

Ref. No.: MJH/J1925/D2/1

Date: 11th November 2020



**GEOTECHNICAL & GEO-ENVIRONMENTAL
INVESTIGATION REPORT**

**For
NORDER DESIGN ASSOCIATES**

**On the Site of a
DPV BLOCK,
ROYAL BREWERY,
DENMARK ROAD,
MANCHESTER**

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1.0 INTRODUCTION

- 1.1 This report describes an intrusive geotechnical & geo-environmental ground investigation on the site of a DPV facility, Royal Brewery, Denmark Road, Manchester, carried out for our Client, Norder Design Associates. This report follows on from and should be read in conjunction with the desk study for the site issued by Emcus Limited in September 2020, (report reference MJH/J1925/D1/1).
- 1.2 The objectives of this investigation have been to obtain further information relating to the geotechnical & geo-environmental conditions pertaining to the site and to produce an assessment of those factors in relation to the proposed development.
- 1.3 We have been advised that the proposed development at the site will generally comprise up to 8 brewery vessels, the lower part of which will be enclosed within a portal framed structure. The southern area of the site will be developed with brewery road. It is assumed in the production of this report that ground levels across the site will generally remain unchanged during the proposed development. If the assumptions made above and in the later sections of this report are not the case, then the recommendations presented within this report may require some amendment.
- 1.4 This report has been produced on behalf of the Client, Norder Design Associates and no responsibility is accepted to any third party for all or any part. This report should not be relied upon or transferred to any other parties without the express written authorisation of Emcus Limited. If any unauthorised third party comes into possession of this report, they rely on it at their own risk and the authors owe them no duty of care or skill.
- 1.5 The site plans and drawings enclosed in this report should not be scaled off.

2.0 THE SITE AND BACKGROUND

2.1 The Site

2.1.1 The site is located in the central area of Royal Brewery, Denmark Road, Manchester, (see drawings J1925/01 & J1925/02). The Ordnance Survey grid reference for the approximate centre of the site is SJ 8397 9587.

2.1.2 At the time of the investigation site works, the site generally comprised an approximately flat lying area of concrete and asphalt hardstanding, forming part of a brewery loading area, road and car-park. In addition, the southern area of the site generally comprised part of an approximately flat lying grassed lawn and planted border

2.2 Background

2.2.1 The historical maps reviewed as part of the earlier desk study indicate that the site generally comprised part of an agricultural field, before being developed in circa 1893 by residential housing and part of a road. The site is then indicated to have formed part of hardstanding and landscaping area within a brewery from 1978 to 2020.

2.2.2 The published geological map indicates that the natural strata beneath the site comprises glacial till, underlain by the Triassic Chester Pebble Beds Formation. In addition to the natural strata, Made Ground is anticipated beneath the site associated with the historic / previous development.

2.2.3 The site is located in an area where a Coal Authority mining is not required.

2.2.4 It is considered unlikely that the indicated historic / previous usage of the site and the surrounding area will have resulted in gross contamination of the site. However, Made Ground beneath the site may contain concentrations of some metals, poly aromatic hydrocarbons and asbestos which exceed the published Soil Guideline Values / assessment criteria for a commercial end use. Furthermore, the possibility of some localised contamination beneath the site from the historic storage and usage of fuels / oils cannot be completely discounted.

2.2.5 The desk study indicates that a historical landfill is present 227m to the north-west of the site. That historical landfill has the potential to generate concentrations of carbon dioxide and perhaps methane which may impact the proposed development at the site.

3.0 SCOPE OF THE INVESTIGATION

3.1 Site Works

- 3.1.1 Intrusive investigation of the site was undertaken between the 21st September and 23rd September 2020, under the supervision of an experienced Engineer from Emcus Limited.
- 3.1.2 The intrusive investigation of the site generally comprised the advancement of 2 boreholes (BH1 & BH2), to depths of 12.5m bgl., using a tracked drilling rig. The boreholes were advanced by dynamic sampling to depths of 3.3m bgl., (BH1) and 3.4m bgl., (BH2), and then by rotary openhole drilling.
- 3.1.3 Standard Penetration Tests (SPTs) were generally undertaken in the boreholes at 1m – 1.5m vertical centres. Representative disturbed samples of all the strata encountered in the boreholes were placed into sealable plastic containers and glass jars provided by the analytical laboratory for that purpose. The investigatory holes were logged in general accordance with BS 5930: 2015 Code of practice for ground investigations.
- 3.1.4 Once advanced to the required depths, the boreholes were backfilled with arisings and bentonite seals to 5m bgl., and then installed with ground-gas and ground-water level monitoring standpipes.
- 3.1.5 The Engineer's logs of the investigatory holes are presented in Appendix A of this report.
- 3.1.6 In addition, 2 plate load tests to determine equivalent CBR values (CBR1 & CBR2) were carried out in the southern area of the site. The plate load testing was undertaken by the specialist geotechnical testing contractor Construction Testing Solution, using a 0.45m diameter plate. The plate load tests were undertaken at 0.4m bgl., (CBR1) and 0.6m bgl., (CBR2). The test locations were prepared using a JCB 3CX excavator which also provided the reaction weight for the testing jack. The results of the plate load tests are presented in Appendix B of this report.
- 3.1.7 The locations of the boreholes and plate load tests are indicated approximately on drawing J1925/03.

3.2 Laboratory Testing & Analyses

- 3.2.1 Selected disturbed samples recovered from the boreholes were subsequently submitted to MCERTS and UKAS accredited laboratories for chemical analysis and geotechnical testing.
- 3.2.2 3 representative samples of the natural strata were submitted for geotechnical testing at the laboratories of Kiwa CMT. The testing carried out on those samples comprised moisture contents and plasticity index determinations, in accordance with BS 1377: Part 2 and BS EN ISO 17892-12: 2014.

- 3.2.3 4 samples were analysed at Chemtech Environmental for a typical suite of potential contaminants, including a range of metals & semi-metals, phenol, cyanides, total sulphate, sulphur, sulphides & pH, USEPA 16 speciated PolyAromatic Hydrocarbons (PAHs), asbestos and Total Petroleum Hydrocarbons speciated in accordance with current UK guidelines (TPH-CWG).
- 3.2.4 4 samples of the strata were also analysed for pH and water-soluble sulphates to determine the potential aggressiveness of the ground to buried concrete.
- 3.2.5 Further details and the results of the chemical contamination analyses and geotechnical testing are presented in Appendix C.

3.3 Gas Monitoring

- 3.3.1 3 of the 4 proposed post site works visits have been made to monitor the standpipes installed in BH1 and BH2 for a range of ground gases (including carbon dioxide, methane), together with measurement of gas flow and to take groundwater depth readings. The monitoring visits were undertaken on 7th October; 13th October and 4th November 2020. The results of the monitoring visits undertaken to date are presented in Appendix D.

4.0 FINDINGS OF THE INVESTIGATION

4.1 Site Works

- 4.1.1 Made Ground was initially encountered in both of the boreholes to depths of 1.7m bgl., (BH1) and 2m bgl., (BH2). The Made Ground generally comprised a surface veneer of asphalt and / or concrete and sub-angular gravel fill (sub-base) to 0.5m bgl., underlain by grey – brown clay and sand fill incorporating fragments of brick.
- 4.1.2 Natural strata was encountered underlying the Made Ground in both of the boreholes. In both of the boreholes, stiff brown gravelly clay was generally encountered to depths of 5.3m bgl., (BH2) and 5.5m bgl., (BH1), underlain by extremely weak and weak sandstone. That sandstone extended beyond the bottom of BH1 and BH2.
- 4.1.3 The Standard Penetration Tests (SPTs) undertaken in the Made Ground revealed ‘N’ values of 5 and 15. ‘N’ values in the range 15 to 36 were generally revealed for the SPTs undertaken in the gravelly clays. (An ‘N’ value of 6 was, however, revealed for the SPT undertaken in BH1 at 2m bgl.). ‘N’ values of >50, (i.e. refusal of the tests) were generally revealed for the SPTs undertaken in the sandstone. An ‘N’ value of 40 was, however, revealed for the test undertaken in BH2 at 7.5m bgl.
- 4.1.4 Groundwater levels were encountered at 4.6m bgl., (BH1) and 3.4m bgl., (BH2), during advancement of the boreholes.
- 4.1.5 The results of the plate load testing and equivalent CBR values can be summarised as follows.

Test reference	Depth of test	Equivalent CBR value	Modulus of sub-grade reaction
CBR1	0.4m	9	51.8kN/m ² /mm
CBR2	0.6m	12.3	61.9kN/m ² /mm

4.2 Geotechnical Laboratory Testing

- 4.2.1 The results of the plasticity index tests undertaken on the samples of the natural strata recovered from the boreholes can be tabulated as follows.

Sample Reference	Moisture Content %	% Smaller than 425µm	Plastic Limit	Plasticity Index
BH1 at 2m bgl.	26%	100%	19%	29
BH1 at 5m bgl.	11%	90%	10%	10
BH2 at 3m bgl.	22%	97%	19%	27

- 4.2.2 The pH of the strata at the site was found to range between 7.4 and 7.8, with associated water soluble sulphate concentrations of 32mg/l to 128mg/l as SO₄ revealed for the samples tested.

4.3 Chemical Contamination Analyses

- 4.3.1 The results of the chemical contamination testing have generally been assessed with reference to the published Soil Guideline Values (SGV's) and Category 4 Screening Levels (C4SLs). In the absence of published SGVs / C4SLs, the results of the chemical contamination analyses have been assessed with reference to criteria calculated using version (1.06) of the CLEA software and in-house criteria, based on a combination of previous experience or other available assessment guidelines.
- 4.3.2 The calculated SGVs, C4SLs, etc. are interpreted in current guidance as 'intervention values' relative to a particular intended end use for the respective site, to provide a means of assessing possible long term chronic risks to human health. They are based on assumptions about soil conditions and the existence of exposure pathway behaviour for the particular contaminant. The exceedance of an SGV, C4SL, etc. can thus be taken as indicating that further detailed assessment and/or remedial action is required to enable/facilitate development for the particular end use of the site concerned.
- 4.3.3 The results of the chemical analyses have revealed concentrations, falling below the levels of detection and / or below their respective assessment criteria (published SGVs, C4SLs, etc.) for an industrial end use.

4.4 Preliminary Waste Classification

- 4.4.1 The results of the chemical contamination analyses have been assessed using the 'HazWasteOnline' software. A copy of the Waste Classification report is presented in Appendix E of this report.
- 4.4.2 The waste classification report indicates that the strata beneath the site would classify as non-hazardous waste for off-site recycling / management, based on the results of the chemical analyses.

4.5 Gas Monitoring

- 4.5.1 The results of the 3 post site work visits undertaken to monitor the standpipes installed in the boreholes can be summarised as follows.

Carbon Dioxide – Steady carbon dioxide concentrations in the range 0.2%v/v to 4.2%v/v have been recorded in the standpipes at the time of the monitoring visits to date. (A short term 'peak' carbon dioxide concentration of 6%v/v was recorded from BH1 at the time of the 4th November monitoring visit).

Methane – No detectable concentrations of Methane have been recorded in the standpipes at the time of the monitoring visits to date.

Oxygen – Steady Oxygen concentrations in the range 13.9%v/v to 20.6%v/v have been recorded in the standpipes at the time of the monitoring visits to date. (A short term oxygen concentration of 13.8%v/v was recorded from BH1 at the time of the 4th November monitoring visit).

Hydrogen Sulphide - No detectable concentrations of hydrogen sulphide have been recorded in any of the standpipes at the time of the monitoring visits to date.

Carbon Monoxide – No detectable concentrations of carbon monoxide have generally been recorded in any of the standpipes at the time of the monitoring visits to date. However, steady carbon monoxide concentrations of 1ppm were recorded from BH1 on 13th October and 4ppm were recorded from BH1 on 7th October.

- 4.5.2 Gas flows in the range 0.0l/hr (i.e. no detectable gas flow) and 0.1l/hr (i.e. the lower detectable limit of the monitor) have been recorded at the time of the monitoring visits to date.
- 4.5.3 The atmospheric pressures at the time of the monitoring visits were in the range 1004mb (7th October) and 1030mb (4th November).
- 4.5.4 After obtaining the gas readings, the gas bungs/taps were removed and the standpipes 'dipped' for groundwater. The standpipes were generally 'dry to base' at the time of the monitoring visits. However, groundwater in BH1 was recorded at 3m bgl., on 7th October and 2.9m bgl., on 13th October.

5.0 GEOTECHNICAL ASSESSMENT

5.1 Foundations

- 5.1.1 It is considered that the Made Ground encountered beneath the site will not provide a suitable foundation bearing strata for the proposed development, due to the variability and likely settlement performance of that strata.
- 5.1.2 It is anticipated that piles end bearing on the very weak sandstone encountered beneath the site are likely to provide the most appropriate foundation solution for the proposed brewery vessels. Mindful of the gas main which extends beneath the southern area of the site and the existing brewery buildings immediately beyond the northern and western site boundaries, it is anticipated that bored piles will be required to minimise the potential for ground disturbance / vibration.

5.2 Concrete Design

- 5.2.1 We have considered the geology of the site and the ground conditions in accordance with the guidelines contained in Part C of BRE Special Digest 1: Concrete in aggressive ground (2005) and have categorised the site as a 'brownfield' site.
- 5.2.2 The results of the water soluble sulphate analyses from the site fall within Design Sulphate (DS) Class DS-1. The groundwater conditions at the site should be considered to be mobile (potentially). On this basis and from consideration of the pH conditions at the sites, the site has been assigned an ACEC (Aggressive Chemical Environment for Concrete) Class AC-1.
- 5.2.3 The specific concrete mixes (The Design Chemical Class) to be used on site for all the 'in the ground' and 'on the ground' permanent applications should be determined, mindful of the ACEC Class, by the site specific concrete requirements, in terms of the required durability and structural performance. These are assessed in terms of the Intended Working Life and any need for Additional Protective Measures (APM), as detailed in Part D, with further guidance in Parts E and F, of the BRE Special Digest 1, (2005).

5.3 Construction

- 5.3.1 Following the breaking out of the concrete / asphalt hardsurfacing, it is anticipated that excavations at the site should be readily achieved using a JCB 3CX, or similar excavation plant. However, higher specification plant (hydraulic breaker attachment and / or larger 360 degree excavator) may be required for excavations which encounter any old foundations / substructures, etc.
- 5.3.2 It is considered that the stability of excavation sides which encounter the Made Ground may be poor. As such, it is recommended that appropriate excavation support, battering of excavation sides or other measures should be used during construction.

5.4 Soakaways

- 5.4.1 It is recommended that water from soakaways / permeable pavements, etc., is not discharged into the Made Ground beneath the site.
- 5.4.2 Furthermore, it is considered that the cohesive strata encountered beneath the site will not be sufficiently permeable to receive water from soakaways.

5.5 Road Pavements

- 5.5.1 The results of the plate load testing indicate that a CBR value of 5% at the formation of road pavements should prove appropriate for design.

6.0 GEO-ENVIRONMENTAL ASSESSMENT

6.1 Contamination

- 6.1.1 The results of the chemical analyses indicate the site can be regarded as uncontaminated for an industrial end use.
- 6.1.2 Furthermore, with the chemical analyses revealing concentrations below the levels of detection and / or below their respective assessment criteria for a commercial end use, it is considered the site does not pose a significant risk to groundwater / environmental receptors.
- 6.1.3 If during the proposed development of the site, any visual or olfactory evidence of contamination is encountered, then further advice from a suitably qualified and experienced Geo-Environmental Engineer should be sought.

6.2 Radon & Other Ground Gases

- 6.2.1 The desk study advises no radon protective measures are required at the site.
- 6.2.2 The results of the first 3 visits to monitor the standpipes installed at the site have revealed a maximum steady carbon dioxide concentration of 4.2%v/v and a maximum gas flow of 0.1l/hr. No detectable methane concentrations have been recorded.
- 6.2.3 In accordance with BS 8485:2015 + A1:2019 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings', a maximum borehole hazardous gas flow rates of 0.004l/hr for carbon dioxide has been calculated.
- 6.2.4 A check of the 'worst case' scenario for the gas monitoring data, (i.e. maximum recorded gas concentration at the time of the maximum recorded gas flow), has also revealed a 'worst case' hazardous gas flow rate of 0.004l/hr for carbon dioxide.
- 6.2.5 From consideration of hazardous gas flow rates and gas concentrations revealed to date, the site has been assigned a Characteristic Gas Situation (CS) CS1 in accordance with BS8485 and no gas protection measures are required within the proposed development.
- 6.2.6 The ground gas assessment should be reviewed once the outstanding monitoring visit has been undertaken.

We trust the above report is suitable for your present requirements. Should you have any comments or queries, wish to discuss any of the above matters, or require any further assistance, please do not hesitate to contact us.

For & on behalf of Emcus Ltd.



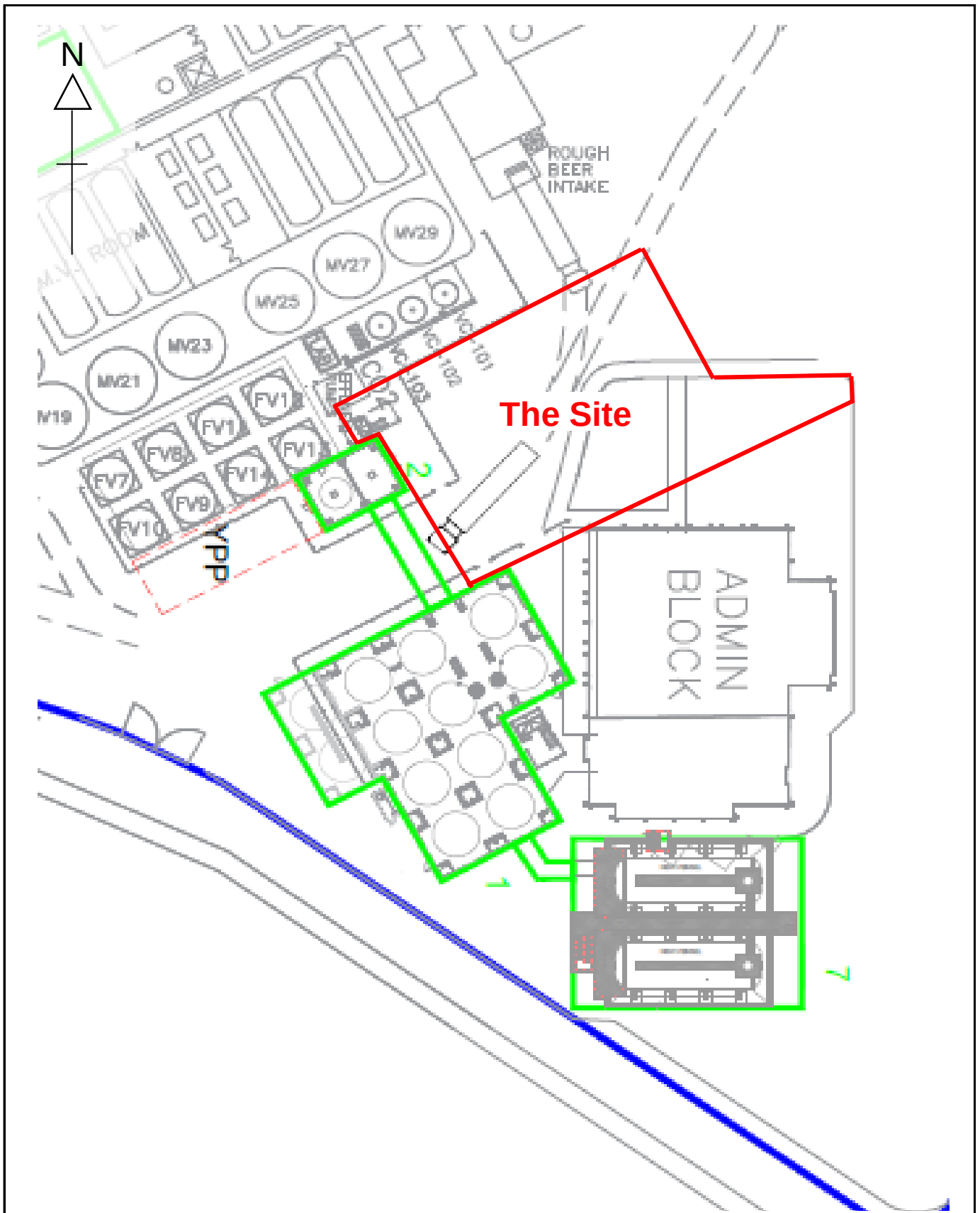
M. J. Hanford, BSc (Hon's) P.Dip FGS
Technical Director

DRAWINGS



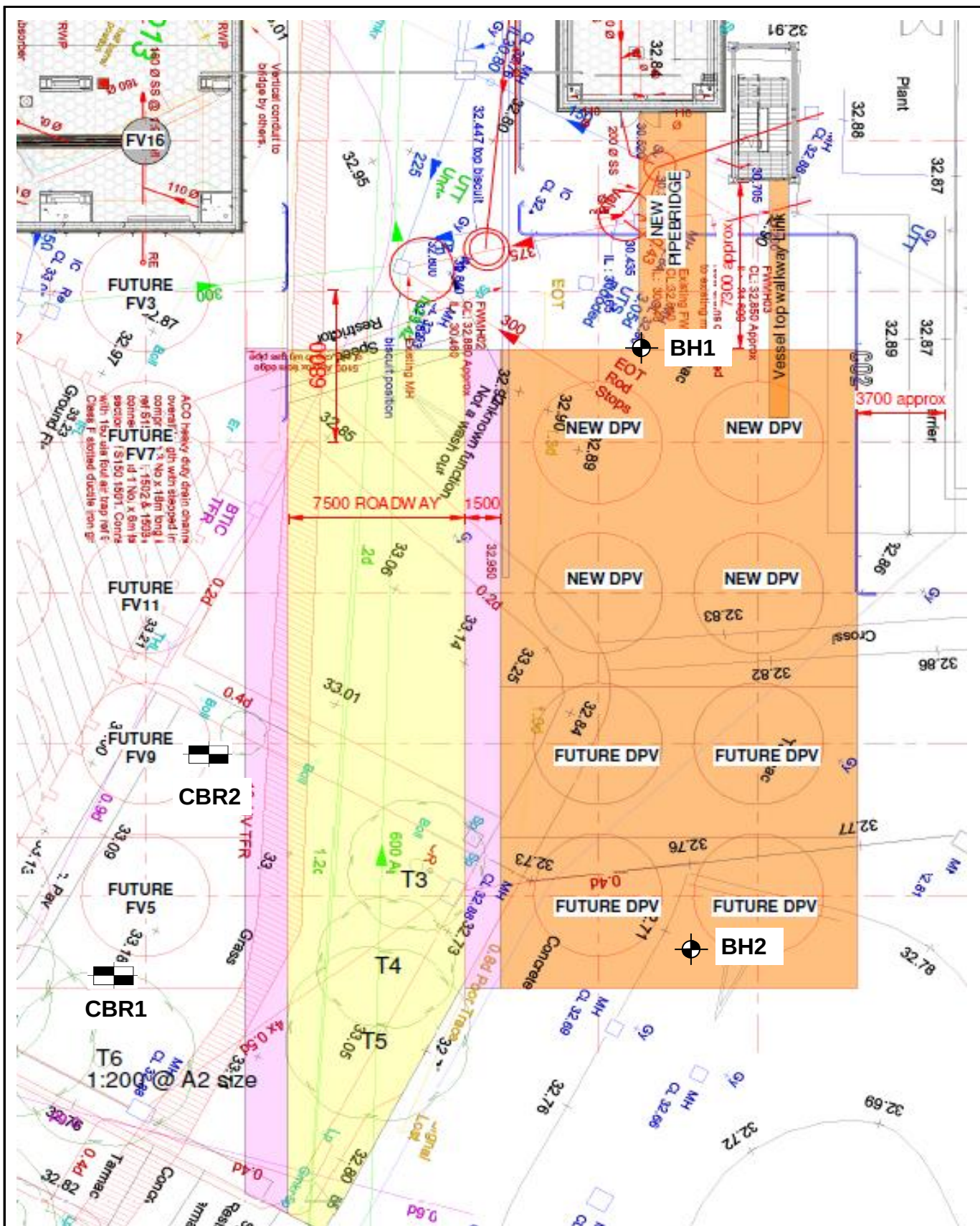
Drawing Title		J1925/01	
Site Location Plan			
		Scale at A4:	NTS
Project	DPV Block, Royal Brewery, Denmark Road, Manchester	Drawn	Approved
		MJH	MJH
Client	Norder Design Associates	Date	Date
		18/09/2020	18/09/2020





Drawing Title Site Plan		J1925/02		
		Scale at A4: NTS		
Project DPV Block, Royal Brewery, Denmark Road, Manchester	Drawn MJH	Approved MJH		
	Client Norder Design Associates	Date 18/09/2020	Date 18/09/2020	





Drawing Title	J1925/03	
	Approximate Investigatory Hole Locations	
Project	Scale at A4:	NTS
	Drawn	Approved
Client	MJH	MJH
	Date	Date
	11/11/2020	11/11/2020



APPENDICES

Appendix A

Logs of Investigatory Holes

Borehole Log

Borehole No.

BH1

Sheet 1 of 1

Project Name: DPV Block

Project No.
J1925

Co-ords: -

Hole Type
RO

Location: Royal Brewery, Manchester

Level:

Scale
1:100

Client: Norder Design Associates

Dates: 22/09/2020 - 23/09/2020

Logged By
JST

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50		N=5 (1,1/1,1,1,2)	0.15 0.40 0.50			MADE GROUND: Dark grey asphalt. MADE GROUND: Grey concrete. Fractured. MADE GROUND: Grey granular fill incorporating much gravel sized fragments of limestone.	1
		1.50	ES		1.20			MADE GROUND: Brown - grey clay fill incorporating many gravel sized fragments of limestone and occasional brick.	2
		1.90	ES		1.70			MADE GROUND: Brown sand fill incorporating many gravel sized fragments of limestone and occasional sandstone.	3
		2.00	D	N=6 (1,1/1,2,2,1)				Stiff brown slightly gravelly silty CLAY. Gravel is angular and subrounded, fine medium and coarse quartzite, siltstone, mudstone and coal.	4
		3.00		N=15 (3,3/3,3,4,5)					5
		4.00		N=36 (5,6/8,9,9,10)					6
		5.00	D		5.50			Extremely weak (becoming weak at 7.5m bgl) red - brown SANDSTONE with occasional subrounded fine medium and coarse gravel of quartzite. Occasional very gravelly horizons.	7
		6.00		50 (10,13/50 for 205mm)					8
		7.50		50 (4,6/50 for 180mm)					9
		9.50		50 (5,12/50 for 145mm)					10
		11.00		50 (25 for 115mm/50 for 50mm)					11
		12.50		50 (6,19/50 for 85mm)	12.50			End of borehole at 12.50 m	12
									13
									14
									15
									16
									17
									18
									19
									20

Remarks

1) Borehole was advanced by dynamic sampling from 0.5m - 3.3m bgl., and then by rotary openhole drilling. 2) Groundwater was encountered at 4.6m bgl., during advancement of borehole. 3) Borehole was cased to 10.5m bgl. 4) Borehole backfilled to 5.0m bgl., with arisings and bentonite seal. 5) Borehole installed with monitoring standpipe above 5m bgl.

Borehole Log

Borehole No.

BH2

Sheet 1 of 1

Project Name: DPV Block

Project No.
J1925

Co-ords: -

Hole Type
RO

Location: Royal Brewery, Manchester

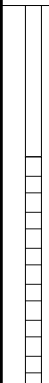
Level:

Scale
1:100

Client: Norder Design Associates

Dates: 21/09/2020 - 22/09/2020

Logged By
JST

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	ES	N=15 (4,3/4,4,4,3)	0.40			MADE GROUND: Grey concrete. 7mm diameter reinforcement bar at 0.38m bgl.	1
		0.80			0.50			MADE GROUND: Grey granular fill incorporating much gravel sized fragments of limestone.	
					1.50			MADE GROUND: Brown - grey gravelly clay fill incorporating much gravel sized fragments of quartzite, limestone and brick.	2
		2.00		N=29 (4,5/5,9,8,7)	2.00			MADE GROUND: Brown - yellow sand fill incorporating occasional gravel sized fragments of quartzite and sandstone.	
		2.50	ES					Stiff brown slightly gravelly silty CLAY. Gravel is angular and subrounded, fine medium and coarse quartzite, siltstone, mudstone and coal.	3
		3.00	ES						4
		4.00		N=27 (4,5/6,6,6,9)					5
		5.00		N=30 (4,6/7,7,7,9)					6
		5.50		50 (10,13/50 for 215mm)	5.30			Extremely weak (becoming weak at 7.5m bgl) red - brown SANDSTONE with occasional subrounded fine medium and coarse gravel of quartzite. Occasional very gravelly horizons.	7
									8
		7.50		40 (25 for 130mm/40 for 90mm)					9
		9.00		50 (25 for 115mm/50 for 85mm)					10
		10.50		50 (25 for 50mm/50 for 40mm)					11
									12
		12.50		50 (50 for 45mm/50 for 90mm)	12.50			End of borehole at 12.50 m	13
									14
									15
									16
									17
									18
									19
									20

Remarks

1) Borehole was advanced by dynamic sampling from 0.5m - 3.4m bgl., and then by rotary openhole drilling. 2) Groundwater was encountered at 3.4m bgl., during advancement of borehole. 3) Borehole was cased to 10.5m bgl. 4) Borehole backfilled to 5.0m bgl., with arisings and bentonite seal. 5) Borehole installed with monitoring standpipe above 5m bgl.

Appendix B

Results of Plate Load Tests / Equivalent CBR Values

Emcus
20 Granite Way
Mountsorrel
Leicestershire,
LE12 7TZ



Royal Brewery, Denmark Road, Just Off Princess Road, Manchester, M15 6LD

Plate Loading Test to determine equivalent CBR Value In accordance with CTS' In-house procedure based on BS1377: Part 9: 1990 & HD 25/94 (replaced by IAN 73/06 Revision 1:2009)		Contract Test Reference: MD2053/1 Clients Reference: MD2053/1	REPORT NO: WVV/27474A Report Date: 23/09/2020
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Material Description:	Brown Topsoil / Tree Roots	Date Tested:	22/09/2020
Test Location:	CBR 1	Supplier/Source:	Site Won
Weather	Sunny		

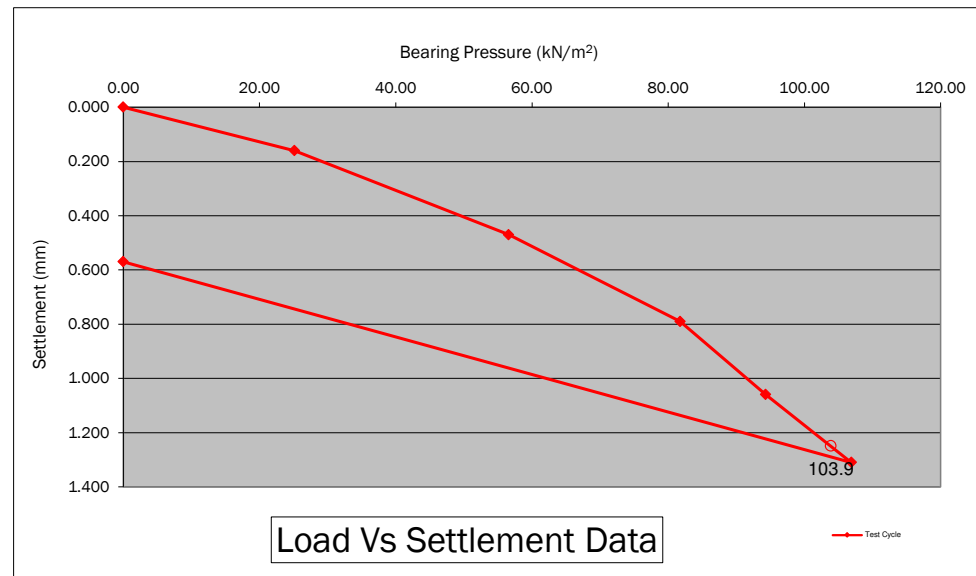
[illegible]

Plate Diameter	450mm	Authorised Signatory  P Taylor - Contract Director
Moisture Content*	Not Taken	
*Carried out in accordance with BS1377: Part 2: 1990.		
Equivalent CBR Value (%)		
9.0		

Notes:

Emcus
20 Granite Way
Mountsorrel
Leicestershire,
LE12 7TZ



Royal Brewery, Denmark Road, Just Off Princess Road, Manchester, M15 6LD

Plate Loading Test to determine equivalent CBR Value In accordance with CTS' In-house procedure based on BS1377: Part 9: 1990 & HD 25/94 (replaced by IAN 73/06 Revision 1:2009)		Contract Test Reference: MD2053/1 Clients Reference: MD2053/1	REPORT NO: WVV/27474B Report Date: 23/09/2020
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Material Description:	Brown, gravelly Clay	Date Tested:	22/09/2020
Test Location:	CBR 2	Supplier/Source:	Site Won
Weather	Sunny		

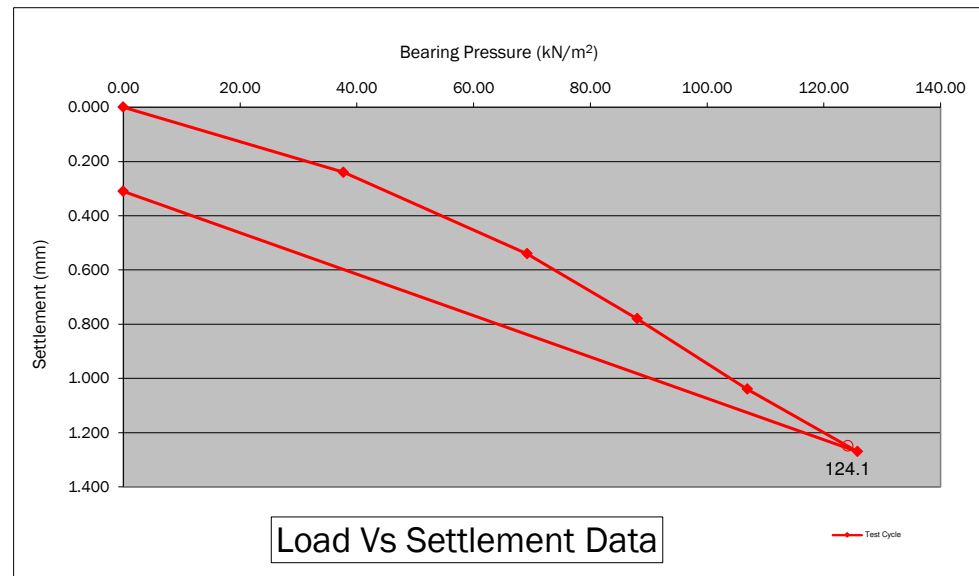
[illegible]

Plate Diameter	450mm	Authorised Signatory  P Taylor - Contract Director
Moisture Content*	Not Taken	
*Carried out in accordance with BS1377: Part 2: 1990.		
Equivalent CBR Value (%)		
12.3		

Notes:	
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Appendix C

Laboratory Test Results

Kiwa CMT



Client: Emcus Ltd
42 Mount Pleasant Drive
Belper
Derbyshire
DE56 2TH

Date: 8th October 2020

Lab Ref: 62066

Originator: Jonathon Thompson

Order Ref: J1925

Site: DPV Heineken
Manchester
J1925

Kiwa CMT Testing
Unit 5 Prime Park Way
Prime Enterprise Park
Derby
DE1 3QB

T +44 (0)1332 383333
F +44 (0)1332 602607
E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Samples:

3No. samples weighing approximately 800g each were sampled by the client and delivered to Kiwa CMT Testing on 1st October 2020. Sampling certificates were not provided.

Requirements:

Determine the Plasticity Index and Water Content of 6No. samples in accordance with **BS 1377: 1990: Part 2: Clauses 4.4 and 5** and **BS EN ISO 17892-1:2014** respectively.

Results:

The individual result sheet may be viewed on page 2 of this report and test results apply to the samples as received.

Kiwa CMT Testing

A handwritten signature in black ink, appearing to read "D. Spencer".

Author: D. Spencer
Technical Administrator

A handwritten signature in blue ink, appearing to read "R. Cartlidge".

Checked and Approved by: R. Cartlidge
Departmental Manager



Certificate of Analysis for Plasticity Index & Water Content**Client:** Emcus Ltd**Site:** DPV Heineken
Manchester
J1925^**Lab Ref:** 62066**Date of Test:** 05.10 - 08.10.20**Test Methods:** BS 1377: 1990: Part 2: Clauses 4.4 and 5 - Liquid Limit/Plastic Limit/Plasticity Index
BS EN ISO 17892-1:2014 - Water Content**Results:**

Sample Ref	Material Description	LL (%)	PL (%)	PI (%)	% Retained on 425µm	Modified PI (%)*	Soil Classification	WC (%)
62066/BH1 2.0m^	Stiff brown CLAY	48	19	29	<1	29	CI	25.7
62066/BH1 5.0m^	Dark brown slightly clayey SAND	20	10	10	10	9	CL	10.6
62066/BH2 3.0m^	Stiff brown slightly silty CLAY	46	19	27	3	26	CI	21.5

The samples tested were disturbed and in their natural condition.

* Modified plasticity index relates to BRE Digest 240.

LL = Liquid Limit

PL = Plastic Limit

PI = Plasticity Index

WC = Water Content

BRE Digest 240 is not included in the UKAS schedule for this Laboratory.

Comment: information marked by ^ supplied by the client can affect the validity of the results. These apply only to the locations provided.



ANALYTICAL TEST REPORT

Contract no: 89620
Contract name: DPV, Heineken
Client reference: J1925
Clients name: Emcus
Clients address: 1E Campbell Street
Belper
Derbyshire
DE56 1AP

Samples received: 24 September 2020

Analysis started: 24 September 2020

Analysis completed: 01 October 2020

Report issued: 01 October 2020

Notes: Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key: U UKAS accredited test
M MCERTS & UKAS accredited test
\$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing
NAD No Asbestos Detected

Approved by:

John Campbell
Director

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
89620-1	BH1	1.50	Sand With Gravel	-	-	13.7
89620-2	BH1	1.90	Clay With Gravel	-	-	15.4
89620-3	BH2	0.80	Clay With Gravel	-	-	19.8
89620-4	BH2	2.50	Clay With Gravel	-	-	15.8

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SOILS

Lab number Sample id Depth (m) Date sampled			89620-1 BH1 1.50 23/09/2020	89620-2 BH1 1.90 23/09/2020	89620-3 BH2 0.80 23/09/2020	89620-4 BH2 2.50 23/09/2020
Test	Method	Units				
Arsenic (total)	CE127 ^M	mg/kg As	3.8	9.5	5.8	14
Boron (water soluble)	CE063 ^M	mg/kg B	1.0	0.8	0.7	0.5
Cadmium (total)	CE127 ^M	mg/kg Cd	<0.2	<0.2	<0.2	0.2
Chromium (total)	CE127 ^M	mg/kg Cr	65	66	103	94
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1	<1
Copper (total)	CE127 ^M	mg/kg Cu	6.5	25	12	28
Lead (total)	CE127 ^M	mg/kg Pb	9.1	13	41	19
Mercury (total)	CE127 ^M	mg/kg Hg	<0.5	<0.5	<0.5	<0.5
Nickel (total)	CE127 ^M	mg/kg Ni	7.5	45	25	53
Selenium (total)	CE127 ^M	mg/kg Se	0.5	2.0	1.7	2.3
Zinc (total)	CE127 ^M	mg/kg Zn	21	65	63	81
pH	CE004 ^M	units	7.7	7.4	7.8	7.8
Sulphate (2:1 water soluble)	CE061 ^M	mg/l SO ₄	48	32	128	110
Sulphate (total)	CE062 ^M	mg/kg SO ₄	218	233	315	301
Sulphide	CE079	mg/kg S ²⁻	<10	<10	<10	<10
Cyanide (free)	CE077	mg/kg CN	<1	<1	<1	<1
Cyanide (total)	CE077	mg/kg CN	<1	<1	<1	<1
Thiocyanate	CE145 ^M	mg/kg SCN	<1	<1	<1	<1
Phenols (total)	CE078	mg/kg PhOH	<0.5	<0.5	0.6	<0.5
Organic matter content (OMC)	CE005	% w/w	1.8	6.5	6.5	26.3
Estimate of TOC (calculated from OMC)	CE005	% w/w C	1.1	3.8	3.8	15.2
PAH						
Naphthalene	CE087 ^M	mg/kg	<0.02	0.03	0.02	0.11
Acenaphthylene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02	<0.02
Acenaphthene	CE087 ^M	mg/kg	<0.02	<0.02	0.04	0.03
Fluorene	CE087 ^U	mg/kg	<0.02	<0.02	0.04	0.02
Phenanthrene	CE087 ^M	mg/kg	<0.02	0.13	0.29	0.14
Anthracene	CE087 ^U	mg/kg	<0.02	0.04	0.07	0.04
Fluoranthene	CE087 ^M	mg/kg	<0.02	0.18	0.49	0.16
Pyrene	CE087 ^M	mg/kg	<0.02	0.15	0.46	0.14
Benzo(a)anthracene	CE087 ^U	mg/kg	<0.02	0.06	0.21	0.06
Chrysene	CE087 ^M	mg/kg	<0.03	0.07	0.24	0.07
Benzo(b)fluoranthene	CE087 ^M	mg/kg	<0.02	0.07	0.26	0.07
Benzo(k)fluoranthene	CE087 ^M	mg/kg	<0.03	<0.03	0.09	<0.03
Benzo(a)pyrene	CE087 ^U	mg/kg	<0.02	0.04	0.21	0.04
Indeno(123cd)pyrene	CE087 ^M	mg/kg	<0.02	0.03	0.17	0.03
Dibenz(ah)anthracene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02	<0.02
Benzo(ghi)perylene	CE087 ^M	mg/kg	<0.02	0.02	0.15	0.03
PAH (total of USEPA 16)	CE087	mg/kg	<0.34	0.83	2.75	0.94
TPH						
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01

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SOILS

Lab number			89620-1	89620-2	89620-3	89620-4
Sample id			BH1	BH1	BH2	BH2
Depth (m)			1.50	1.90	0.80	2.50
Date sampled			23/09/2020	23/09/2020	23/09/2020	23/09/2020
Test	Method	Units				
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	<1	<1	<1	<1
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	<1	<1	1	<1
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	<1	<1	3	1
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	<1	<1	3	1
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	<1	<1	<1	<1
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE068	mg/kg	<4	<4	<4	<4
EPH Aliphatic (>C12-C16)	CE068	mg/kg	<4	<4	36	9
EPH Aliphatic (>C16-C35)	CE068	mg/kg	33	12	272	27
EPH Aliphatic (>C35-C44)	CE068	mg/kg	<10	<10	18	<10
Subcontracted analysis						
Asbestos (qualitative)	\$	-	NAD	NAD	NAD	NAD

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE063	Boron (water soluble)	Hot water extract, ICP-OES	Dry	M	0.5	mg/kg B
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	M	10	mg/l SO ₄
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	M	100	mg/kg SO ₄
CE079	Sulphide	Extraction, Continuous Flow Colorimetry	As received		10	mg/kg S ²⁻
CE077	Cyanide (free)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE077	Cyanide (total)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE145	Thiocyanate	Weak acid extraction, Colorimetry	Dry	M	1	mg/kg SCN
CE078	Phenols (total)	Extraction, Continuous Flow Colorimetry	As received		0.5	mg/kg PhOH
CE005	Organic matter content (OMC)	Based on BS 1377, Colorimetry	Dry		0.1	% w/w
CE005	Estimate of TOC (calculated from OMC)	Calculation from Organic Matter Content	Dry		0.1	% w/w C
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE068	EPH Aromatic (>EC10-EC12)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC12-EC16)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC16-EC21)	Solvent extraction, GC-FID	As received		1	mg/kg

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE068	EPH Aromatic (>EC21-EC35)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC35-EC44)	Solvent extraction, GC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE068	EPH Aliphatic (>C10-C12)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C12-C16)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C16-C35)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C35-C44)	Solvent extraction, GC-FID	As received		10	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

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DEVIATING SAMPLE INFORMATION

Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
89620-1	BH1	1.50	N	
89620-2	BH1	1.90	N	
89620-3	BH2	0.80	N	
89620-4	BH2	2.50	N	

Appendix D

Results of Gas Monitoring



GAS MONITORING RECORD

J1925 DPV Heineken, Manchester.

Date: 07/10/2020
 Atmospheric Pressure: 1004mb
 Atmospheric O₂: 20.7%v/v
 Gas Analyser: GA5000
 Serial Number: G503422

BH No.	Ground level (m AOD)	Response Zone	CH ₄		CO ₂		O ₂		CO		H ₂ S		Flow	Depth to Water (m bgl)	Hazardous Gas Flow Rate (L/Hr)	
			(%v/v)		(%v/v)		(%v/v)		(ppm)		(ppm)		(L/Hr)		CH ₄	CO ₂
			P.R.	S.R.	P.R.	S.R.	P.R.	S.R.	P.R.	S.R.	P.R.	S.R.				
BH1		2.0m - 5.0m bgl	0.0	0.0	1.8	1.8	17.5	17.5	5.0	4.0	0.0	0.0	0.0	3.00	0.0000	0.0000
BH2		2.0m - 5.0m bgl	0.0	0.0	0.4	0.4	20.3	20.3	0.0	0.0	0.0	0.0	0.1	DTB	0.0000	0.0004

Notes:

P.R. - Peak Reading
 S.R. - Steady Reading
 D.T.B. - Dry to Base

N.R.T - No Reading Taken

Recorded Checked

JST



GAS MONITORING RECORD

J1925 DPV Heineken, Manchester.

Date: 13/10/2020
 Atmospheric Pressure: 1008mb
 Atmospheric O₂: 20.4%v/v
 Gas Analyser: GA5000
 Serial Number: G503422

BH No.	Ground level (m AOD)	Response Zone	CH ₄		CO ₂		O ₂		CO		H ₂ S		Flow	Depth to Water (m bgl)	Hazardous Gas Flow Rate (L/Hr)	
			(%v/v)		(%v/v)		(%v/v)		(ppm)		(ppm)		(L/Hr)		CH ₄	CO ₂
			P.R.	S.R.	P.R.	S.R.	P.R.	S.R.	P.R.	S.R.	P.R.	S.R.				
BH1		2.0m - 5.0m bgl	0.0	0.0	4.0	2.0	13.9	13.9	1.0	1.0	0.0	0.0	0.0	2.90	0.0000	0.0000
BH2		2.0m - 5.0m bgl	0.0	0.0	0.2	0.2	20.6	20.6	0.0	0.0	0.0	0.0	0.0	DTB	0.0000	0.0000

Notes:

P.R. - Peak Reading
 S.R. - Steady Reading
 D.T.B. - Dry to Base

N.R.T - No Reading Taken

Recorded Checked

JST



GAS MONITORING RECORD

J1925 DPV Heineken, Manchester.

Date: 04/11/2020
 Atmospheric Pressure: 1030mb
 Atmospheric O₂: 20.5%v/v
 Gas Analyser: GA5000
 Serial Number: G503422

BH No.	Ground level (m AOD)	Response Zone	CH ₄		CO ₂		O ₂		CO		H ₂ S		Flow	Depth to Water (m bgl)	Hazardous Gas Flow Rate (L/Hr)	
			(%v/v)		(%v/v)		(%v/v)		(ppm)		(ppm)		(L/Hr)		CH ₄	CO ₂
			P.R.	S.R.	P.R.	S.R.	P.R.	S.R.	P.R.	S.R.	P.R.	S.R.				
BH1		2.0m - 5.0m bgl	0.0	0.0	6.0	4.2	13.8	13.9	0.0	0.0	0.0	0.0	0.1	DTB	0.0000	0.0042
BH2		2.0m - 5.0m bgl	0.0	0.0	2.1	2.1	19.6	19.6	0.0	0.0	0.0	0.0	0.1	DTB	0.0000	0.0021

Notes:

P.R. - Peak Reading
 S.R. - Steady Reading
 D.T.B. - Dry to Base

N.R.T - No Reading Taken

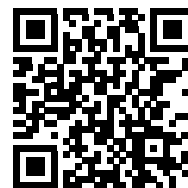
Recorded Checked

JST

Appendix E

Waste Classification Report

Waste Classification Report



7PKSW-DYD4Q-BNUS6

Job name

J1925

Description/Comments

Waste classification based on results of ground investigation

Project

DPV

Site

Heineken

Related Documents

#	Name	Description
None		

Waste Stream Template

Example waste stream template for contaminated soils

Classified by

Name: **Marcus Hanford**
Date: **11 Nov 2020 15:24 GMT**
Telephone: **01773 850365**
Company: **Emcus Limited**

HazWasteOnline™ Training Record:

Course	Date
Hazardous Waste Classification	09 Jun 2015
Advanced Hazardous Waste Classification	-

Report

Created by: Marcus Hanford
Created date: 11 Nov 2020 15:24 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	BH1	1.5	Non Hazardous		2
2	BH 1	1.9	Non Hazardous		4
3	BH2	0.8	Non Hazardous		6
4	BH 2	2.5	Non Hazardous		8

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	10
Appendix B: Rationale for selection of metal species	11
Appendix C: Version	12

Classification of sample: BH1

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

Sample details

Sample Name:	LoW Code:	
BH1	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
1..5 m		

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				3.8 mg/kg	1.32	5.017 mg/kg	0.000502 %			
	033-003-00-0	215-481-4	1327-53-3								
2	boron { diboron trioxide; boric oxide }				1 mg/kg	3.22	3.22 mg/kg	0.000322 %			
	005-008-00-8	215-125-8	1303-86-2								
3	cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %			
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				65 mg/kg	1.462	95.001 mg/kg	0.0095 %			
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				1 mg/kg	1.923	1.923 mg/kg	0.000192 %			
	024-017-00-8										
6	copper { dicopper oxide; copper (I) oxide }				6.5 mg/kg	1.126	7.318 mg/kg	0.000732 %			
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	9.1 mg/kg	1.56	14.194 mg/kg	0.00091 %			
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				0.5 mg/kg	1.353	0.677 mg/kg	0.0000677 %			
	080-010-00-X	231-299-8	7487-94-7								
9	nickel { nickel chromate }				7.5 mg/kg	2.976	22.322 mg/kg	0.00223 %			
	028-035-00-7	238-766-5	14721-18-7								
10	selenium { nickel selenate }				0.5 mg/kg	2.554	1.277 mg/kg	0.000128 %			
	028-031-00-5	239-125-2	15060-62-5								
11	zinc { zinc chromate }				21 mg/kg	2.774	58.257 mg/kg	0.00583 %			
	024-007-00-3	236-878-9	13530-65-9								
12	TPH (C6 to C40) petroleum group				57 mg/kg		57 mg/kg	0.0057 %			
			TPH								
13	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 %			
	006-007-00-5										
14	naphthalene				0.02 mg/kg		0.02 mg/kg	0.000002 %			
	601-052-00-2	202-049-5	91-20-3								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
15	• acenaphthylene	205-917-1	208-96-8		0.02 mg/kg		0.02 mg/kg	0.000002 %		
16	• acenaphthene	201-469-6	83-32-9		0.02 mg/kg		0.02 mg/kg	0.000002 %		
17	• fluorene	201-695-5	86-73-7		0.02 mg/kg		0.02 mg/kg	0.000002 %		
18	• phenanthrene	201-581-5	85-01-8		0.02 mg/kg		0.02 mg/kg	0.000002 %		
19	• anthracene	204-371-1	120-12-7		0.02 mg/kg		0.02 mg/kg	0.000002 %		
20	• fluoranthene	205-912-4	206-44-0		0.02 mg/kg		0.02 mg/kg	0.000002 %		
21	• pyrene	204-927-3	129-00-0		0.02 mg/kg		0.02 mg/kg	0.000002 %		
22	benzo[a]anthracene	601-033-00-9	200-280-6		0.02 mg/kg		0.02 mg/kg	0.000002 %		
23	chrysene	601-048-00-0	205-923-4		0.03 mg/kg		0.03 mg/kg	0.000003 %		
24	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.02 mg/kg		0.02 mg/kg	0.000002 %		
25	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.03 mg/kg		0.03 mg/kg	0.000003 %		
26	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.02 mg/kg		0.02 mg/kg	0.000002 %		
27	• indeno[123-cd]pyrene	205-893-2	193-39-5		0.02 mg/kg		0.02 mg/kg	0.000002 %		
28	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.02 mg/kg		0.02 mg/kg	0.000002 %		
29	• benzo[ghi]perylene	205-883-8	191-24-2		0.02 mg/kg		0.02 mg/kg	0.000002 %		
30	phenol	604-001-00-2	203-632-7		0.5 mg/kg		0.5 mg/kg	0.00005 %		
Total:								0.0264 %		

Key

- User supplied data
- 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

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 Non flammable in soil

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0057%)

Classification of sample: BH 1

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

Sample details

Sample Name:	LoW Code:	
BH 1	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
1.9 m		

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	9.5 mg/kg	1.32	12.543	mg/kg	0.00125 %		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2	0.8 mg/kg	3.22	2.576	mg/kg	0.000258 %		
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0	0.2 mg/kg	1.142	0.228	mg/kg	0.0000228 %		
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		66 mg/kg	1.462	96.463	mg/kg	0.00965 %		
5	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8			1 mg/kg	1.923	1.923	mg/kg	0.000192 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	25 mg/kg	1.126	28.147	mg/kg	0.00281 %		
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	13 mg/kg	1.56	20.278	mg/kg	0.0013 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	0.5 mg/kg	1.353	0.677	mg/kg	0.0000677 %		
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7	45 mg/kg	2.976	133.932	mg/kg	0.0134 %		
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5	2 mg/kg	2.554	5.108	mg/kg	0.000511 %		
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9	65 mg/kg	2.774	180.32	mg/kg	0.018 %		
12	TPH (C6 to C40) petroleum group			TPH	36 mg/kg		36	mg/kg	0.0036 %		
13	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 %		
14	naphthalene	601-052-00-2	202-049-5	91-20-3	0.03 mg/kg		0.03	mg/kg	0.000003 %		

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
15	acenaphthylene	205-917-1	208-96-8		0.02 mg/kg		0.02 mg/kg	0.000002 %		
16	acenaphthene	201-469-6	83-32-9		0.02 mg/kg		0.02 mg/kg	0.000002 %		
17	fluorene	201-695-5	86-73-7		0.02 mg/kg		0.02 mg/kg	0.000002 %		
18	phenanthrene	201-581-5	85-01-8		0.13 mg/kg		0.13 mg/kg	0.000013 %		
19	anthracene	204-371-1	120-12-7		0.04 mg/kg		0.04 mg/kg	0.000004 %		
20	fluoranthene	205-912-4	206-44-0		0.18 mg/kg		0.18 mg/kg	0.000018 %		
21	pyrene	204-927-3	129-00-0		0.15 mg/kg		0.15 mg/kg	0.000015 %		
22	benzo[a]anthracene	601-033-00-9	200-280-6		0.06 mg/kg		0.06 mg/kg	0.000006 %		
23	chrysene	601-048-00-0	205-923-4		0.07 mg/kg		0.07 mg/kg	0.000007 %		
24	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.07 mg/kg		0.07 mg/kg	0.000007 %		
25	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.03 mg/kg		0.03 mg/kg	0.000003 %		
26	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.04 mg/kg		0.04 mg/kg	0.000004 %		
27	indeno[123-cd]pyrene	205-893-2	193-39-5		0.03 mg/kg		0.03 mg/kg	0.000003 %		
28	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.02 mg/kg		0.02 mg/kg	0.000002 %		
29	benzo[ghi]perylene	205-883-8	191-24-2		0.02 mg/kg		0.02 mg/kg	0.000002 %		
30	phenol	604-001-00-2	203-632-7		0.5 mg/kg		0.5 mg/kg	0.00005 %		
Total:								0.0514 %		

Key

- User supplied data
- 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

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 Non flammable in soil

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0036%)

Classification of sample: BH2

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

Sample details

Sample Name:	LoW Code:	
BH2	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.8 m		

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				5.8 mg/kg	1.32	7.658 mg/kg	0.000766 %			
	033-003-00-0	215-481-4	1327-53-3								
2	boron { diboron trioxide; boric oxide }				0.7 mg/kg	3.22	2.254 mg/kg	0.000225 %			
	005-008-00-8	215-125-8	1303-86-2								
3	cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %			
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				103 mg/kg	1.462	150.54 mg/kg	0.0151 %			
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				1 mg/kg	1.923	1.923 mg/kg	0.000192 %			
	024-017-00-8										
6	copper { dicopper oxide; copper (I) oxide }				12 mg/kg	1.126	13.511 mg/kg	0.00135 %			
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	41 mg/kg	1.56	63.952 mg/kg	0.0041 %			
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				0.5 mg/kg	1.353	0.677 mg/kg	0.0000677 %			
	080-010-00-X	231-299-8	7487-94-7								
9	nickel { nickel chromate }				25 mg/kg	2.976	74.407 mg/kg	0.00744 %			
	028-035-00-7	238-766-5	14721-18-7								
10	selenium { nickel selenate }				1.7 mg/kg	2.554	4.342 mg/kg	0.000434 %			
	028-031-00-5	239-125-2	15060-62-5								
11	zinc { zinc chromate }				63 mg/kg	2.774	174.771 mg/kg	0.0175 %			
	024-007-00-3	236-878-9	13530-65-9								
12	TPH (C6 to C40) petroleum group				340 mg/kg		340 mg/kg	0.034 %			
			TPH								
13	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 %			
	006-007-00-5										
14	naphthalene				0.02 mg/kg		0.02 mg/kg	0.000002 %			
	601-052-00-2	202-049-5	91-20-3								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
15	• acenaphthylene	205-917-1	208-96-8		0.02 mg/kg		0.02 mg/kg	0.000002 %		
16	• acenaphthene	201-469-6	83-32-9		0.04 mg/kg		0.04 mg/kg	0.000004 %		
17	• fluorene	201-695-5	86-73-7		0.04 mg/kg		0.04 mg/kg	0.000004 %		
18	• phenanthrene	201-581-5	85-01-8		0.29 mg/kg		0.29 mg/kg	0.000029 %		
19	• anthracene	204-371-1	120-12-7		0.07 mg/kg		0.07 mg/kg	0.000007 %		
20	• fluoranthene	205-912-4	206-44-0		0.49 mg/kg		0.49 mg/kg	0.000049 %		
21	• pyrene	204-927-3	129-00-0		0.46 mg/kg		0.46 mg/kg	0.000046 %		
22	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		0.21 mg/kg		0.21 mg/kg	0.000021 %		
23	chrysene 601-048-00-0	205-923-4	218-01-9		0.24 mg/kg		0.24 mg/kg	0.000024 %		
24	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		0.26 mg/kg		0.26 mg/kg	0.000026 %		
25	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		0.09 mg/kg		0.09 mg/kg	0.000009 %		
26	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		0.21 mg/kg		0.21 mg/kg	0.000021 %		
27	• indeno[123-cd]pyrene 205-893-2	193-39-5			0.17 mg/kg		0.17 mg/kg	0.000017 %		
28	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		0.02 mg/kg		0.02 mg/kg	0.000002 %		
29	• benzo[ghi]perylene 205-883-8	191-24-2			0.15 mg/kg		0.15 mg/kg	0.000015 %		
30	phenol 604-001-00-2	203-632-7	108-95-2		0.5 mg/kg		0.5 mg/kg	0.00005 %		
Total:								0.0816 %		

Key

- User supplied data
- 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
- 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 Non flammable in soil

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.034%)

Classification of sample: BH 2

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

Sample details

Sample Name:	LoW Code:	
BH 2	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
2.5 m		

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	14 mg/kg	1.32	18.485 mg/kg		0.00185 %		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2	0.5 mg/kg	3.22	1.61 mg/kg		0.000161 %		
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0	0.2 mg/kg	1.142	0.228 mg/kg		0.0000228 %		
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		94 mg/kg	1.462	137.386 mg/kg		0.0137 %		
5	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8			1 mg/kg	1.923	1.923 mg/kg		0.000192 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	28 mg/kg	1.126	31.525 mg/kg		0.00315 %		
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	19 mg/kg	1.56	29.636 mg/kg		0.0019 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	0.5 mg/kg	1.353	0.677 mg/kg		0.0000677 %		
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7	53 mg/kg	2.976	157.742 mg/kg		0.0158 %		
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5	2.3 mg/kg	2.554	5.874 mg/kg		0.000587 %		
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9	81 mg/kg	2.774	224.706 mg/kg		0.0225 %		
12	TPH (C6 to C40) petroleum group		TPH		56 mg/kg		56 mg/kg		0.0056 %		
13	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 %		
14	naphthalene	601-052-00-2	202-049-5	91-20-3	0.11 mg/kg		0.11 mg/kg		0.000011 %		

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
15	• acenaphthylene	205-917-1	208-96-8		0.02 mg/kg		0.02 mg/kg	0.000002 %		
16	• acenaphthene	201-469-6	83-32-9		0.03 mg/kg		0.03 mg/kg	0.000003 %		
17	• fluorene	201-695-5	86-73-7		0.02 mg/kg		0.02 mg/kg	0.000002 %		
18	• phenanthrene	201-581-5	85-01-8		0.14 mg/kg		0.14 mg/kg	0.000014 %		
19	• anthracene	204-371-1	120-12-7		0.04 mg/kg		0.04 mg/kg	0.000004 %		
20	• fluoranthene	205-912-4	206-44-0		0.16 mg/kg		0.16 mg/kg	0.000016 %		
21	• pyrene	204-927-3	129-00-0		0.14 mg/kg		0.14 mg/kg	0.000014 %		
22	benzo[a]anthracene	601-033-00-9	200-280-6		0.06 mg/kg		0.06 mg/kg	0.000006 %		
23	chrysene	601-048-00-0	205-923-4		0.07 mg/kg		0.07 mg/kg	0.000007 %		
24	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.07 mg/kg		0.07 mg/kg	0.000007 %		
25	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.03 mg/kg		0.03 mg/kg	0.000003 %		
26	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.04 mg/kg		0.04 mg/kg	0.000004 %		
27	• indeno[123-cd]pyrene	205-893-2	193-39-5		0.03 mg/kg		0.03 mg/kg	0.000003 %		
28	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.02 mg/kg		0.02 mg/kg	0.000002 %		
29	• benzo[ghi]perylene	205-883-8	191-24-2		0.03 mg/kg		0.03 mg/kg	0.000003 %		
30	phenol	604-001-00-2	203-632-7		0.5 mg/kg		0.5 mg/kg	0.00005 %		
Total:								0.0659 %		

Key

- User supplied data
- 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

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 Non flammable in soil

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0056%)

Appendix A: Classifier defined and non CLP determinands

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

Conversion factor: 1.462

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

■ **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

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

CLP index number: 006-007-00-5

Description/Comments: Conversion factor based on a worst case compound: sodium cyanide

Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)

Additional Hazard Statement(s): EUH032 >= 0.2 %

Reason for additional Hazards Statement(s):

14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

■ **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

■ **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

■ **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

■ **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

■ **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

■ **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

• **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

• **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

• **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

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass (edit as required)

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Most likely species

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worst case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {nickel selenate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

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}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.1, May 2018**

HazWasteOnline Classification Engine Version: 2020.315.4525.8798 (10 Nov 2020)

HazWasteOnline Database: 2020.315.4525.8798 (10 Nov 2020)

This classification utilises the following guidance and legislation:

WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018

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

POPs Regulation 2019 - Regulation (EU) 2019/1021 of 20 June 2019