction Organic Carbon FOC Automated	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method	L009	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' 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 30°C.

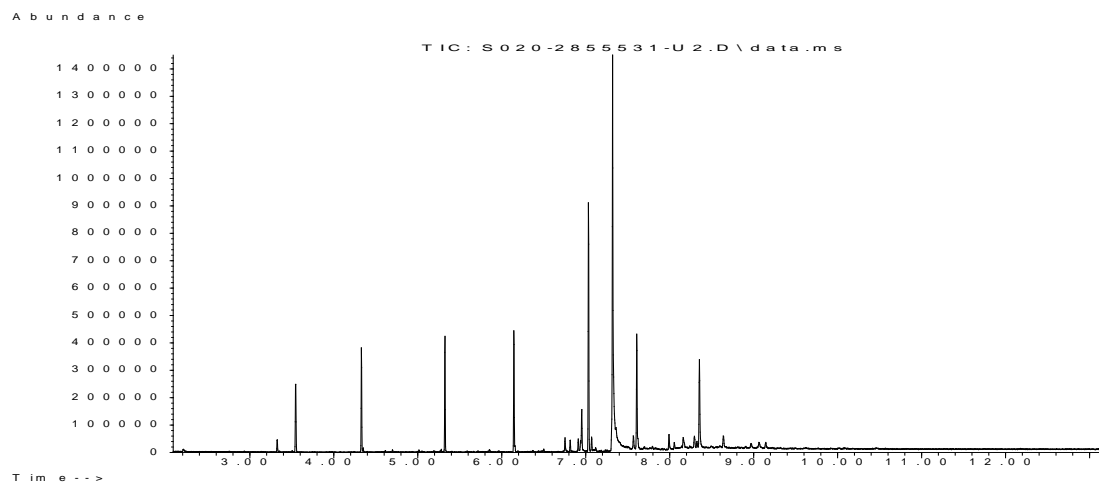
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

### Information in Support of Analytical Results

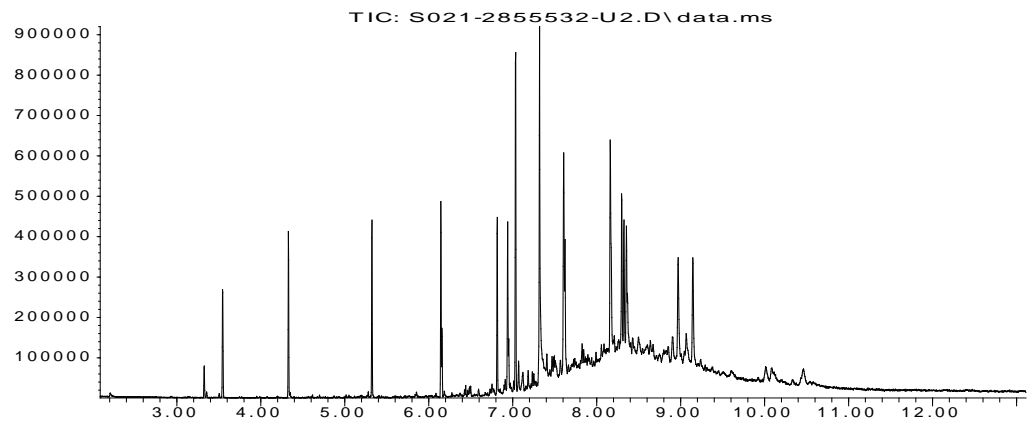
#### List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

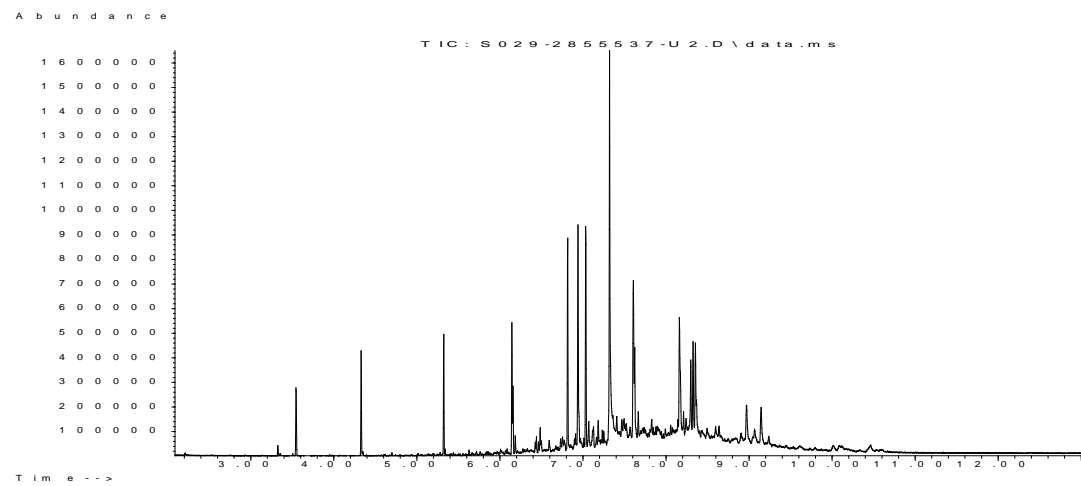


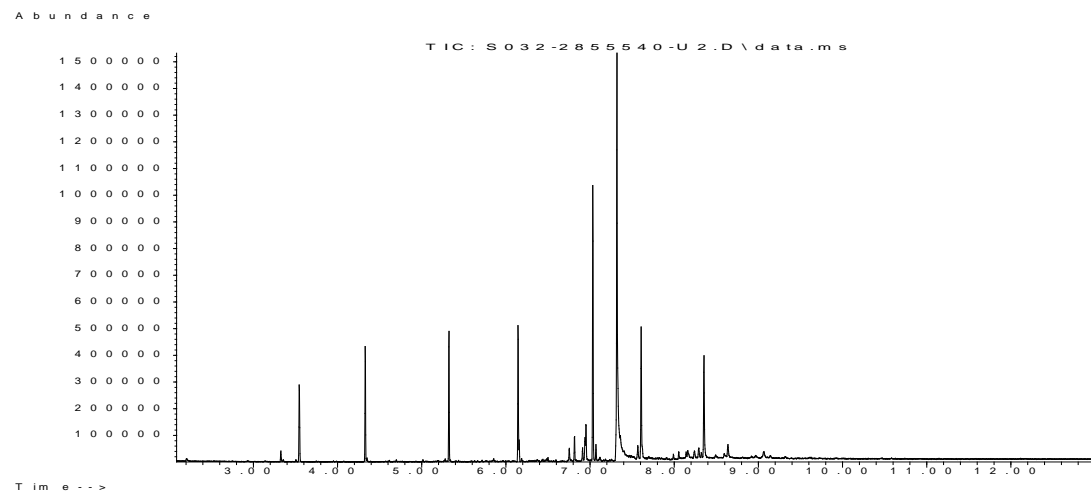


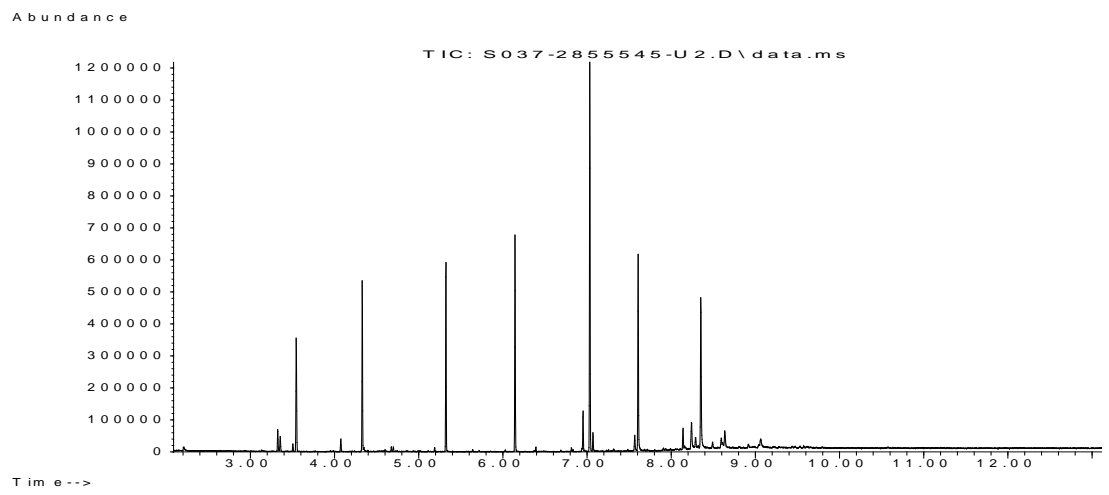
Abundance



Time-->







## Sample Deviation Report



**Analytical Report Number : 23-64537**

**Project / Site name: Bicester Motion**

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP102	None Supplied	S	2855531	c	Free cyanide in soil	L080-PL	c
TP103	None Supplied	S	2855532	c	Free cyanide in soil	L080-PL	c
TP103	None Supplied	S	2855533	c	Free cyanide in soil	L080-PL	c
TP103	None Supplied	S	2855534	c	Free cyanide in soil	L080-PL	c
TP103	None Supplied	S	2855535	c	Free cyanide in soil	L080-PL	c
TP105	None Supplied	S	2855536	c	Free cyanide in soil	L080-PL	c
TP107	None Supplied	S	2855537	c	Free cyanide in soil	L080-PL	c
TP108	None Supplied	S	2855538	c	Free cyanide in soil	L080-PL	c
TP109	None Supplied	S	2855539	c	Free cyanide in soil	L080-PL	c
TP110	None Supplied	S	2855540	c	Free cyanide in soil	L080-PL	c
TP111	None Supplied	S	2855541	c	Free cyanide in soil	L080-PL	c
TP113	None Supplied	S	2855542	c	Free cyanide in soil	L080-PL	c
WS101	None Supplied	S	2855543	c	Free cyanide in soil	L080-PL	c
WS104	None Supplied	S	2855544	c	Free cyanide in soil	L080-PL	c
WS110	None Supplied	S	2855545	c	Free cyanide in soil	L080-PL	c



**Nathan Thompson**  
Hydrock Consultants Ltd  
Nunn Mill Rd  
Northampton  
NN1 5PA

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

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

**e:** Group Northampton cc engineer

## **Analytical Report Number : 23-64797**

<b>Project / Site name:</b>	Bicester Motion	<b>Samples received on:</b>	23/10/2023
<b>Your job number:</b>	27280	<b>Samples instructed on/ Analysis started on:</b>	25/10/2023
<b>Your order number:</b>	PO29514	<b>Analysis completed by:</b>	01/11/2023
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	01/11/2023
<b>Samples Analysed:</b>	2 soil samples		

**Signed:** 

Joanna Szwagrzak  
Junior Reporting Specialist  
**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.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-64797  
 Project / Site name: Bicester Motion  
 Your Order No: PO29514

Lab Sample Number				2857190	2857191
Sample Reference				A1	A2
Sample Number				None Supplied	None Supplied
Depth (m)				0.00	0.00
Date Sampled				10/10/2023	10/10/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	84	85
Moisture Content	%	0.01	NONE	0.33	0.31
Total mass of sample received	kg	0.001	NONE	2	2

#### Phenols by HPLC

Compound	mg/kg	Limit of detection	Accreditation Status	2857190	2857191
Catechol	mg/kg	0.1	MCERTS	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	MCERTS	0.23	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	MCERTS	1.1	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	MCERTS	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	MCERTS	< 0.10	< 0.10
Phenol	mg/kg	0.1	MCERTS	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	MCERTS	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	MCERTS	< 0.30	< 0.30

#### Total Phenols

Parameter	mg/kg	Limit of detection	Accreditation Status	2857190	2857191
Total Phenols (HPLC)	mg/kg	1.3	NONE	< 1.3	< 1.3

#### Speciated PAHs

Compound	mg/kg	Limit of detection	Accreditation Status	2857190	2857191
Naphthalene	mg/kg	0.05	MCERTS	2.1	2.4
Acenaphthylene	mg/kg	0.05	MCERTS	9.9	0.37
Acenaphthene	mg/kg	0.05	MCERTS	15	2.2
Fluorene	mg/kg	0.05	MCERTS	12	2.9
Phenanthrene	mg/kg	0.05	MCERTS	300	12
Anthracene	mg/kg	0.05	MCERTS	71	4.8
Fluoranthene	mg/kg	0.05	MCERTS	300	12
Pyrene	mg/kg	0.05	MCERTS	230	11
Benzo(a)anthracene	mg/kg	0.05	MCERTS	100	4.3
Chrysene	mg/kg	0.05	MCERTS	110	4.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	110	4.7
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	37	2.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	86	4.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	47	2.2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	11	0.61
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	52	2.7

#### Total PAH

Parameter	mg/kg	Limit of detection	Accreditation Status	2857190	2857191
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1490	73.4

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



**Analytical Report Number : 23-64797**  
**Project / Site name: Bicester Motion**

\* 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 *
2857190	A1	None Supplied	0	Brown sand with gravel and stones.
2857191	A2	None Supplied	0	Brown sand with gravel and stones.

**Analytical Report Number : 23-64797**  
**Project / Site name: Bicester Motion**

**Water matrix abbreviations:**

**Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Phenols, speciated, in soil, by HPLC	Determination of speciated phenols by HPLC.	In house method based on Blue Book Method.	L030-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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. Refer to CoA for analyte specific accreditation.	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

**For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).**

**For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).**

**For method numbers ending in 'PL or B' 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.**

**Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.**

## Sample Deviation Report



**Analytical Report Number : 23-64797**

**Project / Site name: Bicester Motion**

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
A1	None Supplied	S	2857190	b	Phenols, speciated, in soil, by HPLC	L030-PL	b
A1	None Supplied	S	2857190	b	Speciated EPA-16 PAHs in soil	L064-PL	b
A2	None Supplied	S	2857191	b	Phenols, speciated, in soil, by HPLC	L030-PL	b
A2	None Supplied	S	2857191	b	Speciated EPA-16 PAHs in soil	L064-PL	b

# TEST CERTIFICATE

**SPECIFICATION FOR TOPSOIL**  
Tested in Accordance with: BS 3882: 2015

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



Environmental Science

Client: Hydrock Consultants Ltd  
Client Address: Nunn Mill Rd, Northampton,  
NN1 5PA

Client Reference: 27280  
Job Number: 23-64799-1  
Date Sampled: 12/10/2023  
Date Received: 23/10/2023  
Date Tested: 30/10/2023  
Sampled By: Not Given

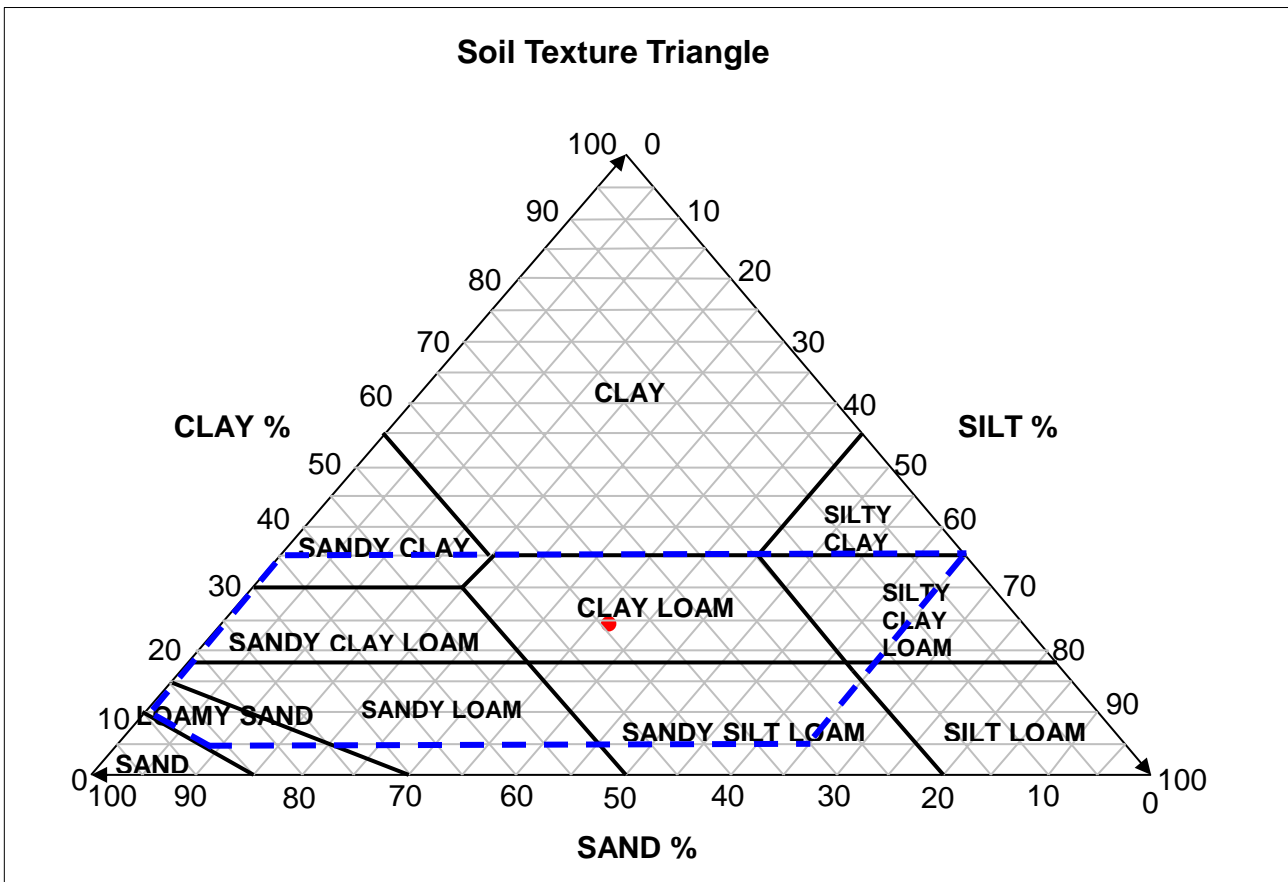
Contact: Nathan Thompson  
Site Address: Bicester Motion

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

**Test Results:**

Laboratory Reference: 2857193  
Hole No.: TP110  
Sample Reference: Not Given  
Sample Description: CLAY LOAM

Depth Top [m]: 0.10  
Depth Base [m]: Not Given  
Sample Type: D



Sample Proportion	% dry mass
Sand	39.6
Silt	35.0
Clay	25.4

Texture within acceptable area (Y/N)  Y

Remarks:

Signed:

Monika Janoszek  
PL Environmental & Geotechnical Lab Production Specialist  
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

## GAC derivation

### Background

Initially, the Hydrock GAC were derived following the publishing of soil guideline values (SGV), toxicological (TOX) reports and associated publications by the Environment Agency (EA) in 2009 referenced under Science Report SC050021 (EA, 2009a, b, c, d). The Hydrock GAC have then been periodically updated following publication of new information on toxicological, physico-chemical, land use or receptor parameters, namely:

- » LQM/CIEH, 2009. LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment, second edition. Nathaniel, C. P., McCaffrey, C., Ashmore, M., Cheng, Y., Gillet, A. G., Ogden, R. C. and Scott, D.
- » CL:AIRE, 2010. 'The EIC/AGS/CL:AIRE Soil Generic Assessment Criteria for Human Health Risk Assessment'. Environmental Industries Commission, The Association of Geotechnical and Geoenvironmental Specialists and Contaminated Land: Applications in Real Environment.
- » CL:AIRE, 2014. 'Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination', Revision 2, DEFRA research project SP1010. Contaminated Land: Applications in Real Environment.
- » LQM/CIEH, 2015. 'The LQM/CIEH S4ULs for Human Health Risk Assessment'. Nathaniel, C. P., McCaffrey, C., Gillet, A. G., Ogden, R. C. and Nathaniel, J. F.
- » CL:AIRE, 2021. 'C4SL Phase 2 Technical Reports'. Contaminated Land: Applications in Real Environment.

### Land use scenarios

Hydrock has derived generic assessment criteria (GAC) for human health based on the six exposure scenarios defined in CL:AIRE (2014) using generic default assumptions from published guidance. GAC for each exposure scenario have been derived for three soil organic matter (SOM) contents, 1%, 2.5% and 6%.

All GAC have been rounded to two significant figures.

### Exposure parameters

The exposure parameters used for the Hydrock GAC are the default parameters stated in SR3, unless updated in CL:AIRE (2014) where the CL:AIRE (2014) values have been adopted.

### Approach to consumption rates

Hydrock have adopted the 90<sup>th</sup> percentile consumption rates from Table 3.4 of CL:AIRE (2014) for all produce types. This is noted to be more conservative than the "top two" approach taken in the derivation of C4SLs.

### Approach to plant uptake for GAC omitted in CL:AIRE (2010)

Plant uptake factors were not identified in CL:AIRE (2010) for antimony, barium and molybdenum. Hydrock has sourced the required parameter values from ORNL (1984) in order to derive GAC that are inclusive of the homegrown produce exposure pathway.

### Chemical and toxicity parameters

The chemical and toxicity parameters have been adopted based on the following documents:

- » IRIS, 2016. 'Toxicological Review of Trimethylbenzenes'. Integrated Risk Information System, National Centre for Environmental Assessment, office of Research and Development, U.S. Environmental Protection Agency.
- » LQM/CIEH, 2015.

- » ORNL, 1984. 'ORNL-5786. A Review and Analysis of Parameters for Assessing Transport of Environmentally released Radionuclides through Agriculture'. Oak Ridge National Laboratory.
- » CL:AIRE, 2010.
- » RIVM, 2001. RIVM Report 711701 025 'HCV Re-evaluation of human-toxicological maximum-permissible risk levels'. National Institute of Public Health and the Environment.
- » LQM/CIEH, 2009.
- » EA, 2009a.

### Approach to Cyanide GAC

The Hydrock GAC for free cyanide have been derived based on ingestion of a bolus of contaminated soil. The GAC are derived for acute exposure of a child (0-6 years old) for all land uses except commercial, where the GAC are derived for acute exposure of an adult (16-65 years old). For the purpose of GQRA, the child value may be adopted for all land use scenarios.

For complex cyanide, the GAC have been derived based on chronic exposure, using the default exposure scenarios but excluding the consumption of homegrown produce, soil attached to homegrown produce, indoor vapour and outdoor vapour pathways. The chronic health criteria value (HCV) for complex cyanide is based on the EA (2009a) HCV for free cyanide and the ratio of toxicity between free and complex cyanide proposed by RIVM (2001).

### Approach to Phenol GAC

In accordance with the EA Science Report SC050021 / Phenol SGV, a  $GAC_{ing/inh}$  has been derived for ingested and inhaled phenol using the CLEA model, with a  $GAC_{derm}$  derived for dermal contact using Equation 5.7 within SR3. The lower of the  $GAC_{ing/inh}$  and  $GAC_{derm}$  has been adopted as the final GAC.

### Approach to PCB GAC

GAC for assessing the non-dioxin-like risk from PCBs have been based on the "Dutch 7". As the TDI used by the authors of the Dutch guidance is for the sum of the 7 individual congeners, the TDI has been divided by 7 to create a TDI for each congener. The non-dioxin-like risk from PCBs is therefore assessed using a Hazard Index approach as for total petroleum hydrocarbons (TPH).

### Sub-surface soil to indoor air correction factors

Reflecting the approach taken by the Environment Agency in the development of revised SGV in 2009 for BTEX, a sub-surface soil to indoor air correction factor of 10 has been applied for petroleum hydrocarbons in order to account for over-prediction of vapour intrusion into building using the Johnson and Ettinger approach.

The correction factor of 10 has been applied to the following petroleum hydrocarbons (it makes negligible difference to less volatile TPH and PAH compounds):

- » TPHCWG fractions, namely aliphatic EC>5-44 and aromatic EC>6-44;
- » PAHs (acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene), benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h,)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene, pyrene);
- » BTEX;
- » Isopropylbenzene;
- » Propylbenzene;
- » 1,2,4- and 1,3,5-trimethylbenzene; and
- » Styrene.

## Approach to saturation limits

The CLEA model includes a traffic light colour system to highlight when saturated soil conditions have potentially been exceeded for the vapour pathways during calculation of assessment criteria. The colours represent:

- » Green: the assessment criteria do not exceed the saturated soil concentration.
- » Amber: the assessment criteria exceed the saturated soil concentration but the contribution of the indoor and outdoor vapour pathway to total exposure is less than 10% and will not significantly affect the assessment criteria.
- » Red: the assessment criteria exceed the saturated soil concentration and the contribution of the indoor and outdoor vapour pathway to total exposure is greater than 10% and will significantly affect the assessment criteria.

Hydrock have not applied any further calculations or assessment in relation to saturation limits during GAC derivation, with the CLEA-modelled GAC being presented as the GAC. Consideration of saturation limits is undertaken during the data assessment stage.

## References

CL:AIRE, 2010. 'The EIC/AGS/CL:AIRE Soil Generic Assessment Criteria for Human Health Risk Assessment'. Environmental Industries Commission, The Association of Geotechnical and Geo-environmental Specialists and Contaminated Land: Applications in Real Environment.

CL:AIRE, 2014. 'Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination', Revision 2, DEFRA research project SP1010. Contaminated Land: Applications in Real Environment

CL:AIRE, 2021. C4SL Phase 2 Technical Reports for tetrachloroethene, trichloroethene and vinyl chloride. Contaminated Land: Applications in Real Environment.

EA, 2009a. 'Science Reports SC050021 – SGV and TOX reports for: benzene, toluene, ethylbenzene, xylene, arsenic, nickel, mercury, selenium, cadmium, inorganic cyanide, phenol, dioxins, furans and dioxin-like PCBs'; 'Supplementary information for the derivation of SGV for: benzene, toluene, ethylbenzene, xylene, arsenic, nickel, mercury, selenium, cadmium, inorganic cyanide, phenol, dioxins, furans and dioxin-like PCBs', and 'Contaminants in soil: updated collation of toxicological data and intake values for humans: benzene, toluene, ethylbenzene, xylene, arsenic, nickel, mercury, selenium, cadmium, inorganic cyanide, phenol, dioxins, furans and dioxin-like PCBs'. Environment Agency.

EA, 2009b. 'Science Report – SC050021/SR2. Human health toxicological assessment of contaminants in soil'. Environment Agency.

EA, 2009c. 'Science Report – SC050021/SR3. Updated technical background to the CLEA model'. Environment Agency.

EA, 2009d. 'Science Report – SC050021/SR4. CLEA Software (version 1.05) Handbook'. Environment Agency.

IRIS, 2016. 'Toxicological Review of Trimethylbenzenes'. Integrated Risk Information System, National Centre for Environmental Assessment, office of Research and Development, U.S. Environmental Protection Agency.

LQM/CIEH, 2009. LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment, second edition. Nathaniel, C. P., McCaffrey, C., Ashmore, M., Cheng, Y., Gillet, A. G., Ogden, R. C. and Scott, D.

LQM/CIEH, 2015. 'The LQM/CIEH S4ULs for Human Health Risk Assessment'. Nathaniel, C. P., McCaffrey, C., Gillet, A. G., Ogden, R. C. and Nathaniel, J. F.

ORNL, 1984. 'ORNL-5786. A Review and Analysis of Parameters for Assessing Transport of Environmentally released Radionuclides through Agriculture'. Oak Ridge National Laboratory.

RIVM, 2001. RIVM Report 711701 025 'HCV Re-evaluation of human-toxicological maximum-permissible risk levels'. National Institute of Public Health and the Environment.



*Human health GQRA*

## Assessment of Chemicals of Potential Concern to Human Health

Risk parameter: <b>Default - Human Health - commercial (2.5%SOM)</b>														Data Filters																
Client: Bicester Motion														Zone: <b>All</b>																
Site: Bicester Motion Innovation District														Strata: <b>NAT</b>																
Job no.: 27280														Depth Min (m bgl): <b>0.05</b>																
Lab. report no(s): 21-06268 (Ridge)														Depth Max (m bgl): <b>3</b>																
Dataset mean SOM%: <b>3.21</b>														Scenario SOM%: <b>2.5</b>																
All values in mg/kg unless otherwise stated																														
CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= GAC & > LoD	Soil Saturation Limit @2.5% SOM	GAC	GAC Source	Strata	Date	10/05/21	10/05/21	10/05/21	11/05/21	11/05/21	11/05/21	11/05/21	11/05/21	11/05/21	11/05/21	12/05/21	12/05/21	10/05/21	11/10/2023	12/10/2023
															Location	TP03	TP04	SA04	WS12	WS13	WS10	WS09	WS08	WS07	WS06	WS05	BH04	TP103	TP109	
														Depth (m bgl)	0.7	1.4	0.4	0.5	0.3	0.3	0.5	0.8	0.6	0.7	1	0.3	3	0.8		
-	<b>Asbestos</b>																													
P1020	Asbestos Identified	text	Y/N	40	-	-	-	-	No. of detects:	0	-	-	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Not-detected	Not-detected	
P188g	Asbestos Screen Name	text		6	-	-	-	-	-	-	-	-																		
P188o	Asbestos Containing Material Types Detected (ACM)	text		6	-	-	-	-	-	-	-	-																		
o	<b>Hydrock Default Suite - FOC / SOM / pH</b>																													
P1085	FOC (dimensionless)	ll	0.001	2	0.004	0.026	0.015	0.015	0.02	-	-	-																	0.026	0.0035
-	SOM (calculated)	%	0.1724	14	0.60	5.30	3.21	3.10	1.56	-	-	-		4	3.5	5.3	5.2	1.4	1.1	2.4	2.7	2.6	4.3	2.3	5	4.4824	0.6034			
P1334	pH (su)	pH Units	0.1	14	7.60	8.50	8.19	8.25	0.27	-	-	-		8.4	8.4	8.5	8.5	7.8	8.1	8	8.4	8.1	8.2	8	8.3	8.3	7.6	8.3		
-	<b>Hydrock Default Suite - Metals &amp; PAH</b>																													
7440-38-2	Arsenic	mg/kg	1	14	9.00	30.00	18.50	17.00	7.60	0	NR	640	C4SL - CLAIRE 2014	14	19	15	20	29	28	29	12	19	12	19	30	9	12	11		
7440-41-7	Beryllium	mg/kg	0.06	2	0.45	1.00	0.73	0.73	0.39	0	NR	12	Hydrock Derived														1	0.45		
7440-42-8	Boron	mg/kg	0.2	2	0.30	0.80	0.55	0.55	0.35	0	NR	240000	Hydrock Derived														0.8	0.3		
7440-43-9	Cadmium	mg/kg	0.2	14	0.20	1.20	0.45	0.30	0.33	0	NR	410	C4SL - CLAIRE 2014	<0.2	<0.2	0.7	0.9	1.2	0.4	0.8	0.3	0.3	<0.2	0.5	<0.2	<0.2	<0.2			
18065-83-1	Chromium (III)	mg/kg	1	2	10.00	22.00	16.00	16.00	8.49	0	NR	8400	Hydrock Derived														22	10		
18540-29-9	Chromium (VI)	mg/kg	1.8	14	1.80	2.00	1.97	2.00	0.07	0	NR	49	C4SL - CLAIRE 2014	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1.8	<1.8		
7440-47-3	Chromium (Total)	mg/kg	1	14	6.00	22.00	13.50	10.50	6.45			-		8	9	8	10	22	21	22	7	12	10	21	6	22	11			
7440-50-8	Copper	mg/kg	1	14	9.00	38.00	16.57	15.00	8.41	0	NR	68000	Hydrock Derived	11	9	19	12	30	17	19	10	13	17	38	9	18	10			
7439-92-1	Lead	mg/kg	1	14	6.00	61.00	18.56	12.50	14.85	0	NR	2300	C4SL - CLAIRE 2014	9	12	8	8	27	32	28	6	12	21	61	13	15	7.8			
7439-97-6	Mercury, inorganic	mg/kg	0.3	14	0.30	1.00	0.90	1.00	0.25	0	NR	1100	Hydrock Derived	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.3	<0.3		
7440-02-0	Nickel	mg/kg	1	14	6.00	26.00	15.93	14.50	7.15	0	NR	980	Hydrock Derived	10	10	11	15	26	24	24	8	14	15	24	6	25	11			
7782-49-2	Selenium	mg/kg	1	14	1.00	3.00	2.71	3.00	0.73	0	NR	12000	Hydrock Derived	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<1	<1			
7440-62-2	Vanadium	mg/kg	1	2	37.00	56.00	46.50	46.50	13.44	0	NR	9000	Hydrock Derived														56	37		
7440-66-6	Zinc	mg/kg	1	14	10.00	107.00	42.50	26.00	32.43	0	NR	730000	Hydrock Derived	19	16	18	23	97	64	83	10	33	29	107	23	51	22			
P1095	Cyanide (free)	mg/kg	1	14	1.00	2.00	1.86	2.00	0.36	0	NR	24	Acute Risk - SoBRA 2020	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<1		
P1186	Total Phenols (Monohydric)	mg/kg	1	14	1.00	2.00	1.86	2.00	0.36	0	38058	690	Hydrock Derived	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<1			
83-32-9	Acenaphthene	mg/kg	0.05	14	0.05	0.10	0.09	0.10	0.02	0	141	110000	Hydrock Derived	<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	<0.05	<0.05		
208-96-8	Acenaphthylene	mg/kg	0.05	14	0.05	0.10	0.09	0.10	0.02	0	212	110000	Hydrock Derived	<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	<0.05	<0.05		
120-12-7	Anthracene	mg/kg	0.05	14	0.05	0.29	0.11	0.10	0.06	0	2.91	540000	Hydrock Derived	<0.1	<0.1	0.16	<0.1	<0.1	<0.1	<0.1	<0.1	0.29	<0.1	<0.1	<0.1	<0.1	<0.05	0.05		
56-55-3	Benzo(a)anthracene	mg/kg	0.05	14	0.05	0.90	0.19	0.10	0.22	0	4.28	180	Hydrock Derived	0.35	<0.1	0.9	<0.1	<0.1	<0.1	<0.1	0.12	0.27	<0.1	<0.1	<0.1	<0.1	<0.05	0.18		
50-32-8	Benzo(a)pyrene	mg/kg	0.05	14	0.05	1.26	0.23	0.10	0.31	0	2.28	77	C4SL - CLAIRE 2014	0.45	<0.1	1.26	<0.1	<0.1	<0.1	0.15	0.26	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	0.19		
205-99-2	Benzo(b)fluoranthene	mg/kg	0.05	14	0.05	1.78	0.28	0.10	0.45	0	3.04	45	Hydrock Derived	0.59	<0.1	1.78	0.12	<0.1	<0.1	0.18	0.31	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	0.25		
191-24-2	Benzo(ghi)perylene	mg/kg	0.05	14	0.05	0.85	0.17	0.10	0.20	0	0.04	3900	Hydrock Derived	0.3	<0.1	0.85	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	0.13		
207-08-9	Benzo(k)fluoranthene	mg/kg	0.05	14	0.05	0.50	0.14	0.10	0.11	0	1.72	1200	Hydrock Derived	0.19	<0.1	0.5	<0.1	<0.1	<0.1	<0.1	0.12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	0.14		
218-01-9	Chrysene	mg/kg	0.05	14	0.05	1.15	0.21	0.10	0.28	0	1.10	350	Hydrock Derived	0.35	<0.1	1.15	<0.1	<0.1	<0.1	<0.1	0.26	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	0.28		
53-70-3	Dibenz(a,h)anthracene	mg/kg	0.05	14	0.05	0.18	0.10	0.10	0.03	0	0.010	3.6	Hydrock Derived	<0.1	<0.1	0.18	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05		
206-44-0	Fluoranthene	mg/kg	0.05	14	0.05	2.15	0.42	0.10	0.58	0	47	23000	Hydrock Derived	0.76	<0.1	2.15	0.2	<0.1	<0.1	0.33	0.93	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	0.69		
86-73-7	Fluorene	mg/kg	0.05	14	0.05	0.10	0.09	0.10	0.02	0	77	72000	Hydrock Derived	<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	<0.05	<0.05		
193-39-5	Indeno(1,2,3-cd)pyrene	mg/kg	0.05	14	0.05	0.89	0.17	0.10	0.21	0	0.15	510	Hydrock Derived	0.28	<0.1	0.89	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	0.11		
91-20-3	Naphthalene	mg/kg	0.05	14	0.05	0.10	0.09	0.10	0.02	0	183	3900	Hydrock Derived	<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	<0.05	<0.05		
85-01-8	Phenanthrene	mg/kg	0.05	14	0.05	0.84	0.25	0.10	0.28	0	90	23000	Hydrock Derived	0.23	<0.1	0.84	0.12	<0.1	<0.1	0.17	0.84	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	0.55		
129-00-0	Pyrene	mg/kg	0.05	14	0.05	1.98	0.37	0.10	0.52	0	5.5	55000	Hydrock Derived	0.68	<0.1	1.98	0.17	<0.1	<0.1	0.3	0.77	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	0.58		
P1310	PAH 16 Total	mg/kg	0.8	14	0.80	12.60	2.80	1.60	2.99			-		4.2	<1.6	12.6	<1.6	<1.6	&											



Assessment of Chemicals of Potential Concern to Human Health

Risk parameter: Default - Human Health - commercial (2.5%SOM)														Data Filters						
Client: Bicester Motion														Zone: All						
Site: Bicester Motion Innovation District														Strata: MG						
Job no.: 27280														Depth Min (m bgl): 0.05						
Lab. report no(s): 21-06268 (Ridge)														Depth Max (m bgl): 3						
Dataset mean SOM%: 4.51														Scenario SOM%: 2.5						
All values in mg/kg unless otherwise stated														Date	11/05/21	11/05/21	12/05/21	12/10/2023	11/10/2023	11/10/2023
														Zone						
														Location	WS15	WS08	WS01	TP110	WS101	WS110
														Depth (m bgl)	0.3	0.3	0.2	0.3	0.4	0.35
CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= GAC & > LoD	Soil Saturation Limit @2.5% SOM	GAC	GAC Source	Strata	MG	MG	MG	MG	MG	MG
-	<b>Asbestos</b>																			
P1020	Asbestos Identified	text	Y/N	40	-	-	-	-	No. of detects:	0	-	-	-	N	N	N	Not-detected	Not-detected	Not-detected	
P188g	Asbestos Screen Name	text		6	-	-	-	-	-	-	-	-	-							
P188o	Asbestos Containing Material Types Detected (ACM)	text		6	-	-	-	-	-	-	-	-	-							
o	<b>Hydrock Default Suite - FOC / SOM / pH</b>																			
P1085	FOC (dimensionless)		0.001	3	0.011	0.017	0.014	0.014	0.00	-	-	-	-				0.014	0.011	0.017	
-	SOM (calculated)	%	0.1724	6	1.90	9.90	4.51	2.72	3.32	-	-	-	-	2.5	9.9	7.4	2.4136	1.8964	2.9308	
P1334	pH (su)	pH Units	0.1	6	7.90	8.20	8.00	8.00	0.11	-	-	-	-	7.9	8	8.2	7.9	8	8	
-	<b>Hydrock Default Suite - Metals &amp; PAH</b>																			
7440-38-2	Arsenic	mg/kg	1	6	9.00	33.00	19.67	17.50	8.94	0	NR	640	C4SL - CL:AIRE 2014	27	14	9	20	15	33	
7440-41-7	Beryllium	mg/kg	0.06	3	0.68	1.30	0.95	0.88	0.32	0	NR	12	Hydrock Derived				0.88	1.3	0.68	
7440-42-8	Boron	mg/kg	0.2	3	0.30	0.90	0.53	0.40	0.32	0	NR	240000	Hydrock Derived				0.3	0.4	0.9	
7440-43-9	Cadmium	mg/kg	0.2	6	0.20	11.20	2.17	0.40	4.43	0	NR	410	C4SL - CL:AIRE 2014	0.6	11.2	<0.2	<0.2	0.6	<0.2	
18065-83-1	Chromium (III)	mg/kg	1	3	22.00	37.00	28.33	26.00	7.77	0	NR	8400	Hydrock Derived				22	37	26	
18540-29-9	Chromium (VI)	mg/kg	1.8	6	1.80	2.00	1.90	1.90	0.11	0	NR	49	C4SL - CL:AIRE 2014	<2	<2	<2	<1.8	<1.8	<1.8	
7440-47-3	Chromium (Total)	mg/kg	1	6	7.00	38.00	22.33	23.00	10.44			-		24	16	7	22	38	27	
7440-50-8	Copper	mg/kg	1	6	12.00	91.00	36.50	25.50	29.34	0	NR	68000	Hydrock Derived	21	91	12	18	47	30	
7439-92-1	Lead	mg/kg	1	6	16.00	130.00	50.83	30.50	44.59	0	NR	2300	C4SL - CL:AIRE 2014	36	77	16	25	130	21	
7439-97-6	Mercury, inorganic	mg/kg	0.3	6	0.30	1.00	0.67	0.70	0.37	0	NR	1100	Hydrock Derived	<1	<1	<1	<0.3	0.4	<0.3	
7440-02-0	Nickel	mg/kg	1	6	7.00	26.00	18.67	20.50	6.83	0	NR	980	Hydrock Derived	23	15	7	22	26	19	
7782-49-2	Selenium	mg/kg	1	6	1.00	3.00	2.00	2.00	1.10	0	NR	12000	Hydrock Derived	<3	<3	<3	<1	<1	<1	
7440-62-2	Vanadium	mg/kg	1	3	50.00	74.00	60.00	56.00	12.49	0	NR	9000	Hydrock Derived				56	74	50	
7440-66-6	Zinc	mg/kg	1	6	26.00	150.00	90.00	88.50	46.50	0	NR	730000	Hydrock Derived	103	130	26	74	150	57	
P1095	Cyanide (free)	mg/kg	1	6	1.00	2.00	1.50	1.50	0.55	0	NR	24	Acute Risk - SoBRA 2020	<2	<2	<2	<1	<1	<1	
P1186	Total Phenols (Monohydric)	mg/kg	1	6	1.00	2.00	1.50	1.50	0.55	0	38058	690	Hydrock Derived	<2	<2	<2	<1	<1	<1	
83-32-9	Acenaphthene	mg/kg	0.05	6	0.05	2.07	0.44	0.10	0.80	0	141	110000	Hydrock Derived	<0.1	2.07	<0.1	<0.05	0.25	<0.05	
208-96-8	Acenaphthylene	mg/kg	0.05	6	0.05	0.51	0.15	0.08	0.18	0	212	110000	Hydrock Derived	<0.1	0.51	<0.1	<0.05	0.06	<0.05	
120-12-7	Anthracene	mg/kg	0.05	6	0.05	13.70	2.58	0.11	5.47	0	2.91	540000	Hydrock Derived	<0.1	13.7	0.12	0.1	1.4	<0.05	
56-55-3	Benz(a)anthracene	mg/kg	0.05	6	0.05	57.10	10.83	0.36	22.83	0	4.28	180	Hydrock Derived	<0.1	57.1	0.47	0.24	7	<0.05	
50-32-8	Benzo(a)pyrene	mg/kg	0.05	6	0.05	55.20	10.61	0.48	22.03	0	2.28	77	C4SL - CL:AIRE 2014	0.13	55.2	0.72	0.24	7.3	<0.05	
205-99-2	Benzo(b)fluoranthene	mg/kg	0.05	6	0.05	67.50	12.87	0.56	26.95	1	3.04	45	Hydrock Derived	0.23	67.5	0.82	0.3	8.3	<0.05	
191-24-2	Benzo(ghi)perylene	mg/kg	0.05	6	0.05	21.30	4.30	0.32	8.45	0	0.04	3900	Hydrock Derived	<0.1	21.3	0.49	0.15	3.7	<0.05	
207-08-9	Benzo(k)fluoranthene	mg/kg	0.05	6	0.05	20.50	4.00	0.19	8.16	0	1.72	1200	Hydrock Derived	<0.1	20.5	0.27	0.1	3	<0.05	
218-01-9	Chrysene	mg/kg	0.05	6	0.05	45.50	8.93	0.43	18.12	0	1.10	350	Hydrock Derived	<0.1	45.5	0.56	0.29	7.1	<0.05	
53-70-3	Dibenz(a,h)anthracene	mg/kg	0.05	6	0.05	3.93	0.82	0.10	1.54	1	0.010	3.6	Hydrock Derived	<0.1	3.93	<0.1	<0.05	0.71	<0.05	
206-44-0	Fluoranthene	mg/kg	0.05	6	0.07	101.00	19.35	0.85	40.31	0	47	23000	Hydrock Derived	0.35	101	1	0.7	13	0.07	
86-73-7	Fluorene	mg/kg	0.05	6	0.05	2.39	0.48	0.10	0.94	0	77	72000	Hydrock Derived	<0.1	2.39	<0.1	<0.05	0.17	<0.05	
193-39-5	Indeno(1,2,3-cd)pyrene	mg/kg	0.05	6	0.05	25.60	4.96	0.31	10.19	0	0.15	510	Hydrock Derived	<0.1	25.6	0.5	0.12	3.4	<0.05	
91-20-3	Naphthalene	mg/kg	0.05	6	0.05	0.29	0.12	0.10	0.09	0	183	3900	Hydrock Derived	<0.1	0.29	<0.1	<0.05	0.1	<0.05	
85-01-8	Phenanthrene	mg/kg	0.05	6	0.05	42.40	7.76	0.52	17.00	0	90	23000	Hydrock Derived	0.18	42.4	0.44	0.6	2.9	<0.05	
129-00-0	Pyrene	mg/kg	0.05	6	0.07	88.60	17.25	0.76	35.31	0	5.5	55000	Hydrock Derived	0.32	88.6	0.91	0.61	13	0.07	
P1310	PAH 16 Total	mg/kg	0.8	6	0.80	547.00	105.03	4.88	218.23			-		<1.6	547	6.3	3.45	71	<0.8	
o	<b>TPH fractions</b>																			
P1407	TPH ali EC05-EC06	mg/kg	0.001	5	0.01	0.02	0.01	0.01	0.005	0	558	5900	Hydrock Derived	<0.01	<0.01	<0.01	<0.02		<0.02	
P1408	TPH ali >EC06-EC08	mg/kg	0.001	5	0.02	0.05	0.04	0.05	0.016	0	322	17000	Hydrock Derived	<0.05	<0.05	<0.05	<0.02		<0.02	
P1409	TPH ali >EC08-EC10	mg/kg	0.001	5	0.05	2.00	1.22	2.00	1.068	0	190	4800	Hydrock Derived	<2	<2	<2	<0.05		<0.05	
P1410	TPH ali >EC10-EC12	mg/kg	1	5	1.00	2.00	1.60	2.00	0.55	0	118	23000	Hydrock Derived	<2	<2	<2	<1		<1	
P1411	TPH ali >EC12-EC16	mg/kg	2	5	2.00	7.00	3.40	3.00	2.07	0	59	82000	Hydrock Derived	<3	7	<3	<2		<2	
P1412	TPH ali >EC16-EC21	mg/kg	8	5	3.00	38.00	12.00	8.00	14.75			-		<3	38	<3	<8		<8	
P1413	TPH ali >EC21-EC35	mg/kg	8	5	8.00	61.00	19.40	10.00	23.28			-		<10	61	<10	<8		<8	
P1938	TPH ali >EC16-EC35	mg/kg	10	2	10.00	10.00	10.00	10.00	0.00	0	21	1700000	Hydrock Derived				<10		<10	

## Assessment of Chemicals of Potential Concern to Human Health

Risk parameter:	Default - Human Health - commercial (2.5%SOM)																		
Client:	Bicester Motion										Data Filters								
Site:	Bicester Motion Innovation District										Zone		All						
Job no.:	27280										Strata		MG						
Lab. report no(s).:	21-06268 (Ridge)										Depth Min (m bgl)		0.05						
											Depth Max (m bgl)		3						
											Dataset mean SOM%		4.51						
											Scenario SOM%		2.5						
All values in mg/kg unless otherwise stated																			
CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= GAC & > LoD	Soil Saturation Limit @2.5% SOM	GAC	GAC Source	Strata	Date				
P1415	TPH ali >EC35-EC44	mg/kg	8.4	2	8.40	8.40	8.40	8.40	0.00	0	21	1700000	Hydrock Derived	MG	11/05/21				
P1418	TPH ali >EC5-EC35	mg/kg	10	5	10.00	106.00	33.60	21.00	40.84			-		MG	11/05/21				
P1420	TPH ali >EC5-EC44	mg/kg	10	2	10.00	10.00	10.00	10.00	0.00			-		MG	12/05/21				
P1441	TPH aro EC05-EC07	mg/kg	0.001	5	0.01	0.01	0.01	0.01	0.00	0	2265	46000	Hydrock Derived	MG	12/10/2023				
P1355	TPH aro >EC07-EC08	mg/kg	0.001	5	0.01	0.05	0.03	0.05	0.02	0	1916	110000	Hydrock Derived	MG	11/10/2023				
P1356	TPH aro >EC08-EC10	mg/kg	0.001	5	0.05	2.00	1.22	2.00	1.07	0	1503	8100	Hydrock Derived	MG	11/10/2023				
P1357	TPH aro >EC10-EC12	mg/kg	1	5	1.00	2.00	1.60	2.00	0.55	0	899	28000	Hydrock Derived	MG	11/10/2023				
P1358	TPH aro >EC12-EC16	mg/kg	2	5	2.00	15.00	4.60	2.00	5.81	0	419	37000	Hydrock Derived	MG	11/10/2023				
P1359	TPH aro >EC16-EC21	mg/kg	10	5	3.00	236.00	52.40	10.00	102.70	0	134	28000	Hydrock Derived	MG	11/10/2023				
P1360	TPH aro >EC21-EC35	mg/kg	10	5	10.00	595.00	136.20	10.00	257.25	0	12	28000	Hydrock Derived	MG	11/10/2023				
P1362	TPH aro >EC35-EC44	mg/kg	8.4	2	8.40	8.40	8.40	8.40	0.00	0	12	28000	Hydrock Derived	MG	11/10/2023				
P1365	TPH aro >EC5-EC35	mg/kg	10	5	10.00	847.00	189.40	21.00	368.16			-		MG	11/10/2023				
P1941	TPH aro >EC5-EC44	mg/kg	10	2	10.00	10.00	10.00	10.00	0.00			-		MG	11/10/2023				
P1373	Total TPH >EC5-EC44	mg/kg	10	5	10.00	953.00	214.80	42.00	413.21			-		MG	11/10/2023				
<b>o VOCs - BTEX &amp; MTBE</b>																			
71-43-2	Benzene	mg/kg	1	5	0.00	0.01	0.00	0.00	0.00	0	2265	50	C4SL - CLAIRE 2014	MG	11/05/21				
108-88-3	Toluene	mg/kg	1	5	0.01	0.01	0.01	0.01	0.00	0	1916	110000	Hydrock Derived	MG	11/05/21				
100-41-4	Ethylbenzene	mg/kg	1	5	0.00	0.01	0.00	0.00	0.00	0	1216	13000	Hydrock Derived	MG	11/05/21				
95-47-6	Xylene, o-	mg/kg	1	5	0.00	0.01	0.00	0.00	0.00	0	1120	15000	Hydrock Derived	MG	11/05/21				
1330-20-7	Xylene, p- (or combined m & p)	mg/kg	1	5	0.00	0.01	0.00	0.00	0.00	0	1353	14000	Hydrock Derived	MG	11/05/21				
1634-04-4	MTBE	mg/kg	1	5	0.01	0.01	0.01	0.01	0.00	0	33075	12000	Hydrock Derived	MG	11/05/21				
<b>TPH Additivity Check</b>																			
<b>HAZARD QUOTIENTS FOR EACH FRACTION</b>																			
														Aliphatics >EC5-EC6	1.69492E-06	1.69492E-06	1.69492E-06	3.38983E-06	3.38983E-06
														Aliphatics >EC6-EC8	2.94118E-06	2.94118E-06	2.94118E-06	1.17647E-06	1.17647E-06
Considered additive														Aliphatics >EC8-EC10	0.000416667	0.000416667	0.000416667	1.04167E-05	1.04167E-05
														Aliphatics >EC10-EC12	8.69565E-05	8.69565E-05	8.69565E-05	4.34783E-05	4.34783E-05
														Aliphatics >EC12-EC16	3.65854E-05	8.53659E-05	3.65854E-05	2.43902E-05	2.43902E-05
														Aliphatics >EC16-EC35				5.88235E-06	5.88235E-06
														Aliphatics >EC35-EC44				4.94118E-06	4.94118E-06
														Aromatics EC5-EC7	2.17391E-07	2.17391E-07	2.17391E-07	2.17391E-07	2.17391E-07
														Aromatics >EC7-EC8	4.54545E-07	4.54545E-07	4.54545E-07	9.09091E-08	9.09091E-08
Considered additive														Aromatics >EC8-EC10	0.000246914	0.000246914	0.000246914	6.17284E-06	6.17284E-06
														Aromatics >EC10-EC12	7.14286E-05	7.14286E-05	7.14286E-05	3.57143E-05	3.57143E-05
														Aromatics >EC12-EC16	5.40541E-05	0.000405405	5.40541E-05	5.40541E-05	5.40541E-05
Considered additive														Aromatics >EC16-EC21	0.000107143	0.008428571	0.000107143	0.000357143	0.000357143
														Aromatics >EC21-EC35	0.000357143	0.02125	0.002	0.000357143	0.000357143
														Aromatics >EC35-EC44				0.0003	0.0003
														<b>Hazard Index for ali&gt;C8-C16</b>	<b>0.000540209</b>	<b>0.000588989</b>	<b>0.000540209</b>	<b>7.82852E-05</b>	<b>7.82852E-05</b>
Hazard Index table - HI or HQ greater than 1 highlighted with orange shading.														<b>Hazard Index for aro&gt;C8-C16</b>	<b>0.000372396</b>	<b>0.000723748</b>	<b>0.000372396</b>	<b>9.59412E-05</b>	<b>9.59412E-05</b>
														<b>Hazard Index for aro&gt;C16-C35</b>	<b>0.000464286</b>	<b>0.029678571</b>	<b>0.002107143</b>	<b>0.000714286</b>	<b>0.000714286</b>

Legend:	Symbol	Description	Value
MG-LF	Made Ground - Landfill	<0.02	Value below the laboratory reporting limit and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
MG-TS	Made Ground - Topsoil	0.02	Value greater than, or equal to, the generic assessment criterion (GAC).
MG	Made Ground	<10	Value excluded from statistical analysis
NAT	Natural Soils	y	Text result
		-	Represents a determinand that was not tested.
		*	represents a data point that is not included in the current filter settings

Template Version:  
1.06: 20/07/23

Assessment of Chemicals of Potential Concern to Human Health

Risk parameter: Default - Human Health - commercial (2.5%SOM)														Data Filters														
Client: Bicester Motion														Zone: All														
Site: Bicester Motion Innovation District														Strata: MG-LF														
Job no.: 27280														Depth Min (m bgl): 0.05														
Lab. report no(s): 21-06268 (Ridge)														Depth Max (m bgl): 3														
Dataset mean SOM%: 4.56														Scenario SOM%: 2.5														
All values in mg/kg unless otherwise stated																												
CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= GAC & > LoD	Soil Saturation Limit @2.5% SOM	GAC	GAC Source	Strata	Date	10/05/21	12/05/21	12/05/21	12/05/21	12/05/21	12/05/21	12/05/21	12/05/21	11/10/2023	11/10/2023	11/10/2023	12/10/2023	
-	Asbestos																											
P1020	Asbestos Identified	text	Y/N	40	-	-	-	-	No. of detects:	3	-	-	-		Y	Y	N	Y	N	N	N	N	N	Not-detected	Not-detected	Not-detected	Not-detected	
P188g	Asbestos Screen Name	text		6	-	-	-	-	-						Chrysotile	Amosite		Chrysotile										
P1885	Asbestos Quant. (Stage 2)	%	0.001	3	0.002	0.010	0.005	0.003	No. > LOD:	3	-	-	-		0.002	0.003		0.01										
P188o	Asbestos Containing Material Types Detected (ACM)	text		6	-	-	-	-	-						Fibres	Fibres		Fibres										
o	Hydrock Default Suite - FOC / SOM / pH																											
P1085	FOC (dimensionless)	l	0.001	4	0.006	0.010	0.008	0.008	0.00		-	-	-											0.0096	0.01	0.0073	0.0063	
-	SOM (calculated)	%	0.1724	10	1.09	12.80	4.56	3.20	4.00		-	-	-		2.7	9.2	3.7	12.8	3.7	7.8	1.65504	1.724	1.25852	1.08612				
P1334	pH (su)	pH Units	0.1	10	7.70	8.40	8.11	8.20	0.23		-	-	-		8.3	7.8	8	7.7	8	8.2	8.2	8.2	8.2	8.4	8.2	8.2	8.3	
-	Hydrock Default Suite - Metals & PAH																											
7440-38-2	Arsenic	mg/kg	1	10	15.00	56.00	25.40	20.50	13.83	0	NR	640	C4SL - CL:AIRE 2014		21	45	23	56	24	15	20	16	19	15				
7440-41-7	Beryllium	mg/kg	0.06	4	0.71	0.90	0.79	0.78	0.08	0	NR	12	Hydrock Derived										0.9	0.75	0.71	0.81		
7440-42-8	Boron	mg/kg	0.2	4	0.20	0.90	0.45	0.35	0.31	0	NR	240000	Hydrock Derived										0.3	0.9	0.4	<0.2		
7440-43-9	Cadmium	mg/kg	0.2	10	0.20	5.40	1.43	0.45	2.02	0	NR	410	C4SL - CL:AIRE 2014		0.4	5	0.5	5.4	0.4	0.5	<0.2	<0.2	<0.2	1.5				
16065-83-1	Chromium (III)	mg/kg	1	4	17.00	33.00	21.50	18.00	7.68	0	NR	8400	Hydrock Derived										17	18	18	33		
18540-29-9	Chromium (VI)	mg/kg	1.8	10	1.80	2.00	1.92	2.00	0.10	0	NR	49	C4SL - CL:AIRE 2014		<2	<2	<2	<2	<2	<2	<2	<2	<1.8	<1.8	<1.8	<1.8		
7440-47-3	Chromium (Total)	mg/kg	1	10	10.00	41.00	23.00	19.50	10.01		-	-			16	41	20	35	20	10	17	19	18	34				
7440-50-8	Copper	mg/kg	1	10	16.00	517.00	115.80	63.00	153.58	0	NR	68000	Hydrock Derived		22	209	24	517	70	16	56	140	29	75				
7439-92-1	Lead	mg/kg	1	10	19.00	16200.00	1832.00	145.00	5054.57	1	NR	2300	C4SL - CL:AIRE 2014		54	16200	766	498	421	27	130	45	19	160				
7439-97-6	Mercury, inorganic	mg/kg	0.3	10	0.30	1.20	0.77	1.00	0.36	0	NR	1100	Hydrock Derived		<1	<1	<1	1.2	<1	<1	<0.3	<0.3	<0.3	0.6				
7440-02-0	Nickel	mg/kg	1	10	11.00	56.00	27.40	20.50	15.53	0	NR	980	Hydrock Derived		18	51	21	56	39	11	20	17	19	22				
7782-49-2	Selenium	mg/kg	1	10	1.00	3.00	2.20	3.00	1.03	0	NR	12000	Hydrock Derived		<3	<3	<3	<3	<3	<3	<3	<3	<1	<1	<1	<1		
7440-62-2	Vanadium	mg/kg	1	4	35.00	47.00	43.00	45.00	5.66	0	NR	9000	Hydrock Derived										47	43	47	35		
7440-66-6	Zinc	mg/kg	1	10	35.00	1200.00	314.10	97.00	439.33	0	NR	730000	Hydrock Derived		91	1070	103	1200	85	35	250	56	41	210				
P1095	Cyanide (free)	mg/kg	1	10	1.00	2.00	1.60	2.00	0.52	0	NR	24	Acute Risk - SoBRA 2020		<2	<2	<2	<2	<2	<2	<2	<2	<1	<1	<1	<1		
P1186	Total Phenols (Monohydric)	mg/kg	1	10	1.00	2.00	1.60	2.00	0.52	0	38058	690	Hydrock Derived		<2	<2	<2	<2	<2	<2	<2	<2	<1	<1	<1	<1		
83-32-9	Acenaphthene	mg/kg	0.05	10	0.05	0.18	0.11	0.10	0.05	0	141	110000	Hydrock Derived		0.16	0.18	0.18	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	0.17				
208-96-8	Acenaphthylene	mg/kg	0.05	10	0.05	0.10	0.08	0.10	0.03	0	212	110000	Hydrock Derived		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05				
120-12-7	Anthracene	mg/kg	0.05	10	0.05	0.93	0.28	0.10	0.33	0	2.91	540000	Hydrock Derived		0.35	0.84	0.93	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	0.26			
56-55-3	Benz(a)anthracene	mg/kg	0.05	10	0.08	3.81	1.07	0.48	1.37	0	4.28	180	Hydrock Derived		0.76	3.81	3.44	0.46	0.25	0.5	0.23	0.25	0.08	0.94				
50-32-8	Benzo(a)pyrene	mg/kg	0.05	10	0.11	4.10	1.18	0.60	1.36	0	2.28	77	C4SL - CL:AIRE 2014		0.65	4.1	3.17	0.55	0.3	1.21	0.31	0.36	0.11	0.99				
205-99-2	Benzo(b)fluoranthene	mg/kg	0.05	10	0.11	5.36	1.52	0.91	1.73	0	3.04	45	Hydrock Derived		0.96	5.36	3.96	0.86	0.44	1.45	0.51	0.47	0.11	1.1				
191-24-2	Benzo(ghi)perylene	mg/kg	0.05	10	0.07	2.44	0.67	0.40	0.70	0	0.04	3900	Hydrock Derived		0.37	2.44	1.15	0.38	0.2	0.87	0.42	0.28	0.07	0.49				
207-08-9	Benzo(k)fluoranthene	mg/kg	0.05	10	0.08	1.78	0.52	0.24	0.56	0	1.72	1200	Hydrock Derived		0.24	1.78	1.25	0.24	0.14	0.48	0.18	0.16	0.08	0.61				
218-01-9	Chrysene	mg/kg	0.05	10	0.11	4.18	1.19	0.62	1.46	0	1.10	350	Hydrock Derived		0.72	4.18	3.62	0.6	0.34	0.63	0.33	0.28	0.11	1.1				
53-70-3	Dibenz(a,h)anthracene	mg/kg	0.05	10	0.05	0.49	0.15	0.10	0.14	0	0.010	3.6	Hydrock Derived		<0.1	0.49	0.29	<0.1	<0.1	0.14	<0.05	<0.05	<0.05	0.08				
206-44-0	Fluoranthene	mg/kg	0.05	10	0.13	8.44	2.47	0.88	3.17	0	47	23000	Hydrock Derived		2.01	8.09	8.44	1.04	0.66	0.72	0.4	0.31	0.13	2.9				
86-73-7	Fluorene	mg/kg	0.05	10	0.05	0.23	0.12	0.10	0.06	0	77	72000	Hydrock Derived		0.18	0.17	0.23	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	0.12				
193-39-5	Indeno(1,2,3-cd)pyrene	mg/kg	0.05	10	0.07	2.59	0.68	0.40	0.77	0	0.15	510	Hydrock Derived		0.41	2.59	1.35	0.38	0.2	0.87	0.27	0.2	0.07	0.5				
91-20-3	Naphthalene	mg/kg	0.05	10	0.05	0.31	0.10	0.10	0.08	0	183	3900	Hydrock Derived		<0.1	0.31	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05				
85-01-8	Phenanthrene	mg/kg	0.05	10	0.05	4.23	1.26	0.33	1.56	0	90	23000	Hydrock Derived		1.45	3.48	4.23	0.44	0.21	0.15	0.2	0.09	0.05	2.3				
129-00-0	Pyrene	mg/kg	0.05	10	0.11	7.00	2.11	0.87	2.61	0	5.5	55000	Hydrock Derived		1.73	7	6.73	0.91	0.62	0.83	0.34	0.33	0.11	2.5				
P1310	PAH 16 Total	mg/kg	0.8	10	0.92	44.80	13.17	6.85	15.69			-		10	44.8	39	5.9	3.3	7.8	3.19	2.73	0.92	14.1					
o	TPH fractions																											
P1407	TPH ali ECo5-EC06	mg/kg	0.001	7	0.01	0.02	0.01	0.01	0.004	0	558	5900	Hydrock Derived		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02					
P1408	TPH ali >ECo6-EC08	mg/kg	0.001	7	0.02	0.05	0.05	0.05	0.011	0	322	17000	Hydrock Derived		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02					
P1409	TPH ali >ECo8-EC10	mg/kg	0.001	7	0.05	2.00	1.72	2.00	0.737	0	190	4800	Hydrock Derived		<2	<2	<2	<2	<2	<2	<2	<0.05						



## Assessment of Chemicals of Potential Concern to Human Health

Risk parameter: <b>Default - Human Health - commercial (6%SOM)</b>														Data Filters												
Client: Bicester Motion														Zone: <b>All</b>												
Site: Bicester Motion Innovation District														Strata: <b>MG-TS</b>												
Job no.: 27280														Depth Min (m bgl): <b>0.05</b>												
Lab. report no(s): 21-06268 (Ridge)														Depth Max (m bgl): <b>3</b>												
Dataset mean SOM%: <b>6.80</b>														Scenario SOM%: <b>6</b>												
All values in mg/kg unless otherwise stated																										
CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= GAC & > LoD	Soil Saturation Limit @6% SOM	GAC	GAC Source	Strata	Date	10/05/21	11/05/21	11/05/21	12/05/21	11/10/2023	11/10/2023	12/10/2023	12/10/2023	12/10/2023	12/10/2023	10/10/2023
															Zone	Location	Depth (m bgl)	MG-TS	MG-TS	MG-TS	MG-TS	MG-TS	MG-TS	MG-TS	MG-TS	MG-TS
-	<b>Asbestos</b>																									
P1020	Asbestos Identified	text	Y/N	40	-	-	-	-	No. of detects:	3	-	-	-		Y	N	Y	Y	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
P188g	Asbestos Screen Name	text		6	-	-	-	-	-						Chrysotile		Chrysotile	Chrysotile								
P1885	Asbestos Quant. (Stage 2)	%	0.001	3	0.001	0.929	0.310	0.001	No. > LOD:	1	-	-	-		<0.001		0.929	<0.001								
P188o	Asbestos Containing Material Types Detected (ACM)	text		6	-	-	-	-	-						Fibres		Cement	Fibres								
o	<b>Hydrock Default Suite - FOC / SOM / pH</b>																									
P1085	FOC (dimensionless)	ll	0.001	6	0.023	0.040	0.031	0.031	0.01		-	-	-							0.032	0.025	0.029	0.038	0.04	0.023	
-	SOM (calculated)	%	0.1724	10	3.60	18.90	6.80	5.26	4.49		-	-	-		18.9	5	3.6	8.3	5.5168	4.31	4.9996	6.5512	6.896	6.9652		
P1334	pH (su)	pH Units	0.1	10	7.70	8.30	8.04	8.05	0.18		-	-	-		7.7	8.2	8.1	7.8	8.2	8	8	8	8	8.3	8.1	
-	<b>Hydrock Default Suite - Metals &amp; PAH</b>																									
7440-38-2	Arsenic	mg/kg	1	10	15.00	51.00	23.70	19.50	10.94	0	NR	640	C4SL - CL:AIRE 2014		19	20	20	29	51	15	16	17	31	19		
7440-41-7	Beryllium	mg/kg	0.06	6	0.64	4.00	1.48	0.73	1.36	0	NR	12	Hydrock Derived						4	0.64	0.66	0.68	2.1	0.78		
7440-42-8	Boron	mg/kg	0.2	6	0.20	2.30	0.77	0.45	0.81	0	NR	240000	Hydrock Derived						0.5	0.4	1	<0.2	2.3	<0.2		
7440-43-9	Cadmium	mg/kg	0.2	10	0.20	49.70	5.84	0.65	15.43	0	NR	410	C4SL - CL:AIRE 2014		1.8	49.7	2.7	0.7	<0.2	0.6	<0.2	0.6	1.7	<0.2		
16065-83-1	Chromium (III)	mg/kg	1	6	15.00	39.00	22.67	18.50	9.44	0	NR	8400	Hydrock Derived						39	15	16	18	29	19		
18540-29-9	Chromium (VI)	mg/kg	1.8	10	1.80	2.00	1.88	1.80	0.10	0	NR	49	C4SL - CL:AIRE 2014		<2	<2	<2	<2	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8		
7440-47-3	Chromium (Total)	mg/kg	1	10	15.00	40.00	23.80	20.00	9.24	0		-			20	39	15	22	40	17	17	18	30	20		
7440-50-8	Copper	mg/kg	1	10	14.00	600.00	127.40	48.50	182.74	0	NR	68000	Hydrock Derived		155	244	32	114	600	20	14	14	65	16		
7439-92-1	Lead	mg/kg	1	10	22.00	1500.00	243.50	50.00	452.82	0	NR	2300	C4SL - CL:AIRE 2014		278	158	47	278	1500	33	37	29	53	22		
7439-97-6	Mercury, inorganic	mg/kg	0.3	10	0.30	1.00	0.58	0.30	0.36	0	NR	1100	Hydrock Derived		<1	<1	<1	<1	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3		
7440-02-0	Nickel	mg/kg	1	10	15.00	74.00	29.00	21.50	19.21	0	NR	980	Hydrock Derived		23	49	15	37	74	16	16	17	23	20		
7782-49-2	Selenium	mg/kg	1	10	1.00	3.00	1.80	1.00	1.03	0	NR	12000	Hydrock Derived		<3	<3	<3	<3	<1	<1	<1	<1	<1	<1		
7440-62-2	Vanadium	mg/kg	1	6	41.00	85.00	53.83	48.00	16.39	0	NR	9000	Hydrock Derived						85	44	41	44	57	52		
7440-66-6	Zinc	mg/kg	1	10	66.00	1500.00	438.90	150.00	521.87	0	NR	730000	Hydrock Derived		462	1230	123	572	1500	70	66	140	160	66		
P1095	Cyanide (free)	mg/kg	1	10	1.00	2.00	1.40	1.00	0.52	0	NR	24	Acute Risk - SoBRA 2020		<2	<2	<2	<2	<1	<1	<1	<1	<1	<1		
P1186	Total Phenols (Monohydric)	mg/kg	1	10	1.00	2.00	1.40	1.00	0.52	0	70308	1300	Hydrock Derived		<2	<2	<2	<2	<1	<1	<1	<1	<1	<1		
83-32-9	Acenaphthene	mg/kg	0.05	10	0.05	3.40	0.66	0.10	1.14	0	336	110000	Hydrock Derived		<0.1	0.51	<0.1	2.05	<0.05	<0.05	0.23	0.05	3.4	<0.05		
208-96-8	Acenaphthylene	mg/kg	0.05	10	0.05	0.39	0.11	0.09	0.10	0	506	110000	Hydrock Derived		<0.1	<0.1	<0.1	0.16	<0.05	<0.05	0.07	<0.05	0.39	<0.05		
120-12-7	Anthracene	mg/kg	0.05	10	0.05	7.20	2.00	0.22	2.94	0	6.96	540000	Hydrock Derived		0.27	6.66	<0.1	4.57	0.16	0.16	0.67	0.12	7.2	<0.05		
56-55-3	Benz(a)anthracene	mg/kg	0.05	10	0.05	52.50	9.53	2.33	16.66	0	10.27	180	Hydrock Derived		2.05	52.5	0.3	9.83	2.6	0.89	3.6	0.47	23	<0.05		
50-32-8	Benzo(a)pyrene	mg/kg	0.05	10	0.05	52.80	9.46	3.25	16.67	0	5.46	77	C4SL - CL:AIRE 2014		1.89	52.8	0.32	5.53	4.6	1	4.9	0.52	23	<0.05		
205-99-2	Benzo(b)fluoranthene	mg/kg	0.05	10	0.05	64.40	11.43	4.18	20.02	1	7.29	45	Hydrock Derived		2.86	64.4	0.4	7.61	6.6	1.2	5.5	0.65	25	<0.05		
191-24-2	Benzo(ghi)perylene	mg/kg	0.05	10	0.05	22.00	4.49	1.63	6.89	0	0.09	4000	Hydrock Derived		1.21	22	0.19	2.04	5.5	0.64	2.9	0.36	10	<0.05		
207-08-9	Benzo(k)fluoranthene	mg/kg	0.05	10	0.05	19.10	3.85	1.39	6.26	0	4.12	1200	Hydrock Derived		0.68	19.1	0.16	2.11	2.3	0.62	2.1	0.33	11	<0.05		
218-01-9	Chrysene	mg/kg	0.05	10	0.05	46.50	8.85	2.85	14.90	0	2.64	360	Hydrock Derived		1.79	46.5	0.3	7.52	3.9	1	3.9	0.58	23	<0.05		
53-70-3	Dibenz(a,h)anthracene	mg/kg	0.05	10	0.05	4.87	0.92	0.34	1.50	1	0.024	3.6	Hydrock Derived		0.22	4.87	<0.1	0.54	0.9	0.13	0.46	<0.05	1.9	<0.05		
206-44-0	Fluoranthene	mg/kg	0.05	10	0.06	82.60	17.89	3.87	28.16	0	113	23000	Hydrock Derived		4.04	82.6	0.83	25	3.7	1.8	6.8	1.1	53	0.06		
86-73-7	Fluorene	mg/kg	0.05	10	0.05	2.60	0.54	0.10	0.89	0	183	72000	Hydrock Derived		<0.1	0.52	<0.1	1.71	<0.05	<0.05	0.17	<0.05	2.6	<0.05		
193-39-5	Indeno(1,2,3-cd)pyrene	mg/kg	0.05	10	0.05	25.60	4.72	1.91	7.92	0	0.37	510	Hydrock Derived		1.31	25.6	0.19	2.53	4.2	0.52	2.5	0.31	10	<0.05		
91-20-3	Naphthalene	mg/kg	0.05	10	0.05	0.51	0.15	0.08	0.17	0	432	7800	Hydrock Derived		<0.1	0.11	<0.1	0.43	<0.05	<0.05	0.06	<0.05	0.51	<0.05		
85-01-8	Phenanthrene	mg/kg	0.05	10	0.05	43.00	9.48	1.39	14.87	0	214	23000	Hydrock Derived		1.27	25.3	0.48	19.7	1.5	0.69	2.2	0.56	43	<0.05		
129-00-0	Pyrene	mg/kg	0.05	10	0.07	74.30	15.52	3.49	24.76	0	13.2	55000	Hydrock Derived		3.67	74.3	0.68	19.9	3.3	1.7	6.6	1	44	0.07		
P1310	PAH 16 Total	mg/kg	0.8	10	0.80	478.00	99.42	30.25	158.07			-			21.3	478	3.9	111	39.2	10.3	42.6	6.11	281	<0.8		
o	<b>TPH fractions</b>																									
P1407	TPH ali ECo5-EC06	mg/kg	0.001	6	0.01	0.02	0.01	0.01	0.005	0	1150	12000	Hydrock Derived		<0.01	<0.01	<0.01	<0.01	<0.02			<0.02				
P1408	TPH ali >ECo6-EC08	mg/kg	0.001	6	0.02	0.05	0.04	0.05	0.015	0	736	40000	Hydrock Derived		<0.05	<0.05	<0.05	<0.05	<0.02			<0.02				
P1409	TPH ali >ECo8-EC10	mg/kg	0.001	6	0.05	2.00	1.35	2.00	1.007	0	451	11000	Hydrock Derived		<2	<2	<2	<2	<0.05			<0.05				
P1410	TPH ali >EC10-EC12	mg/kg	1	6	1.00	2.00	1.67	2.00	0.52	0	283	47000	Hydrock Derived		<2	<2	<2	<2	<1			<1				
P1411	TPH ali >EC12-EC16	mg/kg	2	6	2.00	5.00	3.00	3.00	1.10	0	142	90000	Hydrock Derived		<3	<3	<3									



## Assessment of Chemicals of Potential Concern to Human Health

Risk parameter: Default - Human Health - commercial (6%SOM)														Data Filters																					
Client: Bicester Motion														Zone: All																					
Site: Bicester Motion Innovation District														Strata: MG-TS																					
Job no.: 27280														Depth Min (m bgl): 0.05																					
Lab. report no(s): 21-06268 (Ridge)														Depth Max (m bgl): 3																					
Dataset mean SOM%: 6.80														Scenario SOM%: 6																					
All values in mg/kg unless otherwise stated																																			
CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= GAC & > LoD	Soil Saturation Limit @6% SOM	GAC	GAC Source	Strata	10/05/21	11/05/21	11/05/21	12/05/21	11/10/2023	11/10/2023	12/10/2023	12/10/2023	12/10/2023	12/10/2023	10/10/2023										
P1938	TPH ali >EC16-EC35	mg/kg	10	2	10.00	26.00	18.00	18.00	11.31	0	51	1800000	Hydrock Derived												26	<10									
P1415	TPH ali >EC35-EC44	mg/kg	8.4	2	8.40	35.00	21.70	21.70	18.81	0	51	1800000	Hydrock Derived													35	<8.4								
P1418	TPH ali >EC5-EC35	mg/kg	10	6	10.00	357.00	77.33	23.50	137.16			-			<21	357	<21	29	26								<10								
P1420	TPH ali >EC5-EC44	mg/kg	10	2	10.00	62.00	36.00	36.00	36.77			-															62	<10							
P1441	TPH aro EC05-EC07	mg/kg	0.001	6	0.01	0.01	0.01	0.01	0.00	0	4708	86000	Hydrock Derived		<0.01	<0.01	<0.01	<0.01	<0.01									<0.01							
P1355	TPH aro >EC07-EC08	mg/kg	0.001	6	0.01	0.05	0.04	0.05	0.02	0	4357	180000	Hydrock Derived		<0.05	<0.05	<0.05	<0.05	<0.05									<0.01							
P1356	TPH aro >EC08-EC10	mg/kg	0.001	6	0.05	2.00	1.35	2.00	1.01	0	3578	17000	Hydrock Derived		<2	<2	<2	<2	<2									<0.05							
P1357	TPH aro >EC10-EC12	mg/kg	1	6	1.00	2.00	1.67	2.00	0.52	0	2149	34000	Hydrock Derived		<2	<2	<2	<2	<2									<1							
P1358	TPH aro >EC12-EC16	mg/kg	2	6	2.00	22.00	5.63	2.40	8.03	0	1004	38000	Hydrock Derived		<2	3	<2	22	<2									2.8							
P1359	TPH aro >EC16-EC21	mg/kg	10	6	3.00	174.00	55.67	13.50	73.18	0	321	28000	Hydrock Derived		9	174	<3	121	13									14							
P1360	TPH aro >EC21-EC35	mg/kg	10	6	10.00	651.00	172.33	82.50	242.66	0	29	28000	Hydrock Derived		45	651	<10	177	120									31							
P1362	TPH aro >EC35-EC44	mg/kg	8.4	2	8.40	81.00	44.70	44.70	51.34	0	29	28000	Hydrock Derived															81	<8.4						
P1365	TPH aro >EC5-EC35	mg/kg	10	6	21.00	828.00	233.50	92.00	310.94			-			54	828	<21	320	130									48							
P1941	TPH aro >EC5-EC44	mg/kg	10	2	51.00	210.00	130.50	130.50	112.43			-																210	51						
P1373	Total TPH >EC5-EC44	mg/kg	10	6	42.00	1185.00	325.17	162.00	440.86			-			54	1185	<42	349	270									51							
<b>o VOCs - BTEX &amp; MTBE</b>																																			
71-43-2	Benzene	mg/kg	1	6	0.00	0.01	0.00	0.00	0.00	0	4708	98	C4SL - CL-AIRE 2014		<0.002	<0.002	<0.002	<0.002	<0.002									<0.005							
108-88-3	Toluene	mg/kg	1	6	0.01	0.01	0.01	0.01	0.00	0	4357	180000	Hydrock Derived		<0.005	<0.005	<0.005	<0.005	<0.005									<0.005							
100-41-4	Ethylbenzene	mg/kg	1	6	0.00	0.01	0.00	0.00	0.00	0	2844	27000	Hydrock Derived		<0.002	<0.002	<0.002	<0.002	<0.002									<0.005							
95-47-6	Xylene, o-	mg/kg	1	6	0.00	0.01	0.00	0.00	0.00	0	2618	33000	Hydrock Derived		<0.002	<0.002	<0.002	<0.002	<0.002									<0.005							
1330-20-7	Xylene, p- (or combined m & p)	mg/kg	1	6	0.00	0.01	0.00	0.00	0.00	0	3167	30000	Hydrock Derived		<0.002	<0.002	<0.002	<0.002	<0.002									<0.005							
1634-04-4	MTBE	mg/kg	1	6	0.01	0.01	0.01	0.01	0.00	0	62749	22000	Hydrock Derived		<0.005	<0.005	<0.005	<0.005	<0.005									<0.005							
<b>TPH Additivity Check</b>																																			
<b>HAZARD QUOTIENTS FOR EACH FRACTION</b>																																			
														Aliphatics >EC5-EC6														8.33333E-07	8.33333E-07	8.33333E-07	8.33333E-07	1.66667E-06	1.66667E-06		
														Aliphatics >EC6-EC8														0.00000125	0.00000125	0.00000125	0.00000125	0.0000005	0.0000005		
														Aliphatics >EC8-EC10														0.000181818	0.000181818	0.000181818	0.000181818	4.54545E-06	4.54545E-06		
														Aliphatics >EC10-EC12														4.25532E-05	4.25532E-05	4.25532E-05	4.25532E-05	2.12766E-05	2.12766E-05		
														Aliphatics >EC12-EC16														3.33333E-05	3.33333E-05	3.33333E-05	5.55556E-05	2.22222E-05	2.22222E-05		
														Aliphatics >EC16-EC35																		1.44444E-05	5.55556E-06		
														Aliphatics >EC35-EC44																		1.94444E-05	4.66667E-06		
														Aromatics EC5-EC7														1.16279E-07	1.16279E-07	1.16279E-07	1.16279E-07	1.16279E-07	1.16279E-07		
														Aromatics >EC7-EC8														2.77778E-07	2.77778E-07	2.77778E-07	2.77778E-07	5.55556E-08	5.55556E-08		
														Aromatics >EC8-EC10														0.000117647	0.000117647	0.000117647	0.000117647	2.94118E-06	2.94118E-06		
														Aromatics >EC10-EC12														5.88235E-05	5.88235E-05	5.88235E-05	5.88235E-05	2.94118E-05	2.94118E-05		
														Aromatics >EC12-EC16														5.26316E-05	7.89474E-05	5.26316E-05	0.000578947	5.26316E-05	7.36842E-05		
														Aromatics >EC16-EC21														0.000321429	0.006214286	0.000107143	0.004321429	0.000464286	0.0005		
														Aromatics >EC21-EC35														0.001607143	0.02325	0.000357143	0.006321429	0.004285714	0.001107143		
														Aromatics >EC35-EC44																		0.002892857	0.0003		
														Hazard Index for ali>C8-C16														0.000257705	0.000257705	0.000257705	0.000279927	4.80443E-05	4.80443E-05		
														Hazard Index for aro>C8-C16														0.000229102	0.000255418	0.000229102	0.000755418	8.49845E-05	0.000106037		
														Hazard Index for aro>C16-C35														0.001928571	0.029464286	0.000464286	0.010642857	0.00475	0.001607143		



Template Version:  
1.06: 20/07/23

<b>Legend:</b>	MG-LF Made Ground - Landfill MG-TS Made Ground - Topsoil MG Made Ground NAT Natural Soils	<0.02 Value below the laboratory reporting limit and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate. 0.02 Value greater than, or equal to, the generic assessment criterion (GAC). *<10 Value excluded from statistical analysis y Text result - Represents a determinand that was not tested. • represents a data point that is not included in the current filter settings
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## *Phytotoxic GQRA*



### Assessment of Chemicals of Potential Concern to Plant Life

CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= GAC & > LoD	GAC	GAC Source	Strata	MG	MG	MG	MG	MG	MG													
o Hydrock Default Suite - FOC / SOM / pH																																
P1334	pH (su)	pH Units	0.1	6	7.90	8.20	8.00	8.00	0.11		-	-		7.9	8	8.2	7.9	8	8													
- Hydrock Default Suite - Metals & PAH																																
7440-38-2	Arsenic	mg/kg	1	6	9.00	33.00	19.67	17.50	8.94	0	250	MAFF 1998		27	14	9	20	15	33													
7440-42-8	Boron	mg/kg	0.2	3	0.30	0.90	0.53	0.40	0.32	0	5	Nable, et al. 1997					0.3	0.4	0.9													
18065-83-1	Chromium (III)	mg/kg	1	3	22.00	37.00	28.33	26.00	7.77	0	400	MAFF 1998 (Cr(T))					22	37	26													
18540-29-9	Chromium (VI)	mg/kg	1.8	6	1.80	2.00	1.90	1.90	0.11	0	25	ICRCL 70/90 1990		<2	<2	<2	<1.8	<1.8	<1.8													
7440-50-8	Copper	mg/kg	1	6	12.00	91.00	36.50	25.50	29.34	0	200	BS3882 2015		21	91	12	18	47	30													
7440-02-0	Nickel	mg/kg	1	6	7.00	26.00	18.67	20.50	6.83	0	110	BS3882 2015		23	15	7	22	26	19													
7440-66-6	Zinc	mg/kg	1	6	26.00	150.00	90.00	88.50	46.50	0	300	BS3882 2015		103	130	26	74	150	57													

<b>Legend:</b>	MG-LF Made Ground - Landfill MG-TS Made Ground - Topsoil MG Made Ground  NAT Natural Soils	<0.02 Value below the laboratory reporting limit and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate. 0.02 Value greater than, or equal to, the generic assessment criterion (GAC). 64.00 Value exceed saturation limit and substance is liquid or solid at ambient temperature. *<10 Value excluded from statistical analysis y Text result - Represents a determinand that was not tested. * represents a data point that is not included in the current filter settings	
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Template Version: 106: 20/07/23

### Assessment of Chemicals of Potential Concern to Plant Life

**Risk parameter:** Phytotoxic pH >7

**Client:** Bicester Motion

**Site:** Bicester Motion Innovation District

**Job no.:** 27280

**Lab. report no(s).:** 21-06268 (Ridge)


**Data Filters**

Zone: **All**

Strata: **MG-LF**

Depth Min (m bgl): **0.05**

Depth Max (m bgl): **3**



Dataset mean pH: **8.11**

Scenario pH: **>7**

All values in mg/kg unless otherwise stated													Date	10/05/21	12/05/21	12/05/21	12/05/21	12/05/21	12/05/21	11/10/2023	11/10/2023	11/10/2023	12/10/2023
													Zone										
													Location	TP01	WS04	WS04	WS05	WS03	WS03	TP102	TP103	TP103	TP111
													Depth (m bgl)	0.9	0.4	1	0.5	0.4	0.3	0.3	0.5	1.7	0.7
CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= GAC & > LoD	GAC	GAC Source	Strata	MG-LF	MG-LF	MG-LF	MG-LF	MG-LF	MG-LF	MG-LF	MG-LF		
<b>o Hydrock Default Suite - FOC / SOM / pH</b>																							
P1334	pH (su)	pH Units	0.1	10	7.70	8.40	8.11	8.20	0.23		-	-		8.3	7.8	8	7.7	8	8.2	8.2	8.4	8.2	8.3
<b>- Hydrock Default Suite - Metals &amp; PAH</b>																							
7440-38-2	Arsenic	mg/kg	1	10	15.00	56.00	25.40	20.50	13.83	0	250	MAFF 1998		21	45	23	56	24	15	20	16	19	15
7440-42-8	Boron	mg/kg	0.2	4	0.20	0.90	0.45	0.35	0.31	0	5	Nable, et al. 1997								0.3	0.9	0.4	<0.2
18505-83-1	Chromium (III)	mg/kg	1	4	17.00	33.00	21.50	18.00	7.68	0	400	MAFF 1998 (Cr(T))								17	18	18	33
18540-29-9	Chromium (VI)	mg/kg	1.8	10	1.80	2.00	1.92	2.00	0.10	0	25	ICRCL 70/90 1990		<2	<2	<2	<2	<2	<2	<1.8	<1.8	<1.8	<1.8
7440-50-8	Copper	mg/kg	1	10	16.00	517.00	115.80	63.00	153.58	2	200	BS3882 2015		22	209	24	517	70	16	56	140	29	75
7440-02-0	Nickel	mg/kg	1	10	11.00	56.00	27.40	20.50	15.53	0	110	BS3882 2015		18	51	21	56	39	11	20	17	19	22
7440-66-6	Zinc	mg/kg	1	10	35.00	1200.00	314.10	97.00	439.33	2	300	BS3882 2015		91	1070	103	1200	85	35	250	56	41	210

**Legend:**

MG-LF	Made Ground - Landfill	<b>&lt;0.02</b>	Value below the laboratory reporting limit and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
MG-TS	Made Ground - Topsoil	<b>0.02</b>	Value greater than, or equal to, the generic assessment criterion (GAC).
MG	Made Ground	<b>64.00</b>	Value exceed saturation limit and substance is liquid or solid at ambient temperature.
NAT	Natural Soils	<b>&lt;10</b>	Value excluded from statistical analysis
		<b>y</b>	Text result
		<b>-</b>	Represents a determinand that was not tested.
		<b>*</b>	represents a data point that is not included in the current filter settings

Template Version: 106: 20/07/23

### Assessment of Chemicals of Potential Concern to Plant Life

**Risk parameter:** Phytotoxic pH >7

**Client:** Bicester Motion

**Site:** Bicester Motion Innovation District

**Job no.:** 27280

**Lab. report no(s).:** 21-06268 (Ridge)


**Data Filters**

Zone: **All**

Strata: **MG-TS**

Depth Min (m bgl): **0.05**

Depth Max (m bgl): **3**



Dataset mean pH: **8.04**

Scenario pH: **>7**

Date	10/05/21	11/05/21	11/05/21	12/05/21	11/10/2023	11/10/2023	12/10/2023	12/10/2023	12/10/2023	12/10/2023	10/10/2023												
Zone																							
Location	TP02	WS12	WS07	WS06	TP103	TP105	TP107	TP108	TP113	WS104													
Depth (m bgl)	0.2	0.05	0.2	0.4	0.1	0.1	0.1	0.1	0.1	0.05													
CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= GAC & > LoD	GAC	GAC Source	Strata	MG-TS	MG-TS	MG-TS	MG-TS	MG-TS	MG-TS	MG-TS	MG-TS	MG-TS	
<b>Hydrock Default Suite - FOC / SOM / pH</b>																							
P1334	pH (su)	pH Units	0.1	10	7.70	8.30	8.04	8.05	0.18		-	-		7.7	8.2	8.1	7.8	8.2	8	8	8	8.3	8.1
<b>Hydrock Default Suite - Metals &amp; PAH</b>																							
7440-38-2	Arsenic	mg/kg	1	10	15.00	51.00	23.70	19.50	10.94	0	250	MAFF 1998		19	20	20	29	51	15	16	17	31	19
7440-42-8	Boron	mg/kg	0.2	6	0.20	2.30	0.77	0.45	0.81	0	5	Nable, et al. 1997						0.5	0.4	1	<0.2	2.3	<0.2
18540-29-9	Chromium (III)	mg/kg	1	6	15.00	39.00	22.67	18.50	9.44	0	400	MAFF 1998 (Cr(T))						39	15	16	18	29	19
18540-29-9	Chromium (VI)	mg/kg	1.8	10	1.80	2.00	1.88	1.80	0.10	0	25	ICRCL 70/90 1990		<2	<2	<2	<2	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
7440-50-8	Copper	mg/kg	1	10	14.00	600.00	127.40	48.50	182.74	2	200	BS3882 2015		155	244	32	114	600	20	14	14	65	16
7440-02-0	Nickel	mg/kg	1	10	15.00	74.00	29.00	21.50	19.21	0	110	BS3882 2015		23	49	15	37	74	16	16	17	23	20
7440-66-6	Zinc	mg/kg	1	10	66.00	1500.00	438.90	150.00	521.87	4	300	BS3882 2015		462	1230	123	572	1500	70	66	140	160	66

<b>Legend:</b>	MG-LF Made Ground - Landfill MG-TS Made Ground - Topsoil MG Made Ground NAT Natural Soils	<0.02 Value below the laboratory reporting limit and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate. 0.02 Value greater than, or equal to, the generic assessment criterion (GAC). 64.00 Value exceed saturation limit and substance is liquid or solid at ambient temperature. *10 Value excluded from statistical analysis y Text result - Represents a determinand that was not tested. * represents a data point that is not included in the current filter settings
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Template Version: 106: 20/07/23

# Appendix H Waste assessment

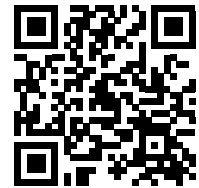
## *HazWasteOnline™ assessment*



# Waste Classification Report

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

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



CFHC4-WGCRS-GIQZR

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

## Job name

23-64537\_HWOL\_Results[2]

## Description/Comments

i2 Lab Cert 23-64537

## Project

27280

## Site

Bicester Motion Innovation Quarter

## Classified by

Name:	Company:
<b>Nathan Thompson</b>	<b>Hydrock Consultants Ltd</b>
Date:	<b>Hawthorn Park</b>
<b>07 Nov 2023 11:38 GMT</b>	<b>Holdenby Road, Spratton</b>
Telephone:	<b>Northampton</b>
<b>07557 345 513</b>	<b>NN6 8LD</b>

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

**HazWasteOnline™ Certification:**

**CERTIFIED**

**Course**  
Hazardous Waste Classification

**Date**  
22 Apr 2021

Next 3 year Refresher due by Apr 2024

## Purpose of classification

2 - Material Characterisation

## Address of the waste

Bicester Motion.

Post Code N/A

## SIC for the process giving rise to the waste

## Description of industry/producer giving rise to the waste

Redevelopment of former RAF base to commercial end use

## Description of the specific process, sub-process and/or activity that created the waste

Waste created during excavations construction process of commercial buildings.

## Description of the waste

Made Ground comprising soils with brick and ashy material and natural soils

### Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	TP102--11102023-0.30		Non Hazardous		3
2	TP103--11102023-0.10		Hazardous	HP 14	6
3	TP103--11102023-0.50		Non Hazardous		9
4	TP103--11102023-1.70		Non Hazardous		11
5	TP103--11102023-3.00		Non Hazardous		13
6	TP105--11102023-0.10		Non Hazardous		15
7	TP107--12102023-0.10		Non Hazardous		17
8	TP108--12102023-0.10		Non Hazardous		20
9	TP109--12102023-0.80		Non Hazardous		22
10	TP110--12102023-0.30		Non Hazardous		24
11	TP111--12102023-0.70		Non Hazardous		27
12	TP113--12102023-0.10		Non Hazardous		29
13	WS101--11102023-0.40		Non Hazardous		31
14	WS104--10102023-0.05		Non Hazardous		33
15	WS110--11102023-0.35		Non Hazardous		35

### Related documents

#	Name	Description
1	23-64537_HWOL_Results.hwol	i2 Analytical .hwol file used to populate the Job
2	Hydrock Standard plus Cresol (ammended Lead)	waste stream template used to create this Job


### Report

Created by: Nathan Thompson

Created date: 07 Nov 2023 11:38 GMT

Appendices	Page
<a href="#">Appendix A: Classifier defined and non GB MCL determinands</a>	38
<a href="#">Appendix B: Rationale for selection of metal species</a>	40
<a href="#">Appendix C: Version</a>	40

Classification of sample: TP102--11102023-0.30

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

**Sample details**

Sample name:	LoW Code:	
<b>TP102--11102023-0.30</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>8.4%</b> (wet weight correction)		

**Hazard properties**

None identified

**Determinands**





Moisture content: 8.4% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	20 mg/kg	1.32	24.188 mg/kg	0.00242 %	✓	
5	benzene	601-020-00-8	200-753-7	71-43-2	<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
6	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.23 mg/kg		0.211 mg/kg	0.0000211 %	✓	
7	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.31 mg/kg		0.284 mg/kg	0.0000284 %	✓	
8	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.51 mg/kg		0.467 mg/kg	0.0000467 %	✓	
9	benzo[ghi]perylene		205-883-8	191-24-2	0.42 mg/kg		0.385 mg/kg	0.0000385 %	✓	
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.18 mg/kg		0.165 mg/kg	0.0000165 %	✓	
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.9 mg/kg	2.775	2.288 mg/kg	0.000229 %	✓	
12	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.3 mg/kg	13.43	3.691 mg/kg	0.000369 %	✓	
13	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9	17 mg/kg	1.462	24.846 mg/kg	0.00248 %		
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	chrysene 601-048-00-0	205-923-4	218-01-9		0.33 mg/kg		0.302 mg/kg	0.0000302 %	✓	
17	copper { dicopper oxide; copper (I) oxide } 029-002-00-X	215-270-7	1317-39-1		56 mg/kg	1.126	57.754 mg/kg	0.00578 %	✓	
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
19	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
21	fluoranthene 205-912-4	206-44-0			0.4 mg/kg		0.366 mg/kg	0.0000366 %	✓	
22	fluorene 201-695-5	86-73-7			<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	indeno[123-cd]pyrene 205-893-2	193-39-5			0.27 mg/kg		0.247 mg/kg	0.0000247 %	✓	
24	lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	130 mg/kg		119.08 mg/kg	0.0119 %	✓	
25	mercury { mercury dichloride } 080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
26	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	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	1.579	28.936 mg/kg	0.00289 %	✓	
28	pH PH				8.2 pH		8.2 pH	8.2 pH		
29	phenanthrene 201-581-5	85-01-8			0.2 mg/kg		0.183 mg/kg	0.0000183 %	✓	
30	pyrene 204-927-3	129-00-0			0.34 mg/kg		0.311 mg/kg	0.0000311 %	✓	
31	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
32	toluene 601-021-00-3	203-625-9	108-88-3		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
33	TPH (C6 to C40) petroleum group TPH				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
34	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	zinc { zinc oxide } 030-013-00-7	215-222-5	1314-13-2		250 mg/kg	1.245	285.04 mg/kg	0.0285 %	✓	
36	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
37	monohydric phenols P1186				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
38	vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8	215-239-8	1314-62-1		47 mg/kg	1.785	76.856 mg/kg	0.00769 %	✓	
Total:								0.0644 %		

Key

---

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

Classification of sample: TP103--11102023-0.10

**Hazardous Waste**  
Classified as **17 05 03 \***  
in the List of Waste

Sample details

Sample name: <b>TP103--11102023-0.10</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>14%</b> (wet weight correction)	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"

Hazard Statements hit:

**Aquatic Chronic 1; H410** "Very toxic to aquatic life with long lasting effects."

Because of determinands:

lead compounds with the exception of those specified elsewhere in this Annex: (Note 1 conc.: 0.129%)  
zinc oxide: (compound conc.: 0.161%)

Determinands


Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		0.16 mg/kg		0.138 mg/kg	0.0000138 %	✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	51 mg/kg	1.32	57.909 mg/kg	0.00579 %	✓	
5	benzene	601-020-00-8	200-753-7	71-43-2	<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
6	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	2.6 mg/kg		2.236 mg/kg	0.000224 %	✓	
7	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	4.6 mg/kg		3.956 mg/kg	0.000396 %	✓	
8	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	6.6 mg/kg		5.676 mg/kg	0.000568 %	✓	
9	benzo[ghi]perylene	205-883-8	191-24-2		5.5 mg/kg		4.73 mg/kg	0.000473 %	✓	
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	2.3 mg/kg		1.978 mg/kg	0.000198 %	✓	
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	4 mg/kg	2.775	9.547 mg/kg	0.000955 %	✓	
12	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.5 mg/kg	13.43	5.775 mg/kg	0.000577 %	✓	
13	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				39 mg/kg	1.462	57.001 mg/kg	0.0057 %		
		215-160-9	1308-38-9							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD
		024-001-00-0	215-607-8	1333-82-0						
16	chrysene				3.9 mg/kg		3.354 mg/kg	0.000335 %	✓	
		601-048-00-0	205-923-4	218-01-9						
17	copper { dicopper oxide; copper (I) oxide }				600 mg/kg	1.126	580.958 mg/kg	0.0581 %	✓	
		029-002-00-X	215-270-7	1317-39-1						
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
		006-007-00-5								
19	dibenz[a,h]anthracene				0.9 mg/kg		0.774 mg/kg	0.0000774 %	✓	
		601-041-00-2	200-181-8	53-70-3						
20	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4						
21	fluoranthene				3.7 mg/kg		3.182 mg/kg	0.000318 %	✓	
			205-912-4	206-44-0						
22	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7						
23	indeno[123-cd]pyrene				4.2 mg/kg		3.612 mg/kg	0.000361 %	✓	
			205-893-2	193-39-5						
24	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	1500 mg/kg		1290 mg/kg	0.129 %	✓	
		082-001-00-6								
25	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7						
26	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3						
27	nickel { nickel dihydroxide }				74 mg/kg	1.579	100.519 mg/kg	0.0101 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]						
28	pH				8.2 pH		8.2 pH	8.2 pH		
29	phenanthrene				1.5 mg/kg		1.29 mg/kg	0.000129 %	✓	
			201-581-5	85-01-8						
30	pyrene				3.3 mg/kg		2.838 mg/kg	0.000284 %	✓	
			204-927-3	129-00-0						
31	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
		034-002-00-8								
32	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3						
33	TPH (C6 to C40) petroleum group				270 mg/kg		232.2 mg/kg	0.0232 %	✓	
34	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]						
35	zinc { zinc oxide }				1500 mg/kg	1.245	1605.681 mg/kg	0.161 %	✓	
		030-013-00-7	215-222-5	1314-13-2						
36	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4						
37	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
38	vanadium { <span style="color: green;">•</span> divanadium pentaoxide; vanadium pentoxide }				85 mg/kg	1.785	130.497 mg/kg	0.013 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
Total:								0.411 %		

**Key**

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

**Supplementary Hazardous Property Information**

**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"

**Force this Hazardous property to non hazardous because** No evidence of free phase hydrocarbons during sampling works.

Hazard Statements hit:


**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0232%)



Classification of sample: TP103--11102023-0.50

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

**Sample details**

Sample name:	LoW Code:	
<b>TP103--11102023-0.50</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>7.2%</b> (wet weight correction)		

**Hazard properties**

None identified


**Determinands**

Moisture content: 7.2% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	16 mg/kg	1.32	19.604 mg/kg	0.00196 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.25 mg/kg		0.232 mg/kg	0.0000232 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.36 mg/kg		0.334 mg/kg	0.0000334 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.47 mg/kg		0.436 mg/kg	0.0000436 %	✓	
8	benzo[ghi]perylene	205-883-8	191-24-2		0.28 mg/kg		0.26 mg/kg	0.000026 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.16 mg/kg		0.148 mg/kg	0.0000148 %	✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.75 mg/kg	2.775	1.932 mg/kg	0.000193 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.9 mg/kg	13.43	11.217 mg/kg	0.00112 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		18 mg/kg	1.462	26.308 mg/kg	0.00263 %		
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	0.28 mg/kg		0.26 mg/kg	0.000026 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	copper { dicopper oxide; copper (I) oxide }				140 mg/kg	1.126	146.275 mg/kg	0.0146 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
	006-007-00-5									
18	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
19	fluoranthene				0.31 mg/kg		0.288 mg/kg	0.0000288 %	✓	
		205-912-4	206-44-0							
20	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							
21	indeno[123-cd]pyrene				0.2 mg/kg		0.186 mg/kg	0.0000186 %	✓	
		205-893-2	193-39-5							
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	45 mg/kg		41.76 mg/kg	0.00418 %	✓	
	082-001-00-6									
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
24	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
25	nickel { nickel dihydroxide }				17 mg/kg	1.579	24.918 mg/kg	0.00249 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
26	pH				8.4 pH		8.4 pH	8.4 pH		
			PH							
27	phenanthrene				0.09 mg/kg		0.0835 mg/kg	0.00000835 %	✓	
		201-581-5	85-01-8							
28	pyrene				0.33 mg/kg		0.306 mg/kg	0.0000306 %	✓	
		204-927-3	129-00-0							
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
30	zinc { zinc oxide }				56 mg/kg	1.245	64.685 mg/kg	0.00647 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
			P1186							
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				43 mg/kg	1.785	71.236 mg/kg	0.00712 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
Total:								0.0419 %		

Key

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

Classification of sample: TP103--11102023-1.70

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

**Sample details**

Sample name:	LoW Code:	
<b>TP103--11102023-1.70</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>10%</b> (wet weight correction)		

**Hazard properties**

None identified

**Determinands**

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	19 mg/kg	1.32	22.578 mg/kg	0.00226 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.08 mg/kg		0.072 mg/kg	0.0000072 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.11 mg/kg		0.099 mg/kg	0.0000099 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.11 mg/kg		0.099 mg/kg	0.0000099 %	✓	
8	benzo[ghi]perylene	205-883-8	191-24-2		0.07 mg/kg		0.063 mg/kg	0.0000063 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.08 mg/kg		0.072 mg/kg	0.0000072 %	✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.71 mg/kg	2.775	1.773 mg/kg	0.000177 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.4 mg/kg	13.43	4.835 mg/kg	0.000483 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		18 mg/kg	1.462	26.308 mg/kg	0.00263 %		
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	0.11 mg/kg		0.099 mg/kg	0.0000099 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	copper { dicopper oxide; copper (I) oxide } 029-002-00-X   215-270-7   1317-39-1				29 mg/kg	1.126	29.386 mg/kg	0.00294 %	✓	
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
18	dibenz[a,h]anthracene 601-041-00-2   200-181-8   53-70-3				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	fluoranthene 205-912-4   206-44-0				0.13 mg/kg		0.117 mg/kg	0.0000117 %	✓	
20	fluorene 201-695-5   86-73-7				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	indeno[123-cd]pyrene 205-893-2   193-39-5				0.07 mg/kg		0.063 mg/kg	0.0000063 %	✓	
22	lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	19 mg/kg		17.1 mg/kg	0.00171 %	✓	
23	mercury { mercury dichloride } 080-010-00-X   231-299-8   7487-94-7				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
24	naphthalene 601-052-00-2   202-049-5   91-20-3				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	nickel { nickel dihydroxide } 028-008-00-X   235-008-5 [1]   12054-48-7 [1]   234-348-1 [2]   11113-74-9 [2]				19 mg/kg	1.579	27.009 mg/kg	0.0027 %	✓	
26	pH PH				8.2 pH		8.2 pH	8.2 pH		
27	phenanthrene 201-581-5   85-01-8				0.05 mg/kg		0.045 mg/kg	0.0000045 %	✓	
28	pyrene 204-927-3   129-00-0				0.11 mg/kg		0.099 mg/kg	0.0000099 %	✓	
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
30	zinc { zinc oxide } 030-013-00-7   215-222-5   1314-13-2				41 mg/kg	1.245	45.93 mg/kg	0.00459 %	✓	
31	monohydric phenols P1186				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
32	vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8   215-239-8   1314-62-1				47 mg/kg	1.785	75.513 mg/kg	0.00755 %	✓	
Total:								0.026 %		

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

Classification of sample: TP103--11102023-3.00

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

**Sample details**

Sample name:	LoW Code:	
<b>TP103--11102023-3.00</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>19%</b> (wet weight correction)		

**Hazard properties**

None identified


**Determinands**

Moisture content: 19% Wet Weight Moisture Correction applied (MC)


#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	12 mg/kg	1.32	12.834 mg/kg	0.00128 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
8	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	1 mg/kg	2.775	2.248 mg/kg	0.000225 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.8 mg/kg	13.43	8.703 mg/kg	0.00087 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		22 mg/kg	1.462	32.154 mg/kg	0.00322 %		
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
16	copper { dicopper oxide; copper (I) oxide } 029-002-00-X   215-270-7   1317-39-1				18 mg/kg	1.126	16.415 mg/kg	0.00164 %		✓	
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
18	dibenz[a,h]anthracene 601-041-00-2   200-181-8   53-70-3				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
19	fluoranthene 205-912-4   206-44-0				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
20	fluorene 201-695-5   86-73-7				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
21	indeno[123-cd]pyrene 205-893-2   193-39-5				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
22	lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	15 mg/kg		12.15 mg/kg	0.00122 %		✓	
23	mercury { mercury dichloride } 080-010-00-X   231-299-8   7487-94-7				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %			<LOD
24	naphthalene 601-052-00-2   202-049-5   91-20-3				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
25	nickel { nickel dihydroxide } 028-008-00-X   235-008-5 [1]   12054-48-7 [1]   234-348-1 [2]   11113-74-9 [2]				25 mg/kg	1.579	31.985 mg/kg	0.0032 %		✓	
26	pH PH				7.6 pH		7.6 pH	7.6 pH			
27	phenanthrene 201-581-5   85-01-8				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
28	pyrene 204-927-3   129-00-0				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
30	zinc { zinc oxide } 030-013-00-7   215-222-5   1314-13-2				51 mg/kg	1.245	51.419 mg/kg	0.00514 %		✓	
31	monohydric phenols P1186				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
32	vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8   215-239-8   1314-62-1				56 mg/kg	1.785	80.976 mg/kg	0.0081 %		✓	
Total:									0.0258 %		

**Key**

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

Classification of sample: TP105--11102023-0.10

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

**Sample details**

Sample name:	LoW Code:	
<b>TP105--11102023-0.10</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>13%</b> (wet weight correction)		

**Hazard properties**

None identified

**Determinands**

Moisture content: 13% Wet Weight Moisture Correction applied (MC)


#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		0.16 mg/kg		0.139 mg/kg	0.0000139 %	✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	15 mg/kg	1.32	17.23 mg/kg	0.00172 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.89 mg/kg		0.774 mg/kg	0.0000774 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	1 mg/kg		0.87 mg/kg	0.000087 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	1.2 mg/kg		1.044 mg/kg	0.000104 %	✓	
8	benzo[ghi]perylene		205-883-8	191-24-2	0.64 mg/kg		0.557 mg/kg	0.0000557 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.62 mg/kg		0.539 mg/kg	0.0000539 %	✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.64 mg/kg	2.775	1.545 mg/kg	0.000155 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2	0.4 mg/kg	13.43	4.674 mg/kg	0.000467 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	0.6 mg/kg	1.285	0.671 mg/kg	0.0000522 %	✓	
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9	15 mg/kg	1.462	21.923 mg/kg	0.00219 %		
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	1 mg/kg		0.87 mg/kg	0.000087 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
16	copper { dicopper oxide; copper (I) oxide } 029-002-00-X   215-270-7   1317-39-1				20 mg/kg	1.126	19.59 mg/kg	0.00196 %		✓	
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
18	dibenz[a,h]anthracene 601-041-00-2   200-181-8   53-70-3				0.13 mg/kg		0.113 mg/kg	0.0000113 %		✓	
19	fluoranthene 205-912-4   206-44-0				1.8 mg/kg		1.566 mg/kg	0.000157 %		✓	
20	fluorene 201-695-5   86-73-7				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
21	indeno[123-cd]pyrene 205-893-2   193-39-5				0.52 mg/kg		0.452 mg/kg	0.0000452 %		✓	
22	lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	33 mg/kg		28.71 mg/kg	0.00287 %		✓	
23	mercury { mercury dichloride } 080-010-00-X   231-299-8   7487-94-7				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %			<LOD
24	naphthalene 601-052-00-2   202-049-5   91-20-3				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
25	nickel { nickel dihydroxide } 028-008-00-X   235-008-5 [1]   12054-48-7 [1]   234-348-1 [2]   11113-74-9 [2]				16 mg/kg	1.579	21.987 mg/kg	0.0022 %		✓	
26	pH PH				8 pH		8 pH	8pH			
27	phenanthrene 201-581-5   85-01-8				0.69 mg/kg		0.6 mg/kg	0.00006 %		✓	
28	pyrene 204-927-3   129-00-0				1.7 mg/kg		1.479 mg/kg	0.000148 %		✓	
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
30	zinc { zinc oxide } 030-013-00-7   215-222-5   1314-13-2				70 mg/kg	1.245	75.803 mg/kg	0.00758 %		✓	
31	monohydric phenols P1186				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
32	vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8   215-239-8   1314-62-1				44 mg/kg	1.785	68.337 mg/kg	0.00683 %		✓	
Total:									0.0278 %		

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



Classification of sample: TP107--12102023-0.10

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

**Sample details**

Sample name:	LoW Code:	
<b>TP107--12102023-0.10</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>14%</b> (wet weight correction)		

**Hazard properties**

None identified

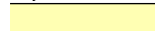



**Determinands**

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		0.23 mg/kg		0.198 mg/kg	0.0000198 %	✓	
2	acenaphthylene	205-917-1	208-96-8		0.07 mg/kg		0.0602 mg/kg	0.00000602 %	✓	
3	anthracene	204-371-1	120-12-7		0.67 mg/kg		0.576 mg/kg	0.0000576 %	✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	16 mg/kg	1.32	18.168 mg/kg	0.00182 %	✓	
5	benzene	601-020-00-8	200-753-7	71-43-2	<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
6	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	3.6 mg/kg		3.096 mg/kg	0.00031 %	✓	
7	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	4.9 mg/kg		4.214 mg/kg	0.000421 %	✓	
8	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	5.5 mg/kg		4.73 mg/kg	0.000473 %	✓	
9	benzo[ghi]perylene		205-883-8	191-24-2	2.9 mg/kg		2.494 mg/kg	0.000249 %	✓	
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	2.1 mg/kg		1.806 mg/kg	0.000181 %	✓	
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.66 mg/kg	2.775	1.575 mg/kg	0.000158 %	✓	
12	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		1 mg/kg	13.43	11.55 mg/kg	0.00115 %	✓	
13	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9	16 mg/kg	1.462	23.385 mg/kg	0.00234 %		
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	chrysene				3.9 mg/kg		3.354 mg/kg	0.000335 %	✓	
	601-048-00-0	205-923-4	218-01-9							
17	copper { dicopper oxide; copper (I) oxide }				14 mg/kg	1.126	13.556 mg/kg	0.00136 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
	006-007-00-5									
19	dibenz[a,h]anthracene				0.46 mg/kg		0.396 mg/kg	0.0000396 %	✓	
	601-041-00-2	200-181-8	53-70-3							
20	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
21	fluoranthene				6.8 mg/kg		5.848 mg/kg	0.000585 %	✓	
		205-912-4	206-44-0							
22	fluorene				0.17 mg/kg		0.146 mg/kg	0.0000146 %	✓	
		201-695-5	86-73-7							
23	indeno[123-cd]pyrene				2.5 mg/kg		2.15 mg/kg	0.000215 %	✓	
		205-893-2	193-39-5							
24	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	37 mg/kg		31.82 mg/kg	0.00318 %	✓	
	082-001-00-6									
25	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
26	naphthalene				0.06 mg/kg		0.0516 mg/kg	0.00000516 %	✓	
	601-052-00-2	202-049-5	91-20-3							
27	nickel { nickel dihydroxide }				16 mg/kg	1.579	21.734 mg/kg	0.00217 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
28	pH		PH		8 pH		8 pH	8pH		
29	phenanthrene				2.2 mg/kg		1.892 mg/kg	0.000189 %	✓	
		201-581-5	85-01-8							
30	pyrene				6.6 mg/kg		5.676 mg/kg	0.000568 %	✓	
		204-927-3	129-00-0							
31	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
32	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
33	TPH (C6 to C40) petroleum group		TPH		51 mg/kg		43.86 mg/kg	0.00439 %	✓	
34	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
35	zinc { zinc oxide }				66 mg/kg	1.245	70.65 mg/kg	0.00706 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
36	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
37	monohydric phenols		P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
38	vanadium { divanadium pentaoxide; vanadium pentoxide }				41 mg/kg	1.785	62.946 mg/kg	0.00629 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
Total:								0.0344 %		

Key

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

**Supplementary Hazardous Property Information**

**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"

Force this Hazardous property to non hazardous because **No evidence of free phase hydrocarbons during sampling works.**

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00439%)

Classification of sample: TP108--12102023-0.10

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

Sample details

Sample name:	LoW Code:
<b>TP108--12102023-0.10</b>	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
<b>15%</b>	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified


Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		0.05 mg/kg		0.0425 mg/kg	0.00000425 %	✓	
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		0.12 mg/kg		0.102 mg/kg	0.0000102 %	✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	17 mg/kg	1.32	19.079 mg/kg	0.00191 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.47 mg/kg		0.399 mg/kg	0.0000399 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.52 mg/kg		0.442 mg/kg	0.0000442 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.65 mg/kg		0.553 mg/kg	0.0000553 %	✓	
8	benzo[ghi]perylene		205-883-8	191-24-2	0.36 mg/kg		0.306 mg/kg	0.0000306 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.33 mg/kg		0.281 mg/kg	0.0000281 %	✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.68 mg/kg	2.775	1.604 mg/kg	0.00016 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2	<0.2 mg/kg	13.43	<2.686 mg/kg	<0.000269 %		<LOD
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	0.6 mg/kg	1.285	0.655 mg/kg	0.000051 %	✓	
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9	18 mg/kg	1.462	26.308 mg/kg	0.00263 %		
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	0.58 mg/kg		0.493 mg/kg	0.0000493 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	copper { dicopper oxide; copper (I) oxide } 029-002-00-X   215-270-7   1317-39-1				14 mg/kg	1.126	13.398 mg/kg	0.00134 %	✓	
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
18	dibenz[a,h]anthracene 601-041-00-2   200-181-8   53-70-3				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	fluoranthene 205-912-4   206-44-0				1.1 mg/kg		0.935 mg/kg	0.0000935 %	✓	
20	fluorene 201-695-5   86-73-7				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	indeno[123-cd]pyrene 205-893-2   193-39-5				0.31 mg/kg		0.264 mg/kg	0.0000264 %	✓	
22	lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	29 mg/kg		24.65 mg/kg	0.00246 %	✓	
23	mercury { mercury dichloride } 080-010-00-X   231-299-8   7487-94-7				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
24	naphthalene 601-052-00-2   202-049-5   91-20-3				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	nickel { nickel dihydroxide } 028-008-00-X   235-008-5 [1]   12054-48-7 [1] 234-348-1 [2]   11113-74-9 [2]				17 mg/kg	1.579	22.824 mg/kg	0.00228 %	✓	
26	pH PH				8 pH		8 pH	8pH		
27	phenanthrene 201-581-5   85-01-8				0.56 mg/kg		0.476 mg/kg	0.0000476 %	✓	
28	pyrene 204-927-3   129-00-0				1 mg/kg		0.85 mg/kg	0.000085 %	✓	
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
30	zinc { zinc oxide } 030-013-00-7   215-222-5   1314-13-2				140 mg/kg	1.245	148.121 mg/kg	0.0148 %	✓	
31	monohydric phenols P1186				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
32	vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8   215-239-8   1314-62-1				44 mg/kg	1.785	66.766 mg/kg	0.00668 %	✓	
Total:								0.0339 %		

**Key**

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

Classification of sample: TP109--12102023-0.80

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

Sample details

Sample name:	LoW Code:
<b>TP109--12102023-0.80</b>	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
<b>6%</b> (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

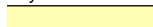



Determinands

Moisture content: 6% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		0.05 mg/kg		0.047 mg/kg	0.0000047 %	✔	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	11 mg/kg	1.32	13.652 mg/kg	0.00137 %	✔	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.18 mg/kg		0.169 mg/kg	0.0000169 %	✔	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.19 mg/kg		0.179 mg/kg	0.0000179 %	✔	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.25 mg/kg		0.235 mg/kg	0.0000235 %	✔	
8	benzo[ghi]perylene		205-883-8	191-24-2	0.13 mg/kg		0.122 mg/kg	0.0000122 %	✔	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.14 mg/kg		0.132 mg/kg	0.0000132 %	✔	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.45 mg/kg	2.775	1.174 mg/kg	0.000117 %	✔	
11	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2	0.3 mg/kg	13.43	3.787 mg/kg	0.000379 %	✔	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9	10 mg/kg	1.462	14.616 mg/kg	0.00146 %		
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	0.28 mg/kg		0.263 mg/kg	0.0000263 %	✔	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	copper { dicopper oxide; copper (I) oxide }				10 mg/kg	1.126	10.583 mg/kg	0.00106 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
	006-007-00-5									
18	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
19	fluoranthene				0.69 mg/kg		0.649 mg/kg	0.0000649 %	✓	
		205-912-4	206-44-0							
20	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							
21	indeno[123-cd]pyrene				0.11 mg/kg		0.103 mg/kg	0.0000103 %	✓	
		205-893-2	193-39-5							
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	7.8 mg/kg		7.332 mg/kg	0.000733 %	✓	
	082-001-00-6									
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
24	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
25	nickel { nickel dihydroxide }				11 mg/kg	1.579	16.332 mg/kg	0.00163 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
26	pH				8.3 pH		8.3 pH	8.3 pH		
			PH							
27	phenanthrene				0.55 mg/kg		0.517 mg/kg	0.0000517 %	✓	
		201-581-5	85-01-8							
28	pyrene				0.58 mg/kg		0.545 mg/kg	0.0000545 %	✓	
		204-927-3	129-00-0							
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
30	zinc { zinc oxide }				22 mg/kg	1.245	25.741 mg/kg	0.00257 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
			P1186							
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				37 mg/kg	1.785	62.089 mg/kg	0.00621 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
Total:								0.0167 %		

Key

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

Classification of sample: TP110--12102023-0.30

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

Sample details

Sample name:	LoW Code:
<b>TP110--12102023-0.30</b>	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>7.9%</b> (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 7.9% Wet Weight Moisture Correction applied (MC)

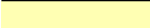



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD	
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD	
3	anthracene	204-371-1	120-12-7		0.1 mg/kg		0.0921 mg/kg	0.00000921 %	✓		
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	20 mg/kg	1.32	24.32 mg/kg	0.00243 %	✓		
5	benzene	601-020-00-8	200-753-7	71-43-2	<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD	
6	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.24 mg/kg		0.221 mg/kg	0.0000221 %	✓		
7	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.24 mg/kg		0.221 mg/kg	0.0000221 %	✓		
8	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.3 mg/kg		0.276 mg/kg	0.0000276 %	✓		
9	benzo[ghi]perylene		205-883-8	191-24-2	0.15 mg/kg		0.138 mg/kg	0.0000138 %	✓		
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.1 mg/kg		0.0921 mg/kg	0.00000921 %	✓		
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.88 mg/kg	2.775	2.249 mg/kg	0.000225 %	✓		
12	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2	0.3 mg/kg	13.43	3.711 mg/kg	0.000371 %	✓		
13	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD	
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9	22 mg/kg	1.462	32.154 mg/kg	0.00322 %			
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD	



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	chrysene 601-048-00-0   205-923-4   218-01-9				0.29 mg/kg		0.267 mg/kg	0.0000267 %	✓	
17	copper { dicopper oxide; copper (I) oxide } 029-002-00-X   215-270-7   1317-39-1				18 mg/kg	1.126	18.665 mg/kg	0.00187 %	✓	
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
19	dibenz[a,h]anthracene 601-041-00-2   200-181-8   53-70-3				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	ethylbenzene 601-023-00-4   202-849-4   100-41-4				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
21	fluoranthene 205-912-4   206-44-0				0.7 mg/kg		0.645 mg/kg	0.0000645 %	✓	
22	fluorene 201-695-5   86-73-7				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	indeno[123-cd]pyrene 205-893-2   193-39-5				0.12 mg/kg		0.111 mg/kg	0.0000111 %	✓	
24	lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	25 mg/kg		23.025 mg/kg	0.0023 %	✓	
25	mercury { mercury dichloride } 080-010-00-X   231-299-8   7487-94-7				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
26	naphthalene 601-052-00-2   202-049-5   91-20-3				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	nickel { nickel dihydroxide } 028-008-00-X   235-008-5 [1]   12054-48-7 [1] 234-348-1 [2]   11113-74-9 [2]				22 mg/kg	1.579	32.004 mg/kg	0.0032 %	✓	
28	pH PH				7.9 pH		7.9 pH	7.9 pH		
29	phenanthrene 201-581-5   85-01-8				0.6 mg/kg		0.553 mg/kg	0.0000553 %	✓	
30	pyrene 204-927-3   129-00-0				0.61 mg/kg		0.562 mg/kg	0.0000562 %	✓	
31	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
32	toluene 601-021-00-3   203-625-9   108-88-3				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
33	TPH (C6 to C40) petroleum group TPH				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
34	xylene 601-022-00-9   202-422-2 [1]   95-47-6 [1] 203-396-5 [2]   106-42-3 [2] 203-576-3 [3]   108-38-3 [3] 215-535-7 [4]   1330-20-7 [4]				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	zinc { zinc oxide } 030-013-00-7   215-222-5   1314-13-2				74 mg/kg	1.245	84.832 mg/kg	0.00848 %	✓	
36	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X   216-653-1   1634-04-4				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
37	monohydric phenols P1186				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
38	vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8   215-239-8   1314-62-1				56 mg/kg	1.785	92.073 mg/kg	0.00921 %	✓	
Total:								0.0335 %		

Key

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

Classification of sample: TP111--12102023-0.70

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

**Sample details**

Sample name:	LoW Code:	
<b>TP111--12102023-0.70</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>7.6%</b> (wet weight correction)		

**Hazard properties**

None identified

**Determinands**

Moisture content: 7.6% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		0.17 mg/kg		0.157 mg/kg	0.0000157 %	✓	
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		0.26 mg/kg		0.24 mg/kg	0.000024 %	✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	15 mg/kg	1.32	18.3 mg/kg	0.00183 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.94 mg/kg		0.869 mg/kg	0.0000869 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.99 mg/kg		0.915 mg/kg	0.0000915 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	1.1 mg/kg		1.016 mg/kg	0.000102 %	✓	
8	benzo[ghi]perylene	205-883-8	191-24-2		0.49 mg/kg		0.453 mg/kg	0.0000453 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.61 mg/kg		0.564 mg/kg	0.0000564 %	✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.81 mg/kg	2.775	2.077 mg/kg	0.000208 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		<0.2 mg/kg	13.43	<2.686 mg/kg	<0.000269 %		<LOD
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1.5 mg/kg	1.285	1.781 mg/kg	0.000139 %	✓	
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		33 mg/kg	1.462	48.231 mg/kg	0.00482 %		
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	1.1 mg/kg		1.016 mg/kg	0.000102 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
16	copper { dicopper oxide; copper (I) oxide }				75 mg/kg	1.126	78.024 mg/kg	0.0078 %		✓	
	029-002-00-X	215-270-7	1317-39-1								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				0.08 mg/kg		0.0739 mg/kg	0.00000739 %		✓	
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				2.9 mg/kg		2.68 mg/kg	0.000268 %		✓	
		205-912-4	206-44-0								
20	fluorene				0.12 mg/kg		0.111 mg/kg	0.0000111 %		✓	
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				0.5 mg/kg		0.462 mg/kg	0.0000462 %		✓	
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	160 mg/kg		147.84 mg/kg	0.0148 %		✓	
	082-001-00-6										
23	mercury { mercury dichloride }				0.6 mg/kg	1.353	0.75 mg/kg	0.000075 %		✓	
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				22 mg/kg	1.579	32.108 mg/kg	0.00321 %		✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				8.3 pH		8.3 pH	8.3 pH			
			PH								
27	phenanthrene				2.3 mg/kg		2.125 mg/kg	0.000213 %		✓	
		201-581-5	85-01-8								
28	pyrene				2.5 mg/kg		2.31 mg/kg	0.000231 %		✓	
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
	034-002-00-8										
30	zinc { zinc oxide }				210 mg/kg	1.245	241.524 mg/kg	0.0242 %		✓	
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				35 mg/kg	1.785	57.733 mg/kg	0.00577 %		✓	
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.0652 %		

Key

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

Classification of sample: TP113--12102023-0.10

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

**Sample details**

Sample name:	LoW Code:	
<b>TP113--12102023-0.10</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>14%</b> (wet weight correction)		

**Hazard properties**

None identified


**Determinands**

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used	
	EU CLP index number	EC Number	CAS Number										
1	acenaphthene	201-469-6	83-32-9		3.4	mg/kg		2.924	mg/kg	0.000292 %	✓		
2	acenaphthylene	205-917-1	208-96-8		0.39	mg/kg		0.335	mg/kg	0.0000335 %	✓		
3	anthracene	204-371-1	120-12-7		7.2	mg/kg		6.192	mg/kg	0.000619 %	✓		
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	31	mg/kg	1.32	35.2	mg/kg	0.00352 %	✓		
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	23	mg/kg		19.78	mg/kg	0.00198 %	✓		
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	23	mg/kg		19.78	mg/kg	0.00198 %	✓		
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	25	mg/kg		21.5	mg/kg	0.00215 %	✓		
8	benzo[ghi]perylene	205-883-8	191-24-2		10	mg/kg		8.6	mg/kg	0.00086 %	✓		
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	11	mg/kg		9.46	mg/kg	0.000946 %	✓		
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	2.1	mg/kg	2.775	5.012	mg/kg	0.000501 %	✓		
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		2.3	mg/kg	13.43	26.565	mg/kg	0.00266 %	✓		
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	1.7	mg/kg	1.285	1.879	mg/kg	0.000146 %	✓	
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		29	mg/kg	1.462	42.385	mg/kg	0.00424 %			
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %	<LOD	
15	chrysene	601-048-00-0	205-923-4	218-01-9		23	mg/kg		19.78	mg/kg	0.00198 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
16	copper { dicopper oxide; copper (I) oxide }				65 mg/kg	1.126	62.937	mg/kg	0.00629 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				1.9 mg/kg		1.634	mg/kg	0.000163 %	✓	
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				53 mg/kg		45.58	mg/kg	0.00456 %	✓	
		205-912-4	206-44-0								
20	fluorene				2.6 mg/kg		2.236	mg/kg	0.000224 %	✓	
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				10 mg/kg		8.6	mg/kg	0.00086 %	✓	
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	53 mg/kg		45.58	mg/kg	0.00456 %	✓	
	082-001-00-6										
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				0.51 mg/kg		0.439	mg/kg	0.0000439 %	✓	
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				23 mg/kg	1.579	31.243	mg/kg	0.00312 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				8.3 pH		8.3	pH	8.3 pH		
			PH								
27	phenanthrene				43 mg/kg		36.98	mg/kg	0.0037 %	✓	
		201-581-5	85-01-8								
28	pyrene				44 mg/kg		37.84	mg/kg	0.00378 %	✓	
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8										
30	zinc { zinc oxide }				160 mg/kg	1.245	171.273	mg/kg	0.0171 %	✓	
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1	mg/kg	<0.0001 %		<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				57 mg/kg	1.785	87.51	mg/kg	0.00875 %	✓	
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.0759 %		

Key

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

Classification of sample: WS101--11102023-0.40

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

**Sample details**

Sample name:	LoW Code:
<b>WS101--11102023-0.40</b>	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
<b>11%</b> (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

**Hazard properties**

None identified


**Determinands**

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		0.25 mg/kg		0.223 mg/kg	0.0000222 %	✓	
2	acenaphthylene	205-917-1	208-96-8		0.06 mg/kg		0.0534 mg/kg	0.00000534 %	✓	
3	anthracene	204-371-1	120-12-7		1.4 mg/kg		1.246 mg/kg	0.000125 %	✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	15 mg/kg	1.32	17.626 mg/kg	0.00176 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	7 mg/kg		6.23 mg/kg	0.000623 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	7.3 mg/kg		6.497 mg/kg	0.00065 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	8.3 mg/kg		7.387 mg/kg	0.000739 %	✓	
8	benzo[ghi]perylene		205-883-8	191-24-2	3.7 mg/kg		3.293 mg/kg	0.000329 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	3 mg/kg		2.67 mg/kg	0.000267 %	✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	1.3 mg/kg	2.775	3.211 mg/kg	0.000321 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2	0.4 mg/kg	13.43	4.781 mg/kg	0.000478 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	0.6 mg/kg	1.285	0.686 mg/kg	0.0000534 %	✓	
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9	37 mg/kg	1.462	54.078 mg/kg	0.00541 %		
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	7.1 mg/kg		6.319 mg/kg	0.000632 %	✓	


#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
16	copper { dicopper oxide; copper (I) oxide }				47 mg/kg	1.126	47.096 mg/kg	0.00471 %		✓	
	029-002-00-X	215-270-7	1317-39-1								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				0.71 mg/kg		0.632 mg/kg	0.0000632 %		✓	
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				13 mg/kg		11.57 mg/kg	0.00116 %		✓	
		205-912-4	206-44-0								
20	fluorene				0.17 mg/kg		0.151 mg/kg	0.0000151 %		✓	
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				3.4 mg/kg		3.026 mg/kg	0.000303 %		✓	
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	130 mg/kg		115.7 mg/kg	0.0116 %		✓	
	082-001-00-6										
23	mercury { mercury dichloride }				0.4 mg/kg	1.353	0.482 mg/kg	0.0000482 %		✓	
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				0.1 mg/kg		0.089 mg/kg	0.0000089 %		✓	
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				26 mg/kg	1.579	36.55 mg/kg	0.00365 %		✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				8 pH		8 pH	8pH			
			PH								
27	phenanthrene				2.9 mg/kg		2.581 mg/kg	0.000258 %		✓	
		201-581-5	85-01-8								
28	pyrene				13 mg/kg		11.57 mg/kg	0.00116 %		✓	
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
	034-002-00-8										
30	zinc { zinc oxide }				150 mg/kg	1.245	166.169 mg/kg	0.0166 %		✓	
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				74 mg/kg	1.785	117.572 mg/kg	0.0118 %		✓	
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.0635 %		

**Key**

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



Classification of sample: WS104--10102023-0.05

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

**Sample details**

Sample name:	LoW Code:	
<b>WS104--10102023-0.05</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>11%</b> (wet weight correction)		

**Hazard properties**

None identified


**Determinands**

Moisture content: 11% Wet Weight Moisture Correction applied (MC)


#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	19 mg/kg	1.32	22.327 mg/kg	0.00223 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
8	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.78 mg/kg	2.775	1.927 mg/kg	0.000193 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		<0.2 mg/kg	13.43	<2.686 mg/kg	<0.000269 %		<LOD
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		19 mg/kg	1.462	27.77 mg/kg	0.00278 %		
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
16	copper { dicopper oxide; copper (I) oxide }				16 mg/kg	1.126	16.033	mg/kg	0.0016 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				0.06 mg/kg		0.0534	mg/kg	0.00000534 %	✓	
		205-912-4	206-44-0								
20	fluorene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	22 mg/kg		19.58	mg/kg	0.00196 %	✓	
	082-001-00-6										
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				20 mg/kg	1.579	28.115	mg/kg	0.00281 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				8.1 pH		8.1	pH	8.1 pH		
			PH								
27	phenanthrene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-581-5	85-01-8								
28	pyrene				0.07 mg/kg		0.0623	mg/kg	0.00000623 %	✓	
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8										
30	zinc { zinc oxide }				66 mg/kg	1.245	73.114	mg/kg	0.00731 %	✓	
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1	mg/kg	<0.0001 %		<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				52 mg/kg	1.785	82.618	mg/kg	0.00826 %	✓	
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.0283 %		

Key

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

Classification of sample: WS110--11102023-0.35

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

**Sample details**

Sample name:	LoW Code:	
<b>WS110--11102023-0.35</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>8.9%</b> (wet weight correction)		

**Hazard properties**

None identified

**Determinands**





Moisture content: 8.9% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	33 mg/kg	1.32	39.693 mg/kg	0.00397 %	✓	
5	benzene	601-020-00-8	200-753-7	71-43-2	<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
6	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
7	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
8	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
9	benzo[ghi]perylene		205-883-8	191-24-2	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.68 mg/kg	2.775	1.719 mg/kg	0.000172 %	✓	
12	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.9 mg/kg	13.43	11.011 mg/kg	0.0011 %	✓	
13	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9	26 mg/kg	1.462	38 mg/kg	0.0038 %		
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	chrysene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
17	copper { dicopper oxide; copper (I) oxide }				30 mg/kg	1.126	30.771 mg/kg	0.00308 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
	006-007-00-5									
19	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
20	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
21	fluoranthene				0.07 mg/kg		0.0638 mg/kg	0.00000638 %	✓	
		205-912-4	206-44-0							
22	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							
23	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-893-2	193-39-5							
24	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	21 mg/kg		19.131 mg/kg	0.00191 %	✓	
	082-001-00-6									
25	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
26	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
27	nickel { nickel dihydroxide }				19 mg/kg	1.579	27.34 mg/kg	0.00273 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
28	pH		PH		8 pH		8 pH	8pH		
29	phenanthrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-581-5	85-01-8							
30	pyrene				0.07 mg/kg		0.0638 mg/kg	0.00000638 %	✓	
		204-927-3	129-00-0							
31	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
32	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
33	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
34	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
35	zinc { zinc oxide }				57 mg/kg	1.245	64.634 mg/kg	0.00646 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
36	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
37	monohydric phenols		P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
38	vanadium { divanadium pentaoxide; vanadium pentoxide }				50 mg/kg	1.785	81.315 mg/kg	0.00813 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
Total:								0.0333 %		

Key

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

## Appendix A: Classifier defined and non GB MCL determinands

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

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

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

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

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

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

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

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

- **boron tribromide/trichloride/trifluoride (combined)** (CAS Number: 10294-33-4, 10294-34-5, 7637-07-2)

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 Aug 2015  
Hazard Statements: EUH014, Acute Tox. 2; H330, Acute Tox. 2; H300, Skin Corr. 1A; H314, Skin Corr. 1B; H314

- **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database  
Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>  
Data source date: 17 Jul 2015  
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

- **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

GB MCL index number: 006-007-00-5  
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide  
Additional Hazard Statement(s): EUH032 >= 0.2 %  
Reason for additional Hazards Statement(s):  
20 Nov 2021 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

- **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

GB MCL index number: 601-023-00-4  
Description/Comments:  
Additional Hazard Statement(s): Carc. 2; H351  
Reason for additional Hazards Statement(s):  
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

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

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

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

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

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

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

▪ **lead compounds with the exception of those specified elsewhere in this Annex**

GB MCL index number: 082-001-00-6  
Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following MCL protocols, considers many simple lead compounds to be Carcinogenic category 2  
Additional Hazard Statement(s): Carc. 2; H351  
Reason for additional Hazards Statement(s):  
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium [www.reach-lead.eu/substanceinformation.html](http://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 May 2015  
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 Aug 2015  
Hazard Statements: Acute Tox. 4; H302, Eye Irrit. 2; H319, STOT SE 3; H335, Carc. 2; H351, Skin Sens. 1; H317, Aquatic Acute 1; H400, Aquatic Chronic 1; H410, Skin Irrit. 2; H315

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

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

▪ **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 May 2015  
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

▪ **monohydric phenols** (CAS Number: P1186)

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xylenols (604-001-00-2, 604-004-00-9, 604-006-00-X)  
Data source: CLP combined data  
Data source date: 26 Mar 2019  
Hazard Statements: Muta. 2; H341, Acute Tox. 3; H331, Acute Tox. 3; H311, Acute Tox. 3; H301, STOT RE 2; H373, Skin Corr. 1B; H314, Skin Corr. 1B; H314 >= 3%, Skin Irrit. 2; H315 1 £ conc. < 3%, Eye Irrit. 2; H319 1 £ conc. < 3%, Aquatic Chronic 2; H411

▪ **divanadium pentoxide; vanadium pentoxide** (EC Number: 215-239-8, CAS Number: 1314-62-1)

GB MCL index number: 023-001-00-8  
Description/Comments: Hazard statements H301, H330, H350 added by HazWasteOnline due to ATP 18 (Regulation (EU) 2022/692) considers vanadium pentoxide to be Carc. 1B; H350. The GB MCL Agency has reached the same opinion [but is yet to formerly make this change to the MCL List]. Substance has therefore been self-classified.  
Additional Hazard Statement(s): Carc. 1B; H350, Acute Tox. 3; H301, Acute Tox. 2; H330  
Reason for additional Hazards Statement(s):  
20 Sep 2022 - Carc. 1B; H350 hazard statement sourced from: ATP 18 (Regulation (EU) 2022/692) considers vanadium pentoxide to be Carc. 1B; H350. The GB MCL Agency has reached the same opinion [but is yet to formerly make this change to the MCL List]. Substance has therefore been self-classified.  
28 Sep 2022 - Acute Tox. 3; H301 hazard statement sourced from: ATP 18 (Regulation (EU) 2022/692) considers vanadium pentoxide to be "Acute tox 3; H301". The GB MCL Agency has reached the same opinion [but is yet to formerly make this change to the MCL List]. Substance has therefore been self-classified.  
28 Sep 2022 - Acute Tox. 2; H330 hazard statement sourced from: ATP 18 (Regulation (EU) 2022/692) considers vanadium pentoxide to be "Acute tox 2; H330". The GB MCL Agency has reached the same opinion [but is yet to formerly make this change to the MCL List]. Substance has therefore been self-classified.

**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)}**

Worst case species based on hazard statements

**chromium in chromium(VI) compounds {chromium(VI) oxide}**

Worst case species based on hazard statements

**copper {dicopper oxide; copper (I) oxide}**

Most likely common species

**cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}**

Worst case species

**lead {lead compounds with the exception of those specified elsewhere in this Annex}**

Worst case species based on hazard statements

**mercury {mercury dichloride}**

Worst case species based on hazard statements

**nickel {nickel dihydroxide}**

Worst case species based on hazard statements

**selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}**

Worst case species based on hazard statements

**zinc {zinc oxide}**

Worst case species based on hazard statements

**vanadium {divanadium pentaoxide; vanadium pentoxide}**

Worst case species based on hazard statements.

**Appendix C: Version**

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021  
 HazWasteOnline Classification Engine Version: 2023.308.5798.10726 (04 Nov 2023)  
 HazWasteOnline Database: 2023.308.5798.10726 (04 Nov 2023)



This classification utilises the following guidance and legislation:

**WM3 v1.2.GB - Waste Classification** - 1st Edition v1.2.GB - Oct 2021

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2020 No. 1540 of 16th December 2020

**GB MCL List** - version 1.1 of 09 June 2021

*WAC data*



**Nathan Thompson**  
Hydrock Consultants Ltd  
2-4 Hawthorne Park  
Holdenby Road  
Spratton  
Northamptonshire  
NN6 8LD

t: 01604842888  
f: 01604842666  
e: nathanthompson@hydrock.com

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 : 23-64538**

<b>Project / Site name:</b>	Bicester Motion	<b>Samples received on:</b>	23/10/2023
<b>Your job number:</b>	27280	<b>Samples instructed on/ Analysis started on:</b>	23/10/2023
<b>Your order number:</b>	PO29514	<b>Analysis completed by:</b>	31/10/2023
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	31/10/2023
<b>Samples Analysed:</b>	10:1 WAC sample		

**Signed:** 

Joanna Szwagrzak  
Junior Reporting Specialist  
**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.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.



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Environmental Science

**i2 Analytical**7 Woodshots Meadow  
Croxley Green Business Park  
Watford, WD18 8YSTelephone: 01923 225404  
Fax: 01923 237404  
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results						
Report No:	23-64538					
				Client: HYDROCK		
Location	Bicester Motion					
Lab Reference (Sample Number)	2855549 / 2855550			Landfill Waste Acceptance Criteria		
Sampling Date	11/10/2023			Limits		
Sample ID	TP103			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Depth (m)	0.10					
<b>Solid Waste Analysis</b>						
TOC (%)**	3.1			3%	5%	6%
Loss on Ignition (%) **	8.0			--	--	10%
BTEX (µg/kg)**	< 5.0			6000	--	--
Sum of PCBs (mg/kg)**	< 0.007			1	--	--
Mineral Oil (mg/kg) <sub>EH, ID, CU, AL</sub>	< 10			500	--	--
Total PAH (WAC-17) (mg/kg)	39.1			100	--	--
pH (units)**	7.4			--	>6	--
Acid Neutralisation Capacity (mmol / kg)	0.63			--	To be evaluated	To be evaluated
<b>Eluate Analysis</b>						
	10:1			10:1	Limit values for compliance leaching test	
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)	
Arsenic *	0.0023			0.0225	0.5	2
Barium *	0.0482			0.482	20	100
Cadmium *	< 0.0001			< 0.0008	0.04	1
Chromium *	0.0027			0.027	0.5	10
Copper *	0.042			0.42	2	50
Mercury *	< 0.0005			< 0.0050	0.01	0.2
Molybdenum *	0.0131			0.131	0.5	10
Nickel *	0.0024			0.025	0.4	10
Lead *	0.011			0.11	0.5	10
Antimony *	< 0.0017			< 0.017	0.06	0.7
Selenium *	< 0.0040			< 0.040	0.1	0.5
Zinc *	0.053			0.53	4	50
Chloride *	1.9			19	800	15000
Fluoride*	1.4			14	10	150
Sulphate *	5.2			52	1000	20000
TDS*	75			750	4000	60000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-
DOC	< 0.100			< 1.00	500	800
<b>Leach Test Information</b>						
Stone Content (%)	< 0.1					
Sample Mass (kg)	0.80					
Dry Matter (%)	86					
Moisture (%)	14					
Results are expressed on a dry weight basis, after correction for moisture content where applicable. * = UKAS accredited (liquid eluate analysis only)						
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation ** = MCERTS accredited						

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.  
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.



**Analytical Report Number : 23-64538**  
**Project / Site name: Bicester Motion**

\* 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 *
2855549	TP103	None Supplied	0.1	Brown loam and sand with gravel and vegetation.

Analytical Report Number : 23-64538  
Project / Site name: Bicester Motion

**Water matrix abbreviations:**

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as received, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance""	L046-PL	W	NONE
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated WAC-17 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
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	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
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
Total BTEX in soil (Poland)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073-PL	W	MCERTS
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025

Analytical Report Number : 23-64538  
Project / Site name: Bicester Motion

**Water matrix abbreviations:**

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by EC probe using a factor of 0.6.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031-PL	W	ISO 17025
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' 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 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

## Information in Support of Analytical Results

### List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

# Appendix I Preliminary geotechnical risk register



## Geotechnical hazard identification – desk study stage

Potential geotechnical hazards have been assessed in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and CD 622. The following pages set out the identified geotechnical risks and hazards which are associated with the proposed development and establish the approach which is to be taken to manage the risks including the geotechnical input and analysis.

Table J.1 is a preliminary assessment of possible geotechnical hazards at the site at Desk Study stage. This information is used to assist with ground investigation design.

Table J.1: Possible geotechnical hazards

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Uncontrolled Made Ground (variable strength and compressibility).	Made Ground present across the site.	✓	-
Soft / loose compressible ground (low strength and high settlement potential).	Unknown strength characteristics; although likely to be poor, particularly in the area of the 'old dump'.	✓	-
Shrinkage/swelling of the clay fraction of soils under the influence of vegetation.	Clay soils present. Locally. Moderate to high potential for swelling/shrinkage in these areas.	✓	-
Lateral and vertical changes in ground conditions.	Various strata across site.	✓	-
High concentrations of sulfates in the soils.	Potential for high sulphate concentrations in Forest Marble Formation soils	✓	-
Adverse chemical ground conditions, (e.g. expansive slag).	Could be present in the 'old dump materials, although not identified by earlier phases of investigation.	✓	-
Obstructions.	Whilst outside the construction area, It is unknown if these are to remain <i>in situ</i> .	✓	-
Existing below ground structures to remain (pill boxes and 'seagull trenches')	Potential for other unknown structures to be present.	✓	-

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Shallow groundwater.	Shallow groundwater levels are recorded in the Cornbrash Limestone Formation.	✓	-
Changing groundwater conditions.	These are likely to be subject to seasonal variations.	✓	-
Risk from erosion.	Unlikely to affect the site.	-	✓
Risk from flooding.	The site is in Flood Zone 1, with a low risk of fluvial flooding.	-	✓
Running sands and / or loose Made Ground, leading to difficulty with excavation and collapse of side walls.	There is relatively deep, likely to be poorly compacted, Made Ground in the 'old dump' area.	✓	-
Slope stability issues – general slopes.	The site generally slopes gently, and proposed levels are not significantly different from existing.	-	✓
Slope stability issues – retaining walls.	Significant slopes and retaining walls are unlikely to be required.	-	✓
Earthworks – settlement (due to placement of fill on soft / loose ground).	Site levels are to be altered to create development plateaux.	✓	-
Earthworks – poor bearing capacity of new fill.	Made Ground is identified and is liable to settlement and potentially failure, under loading.	✓	-
Earthworks – unsuitability of site won material to be reused as fill.	Made Ground soils may be geotechnically and/or chemically unsuitable for reuse.	✓	-
Mining.	The 'old dump' is a backfilled former quarry.	✓	-
Cambered ground with gulls possibly present.	The geology below the site is not generally associated with cambering.	-	✓
Relic slip surfaces.	The site generally slopes gently.	-	✓

Solifluction.	No superficial deposits are recorded on site, or in the area.	-	✓
Problematic soils (silts and rewetting etc.).	Some of the rock strata (siltstone) may weather to silt.	✓	-

### Geotechnical hazard identification – following ground investigation

The preliminary Geotechnical Risk Register following Ground Investigation is set out in Table J.3.

The probability and impact of a hazard have been judged on a qualitative scale as set out in Table J.2. The degree of risk (R) is determined by combining an assessment of the probability (P) of the hazard occurring with an assessment of the impact (I) of the hazard and associated mitigation it will require if it occurs ( $R = P \times I$ ).

Table J.2: Qualitative assessment of hazards and risks

P = Probability		I = Impact		R = Risk Rating (P x I)	
1	Very unlikely (VU)	1	Very Low	1 – 4	None / negligible
2	Unlikely (U)	2	Low	5 – 9	Minor
3	Plausible (P)	3	Medium	10 – 14	Moderate
4	Likely (Lk)	4	High	15 – 19	Substantial
5	Very Likely (VLk)	5	Very High	20 – 25	Severe

Table 1.3: Qualitative assessment of hazards and risks

Hazard	Comments	Who is at risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Uncontrolled Made Ground (variable strength and compressibility).	There is Made Ground due to historical construction activity and waste disposal/quarry backfilling at the site.  The Made Ground is up to 3.0m thick in the 'Old Dump' area of the site.	New structures	Bearing capacity failure, settlement (total and differential).	4	4	16	Design foundations to found on suitable natural soils or on structural fill.
			Floor slab failure.	4	4	16	Design floor slabs to found on suitable natural soils or on structural fill.
		Roads and pavements.	Settlement (total and differential) of roads and pavements.	3	3	9	Design roads and pavements using suitable geotechnical parameters, and increase the sub-base and use geo-grids as appropriate.
		Services.	Settlement (total and/or differential), causing damage to services.	2	3	6	It is not anticipated that settlement will significantly adversely affect services. No additional design requirements envisaged.
		Landscaping	Settlement (differential), in landscaped areas	3	2	6	It is possible but unlikely that settlements will significantly adversely affect landscaped areas
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.	3	3	9	Where soft spots are encountered, over-excavate and replace with suitable fill. Outline design of working platform to include geo-grid. Site inspection and watching brief by Contractor to review working platform frequently and regularly.
			Collapse of excavations.	3	3	9	Temporary Works Design to include recommendations for inspection of excavations. No person entry to unsupported excavations.

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Hazard	Comments	Who is at risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Soft / loose ground (low strength and high settlement potential).	There is Made Ground due to historical construction activity and waste disposal/quarry backfilling at the site. The Made Ground is up to 3.0m thick in the 'Old Dump' area of the site.	New structures	Bearing capacity failure, settlement (total and differential).	4	4	16	Design foundations to found on suitable natural soils or on structural fill.
			Floor slab failure.	4	4	16	Design floor slabs to found on suitable natural soils or on structural fill.
		Roads and pavements.	Settlement (total and differential) of roads and pavements.	3	3	9	Design roads and pavements using suitable geotechnical parameters, and increase the sub-base and use geo-grids as appropriate.
		Services.	Settlement (total and/or differential), causing damage to services.	2	3	6	It is not anticipated that settlement will significantly adversely affect services. No additional design requirements envisaged.
		Landscaping	Settlement (differential), in landscaped areas	3	2	6	It is possible but unlikely that settlements will significantly adversely affect landscaped areas.
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.	3	3	9	Where soft spots are encountered, over-excavate and replace with suitable fill. Outline design of working platform to include geo-grid. Site inspection and watching brief by Contractor to review working platform frequently and regularly.
			Collapse of excavations.	3	3	9	Temporary Works Design to include recommendations for inspection of excavations. No person entry to unsupported excavations.
Shrinkage / swelling of the clay fraction of soils under the influence of vegetation.	The clays of the Forest Marble Formation are of medium heave potential.	Foundations.	Shrinkage or heave of soils leading to damage to foundations.	2	4	8	The Forest Marble is unlikely to form the founding stratum for most of the structures, due to its depth below the site. Where it does form the founding stratum it is likely to be too deep to be affected by seasonal variations, or tree influence. Design foundations to found below the depth of influence of any trees.
		Floor slabs.	Floor slab failure.	2	4	8	Design floor slabs in accordance with relevant standards.

Hazard	Comments	Who is at risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Lateral and vertical changes in ground conditions.	The near surface soils vary laterally and vertically, both in composition and strength, from Made Ground of different types to natural weathered Cornbrash Limestone Formation.	New structures	Foundation bearing capacity failure, due to differential settlement.	4	4	16	Design foundations to found on suitable natural ground or on structural fill. Allow for reinforcement of any long foundations.
			Floor slab failure.	4	4	16	Design floor slab to found on suitable natural ground or on structural fill.
		Roads and pavements.	Settlement (total and differential), of roads and pavements.	3	3	9	Design roads and pavements using suitable geotechnical parameters and increase the sub-base and use geo-grids as appropriate. If anticipated settlements are significant, and cannot be mitigated by design, over-excavate and replace unsuitable soils.
		Services.	Settlement (differential), causing damage to services.	2	3	6	It is not anticipated that settlement will significantly adversely affect services. No additional design requirements envisaged.
		Landscaped areas	Settlement (differential), in landscaped areas.	2	2	6	It is unlikely that significant differential settlements will be encountered due to different ground conditions.
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.	3	3	9	Where soft spots encountered, over-excavate and replace with suitable fill. Design working platform to suit the ground conditions. Outline design of working platform to include geo-grid if necessary. Site inspection and watching brief by Contractor to review working platform frequently and regularly.

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Hazard	Comments	Who is at risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Sulfates in the soils.	DS-1 conditions are recorded across the site.	Attack of buried concrete.	Damage to concrete and reduction in strength.	1	4	4	Classify concrete in accordance with BRE SD1 and design concrete accordingly.
		Earthworks.	Sulfate heave following the use of hydraulic binders.	1	4	4	Supplementary sulfate testing in accordance with BRE guidelines to be undertaken during earthworks. Before the use of hydraulic binders is approved, comprehensive testing and design will need to be completed by a Specialist Contractor to satisfy both themselves and the Engineer of the suitability of the soils for treatment, and confirm that the requisite end-performance of the material is achievable. The use of modification / stabilisation to be restricted to suitable materials following laboratory trials. In all instances where improvement by the inclusion of binders is considered, a mix design is required and as part of this design, samples should be checked for swelling, even where very low sulfate values are recorded.
Obstructions.	There is a potential for obstructions to be encountered due to historical construction activity, materials in Made Ground, or shallow rock.	New structures	Requirement for breaking out. Requirement to redesign foundations	3	3	9	Undertake Enablement Works and remove obstructions. or Allow for a breaker to be present during construction and remove obstructions where encountered during construction.
		Roads and pavements.	Hard spots in externals and roads / pavements.	3	2	6	
		Construction staff, vehicles and plant operators.	Risk of collapse of excavation as obstructions are pulled out.	3	3	9	Temporary Works Design to include recommendations for inspection of excavations. No person entry to unsupported excavations.



Hazard	Comments	Who is at risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Existing below ground structures to remain (pill boxes and 'seagull trenches').	There are existing pill boxes and 'seagull trenches' on site, which are outside the proposed building footprints but could be impacted by new foundations.	New structures	Foundation bearing capacity failure/ settlement.	2	4	8	Undertake geotechnical design to ensure the proposed structures do not place additional load on the existing structures. Design to be undertaken in accordance with EC7. Contractor to appoint competent Temporary Works Designer to design temporary works, in accordance with BS 5975:2008+A1:2011. Temporary Works Design to include recommendations for inspection of excavations. No person entry to unsupported excavations.
Shallow groundwater.	Monitoring during the ground investigations has proven a shallow groundwater table	Construction staff, vehicles and plant operators.	Difficulty with excavation.  Limit state failure, excessive deformation, trafficking of site plant, inability to place and compact fill.	4	2	8	Contractor to appoint competent Temporary Works Designer to design temporary works, in accordance with BS 5975:2008+A1:2011. Temporary Works Designer to consider in their analysis the impact of, and requirements for, de-watering of excavations. Any water that collects at the base of excavations to be removed as soon as practicable.
Changing groundwater conditions.	Groundwater levels likely constrained within the Cornbrash Limestone Formation but may be seasonally variable.	Construction staff, vehicles and plant operators.	Difficulty with excavation.  Limit state failure, excessive deformation, trafficking of site plant, inability to place and compact fill.	4	2	8	Contractor to appoint competent Temporary Works Designer to design temporary works as required, in accordance with BS 5975:2008+A1:2011. Temporary Works Designer to consider in their analysis the impact of a variable water table.

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Hazard	Comments	Who is at risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Earthworks – settlement (due to placement of fill on soft / loose ground / deep Made Ground).	The underlying geology is generally the weathered Cornbrash Limestone Formation although there is deep Made Ground associated with the 'Old Dump'	New structures	Foundation bearing capacity failure, settlement (total and differential).	3	4	12	Undertake earthworks in accordance with a suitable Specification. Design foundations to found on suitable natural soils or on structural fill.
			Floor slab failure.	3	4	12	Undertake earthworks in accordance with a suitable Specification. Design floor slabs to found on suitable natural soils or on structural fill.
		Roads and pavements.	Settlement (total and differential), of roads and pavements.	3	3	9	Design roads and pavements on improved ground, using suitable geotechnical parameters or increase the sub-base and use geo-grids as appropriate.
		Services.	Settlement (differential), causing damage to services.	2	3	6	Settlements are not anticipated to be significant with regard to services.
		Landscaped areas	Settlement (differential), in landscaped areas	3	3	9	Assess the use of geogrids as part of the design process. Undertake ground improvement (pre-load and surcharge / rolling dynamic compaction / dynamic compaction / over-excavation and replacement) to reduce settlements.
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.	3	3	9	Where soft spots encountered, over-excavate and replace with suitable fill. Design working platform to suit the ground conditions. Outline design of working platform to include geo-grid if necessary. Site inspection and watching brief by Contractor to review working platform frequently and regularly.

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Hazard	Comments	Who is at risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Earthworks – poor bearing capacity and / or settlement of new fill.	There is a requirement for cut to fill to create the development platform and filling of remediation excavations.	New structures	Foundation bearing capacity failure, settlement (total and differential).	3	4	12	Undertake earthworks in accordance with a suitable Specification. Design foundations to found on suitable natural soils or on structural fill.
			Floor slab failure.	3	4	12	Undertake earthworks in accordance with a suitable Specification. Design floor slabs to found on suitable natural soils or on structural fill.
	This will require reuse of soils excavated from the site as well as imported fill.	Roads and pavements.	Settlement (total and differential), of roads and pavements.	3	3	9	Minimum engineering performance to be defined in an Earthworks Specification. Earthworks to be designed in accordance with
		Services.	Settlement (differential), causing damage to services.	2	3	6	1) Manual of Contract Documents for Highway Works (MCHW), Volume 1; 2) Specification for Highway Works (SHW) Series 600;
		Landscaped areas	Settlement (differential), in landscaped areas	2	3	6	3) 6031:2009, Code of practice for earthworks; and 4) BS 8000-1, workmanship on building sites.
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.	3	3	9	Site testing to be undertaken to confirm the works are in accordance with the design. Undertake a suitable watching brief and independent verification.
Earthworks – unsuitability of site won material to be reused as fill.	There is a requirement for cut to fill to create the development platform and filling of remediation excavations. This will require reuse of soils excavated from the site. Made Ground – Landfill is not to be reused in the works.	Earthworks control, inability to place and compact fill.	Service limit state failure, excessive and intolerable total and differential settlement.	4	3	12	Allow for export of unsuitable fill from site and sufficient import to replace it. The design is to describe the processes required to produce suitable fill for reuse. Contractor to design site control measures, plant, equipment and arrangement to comply with processing requirements.
		Project budgets - Insufficient fill to complete earthworks.	Additional costs, due to importation of fill or having to modify designs.	3	3	9	Site testing to be undertaken to confirm the works are in accordance with the design. Undertake a suitable watching brief and independent verification. Adequate investigation of soil types and characterisation of the soils to be undertaken during investigation.

Hazard	Comments	Who is at risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Unforeseen ground conditions - risk associated with limited data.	Ground investigation has been undertaken. However, additional information will be obtained during construction. Ground conditions are only defined at exploratory hole locations.	All aspects of the development		3	4	12	<p>Designers to be contacted if conditions encountered are different to those identified during investigation.</p> <p>Regular inspections of excavations and earthworks for evidence of stability.</p> <p>Adequate investigation required to characterise the site and understand the potential risks.</p>

Whilst the probability and impact of the hazard occurring can be reduced to a minimum by geotechnical design, the impact cannot be reduced below very low. The risk register will need to be up-dated, as necessary, to reflect design, additional information, data and experience as it is gained through the construction process.

Impacts of the design with regard to health and safety considerations will need to be included by the designer at design stage.

# Appendix J Plausible source-pathway-receptor contaminant linkages

## Summary of potential contaminant linkages

Table J.2 lists the plausible contaminant linkages which have been identified. These are considered as potentially unacceptable risks in line with guidelines published in LCRM (2023) and additional risk assessment is required.

Source – Pathway – Receptor Linkages have been assessed in general accordance with guidance in CIRIA Report C552 (Rudland *et al* 2001) but modified to add a 'no linkage' category and to remove low/moderate risk (See Table J.1).

It should be noted that whilst the risk assessment process undertaken in this report may identify potential risks to site demolition and redevelopment workers, consideration of occupational health and safety issues is beyond the scope of this report and need to be considered separately in the Construction Phase Health and Safety Plan.

Table J.1: Consequence versus probability assessment.

		Consequence			
		Severe	Medium	Mild	Minor
Probability	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			

Table J.2: Exposure model – final source-pathway-receptor contaminant linkages

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
Made Ground below the site (PAH, lead, TPH and BTEX)	Ingestion, inhalation or direct contact.	Site users.	Likely	Medium	Moderate	There is Made Ground below the entire site, and there are metals (lead) and PAH at levels in excess of the GAC in the south and east of the site. Contact with these materials is likely in areas of Public Open Space. Mitigation measures will be required to break the SPR linkage in the south and east of the site.
	Inhalation of fugitive dust.	Neighbours.	Low likelihood	Medium	Low	The risk of significant generation of dust is likely only during site development process and can therefore be controlled.
	Leaching through unsaturated zone.	Groundwater and possible abstractors.	Low likelihood	Medium	Low	There is Made Ground below the entire site, and there are metals and PAH at levels in excess of human health GAC in the south and east of the site. Historical monitoring has indicated no concentrations above the GAC within groundwater tested on site. As such the risk with regards to controlled waters is considered low.
	Surface run-off.	Aquatic ecosystems.	Low likelihood	Medium	Low	
	Base flow from contaminated groundwater.	Surface water and possible abstractors.	Low likelihood	Medium	Low	
	Direct contact	Services/ water supply pipes	Low likelihood	Medium	Moderate	Whilst there are elevated concentrations of TPH, BTEX and PAH recorded in shallow Made Ground soils, pipework is likely to be generally at greater depth in the natural soils. However, 'Protectaline' or similar barrier pipework may be required subject to the requirements of the local water supply company.
Made Ground below the site (asbestos).	Inhalation of fugitive dust.	Site users.	Likely	Severe	Very high	There is Made Ground below the entire site, and sporadic ACM and asbestos fibres have been proven to be present in the soil. In the south and east of the site. Contact with these materials is likely in landscaped areas. Mitigation measures will be required to break the SPR linkage in the south and east of the site.

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
Made Ground below the site (zinc and copper)	Root uptake.	New planting.	Low likelihood	Mild	Low	There is Made Ground below the entire site. Whilst root uptake is possible in landscaped areas and a low risk the cover system will include a suitable growing medium, which should mitigate this risk where installed.
Ground gases (carbon dioxide and methane) from organic materials in the Made Ground	Migration, build up and asphyxiation.	Site users.	Unlikely	Severe	Low	Ground gas monitoring has indicated no concentrations of methane above 1% and carbon dioxide readings are primarily below 5%.
		Neighbours.		Severe	Low	
	Migration, build up and explosion.	Site users.	Unlikely	Severe	Low	CS1 conditions when assessed against highest flow rate per borehole and no mitigation measures required.
		Neighbours.				
Buildings on site.						
Buildings on adjacent sites.						
Coal tar in the remaining bituminous bound pavements	Ingestion, inhalation or direct contact.	Site users.	Unlikely	Medium	Very low	Testing indicated the presence of benzo(a)pyrene >50mg/kg in one samples in the asphalt track in the east of the site.
		Neighbours.	Unlikely	Medium	Very low	



# Appendix K Climate Change Considerations for C-S-M

Table K.1 summarises the considerations that have been made in relation the possible implications of predicted climate change. These considerations have been made with reference to prevailing guidance on climate change and land contamination (SoBRA (2022), CL:AIRE (2022), Environment Agency (2010)), and climate change information published by the Met Office and the Environment Agency

Table K.1: Possible CSM considerations related to climate change.

Climate change type	Potential climate change induced effect	Possible considerations on CSM
Increase in frequency and severity of extreme rainfall events	Temporary increasing in groundwater levels	The risk of groundwater flooding is increased but is unlikely to result in a groundwater flooding Likely to have a minimal impact on contaminant linkages.
	Increased surface run-off	Site is to part covered in concrete hardstanding with associated surface water drainage. Surface water run-off will impact drainage network (in terms of volume of water) but is not expected to impact underlying ground conditions.
	Land-based erosion	Not relevant to current nature and location of site.
	River flooding	The site is not in a flood zone. An increase in frequency and severity of extreme rainfall events is unlikely to increase this risk. Not relevant to current nature and location of site.
Increase in frequency and severity of extreme cold and hot weather events	Soil freezing	Could cause failure of surface water drainage network (requiring repair) due to freeze/thaw action but not evident that this would cause a significant change to identified contaminant linkages.
	Soil desiccation/shrinkage	Plasticity indices indicated up to medium volume change potential soils. These are at an increased risk from shrinkage-related subsidence.
	Land fires	Not relevant to current nature and location of site.
	Temporary drop in water (GW and/or SW) levels due to increased water abstraction demand	Cornbrash Limestone Formation on the site is relatively thin which is unlikely to provided suitable resource for water abstraction on a wider scale. It is not expected the site would be adversely affected.
	Temporary drop in water levels (GW and/or SW) due to lower rainfall.	It is not expected that the site would be adversely affected by temporary drop in water levels. Contamination within underlying groundwater not recorded above GAC levels historically.
Long-term sea level rise	Coastal erosion	Not relevant to current nature and location of site.
	Saline intrusion and marine inundation	Not relevant to current nature and location of site.

Long-term increase in rainfall	Increase in groundwater levels	The site is located within a river catchment that eFLAG predicts will see an increase of 0.8mm per day in groundwater recharge in winter months. Potential for increased water levels within the Cornbrash Limestone Formation
Long-term decrease in rainfall	Decrease in groundwater levels	See comment above for temporary decrease in groundwater levels above. Whilst it is expected that there will be an increase in winter rainfall it is also expected that there will be a reduction in summer rainfall such that there will be a long-term increase in the expected seasonal fluctuation in shallow groundwater depth
Long-term change in seasonal temperatures	Change in soil temperature	Worst-case (RCP8.5) prediction for average summer temperatures in 2060-2080 in this area is 6-7 degrees Celsius. Soil temperature at depth below the site (considering the surface cover of buildings and concrete hardstanding) is not expected to rise by this amount and may see a much smaller rise in average temperature as a result of seasonal variation in temperature. A small increase in average soil temperature is not expected to have a significant effect on contaminant fate and transport.