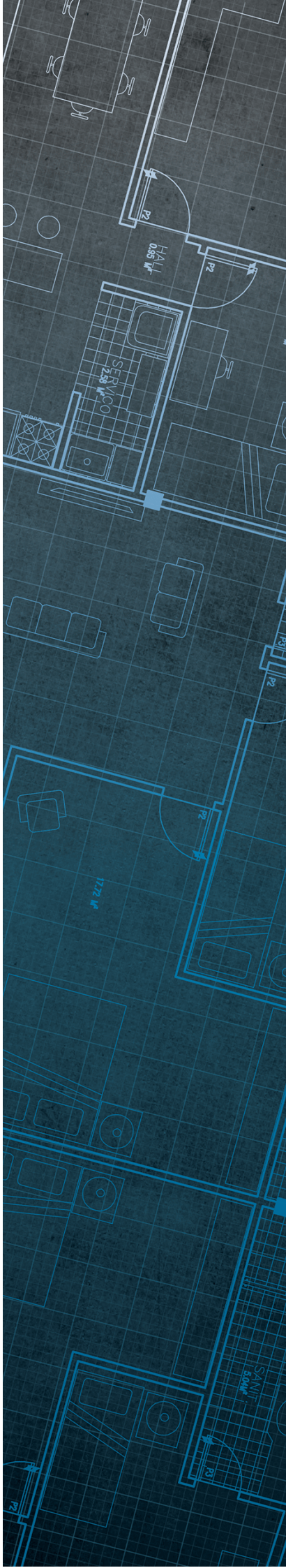
The Coal Authority

Consultants

Coal Mining Report

Orient House
Granby Row
Manchester
Greater Manchester

Date of enquiry:	**2 July 2025**
Date enquiry received:	**2 July 2025**
Issue date:	**2 July 2025**
Our reference:	**51003509281001**
Your reference:	**380510101_2**



Consultants
Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

NLIS Hub

Enquiry address

Orient House
Granby Row
Manchester
Greater Manchester



Approximate position of property

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How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

@coalauthority
/company/the-coal-authority
/thecoalauthority
/thecoalauthority

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Section 1 – Mining activity and geology

Past underground mining
No past mining recorded.

Probable unrecorded shallow workings
None.

Spine roadways at shallow depth
No spine roadway recorded at shallow depth.

Mine entries
None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers
None available.

Outcrops
No outcrops recorded.

Geological faults, fissures and breaklines
No faults, fissures or breaklines recorded.

Opencast mines
None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips
None recorded within 500 metres of the enquiry boundary.

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Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations
None recorded within 50 metres of the enquiry boundary.

Remediated sites
None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence
The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas
None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes
None recorded within 500 metres of the enquiry boundary.

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Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

Section 46 notices
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

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Section 4 – Further information

Based on the responses in this report, no further information has been highlighted.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

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Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

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Opencast mines
Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips
Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations
Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites
Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence
Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

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Mine water treatment schemes
Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining
Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing
Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders
Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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The Coal Authority

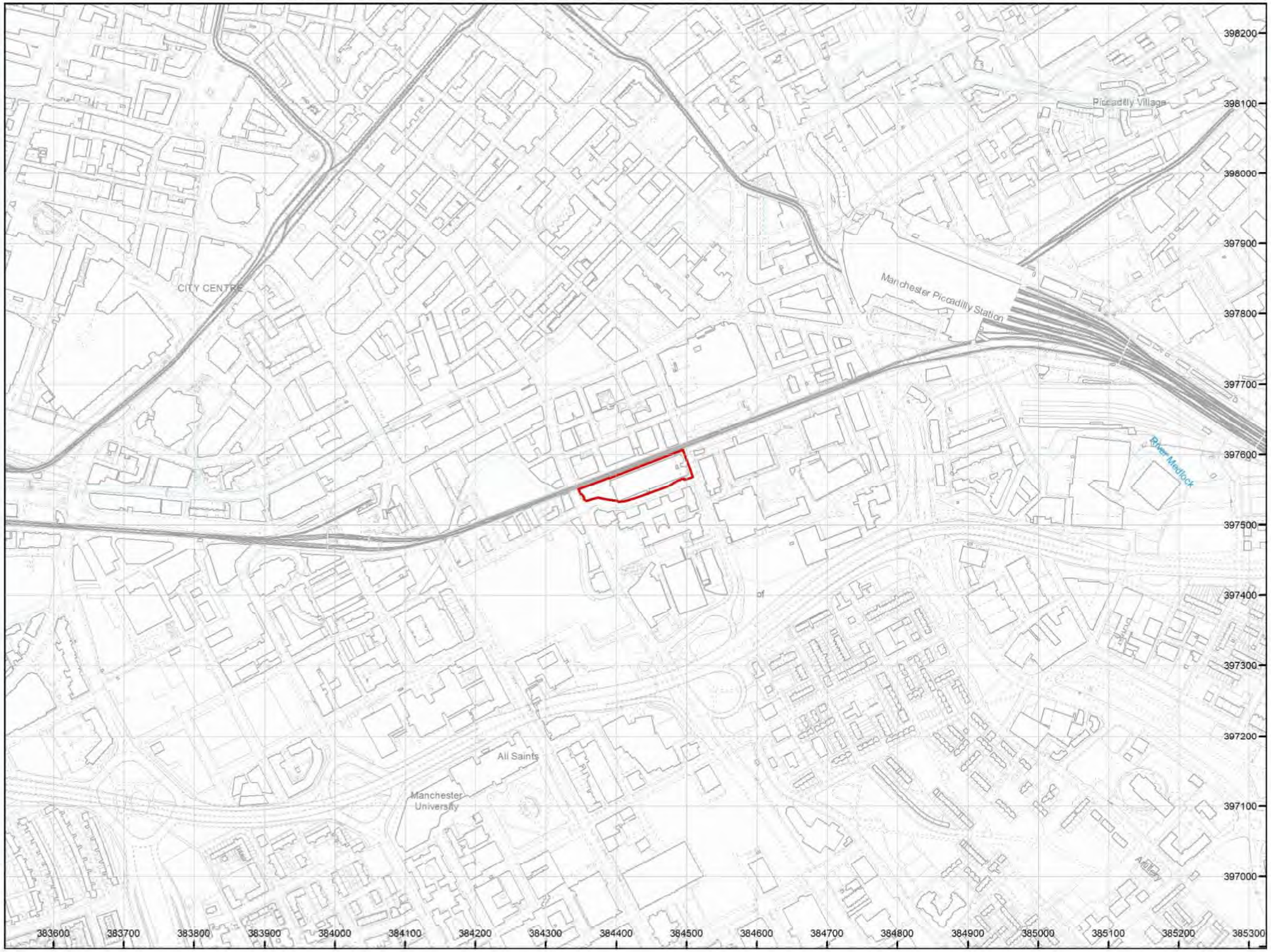
Summary of findings

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The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry boundary shown



How to contact us
0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com

British Geological Survey

BGS ID: 1043693 : BGS Reference: SJ89NW1499
British National Grid (27700) : 384510,397600

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

SJ89NW 8451 9760 1499

INVESTIGATION FOR	Main Drainage	DATE COMMENCED	24.7.85.
TION	Sackville Street REF:	BORING METHOD	Cable Percussive
HOLE No.	3 (Sheet 1 of 2)	BORING DIAMETER	150 mm.
REFERENCE		SCALE:	1:50 approx.

E	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	To	No. of Blows
			0.05		Bituminous Surfacing				
			0.15		Setts				
			0.30		Concrete				
					Clayey ashes, cinders, brick pieces, sand, stones soft and firm silty and sandy CLAY Made Ground	D1	0.5		
						D2	1.25		
						P3	1.65	1.95	6
						D4	2.10		
						P5	2.65	2.95	8
						D6	3.10		
						P7	3.65	3.95	4
						D8	4.2		
						P9	4.65	4.95	8
						D10	5.20		
						P11	5.65	5.95	8
						D12	6.10		
			6.40						
			7.20		Medium dense silty and gravelly SAND	P13	6.75	7.05	24

OBSERVATIONS DURING BORING

OF ENTRY	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)
ed			

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS: -

E TEST KEY

D – DISTURBED SAMPLE
B – BULK SAMPLE
U – UNDISTURBED SAMPLE
P – SPT SAMPLE
W – WATER SAMPLE

WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N – VALUE)

PTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

KS

Trial hole excavated to 1.50m below ground level
* SPT sample P16 proved 69 blows for 115mm within the initial 150MM penetration.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043693 : BGS Reference: SJ89NW1499
British National Grid (27700) : 384510,397600

SJ89NW

1499

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

NVESTIGATION FOR	Main Drainage	DATE COMMENCED	24.7.85.
TION	Sackville Street REF:	BORING METHOD	Cable Percussive
HOLE No.	3(sheet 2 of 2)	BORING DIAMETER	150 MM
REFERENCE		SCALE:	1:50 approx.

E	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	SAMPLE DEPTH PENETRATION To	No. of Blows	Legend
					Medium dense to dense red/brown fine/medium grained SANDSTONE	B14 P15 P16	7.2 7.65 8.0	7.5 7.95 8.12	 27 69*	
85.	8.0	Dry	8.12							

OBSERVATIONS DURING BORING

OF NTRY	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:

TEST KEY

D – DISTURBED SAMPLE B – BULK SAMPLE U – UNDISTURBED SAMPLE
P – SPT SAMPLE W – WATER SAMPLE

HERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED ENETRATION IS GIVEN (NOT N – VALUE)

THS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

S

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British Geological Survey

BGS ID: 1043694 : BGS Reference: SJ89NW1500
British National Grid (27700) : 384520,397530

ENGINEER AND SURVEYORS DEPARTMENT

SJ89NW

INVESTIGATION FOR	Main Drainage	DATE COMMENCED	23.7.85. 8452 9753
TION	Sackville Street REF:	BORING METHOD	Cable Percussive
HOLE No.	4	BORING DIAMETER	150MM 1500
REFERENCE		SCALE:	1:50 approx.

E	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	To	No. of Blows	Legen
			0.1		Bituminous Surfacing					
			0.3		Concrete					
					Soft and firm silty and sandy CLAY, ashes, sand, brick pieces etc. Made Ground	D1	0.5			
						P2	1.35	1.65	6	
						D3	1.8			
						P4	2.35	2.65	5	
						D5	2.90			
						U6	3.0	3.45		
						D7	4.0			
						P8	4.15	4.45	4	
						D9	4.8			
						P10	5.15	5.45	4	
						D11	5.7			
						P12	5.8	6.25	4	
35	5.80	Dry	6.25							

OBSERVATIONS DURING BORING

OF ENTRY	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:-

TEST KEY

D – DISTURBED SAMPLE B – BULK SAMPLE U – UNDISTURBED SAMPLE
P – SPT SAMPLE W – WATER SAMPLE

HERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED ENETRATION IS GIVEN (NOT N – VALUE)

THS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

KS

Trial hole excavated to 1.20m below ground level

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1045814 : BGS Reference: SJ89NW3620
British National Grid (27700) : 384430,397630

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

SJ89NW3620
8443 9763

SITE INVESTIGATION FOR	MAIN DRAINAGE	DATE COMMENCED	7/12/83
LOCATION	GRANBY ROW REF:	BORING METHOD	S.S Multi-Drill
BOREHOLE No.	3 (Sheet 1 of 2)	BORING DIAMETER	150 mm
GRID REFERENCE		SCALE:	1:50 approx.

DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	To	No. of Blows	Legend
7/12/83			0.05		Bituminous surfacing					
			0.20		Setts					
					Topsoil, brick pieces, clay, ashes etc - Made Ground	D1	0.5			
						D2	1.0			
						P1	1.35	1.65	7	
						D3	1.80			
						P2	2.35	2.65	3	
						D4	2.70			
						P3	3.35	3.65	3	
						D5	3.80			
			3.90		Soft brown silty clay with sand lenses, stone & coal inclusions	D6	4.0			
			4.20		Very dense brown sandy GRAVEL	U1	4.2	4.65		
			5.0			P4	4.95	5.25	33	
					Very dense brown SAND and GRAVEL	B2	5.40			
						P5	5.90	6.09	50	
						B3	6.40			
			6.60							

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WATER OBSERVATIONS DURING BORING

DEPTH OF WATER ENTRY (m)	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)
None			

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:-

SAMPLE TEST KEY

D – DISTURBED SAMPLE
P – SPT SAMPLE
B – BULK SAMPLE
W – WATER SAMPLE
U – UNDISTURBED SAMPLE

NOTE: WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N – VALUE)

ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

REMARKS

Trial hole excavated to 1.2 m below ground level. Borehole backfilled on completion, no overnight standing water level observed. SPT sample P5 recorded 50 blows for 150 mm penetration including the initial 150 mm.

M/c 5931

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1045814 : BGS Reference: SJ89NW3620
British National Grid (27700) : 384430,397630

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

SJ89NW3620

SITE INVESTIGATION FOR	MAIN DRAINAGE	DATE COMMENCED	7/12/83
LOCATION	GRANBY ROW REF:	BORING METHOD	S.S Multi-Drill
BOREHOLE No.	3 (sheet 2of 2)	BORING DIAMETER	150 mm
GRID REFERENCE		SCALE:	1:50 approx.

DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	To	No. of Blows	Legend
					Very dense red/brown silty fine/MEDIUM grained	P6	6.7	6.9	50	
						D7	7.4			
						P7	7.9	8.75	50	
7/12/83	7.50	Dry			SAND	D8	8.40			
8/12/83		Dry			(Weathered SANDSTONE)	P8	8.7	8.85	50	
						D9	9.0			
						P9	9.3	9.425	50	
12/83	9.0	Dry	9.425							

COMMERCIAL IN CONFIDENCE

WATER OBSERVATIONS DURING BORING

DEPTH OF WATER ENTRY (m)	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:–

SAMPLE TEST KEY

D – DISTURBED SAMPLE
P – SPT SAMPLE
B – BULK SAMPLE
W – WATER SAMPLE
U – UNDISTURBED SAMPLE

NOTE: WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N – VALUE)

ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

REMARKS

SPT sample P6 recorded 50 blows for 200 mm penetration including the initial 150mm penetrati
SPT sample P7 recorded 50 blows for 175 mm penetration including the initial 150mm penetrati
SPT sample P8 recorded 50 blows for 150 mm penetration within the initial 150mm penetratio
SPT sample P9 recorded 50 blows for 125 mm penetration within the initial 150 mm penetrati

M/c 5931

Contact BGS: ngdc@bgs.ac.uk

Appendix 8 – ID Manchester Preliminary Ground Investigation Interpretive Report and Final Factual Report

Preliminary Ground Investigation Interpretive Report and Final Factual Report.pdf - Page 1

ID Manchester - Christine Campbell - Burnwood Scitech - 6/30/2020 2:14:30 PM - 81.154.246.72

I·D MANCHESTER

Preliminary Ground Investigation Interpretive Report

&

Final Factual Report

June 2020

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Preliminary Ground Investigation Interpretive Report and Final Factual Report.pdf - Page 2

Preliminary Ground Investigation Interpretive Report (Arup)

The following report was commissioned by The University of Manchester and undertaken by Ove Arup and Partners Ltd (Arup), to assist in assessing the feasibility of redeveloping part of their university campus, formerly North Campus, now called ID Manchester.

The intrusive fieldwork was undertaken by AEG and is presented in the *Final Factual Report* at the rear of the document.

Prior to undertaking this Preliminary Ground Investigations Study, Arup carried out a desk-based review of the ground conditions and site history (this report is also available via the data room, titled *Ground Conditions Desk Study*) which identified a number of possible below ground constraints which have the potential to impact future redevelopment of the site. In particular the following were identified as warranting further investigation to help quantify the level of risk:

- Potential for unexploded ordnance (UXO);
- Presence of buried obstructions;
- Former channel of the River Medlock with potential for voids and soft ground;
- Shallow rockhead;
- Tunnels (specifically the BT tunnel);
- Potential contamination associated with past industry (specifically chemical and oil works with a higher contamination potential); and
- Retaining structures

This Preliminary Ground Investigations Interpretive Report was designed to target specific features (as above) to provide data to better quantify the level of risk to the expected activities associated with redevelopment on the site.

Final Factual Report (AEG)

The Final Factual Report is provided at the rear of this document and details the intrusive fieldwork undertaken by Allied Exploration and Geotechnics (AEG), designed and supervised by Arup. The investigation targeted specific below ground features across the Site and comprised:

- Seventeen boreholes;
- Three trial pits;
- Four horizontal cores;
- Thirteen monitoring installations;
- Geoenvironmental and geotechnical testing; and
- Gas and groundwater monitoring.

ID Manchester - Christine Campbell - Bruntwood SciTech 6/30/2020 2:14:20 PM - 81.154.246.72

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Preliminary Ground Investigation Interpretive Report and Final Factual Report.pdf - Page 3

ID Manchester - Christine Campbell - Bruntwood SciTech - 6/30/2020 2:14:30 PM - 81.154.246.72

The University of Manchester

ID Manchester

Preliminary Ground Investigation Interpretive Report

UNMC-ARUP-ZZ-XX-RP-CG-0004

Issue 2 | 16 April 2020

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 265190-00

Ove Arup & Partners Ltd
6th Floor 3 Piccadilly Place
Manchester M1 3BN
United Kingdom
www.arup.com

ARUP

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Preliminary Ground Investigation Interpretive Report and Final Factual Report.pdf - Page 4

Document verification

ARUP

Job title		ID Manchester			**Job number** 265190-00
Document title		Preliminary Ground Investigation Interpretive Report			**File reference** 04-05-11
Document ref		UNMC-ARUP-ZZ-XX-RP-CG-0004			
Revision	**Date**	**Filename**	Preliminary GI Report Draft Issue.docx		
Issue 1	29 Jan 2020	**Description**	Interim Issue: Monitoring works are ongoing and the relevant sections are to be updated in a subsequent revision		
			Prepared by	Checked by	Approved by
		Name	Jordan Weddepohl	Mark Griffiths / Lee Jordan / Jenny Lightfoot	Jane Collins
		Signature	[redacted]		
Issue 2	16 April 2020	**Filename**	Preliminary GI Report Issue 2.docx		
		Description	Final issue of Preliminary GI Report including completed groundwater and gas monitoring data		
			Prepared by	Checked by	Approved by
		Name	Jordan Weddepohl	Mark Griffiths / Lee Jordan / Jenny Lightfoot	Michael Wilton
		Signature	[redacted]		
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			

Issue Document verification with document ✓

ID Manchester - Christine Campbell - Blood Screening /2020 2:16:30 PM - 81.154.246.72

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Preliminary Ground Investigation Interpretive Report and Final Factual Report.pdf - Page 5

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Appendix I

Preliminary Ground Investigation Rationale

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Executive Summary

The ID Manchester site is part of the University of Manchester's estate. The site occupies around 11.8ha and is located in the centre of Manchester, southwest of Manchester Piccadilly rail station. The site had an industrial past prior to being cleared and redeveloped into the University campus which began in the 1960s.

Arup undertook a desk-based review of the ground conditions and site history which identified a number of possible below ground constraints which have the potential to impact future redevelopment of the site. In particular the following were identified as some of the potentially higher risk items compared to others and warranted further investigation to help quantify the level of risk:

- Potential for unexploded ordnance (UXO);
- Presence of buried obstructions;
- Former channel of the River Medlock with potential for voids and soft ground;
- Shallow rockhead;
- Tunnels (specifically the BT tunnel);
- Potential contamination associated with past industry (specifically chemical and oil works with a higher contamination potential); and
- Retaining structures.

Supplemental surveys and investigations were recommended to better define the risk posed by some of these below ground constraints. This included UXO risk assessment, a preliminary intrusive ground investigation (Preliminary GI), and additional desk study incorporating past ground investigation data provided by the University.

The table below provides a summary of the below ground constraints investigated as part of this study and the revised assessment of the hazard based on the findings of the additional assessments.

The Preliminary GI was designed to target specific features (see above) to provide data to better quantify the level of risk to the expected activities associated with redevelopment on the site. The investigation was constrained by the presence of existing operational buildings. In addition, the exact form of the development and building positions isn't defined at this stage. Given these points, further ground investigation will be needed in the future to provide an appropriate level of detail for earthworks design, foundation design, environmental risk assessment and discharge of associated ground related planning conditions. Given the site is heavily constrained by existing buildings and infrastructure it is probable that further ground investigation will need to be undertaken in phases as and when parcels of land become available for development.

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Hazard/ constraint	Description of hazard/ constraint	Development or construction activity	Assessment of hazard
UXO	A more detailed UXO risk assessment has concluded that some areas of the site are low risk with the central and southern areas only considered to be a moderate risk.	Piling or ground investigation	Zetica has recommended UXB detection in boreholes/ piles in moderate risk areas
		Earthworks/ excavations	Zetica has recommended UXO awareness briefings for shallow excavations in moderate risk areas
Buried obstructions	Former structures associated with past development and boulder sized obstructions of concrete and former brick structures may cause problems with activities such as piling, earthworks and temporary works. The ground investigation encountered concrete obstructions, intact brick walls as well as large brick and concrete within made ground.	Piling or ground investigation	Buried obstructions may restrict certain piling methods, such as driven or CFA piles, without prior removal of these obstructions.
		Earthworks/ excavations	Excavations may become unstable if ripping out large slabs and brick walls and may result in delays in earthworks whilst features are broken out, particularly if these obstructions extend below parts of the site that will remain operational. These brick and concrete structures are likely to form a suitable engineering material following their removal and processing.
Former channel of the River Medlock	The depth, composition of fill and presence of associated structures was previously unknown. The Preliminary GI found that the base of the River Medlock extends to the infill material and is compositionally similar to surrounding made ground, and no voids were encountered. The base of the river was found to be between 6.3 to 8.9mbgl (25.3 to 27.8mOD). No bridge structures over the former river were encountered.	Earthworks/ excavations	The material within the former channel of the River Medlock is likely to be suitable for use as an engineering fill but will require selection/processing and controlled backfilling. Buried structures associated with the former River Medlock may cause problems with earthworks - see buried obstructions above
		External works	Ground improvement is unlikely to be required for external areas but will need further validation through future phases of ground investigation.
		Foundations	For foundations to low rise structures it may be practical to undertake earthworks to remove obstructions and produce platforms with a suitable bearing capacity. However, if this is not possible then piling would be required and any risks associated with obstructions would need to be mitigated.
Shallow rockhead	Rockhead is generally shallow and was typically encountered between 5 and 6mbgl (28 to 30mOD).	Piling	At these depths shallow (c. 10m) piled foundations are likely the most suitable foundation solution. Ground improvement (eg using vibro stone columns) could be considered in areas where the obstruction risks and proposed loading are relatively low.

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Hazard/ constraint	Description of hazard/ constraint	Development or construction activity	Assessment of hazard
		Earthworks/ excavations	The uppermost sandstone (to circa 6m below rockhead) is highly weathered and is unlikely to require specialist excavation or blasting equipment to excavate within the uppermost 6m. The sandstone strength increases with depth and further assessment will be needed for deeper excavations.
BT Tunnel	The BT Tunnel is located beneath the site with associated restrictions regarding adjacent construction or over the tunnel. Boreholes positioned near the BT tunnel determined the rockhead ranged between 25.9 and 33.4mOD. The top of tunnel is around 6.5mOD. A single borehole investigating deeper rock found that the sandstone becomes stronger and less weathered with depth.	Masterplan	Future proposals to build over and adjacent to the tunnel will need to take cognisance of the restrictions placed by the owner of this asset (See section 5.6). If build over is required as part of the masterplan, it may be necessary to limit the magnitude of loading to accommodate these requirements or utilise foundations which transfer load below it.
		Piling	Further to the above points, vibration, additional loading, and clearance restrictions which accompany the BT Tunnel may influence which piling techniques are appropriate.
Contamination	The site has an industrial heritage and multiple sources of contamination were identified from historical maps. These include: The Ardwick Bridge Chemical Works and other chemical works; the Medlock Oil Works; other previous industrial activities (wood, iron, soap works, mills, and garages); and the former River Medlock and other infilled associated features.	Earthworks	Soils tested detected only a single, marginal, exceedance of lead (out of 49 lead tests) in borehole DS002. This sample was located within the footprint of the former chemical works). Asbestos was identified in 8 of 51 samples. Based on the findings of this Preliminary GI it is likely that a significant proportion of the site soils will be suitable for re-use with the development below a cover system (ie building slab, or hard and soft landscaping). Further investigation will be required to confirm this conclusion. Planning permission is likely to require a remediation strategy outlining the clean cover proposals and validation strategy as well as careful management of earthworks to minimise cross contamination and a verification report.
		Waste	If there is no opportunity to re-use site soils, or for logistical reasons it is not possible (e.g. limited land for storage), then the soil material will become a waste and will require appropriate transfer to a waste processing facility or disposal at landfill. Based on the findings of this Preliminary GI it is likely that a significant proportion of waste soils would be classified as non-hazardous waste. Further testing is required to determine if the material would be acceptable for disposal at an inert landfill.

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Hazard/ constraint	Description of hazard/ constraint	Development or construction activity	Assessment of hazard
		Groundwater remediation	Groundwater samples were collected from six locations. No extensive or gross contamination of groundwater has been identified. However locally elevated lead and cyanide and several other contaminants were identified. Whilst it is considered that extensive groundwater remediation will not be required to mitigate the risks to controlled waters, further sampling and assessment of the contaminants noted above is recommended to confirm concentrations and inform further risk assessment. Notwithstanding this assessment, it is likely that any piling works would require the completion of a Foundation Works Risk Assessment to satisfy planning conditions.
		Buildings	Across the site, ground gas levels were found to be consistent with CS1. No special precautions or protective measures are required for sites characterised as CS1.
Retaining structures		Earthworks/ excavations	Historical retaining structures may restrict certain piling methods, such as driven or CFA piles, and would require either avoidance of the pile groupings or prior removal. If these materials are removed then they could be crushed/processed to form a high quality engineering fill for reuse. However, the removal of any buried obstructions should be undertaken in a way that mitigates the undermining and destabilisation of adjacent properties and utilities.

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1 Introduction

Ove Arup and Partners Ltd (Arup) has been commissioned by CBRE on behalf of the University of Manchester to provide further assessment of the ground conditions at ID Manchester[1] (the Site). The assessments presented in this report focus on ground conditions identified through desk study and constraints identification which are generally atypical of Manchester brownfield sites. Further detail is presented within the Arup (2019) Geotechnical Desk Study [1] and should be read in conjunction with this report. The following features were identified in the desk study as specifically warranting further early investigation and assessment:

- Buried obstructions;
- Former channel of the River Medlock with potential for voids and soft ground;
- Tunnels (specifically the BT tunnel);
- Shallow rockhead;
- Potential contamination associated with past industry (specifically chemical and oil works with a higher contamination potential);
- Potential for UXO; and
- Old retaining structures.

This report builds upon the desk study work through a combination of additional archive data, desk-based assessments and intrusive investigations at the site. The ground conditions have been re-assessed and the level of risk re-evaluated based on these additional sources of data and information.

It should be noted that the extent of intrusive investigation was relatively limited and was focussed on specific high-risk items identified in the desk study. Supplementary intrusive investigation will be needed on a plot by plot basis once the form of each development and the specific requirements are known.

[1] previously referred to as the North Campus

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2 Additional surveys and data

This section provides a summary of the surveys and data that has been acquired since issue of the Arup Geotechnical Desk Study [1]. The additional data includes a combination of archive data provided by the University of Manchester as well as surveys commissioned in line with recommendations made in the desk study.

2.1 Unexploded Ordnance

Zetica Ltd (Zetica) was commissioned to prepare a UXO desk study and risk assessment for the Site. Zetica concluded that the central and southern parts of the site are classified as moderate risk for UXO [2]. Bomb strikes have been recorded in these areas, and there is a moderate risk for UXO for deep excavations (>1mbgl) and boreholes/piling. The remainder of the site was classified as low risk. The UXO risk zoning is shown in **Figure 2.1**.



Figure 2.1: Zetica UXO risk map

In moderate risk zones, Zetica recommended UXO awareness briefings for shallow ground works (such as excavations or trial pits) and deep UXB detection during construction of boreholes and piles. In low risk areas, a UXO awareness briefing may be provided however isn't required. Further details are presented in the Zetica report which is included in **Appendix A**.

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2.2 Ecological constraints assessment

An ecological constraints assessment was undertaken by Arup in September 2019 to support the Preliminary GI (see Section 3) for the site. This assessment is presented in **Appendix B**.

The assessment identified some ecologically valued features such as trees and scrub. These features have significance during the breeding bird season (March – August) and an ecologist should be consulted if works are to be carried out during this period. If trees are felled, they should be replaced at a ratio of 2:1. Prior to development a Preliminary Ecological Appraisal (PEA) should be undertaken.

2.3 Ground investigation data

The University of Manchester commissioned a targeted intrusive ground investigation designed specifically to provide data on some of the abnormal ground conditions identified in the Arup Geotechnical Desk Study. This ground investigation has been termed the Preliminary Ground Investigation (Preliminary GI). The Preliminary GI has been supplemented by ground investigation data for nearby University of Manchester sites:

- Geotechnics (2015); and
- Constructive Evaluation (2015).

Details of these investigations are briefly described below, and details of the Preliminary GI are expanded upon in **Section 3**.

A plan showing the investigation hole locations is presented below in **Figure 2.2**, and in **Drawing UNMC-ARUP-ZZ-XX-DR-CG-1001**.

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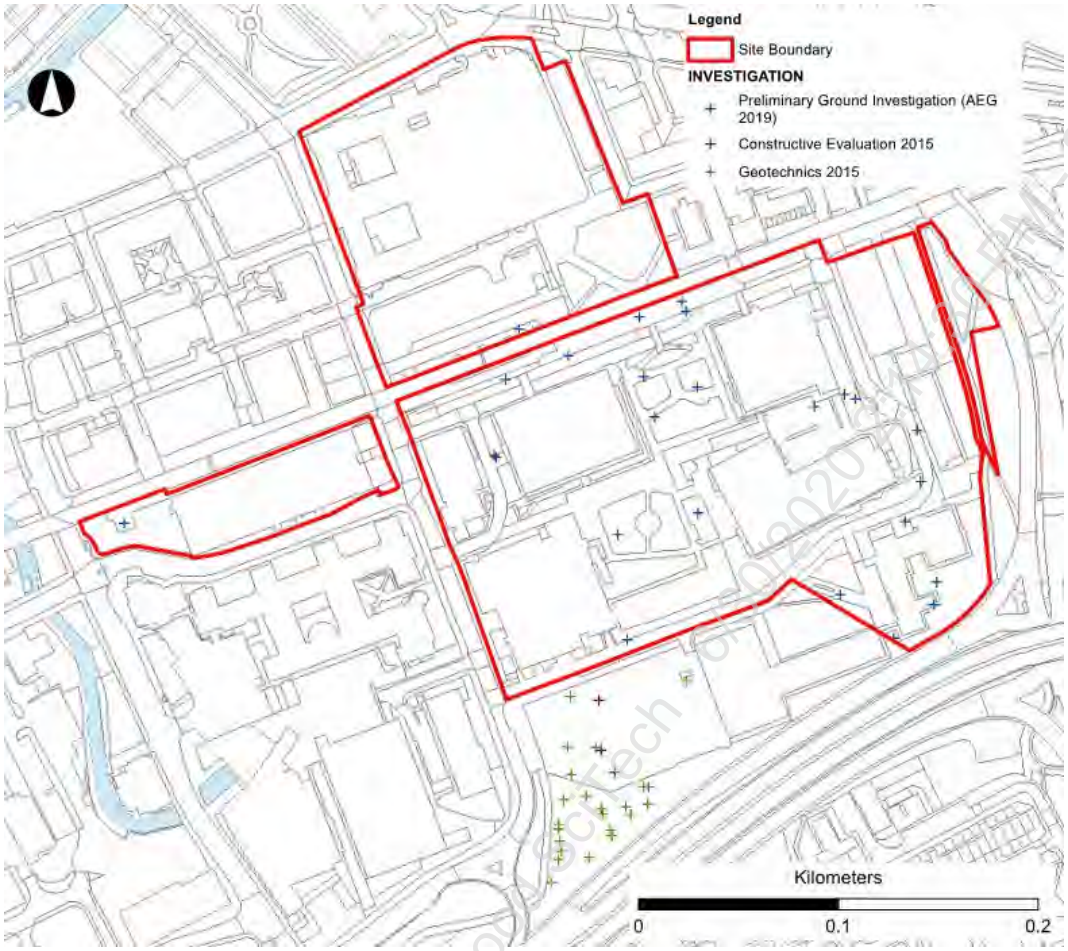


Figure 2.2: Ground investigation locations (**Drawing UNMC-ARUP-ZZ-XX-DR-CG-1001**)

2.3.1 Geotechnics, 2015

Geotechnics undertook a ground investigation between 28th April and 12th May 2015 to the south of the site. The investigation comprised:

- Six cable percussive boreholes to a maximum depth of 20.06 mbgl;
- Three window sample holes to a maximum depth of 6.45 mbgl;
- Fourteen trial pits to a maximum depth of 4.1 mbgl, some of which targeted locating the River Medlock culvert;
- Installation of seven monitoring installations;
- Geotechnical testing:
  - 15 No. Water content determination;
  - 16 No. Liquid and plastic limit determination;
  - 17 No. Wet sieving;
  - 6 No. Sedimentation;
  - 12 No. Sulphate analysis and pH determination;
  - 7 No. Dry density/ moisture content and compaction test (4.5kg hammer);
  - 3 No. California bearing ration measurement;
  - 2 No. one-dimensional consolidation test;

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- 2 No. shear strength measurement – 100mm undrained triaxial compaction test;
- Geoenvironmental testing:
  - Asbestos, metals, PAH, BTEX, VOC, SVOC, TPH;
- Gas and groundwater monitoring.

2.3.2 Constructive Evaluation, 2015

Constructive Evaluation undertook intrusive fieldwork between 17th and 18th March 2015 as part of the ground investigation for the Faraday Building, located to the south-west of the site, adjacent the Sackville Street. The ground investigation was undertaken within the building (prior to demolition) and comprised:

- Three vertical concrete cores to a maximum depth of 1.65mbgl (to establish concrete floor thickness);
- Four horizontal cores to a maximum length of 0.66m (to establish external basement wall thickness);
- Three shallow (<1.7mbgl) window sample holes (to assess ground conditions beneath the basement);
- Geotechnical testing:
  - 1 No. Particle size distribution;
  - 2 No. Moisture content testing; and
  - 2 No. Sulphate and pH determination;
- Geoenvironmental testing:
  - Asbestos, metals, PAH, BTEX, TPH.

2.3.3 ID Manchester Preliminary Ground Investigation, 2019

Allied Exploration and Geotechnics (AEG) undertook a ground investigation designed and supervised by Arup. The investigation targeted specific below ground features across the Site and comprised:

- Seventeen boreholes;
- Three trial pits;
- Four horizontal cores;
- Thirteen monitoring installations;
- Geoenvironmental and geotechnical testing; and
- Gas and groundwater monitoring.

Further details of the investigation can be found in **Section 3**.

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3 Preliminary ground investigation

3.1 Objectives and rationale

Arup recommended a ground investigation with a focus on collecting data for below ground features identified at desk study which were considered to have the biggest potential to impact ground related costs. The Preliminary GI was designed to collect data on:

- the depth to bedrock, in particular near to the BT tunnel which has specific requirements relating to construction over or adjacent to it;
- the infill within the former River Medlock;
- potential for contamination within the plots of the former chemical works;
- the material behind the Altrincham Street retaining wall; and
- infiltration potential in parts of the site not underlain by low permeability glacial till.

Further details can be found in the Preliminary GI rational document provided in **Appendix I**.

3.2 Scope of works

At this early stage in the project the scope of this Preliminary GI is considered appropriate to inform scheme design and provide greater understanding of some of the abnormal ground conditions. The ground conditions in between the investigation points could vary significantly. Additional phases of ground investigation will be required in the future to provide specific data for the design and costing of earthworks, foundations and remediation on a plot/ building specific basis.

3.3 Fieldwork

Intrusive fieldwork was undertaken by Allied Exploration and Geotechnics (AEG) between 26th October 2019 and 1st December 2019 and was predominantly carried out on weekends to minimise disruption to the university. The fieldwork was supervised by an Arup engineer.

3.4 Monitoring

Thirteen monitoring wells were installed in boreholes as part of the ground investigation.

3.4.1 Groundwater sampling

Groundwater samples were collected from six of the monitoring installations between 15th and 17th January 2020. A list of these boreholes is presented in

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Table 3.1. Chemical analysis of these samples is presented in the AEG 2020 factual report [7] and assessment of the data in **Section 6**.

Table 3.1: Summary of groundwater sample locations and strata

Borehole ID	Response zone (mbgl)	Strata
BH001	10 – 15.5	Sandstone
BH004	11 – 14	Sandstone
BH005	18.5 – 21.5	Sandstone
BH007	10.6 – 13.6	Sandstone
BH011	10 – 13	Sandstone
BH013	11 – 16.5	Sandstone

3.4.2 Gas and groundwater levels

Gas and groundwater monitoring included two rounds of groundwater monitoring during/ at the end of the intrusive fieldwork and four post fieldwork monitoring rounds. The dates of these monitoring rounds are presented in **Table 3.2**.

Table 3.2: Summary of monitoring rounds

Monitoring Round Number	Date
1	22/11/2019 (groundwater only)
2	03/12/2019 (groundwater only)
3	15/01/2020 - 17/01/2020
4	06/02/2020
5	20/02/2020
6	06/03/2020

The groundwater level data is presented in **Table 3.3**.

Table 3.3: Summary of groundwater level data

Borehole ID	Base of installation (mbgl)	Groundwater level (mbgl)					
		Round 1	Round 2	Round 3	Round 4	Round 5	Round 6
ARP-BH001	15.60	9.47	9.52	9.5	9.73	9.75	9.80
ARP-BH002 (s)	3.10	Wet at tip	Wet at tip	Dry	Dry	Dry	Wet at tip
ARP-BH002 (d)	3.95	Dry	Dry	Dry	Dry	Dry	Wet at tip
ARP-BH004	7.70	5.98	6.01	6.06	6.15	6.20	6.20
ARP-BH004A	4.20	Wet at tip	Wet at tip	Dry	Dry	Wet at tip	Wet at tip

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Borehole ID	Base of installation (mbgl)	Groundwater level (mbgl)					
		Round 1	Round 2	Round 3	Round 4	Round 5	Round 6
ARP-BH005	21.5	N/A	N/A	6.02	5.27	5.30	5.25
ARP-BH007	14.30	6.02	3	6.07	6.27	6.20	6.10
ARP-BH008	6.50	5.32	5.29	Wet at tip	5.51	5.50	5.50
ARP-BH009	1.80	Dry	Dry	Dry	Dry	Dry	Wet at tip
ARP-BH011	13	N/A	5.56	7.4	5.65	5.70	5.60
ARP-BH012A	6.25	5.99	5.98	Wet at tip	5.98	Wet at tip	Wet at tip
ARP-BH013	16.50	5.30	5.33	5.3	5.40	5.40	5.30
ARP-DS001	4	N/A	2.60	Wet at tip	3.17	3.05	3.00
ARP-DS002	10	N/A	5.32	9.7	5.51	5.45	5.40
Notes: N/A – borehole not complete at time of monitoring							

The depth to groundwater ranged from 2.6 to 9.7mbgl, however was typically encountered between 5 and 6mbgl (28 to 30mOD).

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4 Ground conditions

4.1 Ground model

Made ground was encountered in all exploratory holes across the site. Within the centre of the site, the base was typically around 4 to 4.6mbgl. However, deeper areas of made ground were found in the area of the former River Medlock and are inferred to represent infill of the former channel. This material was similar in composition to the other made ground but to a depth of between 6.3 to 8.9mbgl. The made ground was of similar composition to the natural superficial alluvium and glacial till and is likely to include some reworked natural superficial material.

Alluvium was encountered in some exploratory locations in the centre, east, and west of the site. It ranged in composition to a very dense clayey very gravelly sand to a loose medium dense clayey gravelly sand. The top of alluvium strata was found between 1 to 6mbgl and ranged in thickness between 0.2 to 2.7m. The locations where alluvium was encountered coincides with the former River Medlock valley. In several locations within the central areas of the site the alluvium was absent and made ground directly overlies the sandstone bedrock. It is noted that there is some uncertainty relating to the interface between weathered sandstone (see below) and alluvium where the latter is a red/orange sand which has similar properties to weathered sandstone.

Glacial till was encountered in the north of the site (north of the Network Rail viaduct) with a thickness of 4.2 to 7.2m, and in the south of the site with a thickness of 0.2 to 3.2m. Glacial till was absent in the central areas of the site.

The Sherwood Sandstone Group was encountered in all boreholes which fully penetrated superficial deposits with geological rockhead found between 3.1 to 4.6mbgl. Five boreholes (BH001, 04, 07, 11, 13) were rotary drilled 6m into the sandstone bedrock, and BH005 was drilled 18.5m into the bedrock. The upper 0.5 to 3m of the sandstone was recovered as a very dense clayey slightly gravely sand; had no core recovery; and was described as extremely to highly weathered. There is some uncertainty surrounding this rock. It could be interpreted either as an extremely weathered sandstone, or as alluvial deposits of the River Medlock.

Beyond the upper sand layer, the rock was described as a highly weathered weak fine to coarse grained sandstone and had occasional subhorizontal discontinuities and apertures. One borehole, BH005, was drilled to 21.5mbgl to provide data on the deeper sandstone. BH005 identified a weak to medium strong partially weathered sandstone from 14mbgl (19.4mOD), 10.9m below geological rockhead, indicating the weathering profile reduces with depth.

A summary of the ground conditions encountered is provided in **Table 4.1** below.

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Table 4.1: Summary of ground conditions

Stratum	Thickness (range) (m)	Typical thickness	Top of strata (mbgl)	Description and distribution
Made ground (general)	1.5 to 8.9	4 to 4.6	Ground level	Generally described as a clayey, gravelly, sand with clinker, and fragments of pottery, glass and wood. Present across the site, typically to a depth of 4 to 4.6mbgl. However, thicker layers are present associated with the former River Medlock and Altrincham Street retaining wall
Made ground (former Medlock infill)	1.8 to 4.5	2.5 to 4	2.2 to 4.6 (typically 4.6)	Similar composition to the other made ground. Soft to firm brown yellow grey sandy gravelly clay with bands of clayey sandy gravel. Sand and gravel is fine to coarse and includes ash, wood, brick and clinker
Alluvium	0.2 to 2.7	0.5 to 1	1 to 6	Alluvium was found in five locations (BH004, 005, 007, 013, and 014) and generally comprised of dense brown clayey very gravelly sand with subangular to rounded cobbles of sandstone Possible sand deposited by the river
Glacial till	4.2 to 7.2 (in the north) 0.2 to 3.2 (in the south)	5 to 6 (in the north) 0.4 to 1.5 (in the south)	0.5 to 3.8 (in the north) 1.3 to 4 (in the south)	Glacial till was identified in the north of the site to a significant thickness (up to 7.2m thick), and to the south of the site (to 1.5m thick). It was generally described as a stiff to very stiff high strength grey to brown slightly gravelly clay with stone inclusions and occasional sand lenses
Sherwood Sandstone Group	Not proven	Not proven	3.1 to 10.4	Rockhead is generally 3.1 to 4.6mbgl (27.5 to 30mOD) across most of the site. The upper section of the unit (top 6m) is an extremely weak to weak, moderately to highly weathered fine sandstone. The unit likely becomes stronger and more competent with depth and at one location (BH005) the sandstone was found to be a weak to moderately strong, partially weathered, coarse sandstone at 10.9m below rockhead

A summary geological cross section of the anticipated geology is shown in **Figure 4.1**.

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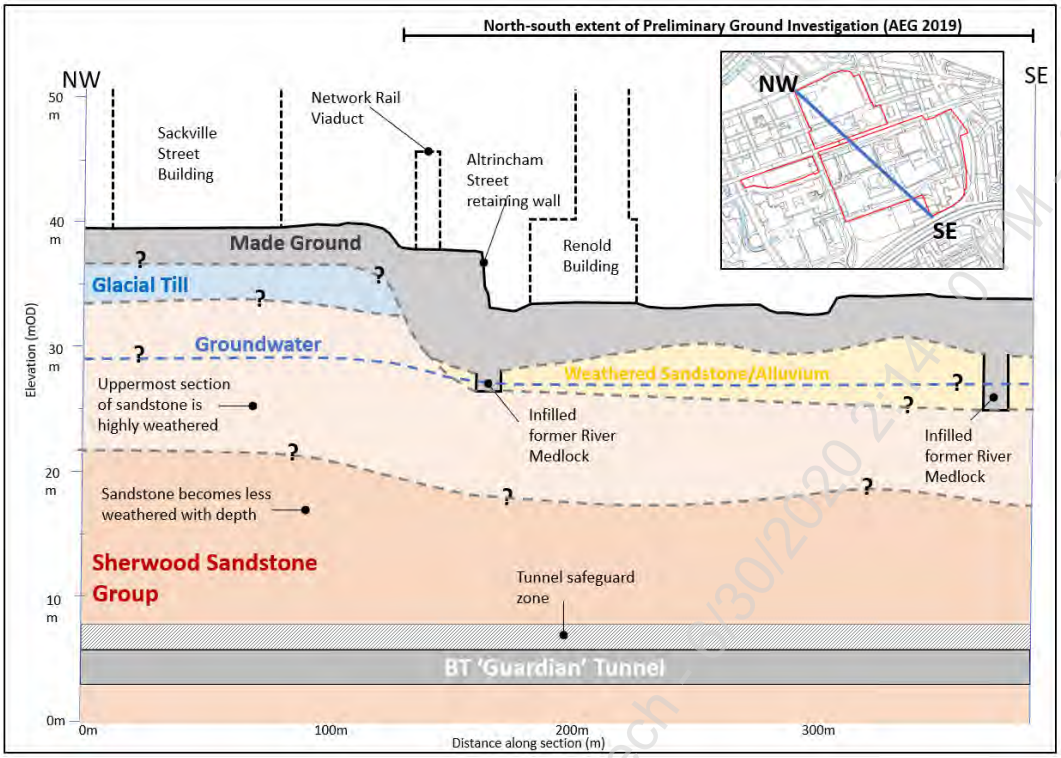


Figure 4.1: Inferred geological cross section NW to SE across the ID Manchester site.

4.2 Made ground

Made ground was encountered in all exploratory holes at the site to a typical depth of 4 to 4.6mbgl (28.6 to 29.6mOD). Locally, at locations BH004, BH007, BH008, DS001, and DS002, made ground was found at deeper depths, between 6.3 to 8.9mbgl (25.3 to 27.8mOD). These boreholes are located on the former River Medlock and the thicker made ground is thought to represent the infilled material of the Medlock. The infill material was found to have a similar composition to the surrounding made ground. BH012A, located north of the Altrincham Street retaining wall, encountered made ground to 10.4mbgl (25.3mOD).

The made ground composition varies but was generally described as a clayey, gravelly, fine to coarse sand. Gravel within the made ground was described as fine to course, subangular to angular and includes sandstone, brick, and limestone. Anthropogenic material within the made ground included fragments of pottery, glass, wood and clinker.

Concrete obstructions were encountered at 1.6mbgl, 1.3mbgl, and 0.7mbgl at BH006, BH006A, and BH006B respectively and are inferred to be linked to a single larger structure. Intact brick structures were encountered in TP002 and DS001 and represent former structures. These obstructions are discussed further in **Section 5.3**.

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4.3 Natural superficial deposits

4.3.1 Alluvium

Material interpreted to represent alluvium was encountered in five locations across the Site between 0.2 and 2.7m thick. At these locations the material was described as a dense brown clayey very gravelly sand with subangular to rounded cobbles of sandstone. It was also occasionally described as a loose medium dense clayey gravelly sand. The material has similarities to weathered sandstone and therefore it is possible that alluvium may have been recorded as weathered sandstone in places.

British Geological Survey (BGS) records indicate alluvium up to 1.2m thick was encountered in historical boreholes within the footprint of the Renold Building.

4.3.2 Glacial till

BGS historical borehole records identified glacial till in the north of the site (north of the Network Rail viaduct). The top of strata was found between 0.5 to 3.8mbgl and ranged in thickness from 4.2 to 7.2m. It was generally described as a very stiff brown silty and sandy clay with grey fissures and stone inclusions with occasional lenses of silt and sand. BH001 and BH012A, which are located near to the Network Rail viaduct did not encounter glacial till.

Glacial till was absent in the centre of the Site in the area indicated to represent the valley of the former River Medlock.

Historic BGS and the 2015 Geotechnics investigation encountered glacial till offsite to the South between 1.3 to 4mbgl and ranged in thickness from 0.4 to 1.5m. It was generally described as a stiff high strength slightly sandy gravelly clay.

4.4 Bedrock

4.4.1 Description

The upper portion of sandstone was found to be highly weathered. In the one borehole (BH005) which was advanced beyond 6m into rockhead, this weathered zone transitioned to a less weathered material from 10.9m below rockhead.

Most boreholes only extended into the upper 6m of the sandstone, within the upper highly weathered section. This rock was described as a very dense red extremely weak to weak and moderately to highly weathered fine-grained sandstone.

BH005 extended 18.4m into the sandstone (21.5mbgl). At 10.9m below geological rockhead the sandstone became a partially weathered weak to medium strong red brown coarse grained sandstone.

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4.4.2 Rockhead

The depth to geological rockhead ranged from 25.1mOD to 33.41mOD (2.4mbgl to 10.4mbgl) and varied as a function of ground elevation. The depths to rockhead identified as part of the 2019 AEG and 2015 Geotechnics investigations closely matched depths presented within the ca. 1960's rockhead contour drawing by CS Allott & Son [6]. Indicative rockhead surface contours have been generated by adapting the Allott & Son rockhead contour plan with more recent ground investigation data. These contour plans are presented in drawings **UNMC-ARUP-ZZ-XX-DR-CG-1002** and **UNMC-ARUP-ZZ-XX-DR-CG-1003**.

The rockhead contours represent the inferred natural variations in geological rockhead. However locally these may be deeper where excavations to form foundations, basements or other structures or where the former River Medlock has incised the bedrock.

4.5 Hydrogeology

4.5.1 General

The superficial glacial till, which can be found to the north and south of the site, is classified as a Secondary Aquifer (Undifferentiated). The superficial alluvium, which can be found in the centre of the site, is classified as a Secondary A aquifer. Secondary Aquifers are defined as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

The bedrock geology is classified as a Principal Aquifer. Principal Aquifers are defined as geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale.

The culverted River Medlock runs from east to west and is located between 10 and 65m south of the site.

4.5.2 Infiltration

A single soakaway test was attempted between 1.4 to 2.6mbgl (within made ground) in TP001 but it wasn't possible to fill the pit due to the high infiltration rate (i.e. water drained away quicker than it was introduced). The flow rate of 33 litres per minute was noted.

Hydraulic conductivity was calculated by applying particle size distribution data to published empirical formulae. This was completed using the HydroGeoSieve XL tool [16]. Multiple empirical relationships are suitable for undertaking this assessment, and hence the geometric and arithmetic mean for each results of each relationship were calculated. A summary of the findings is presented in **Table 4.2** below.

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Table 4.2: Summary of estimated hydraulic conductivity of made ground laboratory particle size distribution data

Sample	Geometric mean (m/s)	Arithmetic mean (m/s)
TP001, 0.8mbgl	5.08 x10^{-4}	2.68 x10^{-3}
TP001, 1.5mbgl	3.54 x10^{-3}	1.36 x10^{-2}
TP002, 1mbgl	4.95 x10^{-3}	1.83 x10^{-2}
TP002, 2.5mbgl	8.39 x10^{-3}	3.02 x10^{-2}
TP003, 1mbgl	1.71 x10^{-3}	1.28 x10^{-2}
TP003, 3mbgl	1.25 x10^{-4}	5.45 x10^{-4}

As can be seen from **Table 4.2**, the hydraulic conductivity of made ground ranged by two orders of magnitude from 5.45 x10^{-4} to 1.28x10^{-2} m/s. These values are consistent with published values for unconsolidated silty gravelly sand [17], which also matches soil descriptions of the made ground.

4.5.3 Groundwater levels

The depth to groundwater ranged from 2.6 to 9.7mbgl, however was typically encountered between 5 and 6mbgl (28 to 30mOD). Further details of groundwater levels are presented in **Section 3.4**.

4.6 Evidence of contamination

During the Preliminary GI, a photo ionisation detector (PID) was used to identify volatile compounds. Eighty-six measurements were taken from 19 positions (all boreholes and trial pits). The depth of the measurements ranged from 0.2 to 10mbgl, located primarily within the made ground. PID readings ranged from 0 to 0.4ppmV. These results are very low and infer that no volatile compounds are present.

No visual or olfactory evidence of contamination was encountered on site.

4.7 Typical material properties

In situ and laboratory testing of soils and rock has been undertaken as part of the AEG 2019 Preliminary GI and the Geotechnics and Constructive Evaluation 2015 investigations. It is noted that the Preliminary GI targeted areas of the site with potential for abnormal ground conditions and therefore the results presented in the following sections may not be typical of the wider site.

4.7.1 Soil

Geotechnical testing of soils was undertaken as part of the 2019 and 2015 investigations. A summary of in situ and lab test data is provided in **Table 4.3** below. Further details can be found in the factual report [7].

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Table 4.3: Summary of the geotechnical properties of made ground, alluvium, and glacial till

Stratum	SPT	PSD	MC[#]	Atterberg limits
Made ground	81 No. Range: 3 – 50* Highly variable across the site (See **Figure 005** in **Appendix H**)	32 No. Well distributed particle sizes, consistent with soil descriptions (See **Figure 001** in **Appendix H**)	35 No. Range: 8.3 – 29.2% Typical: 17.3% (See **Figure 007** in **Appendix H**)	12 No. Liquid limit: 15 to 47% Plastic limit: 15 to 24% Plasticity index: 0 to 23% Pass 425µm sieve: 27 to 75% (See **Figure 007** in **Appendix H**)
Alluvium	7 No. Range: 10 – 50* (See **Figure 005** in **Appendix H**)	5 No. Well distributed with larger clasts, consistent with descriptions (See **Figure 002** in **Appendix H**)	5 No. Range: 7.5 to 18.6% Typical: 17.6% (See **Figure 007** in **Appendix H**)	No data
Glacial Till	5 No. 6 – 33 Data from the 2015 Geotechnics investigation (south of site) (See **Figure 005** in **Appendix H**)	2 No. High proportion of clays and silts with some sand and gravels. Consistent with descriptions (See **Figure 003** in **Appendix H**)	No data	No data

[#] Moisture content typical value is the median value

* SPT values denoted with 50* represent refusal. Within 50 blows the SPT tool progressed less than 75mm.

4.7.2 Rock

Cores of the sandstone bedrock were collected from six locations (BH001, BH004, BH005, BH007, BH011, and BH013), however, core recovery was generally low due to the high degree of weathering. Total core recovery and rock quality designation generally increased with depth into the sandstone, this is likely to be a function of the reduced wreathing profile (See **Figure 008** and **Figure 009** in **Appendix H**). Furthermore, of the borehole samples that were recovered, all of them were unsuitable for laboratory testing other than point load and moisture content testing. Only one sample, from horizontal core HC004, was suitable and tested for uniaxial compressive strength (UCS). SPT testing was undertaken in situ. The results of geotechnical tests are presented in **Table 4.4** below.

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Table 4.4: Summary of the geotechnical properties of the sandstone bedrock

Stratum	**SPT**	**UCS[#]**	**PL[#]**	**MC[#]**
Sandstone	78 No. Typical: 50* (in 77 of 78 tests) Single N value of 25 at BH011 (See **Figure 006** in **Appendix H**)	No Data. All core samples tested were either found to be unsuitable or fractured prematurely during the test.	131 No. Range: 0 – 2.5MPa Typical: 0.1MPa	17 No. Range: 9.9 to 19.4% Typical: 15%
* SPT values denoted with 50* represent refusal. Within 50 blows the SPT tool progressed less than 75mm. [#] Obtaining cores for geotechnical testing proved challenging due to the highly weathered and non-cohesive nature of the rock. The samples were only suitable for point load and moisture content tests, and unsuitable for UCS tests.				

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5 Geotechnical considerations

5.1 Introduction

This section updates the high-level assessment of the geotechnical constraints and ground-related hazards at the site to reflect the findings of the additional surveys and investigations. The Preliminary GI aimed to provide further details regarding the River Medlock, Ardwick Bridge Chemical works, and BT Tunnel. Additional data has been obtained, however this was supplementary to the scope of this investigation. This section should be read in conjunction with the Geotechnical Desk Study [1], the geotechnical constraints drawing **UMNC-ARUP-ZZ-XX-DR-CG-0002** and constraints tracker **UMNC-ARUP-ZZ-XX-SH-CG-0018 Rev3**.

5.2 UXO

A preliminary UXO assessment identified a moderate UXO risk across the entire site. As part of the Preliminary GI, Zetica were commissioned to prepare a UXO desk study and risk assessment of the site. The Zetica UXO risk report concluded that some areas of the site are low risk with the central and southern areas only considered to be a moderate risk.

Zetica has recommended UXB detection in boreholes/piles, and UXO awareness briefings for shallow excavations in moderate risk areas. (The Zetica Report is included in **Appendix A.**)

5.3 Buried obstructions

There is a high potential for encountering buried obstructions at the site due to the site development history. Obstructions may include former basements, foundations, walls, utilities and made ground containing demolition rubble and large boulder sized obstructions of concrete and former brick structures [1].

These types of obstructions may affect activities such as piling, excavations and earthworks as well as the design and construction of new retaining structures. Refer to the desk study for further detail [1].

Obstructions were encountered in several of the exploratory holes at the site. The obstructions included very strong concrete in BH006, BH006A and BH006B (likely all linked to a larger structure) as well as intact weak brick walls (e.g. TP001). At DS001 the ground was found to contain lots of bricks. It is considered that these types of observations are generally typical of the wider site.

5.4 Voids

The desk study identified several potential sources of voids within the ground ranging from smaller scale voids resulting from uncontrolled backfill of historical features (such as basements, River Medlock and other water bodies) and larger voids due to incomplete backfill such as below old bridge structures. These voids

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may pose a hazard to shallow foundations, and potentially external works, without some form of treatment (such as excavation/replacement or other treatment such as grouting or ground improvement).

The Preliminary GI included five boreholes which targeted the former course of the River Medlock prior to it being infilled. This included a former bridge structure. No evidence of voids was encountered in these or any of the other exploratory location at the site. Whilst it is not possible to discount the possibility of voids the Preliminary GI suggests that voids are unlikely to be a widespread hazard. However, plot specific ground investigation is recommended to further quantify the risk and allow the design of appropriate mitigation if needed.

5.5 Shallow rockhead

Fourteen boreholes from the 2019 investigation and six from the 2015 Geotechnics investigation extended into the sandstone bedrock. The rockhead was identified to be shallow, typically between 3.1 and 4.6mbgl (27.5 to 30mOD) within the centre of the site. However deeper areas are present, such as the Charles Street Car Park where rockhead extended to 9.4mbgl. The implication of this variable rockhead is that a variety of foundation solutions may be required across the site. This is discussed in further detail in **Section 5.9.3** below.

5.6 Tunnels

Two tunnel networks were originally identified within the ID Manchester Site [1]. A telecommunications tunnel running approximately NNW to SSE through the centre of the site (BT Tunnel) and a former network of tunnels associated with an old dye works (UMIST tunnels). However, the site boundary has since been modified such that the UMIST tunnels are no longer within the site.

To reduce the potential for damage to the BT Tunnel a set of safeguard guidelines have been prepared by Halcrow Group Ltd on behalf of BT [6]. These include:

- A minimum clearance of 2m;
- New works and structures cannot cause variation in loading on the tunnel to vary by more than 10%;
- Piling and construction works cannot exceed vibrations of 20mm/sec;
- Tunnel condition surveys are to be carried out before and after the works are carried out;
- Piles proposed within 3m of the tunnel require detailed surveying of pile locations; and those within 2m additionally require continuous monitoring of the tunnel during piling.

The depth of the tunnel has been reviewed since the Geotechnical Desk Study was issued and the top of the tunnel is now understood to be around 6.5mOD, which is deeper than 15mOD initially thought. In addition, the ground investigations have provided greater certainty on the rockhead elevation adjacent to the tunnel as well as data on the rock condition and strength. An updated inferred geological rockhead contour drawing is presented in **Figure 4.1**.

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The depth to rockhead along the alignment of the tunnel ranged from 25.9mOD to 33.4mOD (3.1 to 8.15mbgl), as shown in **Drawing UNMC-ARUP-ZZ-XX-DR-CG-1002** and **UNMC-ARUP-ZZ-XX-DR-CG-1003**.

Much of the site located rockhead between 3 to 7.5mbgl. At this depth it is thought that shallow piles (to ca. 10mbgl) are likely the most suitable piling solution. The BT tunnel is now understood to be around 6.5mOD, which is deeper than previously thought. The additional depth will impact loading calculations for structural design. The sandstone was found to be weak and highly weathered in the upper section and partially weathered at 10.9m depth from the top of rockhead. The weak nature of the rock may impact pile design. Deeper or larger diameter piles may be required due to the weak nature of the rock.

5.7 Retaining walls

Due to the stepped topography of the site there are several retaining walls. Two retaining walls were investigated as part of Preliminary GI. These were the Altrincham Street retaining wall and the retaining wall for the ramp to the basement of the Pariser Building. The material behind the Altrincham Street retaining wall was also investigated.

Three, 2m long, horizontal cores (HC001 to HC003) were drilled in the Altrincham Street retaining wall. All three cores identified a strong orange red brick with moderately strong light grey mortar, well bonded facing brick between 0.19 to 0.33m thick. This became a moderately weak to moderately strong dark to light orange red brick with weak dark grey mortar, poorly bonded to 2m. The full thickness of the wall was not proven. In HC003, a strong grey concrete was also identified between 0.33m and 0.55m. The retaining wall includes a number of arches, used as leased storage areas, which extend beneath Altrincham Street.

BH012A, located above HC003 and approximately 4.7m north of the Altrincham Street retaining wall, encountered made ground from the surface to a depth of 10.4 mbgl. The made ground varied in composition between a loose slightly clayey gravelly sand to a very clayey gravelly sand and included brick fragments.

Therefore, the Altrincham Street retaining wall is quite extensive, measured to be greater than 2m, but less than 4.7m thick.

A further horizontal core, HC004, was drilled in the south of the site in the supporting wall of the Pariser Building basement access ramp. The core extended to 0.46m. The first 0.42m was comprised of an extremely strong light grey concrete with 5mm diameter reinforcing bars at 0.05m-0.1m and 8-10mm diameter reinforcing bars at 0.36m-0.42mm. The reminder of the core from 0.42 to 0.46m was found to be hardcore/ gravel behind the retaining wall.

Further details and core logs can be found in the factual report [7].

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5.8 Infiltration

The permeability of the superficial deposits and bedrock will determine drainage design. A single soakaway test was attempted at TP001 in the centre of the site, however due to the high infiltration rate the test couldn't be completed.

Permeability of the made ground was estimated using Particle Size distribution data. Samples collected from TP001, TP002, and TP003 between 0.8 to 3mbgl was found to range in hydraulic conductivity from 5.45 $x10^{-4}$ to 1.28$x10^{-2}$ m/s. The high estimated hydraulic conductivity of the made ground may impact drainage design and could cause rapid inflows in to any excavations adjacent to perched waters. Further details can be found in **Appendix H**.

5.9 Further geotechnical considerations

Whilst the Preliminary GI was designed specifically to provide data on the issues described above, the data collected has provided some additional data on other possible hazards and features identified at the site. These are summarised below.

5.9.1 Soft ground

Potential for soft ground within made ground and alluvium was identified in the Geotechnical Desk Study [1]. The made ground was found to vary in strength/density, with a range of SPT 'N' values from 3 to 50 (refusal). The average made ground was medium dense. Glacial till was found to be very stiff and firm, and therefore does not represent soft ground. Some alluvium was encountered. It was occasionally found to be loose, however it generally comprised a dense clayey gravelly sand. SPT 'N' values ranged from 10 to 50 (refusal)

While few areas of the site were found to be contain soft ground, it may still be present. Due to the low density of GI coverage and the targeted nature of the Preliminary GI, alluvium, which is thought to pose the greatest risk of soft ground, may be under represented in the available GI across the site.

5.9.2 Groundwater

Groundwater levels were found to range from 2.6 to 9.7mbgl but was typically found between 5 and 6mbgl (28 to 30mOD). The depth of groundwater will have implications for earthworks such as the requirement for pumping in deeper excavations or casing piles. Shallow groundwater will also increase the contaminative risk to aquifers. No perched water was encountered, however may still be present due to the limited scale of this investigation.

The depth to groundwater (generally 28 to 30mOD) is comparable to rockhead (28.7 to 30.3mOD across much of the site). Earthworks are likely to extend into the bedrock and therefore some dewatering is likely to be required. Where deeper excavations are required, where rockhead is deeper (such as the west of the site), dewatering is very likely to be required.

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5.9.3 Foundations

It is assumed that where rockhead is <3mbgl shallow footings will be suitable. Where the depth to rockhead is greater, piled foundation solutions are likely to be required with pile lengths assumed to be 3-5m below the top of geological rockhead. This is around 10 to 15mbgl.

Where new basements are proposed and the rock depths are relatively shallow, a combination of piled basement retaining walls (to carry vertical loads from the perimeter of the structure), and pads onto rock for the internal columns/cores could be considered.

An indicative rockhead and foundation plan has been produced from historical rockhead contour data and 2019 Preliminary GI data (**Drawing UNMC-ARUP-ZZ-XX-DR-CG-1005**). This plan shows that the centre of the site generally has rockhead at 3 to 7.5mbgl. Some areas with shallow rockhead (<3mbgl) are present in the centre/south of the site; and some areas of deeper rockhead (>7.5mbgl) are present in the east and west of the site.

5.9.4 Earthworks

The proposed development levels for the site are yet to be determined. However, adjacent developments and highways will limit significant changes in level at the site boundaries. It is currently assumed that the target for earthworks cut to fill balance will be zero, however this needs to be verified as the masterplan develops. Materials used in earthworks will need to be verified as suitable from both a geotechnical and geoenvironmental perspective; this includes both site won and imported soils.

The ground investigation identified that the upper (6m) of the sandstone unit is weak to very weak and extremely to highly weathered. The excavatability of a rock can be estimated based on point load and fracture index data. Within the sandstone cores tested, points load test results ranged from 0 to 0.3MPa, while average discontinuity spacing per core ranged from 0.07 to 0.36m This suggests that easy digging or hard digging excavation will be encountered across most of the site, and there is a small likelihood that 'easy ripping' type excavation might be required. From experience within the region there is a possibility that localised more strongly cemented sandstone is present requiring higher excavation effort than currently identified in the GI. A plot of excavatability is presented in **Appendix H**.

5.9.5 Medlock culvert

The River Medlock is now culverted, and the culvert is located to the south of the site. The exact position is not known however plans showing approximate location were obtained and included in the desk study [1]. The 2015 Geotechnics investigation included fourteen trail pits to locate the culvert. Seven intersected the culvert at a depth of between 1.9 to 3.55mbgl (32 to 33.6mOD).

A drawing showing the reported position of the culvert and the depth to the top of culvert is presented in **Drawing UNMC-ARUP-ZZ-XX-DR-CG-1004**.

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6 Contamination and surplus soil

6.1 Approach

This section presents an initial assessment of contamination and waste classification which is considered appropriate at this early stage of this project and the targeted nature of the Preliminary GI. The assessment is indicative and for use in providing qualitative judgements regarding remediation scope and waste disposal options. Additional assessment will be required once further design has been done in relation to building locations, building use, landscaping proposals and earthworks and foundation design.

6.2 Conceptual model

Arup has prepared a conceptual model following the guidance outlined in the Environment Agency's Contaminated Land: Risk Management framework [4]. The conceptual model is based on the masterplan presented in the Geotechnical Desk Study[1].

6.2.1 Possible sources of contamination

Possible sources of contamination have been identified at the site and are primarily associated with the former industrial land use. Historically the regulations regarding environmental protection measures (such as waste management and containment measures for spills and leaks) were much less stringent and therefore the older activities on site (especially those undertaken prior to the campus development) have a greater likelihood to have impacted soil and water quality.

The locations of these historical land use which are considered to have potential to act as a contaminant sources are shown in **UMNC-ARUP-ZZ-XX-DR-CG-0001**.

Made ground, where present, can contain a wide variety of potential contaminants depending on the source of the material (which is often unknown). Common contaminants in made ground can include heavy metals, asbestos and PAHs (particularly associated with ash and clinker fragments). Degradation of organic materials within made ground may also generate ground gases.

The former land uses with the highest potential to have caused extensive contamination are the Ardwick Bridge Chemical Works, in the southeast of the site, and the Medlock Oil Works, in the west of the site.

Historical land use immediately adjacent the site was primarily terraced housing. Minor industrial works were located north and west of the site, however due their size the influence of off-site contamination is likely to be minimal.

The Department of Environment (DoE) Industry Profiles [8] were used to identify potential contaminants associated with historical land uses. The potential sources of contamination are summarised below.

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Table 6.1: Potential sources of contamination

Potential Source	Potentially Contaminative Materials	Comments
Ardwick Bridge Chemical Works[1] and other chemical works	Metals, metalloids and their compounds Inorganic compounds Organic compounds Acids/bases Fuel oils Asbestos Dyes	Contamination likely associated with spills and leaks.
Medlock Oil Works[2]	Metals, metalloids and their compounds Inorganic compounds Hydrocarbons Other organic compounds Asbestos	Contamination likely associated with spills, leaks and fuelling/filling of tanks
Other previous industrial activities[3,4,5,6,7]	Heavy metals Hydrocarbons Lubricating oils Polycyclic Aromatic Hydrocarbons (PAH) Chlorinated solvents and non-chlorinated solvents Acids/bases Asbestos	Works include: wood works, garages, iron works, mills and soap works.
Former River Medlock and other infilled associated features	Asbestos Heavy metals Sulphate Acid/bases Inorganics Hydrocarbons	Possible infill with soils which pose a risk to human health and the environment, may also be a source of ground gas
DoE Industrial Profile document titles: [1] Textile works and dye works [2] Oil refineries and bulk storage of crude oil and petroleum products [3] Timber treatment works [4] Timber manufacturing works [5] Road vehicle fuelling, service and repair – garages and filling stations [6] Chemical works – soap detergent manufacturing works [7] Metal manufacturing, refining and finishing works – iron and steel works		

6.2.2 Receptors

The following receptors have been identified at the Site:

Construction phase:

- Ground workers;
- Users of nearby site;
- River Medlock (culvert); and

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- Sherwood Sandstone Principal Aquifer;

Post construction phase:

- Future site users;
- Future ground workers;
- River Medlock (culvert);
- Sherwood Sandstone Principal Aquifer;
- Buried structures in contact with chemically aggressive ground; and
- Buried water supply pipe.

6.2.3 Pathways

The following pathways may link sources of contamination to receptors at the Site during construction:

- Inhalation of soil dust;
- Inhalation of vapours;
- Ingestion of soil and soil dust;
- Dermal contact with soils and groundwater.

The following pathways may link sources of contamination to receptors at the Site during post-construction:

- Inhalation of soil dust;
- Inhalation of vapours;
- Ingestion of soil and soil dust;
- Dermal contact with soils and groundwater;
- Direct contact and lateral flow of groundwater;
- Ingress and accumulation of gases in confined spaces

6.2.4 Conceptual model

A summary of the initial conceptual site model for the construction phase and post construction of the site is presented in **Table 6.2** and Table 6.3 respectively.

Table 6.2: Conceptual model for the construction phase

Source		Pathway		Receptor
Demolition of existing building (with possible asbestos containing materials (ACM))	→	Inhalation of dust	→	Construction worker
			→	User of nearby site
Stockpiles of made ground (asbestos, metals, PAH, VOC, SVOC, hydrocarbons)	→	Inhalation of soil and soil dust	→	Construction work
			→	User of nearby site
		Dermal contact	→	Construction worker
		Ingestion	→	
		Inhalation of vapours	→	

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Source		Pathway		Receptor
		Leaching and runoff	→	River Medlock
		Leaching of soils	→	Sherwood Sandstone Principal Aquifer
Impacted shallow groundwater	→	Inhalation of vapours (in confined spaces)	→	Construction worker
		Dermal contact	→	
		Ingestion	→	

Table 6.3: Conceptual model post-construction

Source		Pathway		Receptor	Plausible Pollutant Linkage
Made ground (asbestos, metals, PAH, VOC, SVOC, hydrocarbons)	→	Direct contact, ingestion of soil/ soil dust, inhalation of soil/ soil dust	→	Future ground worker	PPL1
				Future site user	PPL2
		Inhalation of vapours	→	Future ground worker	PPL3
			→	Future site user	PPL4
		Leaching and infiltration through the unsaturated zone	→	Sherwood Sandstone Principal Aquifer	PPL5
		Leaching within the saturated zone	→	Sherwood Sandstone Principal Aquifer	PPL6
Impacted shallow groundwater	→	Lateral flow	→	River Medlock	PPL7
		Inhalation of vapours	→	Future site user	PPL8
Ground gases	→	Ingress and accumulation of gases in confined spaces to explosive/asphyxiating/ toxic concentrations	→	Future ground worker	PPL9
			→	Future site user	PPL10
Made ground/ impacted shallow groundwater	→	Direct contact and infiltration through cracks/ joints	→	Potable water supply pipes	PPL11
	→	Direct contact	→	Buried concrete	PPL12

6.3 Generic risk assessment of the data

6.3.1 Construction phase

Although the conceptual model for the construction phase had identified possible risks (**Table 6.2**), these temporary acute risks are not covered by the risk assessment presented in this section. Most of these acute risks will be controlled

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by good practice implemented through a Construction Environmental Management Plan.

6.3.2 Operational Phase

6.3.2.1 Human health

The human health risk assessment has been undertaken to assess the following pollutant linkages:

- PPL1 - exposure of future ground worker/ maintenance worker to soil via dermal contact, ingestion of soil/soil dust/inhalation of soil/soil dust
- PPL2 - exposure of future site users (in soft landscape area) to soil via dermal contact, ingestion of soil/soil dust/inhalation of soil/soil dust
- PPL3 - exposure of future ground workers via inhalation of vapours
- PPL4 - exposure of future site user via inhalation of vapours
- PPL8 - exposure of future users via inhalation of shallow groundwater vapours
- PPL9 - exposure of future ground worker to ground gases in confined spaces
- PPL10 - exposure of future site user to ground gases in confined spaces

6.3.2.2 Human health generic quantitative risk assessment (GQRA)

To simplify the assessment of ground contamination risks, the UK Statutory Guidance [10] endorses the use of generic quality guideline values for initial screening of contamination testing results. These generic assessment criteria (GAC) are based on conservative assumptions about exposure regarding intake and effect levels. Arup has developed GAC for various land use scenarios which cover a broad range of development scenarios. Further details on the development and justification of the Arup GAC can be provided upon request.

Contaminants which are below these scientific and appropriate guideline values, do not require further assessment if it is planned to retain these soils on the site.

A finalised masterplan for the proposed development has not been provided, however will likely comprise new commercial buildings and residential flats. Underlying assumptions for commercial GACs include human exposure to soil/water/gas contaminants during outdoor lunches. It is assumed that future residents of the proposed flats would have a similar exposure to this. This assumption is based on limited exposure to soils (with no gardens) and elevated positions (in high-rise apartments). Therefore, the primary pathways linking residents in apartments are via inhalation of soil dust/vapour pathways with minor contributions from exposure to soft landscaping areas. The use of commercial GACs is therefore appropriate for this assessment as the use of residential GACs would be too conservative and not representative of contaminant exposure pathways at the finished development. However, if the masterplan changes then this assumption should be re-evaluated.

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Soil organic matter (SOM) concentrations within soils can influence organic contaminant concentrations. The SOM within made ground was calculated to be 2.63% and was calculated from 51 total organic carbon results. Based on this, the appropriate screening criteria for this assessment is Commercial GAC at 2.5% SOM.

The screening identified a single sample where a contaminant exceeded the human health GAC. The contaminant was lead which was present in shallow soil (0.8mbgl) at a concentration of 2,400mg/kg, compared to the GAC of 2,300. The location of this exceedance, DS002, was within the footprint of the former Ardwick Bridge chemical works.

Asbestos was positively identified in 8 of 51 made ground samples tested for asbestos. Concentrations greater than 0.001% (the laboratory quantification limit) was detected in a sample collected from BH007 at 3.3mbgl, recording a concentration of 0.192wt%.

Full details of the assessment and screening spreadsheet can be found in **Appendix C**.

The Preliminary GI has provided soil chemical data for some of the areas of the site with highest potential for contamination (chemical works, infill of the River Medlock). Based on the data collected it is considered likely that a large proportion of the soils on site would be chemically suitable for use within this predominantly commercial scheme with minimal mitigation. This mitigation is likely to comprise a clean cover system (hard landscaping and validated clean soils in soft landscaping areas) to minimise exposure to soil contaminants such as asbestos. However, this conclusion will need to be validated through plot specific ground investigation.

6.4 Controlled waters

Controlled waters generic assessment criteria (CWGAC), suitable for controlled waters receptors comprising both groundwater in a Principal Aquifer (i.e. the Sherwood Sandstone bedrock) and freshwater watercourse (i.e. the River Medlock).

Several inorganic compounds detected above GWGAC are trace metals typical of mineral cements within the local aquifers. The Site data relative to aquifer baseline data is presented in **Table 6.4**. Metal concentrations found to be within baseline ranges are considered naturally occurring and not considered further within this assessment.

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Table 6.4: Summary of background contaminants within bedrock aquifer. Substances exceeding the baseline concentrations highlighted in red.

Contaminant detected in groundwater	Max Conc. in groundwater (µg/l)	Aquifer baseline range (µg/l)[2]	Comment
Arsenic	15	<0.05 to 215.5	Most metal concentrations are within baseline range
Cadmium	0.38	<0.05 to 42	
Chromium	9	<0.5 to 25	
Copper	2.4	<0.5 to 420	
Lead	3,100	<1 to 6.8	
Manganese	2600	0.3 to 6000	
Nickel	8.6	<0.2 to 59	
Selenium	22	<0.5 to 4.7	
Zinc	12.3	3.4 to 177.4	

Groundwater sampled from BH011 had a concentration of lead which exceeded the aquifer baseline values and CWGAC (3,100 µg/l). BH011 is located within the footprint of the former Ardwick Bridge Chemical Works which may be the source of the lead. Elevated concentrations of lead were reported in a sample of made ground at borehole DS001 which is also located within the footprint chemical works which may indicate leaching of these soils.

A single sample of selenium was also found to have a concentration which exceeded background values and CWGAC. The sample was from BH013, which is located in the west of the site, within the footprint of past industry.

Two cyanide samples were found in exceedance of CWGAC. One sample, from BH011, was found at 1,000µg/l, a concentration many times greater than CWGAC. This high concentration may again derive from the former Ardwick Bridge Chemical Works.

Two polycyclic aromatic hydrocarbons (PAH) contaminants were found to exceed CWGAC. PAH are very common in made ground and it is considered that the PAH detected in the groundwater is a result of leaching of made ground. This pathway is feasible as made ground was commonly found to directly overly sandstone, within which the groundwater sample was taken.

Leaching of made ground soils is considered to be the most likely cause of the elevated groundwater concentrations and these soils are likely to be discrete. Leaching will be minimised in the final development below buildings or hard surfacing (with surface water drainage system) which will mitigate the risk to controlled waters. Therefore, delineation of these soil sources and excavation and placement of the soils in appropriate areas of the development is considered appropriate.

[2] EA/BGS, 2003, Baseline Report Series: 8. The Permo-Triassic Sandstones of Manchester and East Cheshire

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Whilst it is considered that extensive groundwater remediation will not be required to mitigate the risks to controlled waters, further sampling and assessment of the contaminants noted above is recommended to confirm concentrations and inform further risk assessment (including Foundation Works Assessment).

A summary of the contaminants which exceeded their CWGAC is presented below in **Table 6.5**. The complete screening spreadsheet is found in **Appendix D**.

Table 6.5: Summary of controlled waters screening assessment

Contaminant Name	CWGAC (µg/l)	Source	No > GAC	Max concentration in groundwater (ug/l)
Metals				
Lead	1.2	EQS	1	3100
Selenium	10	DWS	1	22
Inorganics				
Cyanide	0.001	EQS	2	1000
Ammoniacal nitrogen	0.3	EQS	2	0.53
PAHs				
Naphthalene	2	EQS	1	4.9
Fluoranthene	0.0063	EQS	2	0.1

6.5 Ground gas

The conceptual model has identified risks to site receptors from exposure to ground gas via the following linkages:

- PPL9 - exposure of future ground worker to ground gases in confined spaces
- PPL10 - exposure of future site user to ground gases in confined spaces

Consequently, a ground gas risk assessment has been undertaken (in accordance with CIRIA C665 [18] and BS8485:2015+A1:2019) to estimate the level of risk posed to the future site users and determine the need for remedial action.

The gas monitoring was undertaken under a range of atmospheric pressures and included rising and falling pressure trends. The pressure ranged from 997 to 1031 mbar

The results of this gas monitoring have been assessed using the classification system presented within CIRIA C665. The classification system uses gas concentrations and recorded flow rates for methane and carbon dioxide to determine a gas screening value (GSV). The GSV is calculated by multiplying the maximum recorded flow rate (l/hr) against the maximum recorded gas concentration determining a value reflecting the worst-case scenario. The GSV is used in turn to determine a 'characteristic situation' (CS) for the Site which is used to inform the gas protection requirements.

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Based on the available data, the maximum gas concentrations and GSVs from standpipes located within the made ground are presented in **Table 6.6** below. The monitoring included four rounds over a seven-week period (see **Section 3.4.2**). The complete screening assessment from the recent monitoring rounds is presented in **Appendix E**.

Table 6.6: Summary of calculated maximum gas concentrations and flows from standpipes within the made ground

Borehole (response zone range mbgl)	Maximum Methane (%v/v)	Maximum Carbon Dioxide (%v/v)	Maximum Flow (l/hr)	Max GSV Methane	Max GSV Carbon Dioxide	Assessed gas situation
BH002 (0.5 to 2.5)	<0.1	0.3	0	0	0	CS1
BH002 (3.2 to 4)	<0.1	0.5	0	0	0	CS1
BH004A (1 to 4)	<0.1	1.3	0	0	0	CS1
BH008 (0.3 to 6.5)	<0.1	0.5	0	0	0	CS1
BH009 (0.5 to 1.7)	<0.1	0.1	0	0	0	CS1
BH012A (2 to 6)	<0.1	0.6	0	0	0	CS1
DS001 (2 to 4)	<0.1	0.4	0	0	0	CS1

The site is characterised as CS1.

6.6 Chemically aggressive ground

An assessment has been undertaken to evaluate the chemical environment for concrete in accordance with BRE Special Digest 1 [9] to assess the risks posed by concrete in contact with possibly chemically aggressive ground. The assessment is presented in **Appendix F** and a summary presented in **Table 6.7** below.

Characteristic values were determined from the arithmetic mean of the worst case 20% of pH and sulphate concentrations of soil and rock samples. The arithmetic mean was used, as opposed to using the single worst value, due to sufficiently large sample sets (greater than 10 samples).

At this preliminary stage the assessment has concluded a design sulphate class of DS-2 and an aggressive chemical environment for concrete of AC-1 for concrete placed in contact with made ground. A design sulphate class of DS-1 and an aggressive chemical environment for concrete of AC-1 is required for concrete placed in contact with sandstone.

Whilst the data collected as part of the Preliminary GI provides a good indication of the likely conditions, additional plot specific ground investigation is recommended to support the design of structural concrete.

Table 6.7: Summary of chemical aggressive ground assessment

Geology	No. Samples	Characteristic pH	Characteristic Sulphate	Design Sulphate Class	ACEC Class

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MG	19	7.97	717.5	DS-2	AC-1
SS	11	7.85	114	DS-1	AC-1

The pH from groundwater samples ranged from 4.8 to 7, however typically ranged from 6.7 to 7.

6.7 Surplus soil and waste

6.7.1 Approach

The most sustainable approach to managing surplus soils arising from construction excavation is to reuse suitable soils on site (in accordance with the CL:AIRE Definition of Waste Code of Practice). Where possible it is advisable to amend proposed levels to allow for reuse of surplus soils.

If surplus soil requires offsite disposal then it is likely to meet the legal definition of waste. Under current English waste regulatory requirements, there is a legal requirement to correctly classify material for disposal. For soils arising from brownfield sites soil test results are used to classify the material as hazardous or non-hazardous waste, following the procedure in the EA WM3 document [11]. The online waste classification tool (HazWasteOnline [12]) classifies material in line with WM3. A European Waste Catalogue (EWC) List of Waste code is then assigned, typically 17-05-03 for non-hazardous soils. Subsequently waste acceptance criteria (WAC) testing may be necessary if disposal at a landfill is intended.

This section summarises the results of an indicative screen of the made ground, to determine its waste classification using HazWasteOnline.

As there are currently no details in relation to earthworks and where waste may be generated it was considered inappropriate to undertake WAC analysis at this stage. However, this data could be collected as part of future plot specific ground investigation if it is likely that waste made ground requiring disposal at landfill will be generated as a result of construction.

6.7.2 Waste classification

An indicative waste classification exercise has been undertaken to provide information to assist in the assessment of the management of waste soils at the site.

As part of the investigation, 55 samples of made ground have been tested for a range of inorganic and organic contaminants of potential concern. The HazWasteOnline screening tool has been used to assess the hazardous properties of these materials. The results of the screening are presented in **Appendix G**. None of the samples screened were classified as hazardous.

The HazWasteOnline tool does not consider asbestos containing materials. However, ACM has been detected in 8 of soil samples of the 51 samples tested. As stated in WM3 guidance document, if the waste contains fibres that are free

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and dispersed then the waste will be hazardous if the waste as a whole contains 0.1% or more asbestos. Where the waste contains identifiable pieces of asbestos containing material (i.e. any particle of a size that can be identified as potentially being asbestos by a competent person if examined by the naked eye), then these pieces must be assessed separately. The waste is hazardous if the concentration of asbestos in the piece of asbestos containing material is 0.1% or more.

ACM has been detected in eight soil samples, however only one sample (BH007, 3.3mbgl) exceeded the hazardous waste threshold of 0.1%, recording 0.192wt%.

This assessment has concluded that a low proportion of the made ground soils at the site are likely to be classified as hazardous waste and this has resulted from asbestos above hazardous waste thresholds. Therefore, most of the made ground is likely to be classified as non-hazardous but requires further plot specific investigation to confirm this conclusion. Further analysis to determine whether the non-hazardous waste would be accepted at an inert waste landfill will be required in the future, if waste soils are likely to be generated, i.e. if the material is not planned to be re-used as part of the development.

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7 Conclusions

The University of Manchester commissioned additional investigation and assessments to help better define the risk posed by below ground constraints at the Site. This included:

- UXO risk assessment;
- Ground investigation data from adjacent sites; and
- A preliminary intrusive ground investigation specifically targeting features identified at desk study.

7.1 Summary of assessment findings

7.1.1 UXO

The desk study had identified a moderate risk of encountering UXO and therefore further assessment was warranted. Zetica was appointed to prepare a more detailed risk assessment. Zetica concluded that some areas of the site are low risk with the central and southern areas only considered to be a moderate risk (as seen in **Figure 2.1**). Zetica has recommended UXB detection in boreholes/ piles and UXO awareness briefings for shallow excavations in moderate risk areas.

7.1.2 Buried obstructions

Owing to the past industrial and more recent development history at the site there is high potential for buried obstructions. These obstructions fall into two categories, old obstructions resulting from historical foundations, basements, retaining walls for the River Medlock. More recent obstructions include buried service tunnels, foundations, basement slab, floor slabs which may remain following demolition.

Old obstructions

This may include features such as retaining walls associated with the former River Medlock, basements, foundations and old infrastructure. An old brick wall was encountered in TP001 and numerous observations of brick clasts within the made ground fill were observed during the Preliminary GI.

The fact that old buried obstructions were encountered as part of the Preliminary GI, given the limited scope, suggests further obstructions are likely to exist on-site. The risk of encountering historical obstructions is likely to be lower in the footprints of the existing buildings particularly where basements and deeper foundations have been constructed as these obstructions are likely to have been cleared for construction. In current external areas, the risk of encountering historical buried features is likely to be higher as removal of obstructions may not have been needed.

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Obstructions associated with the existing development

Buildings and infrastructure associated with the existing development will form obstructions if not removed prior to earthworks or foundation works. These will include existing foundations/ basements for the existing buildings, basement slabs and walls and utilities and utility tunnels.

Whilst these were not specifically targeted during the Preliminary GI, the ground investigation encountered an extensive concrete obstruction in the east of the site (BH006, BH006A, and BH006B) between 0.7 to 1.6mbgl. This may be a utility tunnel or a foundation.

Implications for new development

Earthworks and excavations will need to be carefully designed and managed to mitigate risks associated with instability when digging out large slabs or brick walls. However, there is high potential to re-use these obstructions as an engineering fill within site earthworks following crushing and processing. and may cause instability during earthworks or excavation, particularly where the obstruction overlaps boundaries of the development phases.

Where piling is required, piling and drilling methods will need to take into consideration these features. Where the obstructions remain in situ they are likely to restrict the use of driven and CFA bored piles.

Further plot specific investigations are likely to be needed to inform the design and construction methodology for any basement and piling works.

7.1.3 Former River Medlock

In the 1960's the River Medlock was culverted (see Drawing **UMNC-ARUP-ZZ-XX-DR-CG-0002**). The desk study identified uncertainty regarding the status and method of backfilling of the former Medlock channel and therefore potential for voids, soft ground and contamination.

The Preliminary GI found made ground within exploratory locations within the former Medlock was deeper (6.3 to 8.9 mbgl) than surrounding areas (4 to 4.6 mbgl). The composition of the infill was consistent with surrounding made ground, and no voids or soft spots were encountered. In situ soil density testing (SPT) indicates a range in soil strength/ density and with a range of particle sized which is typical of made ground deposits. The made ground was generally granular in nature suggesting that treatment by excavation and compaction or vibro ground improvement might be an option for treatment subject to proposed loading.

7.1.4 Shallow rockhead

The depth to the Sherwood Sandstone rockhead but is generally at 28 to 30mOD however the depth to rockhead from the ground surface varies as a function of the ground levels which vary significantly. South of Altrincham Street, where ground levels drop, rockhead is around 3.1 to 4.6 mbgl. A geological rockhead contour

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plan, produced in the 1960s by C.S. Allott & Son Consulting Engineers [6], was obtained during the Arup desk study. The recent ground investigation has been compared to the rockhead drawing. Generally, the rockhead levels encountered are consistent with those estimated. An updated rockhead drawing based on the latest data is presented in **Drawing UNMC-ARUP-ZZ-XX-DR-CG-1002** and **UNMC-ARUP-ZZ-XX-DR-CG-1002**.

As the rockhead is generally around 3 to 7.5mbgl shallow piled foundations are likely the most appropriate foundation solution. Areas of shallower and deeper rockhead are present and different foundation solutions may be more appropriate in these locations. The upper section of the sandstone bedrock was found to be highly weathered and weak, and likely to be excavatable without the need for specialist equipment.

7.1.5 BT tunnel

The BT/Guardian tunnel passes approximately NW-SE through the central part of Site (see **Drawing UMNC-ARUP-ZZ-XX-DR-CG-0002**) at a depth of around 6.5mOD [13]. This is between 26.5mbgl (in the centre/south of the site) and 31.5mbgl (in the north of the site) and 19.5 to 27mbgl.

Safeguard restrictions [5] have been identified which require more care to be taken during construction over or adjacent to the tunnels. This might restrict pile depths and locations.

The Preliminary GI included five boreholes located nearby to the BT tunnel to determine the nearby rockhead level including one deeper borehole to provide data on the rock properties around tunnel depth. This information should be used to inform the scheme designs of any structures on or adjacent to the tunnel.

7.1.6 Contamination associated with past industry

Several former industrial uses with contamination potential were located within the site, including a former chemical works and oil works.

As well as providing data on made ground across the site the Preliminary GI targeted areas of high contamination potential such as the Ardwick Bridge Chemical works and River Medlock infill. No visual or olfactory evidence of contamination was observed during the investigation fieldwork; no high PID readings were measured; only a single chemical soil exceedance was identified (at the site of the former Ardwick Bridge Chemical works). The ground investigation data suggests that gross contamination is not widespread and that the contamination potential at the former Ardwick Bridge Chemical Works and the infilled River Medlock is less than inferred at desk study.

Contaminant concentrations within groundwater generally suggest no gross contamination. However, groundwater from BH011, on the former Ardwick Bridge Chemical Works site, was found to have elevated lead and cyanide. Selenium, ammoniacal nitrogen and PAHs (naphthalene and fluoranthene) were also found to exceed CWGAC. Whilst it is considered that extensive groundwater remediation is unlikely to be required to mitigate the risks to controlled waters, it

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is recommended that further water samples are collected to confirm these measurements, and inform further risk assessment.

Across the site, ground gas levels were found to be consistent with CS1. No special precautions or protective measures are required for sites characterised as CS1 [18].

7.1.7 Retaining structures

The Altrincham Street retaining wall was found to be greater than 2m thick, but likely less than 4.3m thick. The wall is faced by newer stronger brick wall, occasional concrete, and an older weaker brick structure. The material behind the wall was identified as made ground comprised of a clayey gravelly sand.

The Pariser Building access ramp wall situated in the south of the site was found to be very strong, comprised of a 40cm concrete wall with rebar support. Behind the wall was a hardcore fill.

7.2 Updated risk register

The desk study identified key site risks which were documented within a risk register. Some of these risks were addressed as part of this preliminary investigation. These have been summarised above in **Section 7.1**, and further details can be found in the constraints tracker [15].

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ARP-BH012A
ARP-HC003
ARP-BH012
ARP-BH001
ARP-HC002
ARP-HC001
ARP-TP002
ARP-BH002
ARP-BH006A
ARP-BH006B
ARP-BH006
ARP-BH003
ARP-BH007
ARP-BH004A
ARP-BH004
ARP-BH014
ARP-BH008
ARP-BH013
ARP-BH005
ARP-BH009
ARP-TP001
ARP-DS001
ARP-BH011
ARP-TP003
ARP-HC004
ARP-DS002
WLS01
CRH01
CC/WS3
CRH01A
WLS02
CC/WS2
CRH01B
CC/WS1
CRH02
CRH02A
WLS03
TP01
TP07A
TP06
TP03A
TP07
TP10
TP03
TP010A
TP05A
TP05
TP02
TP09
CRH03
TP04
TP08

Legend

- Site Boundary

Ground Investigation Locations

- Preliminary Ground Investigation (AEG 2019)
- Constructive Evaluation 2015
- Geotechnics 2015

Issue	Date	By	Chkd	Appd
P1	09/04/2020	JW	MG	MG

Metres

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ARUP

6th Floor, 3 Piccadilly Place
Manchester M1 3BN
Tel+44(0161) 228 2331 Fax+44(0161)228 6879
www.arup.com

Client
University of Manchester

Project Title
ID Manchester

Drawing Title
Ground Investigation Locations

Scale at A3
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Arup Job No	Suitability	Rev
265190-00	**Preliminary**	

Name
UNMC-ARUP-ZZ-XX-DR-CG-1001 | Rev **P1**

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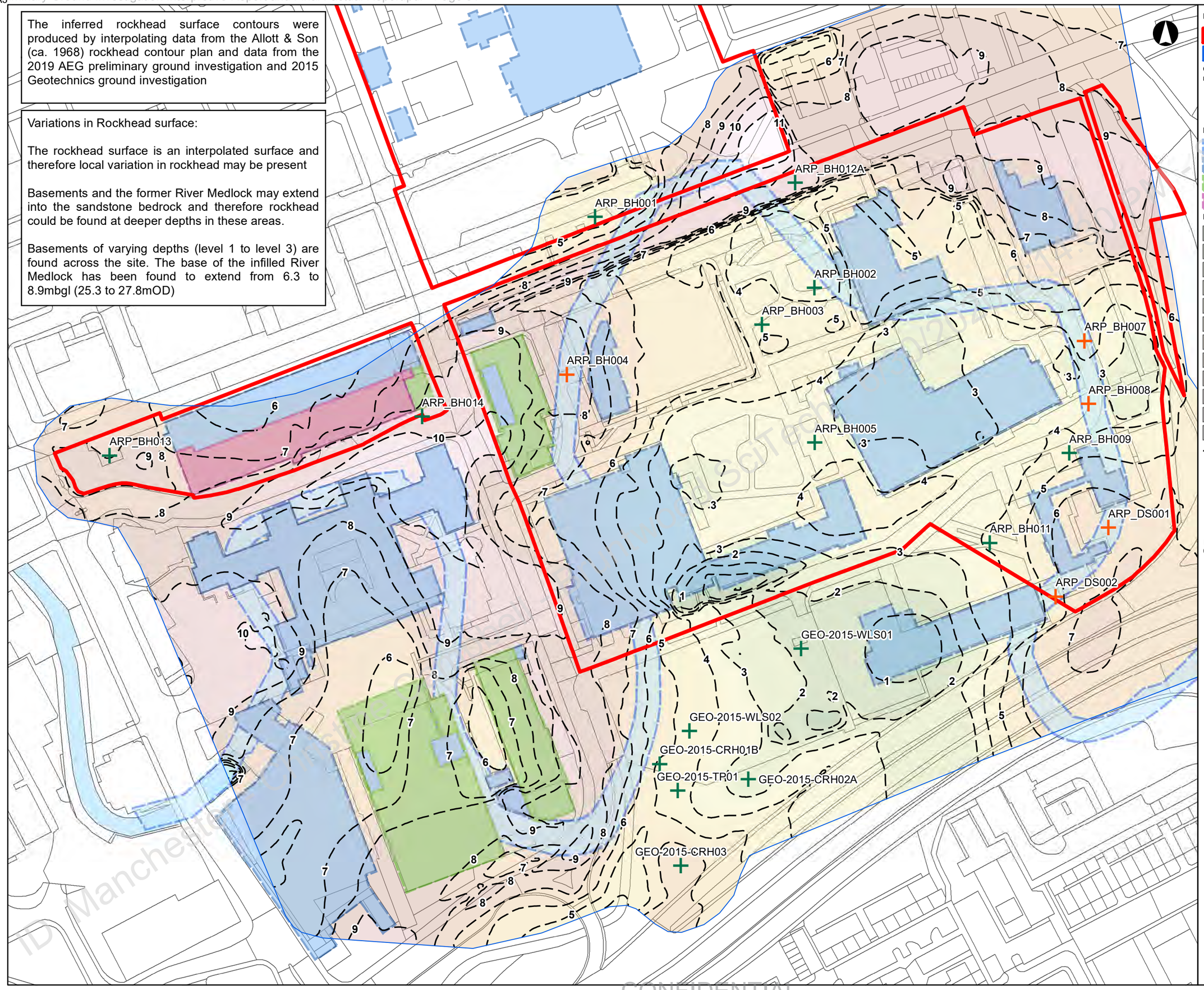
The inferred rockhead surface contours were produced by interpolating data from the Allott & Son (ca. 1968) rockhead contour plan and data from the 2019 AEG preliminary ground investigation and 2015 Geotechnics ground investigation

Variations in Rockhead surface:

The rockhead surface is an interpolated surface and therefore local variation in rockhead may be present

Basements and the former River Medlock may extend into the sandstone bedrock and therefore rockhead could be found at deeper depths in these areas.

Basements of varying depths (level 1 to level 3) are found across the site. The base of the infilled River Medlock has been found to extend from 6.3 to 8.9mbgl (25.3 to 27.8mOD)



Legend

- Site boundary
- Extent of rockhead data

Ground investigations which extended into rockhead

- GI Not located on former River Medlock
- GI located on former River Medlock

Basements and Former River Medlock

- GEO0005 Former River Medlock infill
- GEO0008a Basement (Level 1)
- GEO0008b Basement (Level 2)
- GEO0008c Basement (Level 3)

Depth to Rockhead (mbgl)

- <1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 - 6
- 6 - 7
- 7 - 8
- 8 - 9
- 9 - 10
- 10 - 11
- >11
- Rockhead Contour (mbgl)

Issue	Date	By	Chkd	Appd
P2	09/04/2020	JW	MG	MG

Metres

0 20 40 80

ARUP

6th Floor, 3 Piccadilly Place
Manchester M1 3BN
Tel+44(0161) 228 2331 Fax+44(0161)228 6879
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Project Title
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Drawing Title
Inferred Depth to Rockhead (mbgl)

Scale at A3
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265190-00	**Preliminary**

Name	Rev
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A3

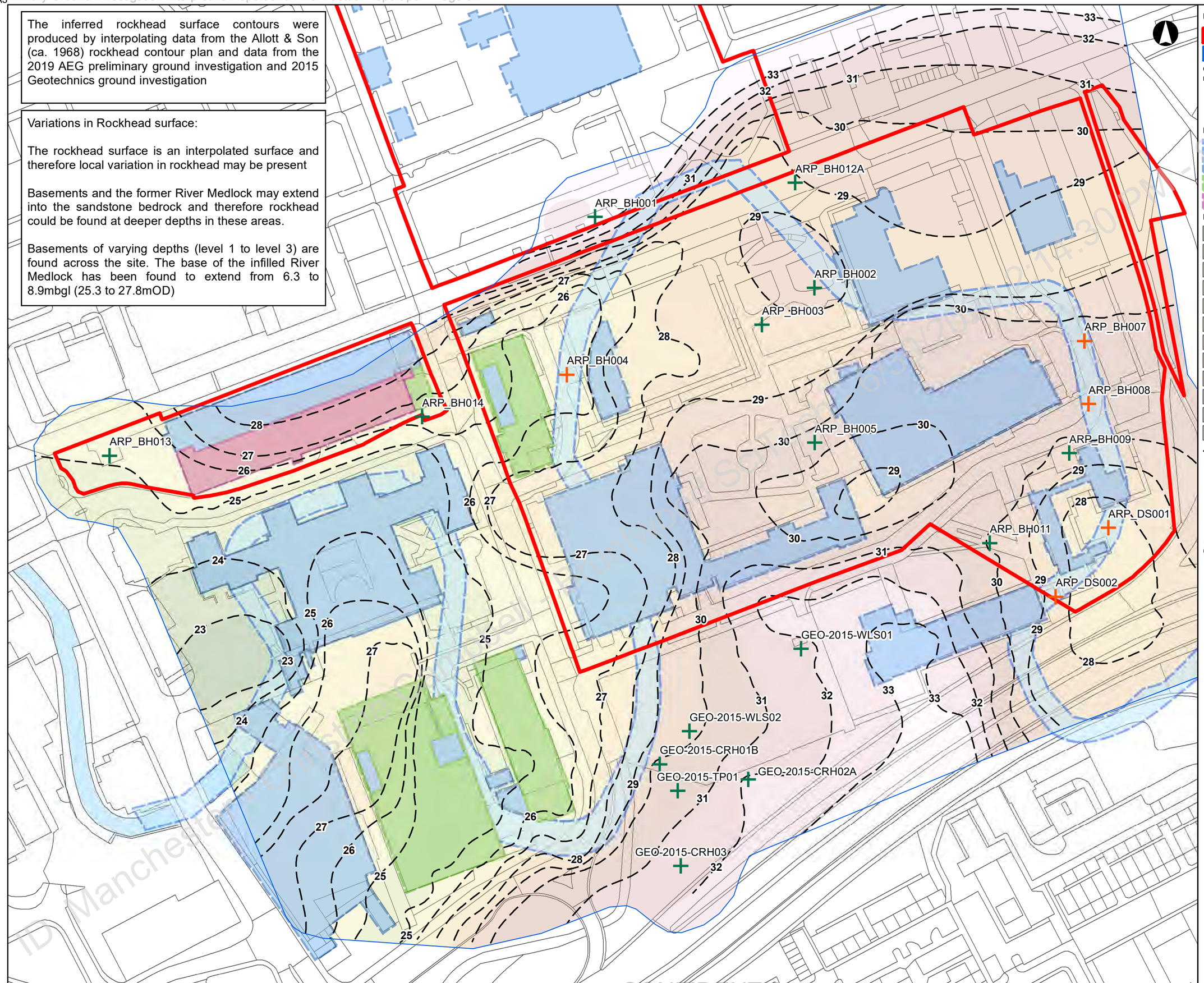
The inferred rockhead surface contours were produced by interpolating data from the Allott & Son (ca. 1968) rockhead contour plan and data from the 2019 AEG preliminary ground investigation and 2015 Geotechnics ground investigation

Variations in Rockhead surface:

The rockhead surface is an interpolated surface and therefore local variation in rockhead may be present

Basements and the former River Medlock may extend into the sandstone bedrock and therefore rockhead could be found at deeper depths in these areas.

Basements of varying depths (level 1 to level 3) are found across the site. The base of the infilled River Medlock has been found to extend from 6.3 to 8.9mbgl (25.3 to 27.8mOD)



Legend

- Site boundary
- Extent of rockhead data

Ground investigations which extended into rockhead

- GI Not located on former River Medlock
- GI located on former River Medlock

Basements and Former River Medlock

- GEO0005 Former River Medlock infill
- GEO0008a Basement (Level 1)
- GEO0008b Basement (Level 2)
- GEO0008c Basement (Level 3)

Depth to Rockhead (mOD)

- <23
- 23 - 24
- 24 - 25
- 25 - 26
- 26 - 27
- 27 - 28
- 28 - 29
- 29 - 30
- 30 - 31
- 31 - 32
- 32 - 33
- >33
- Rockhead Contours (mOD)

Issue	Date	By	Chkd	Appd
P2	09/04/2020	JW	MG	MG

Metres

0 20 40 80

ARUP

6th Floor, 3 Piccadilly Place
Manchester M1 3BN
Tel+44(0161) 228 2331 Fax+44(0161)228 6879
www.arup.com

Client
University of Manchester

Project Title
ID Manchester

Drawing Title
Inferred Depth to Rockhead (mOD)

Scale at A3
1:1,400

Arup Job No
265190-00

Suitability
Preliminary

Name
UNMC-ARUP-ZZ-XX-DR-CG-1003

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P2

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ID Manchester - Construction Consultants - Plumbing

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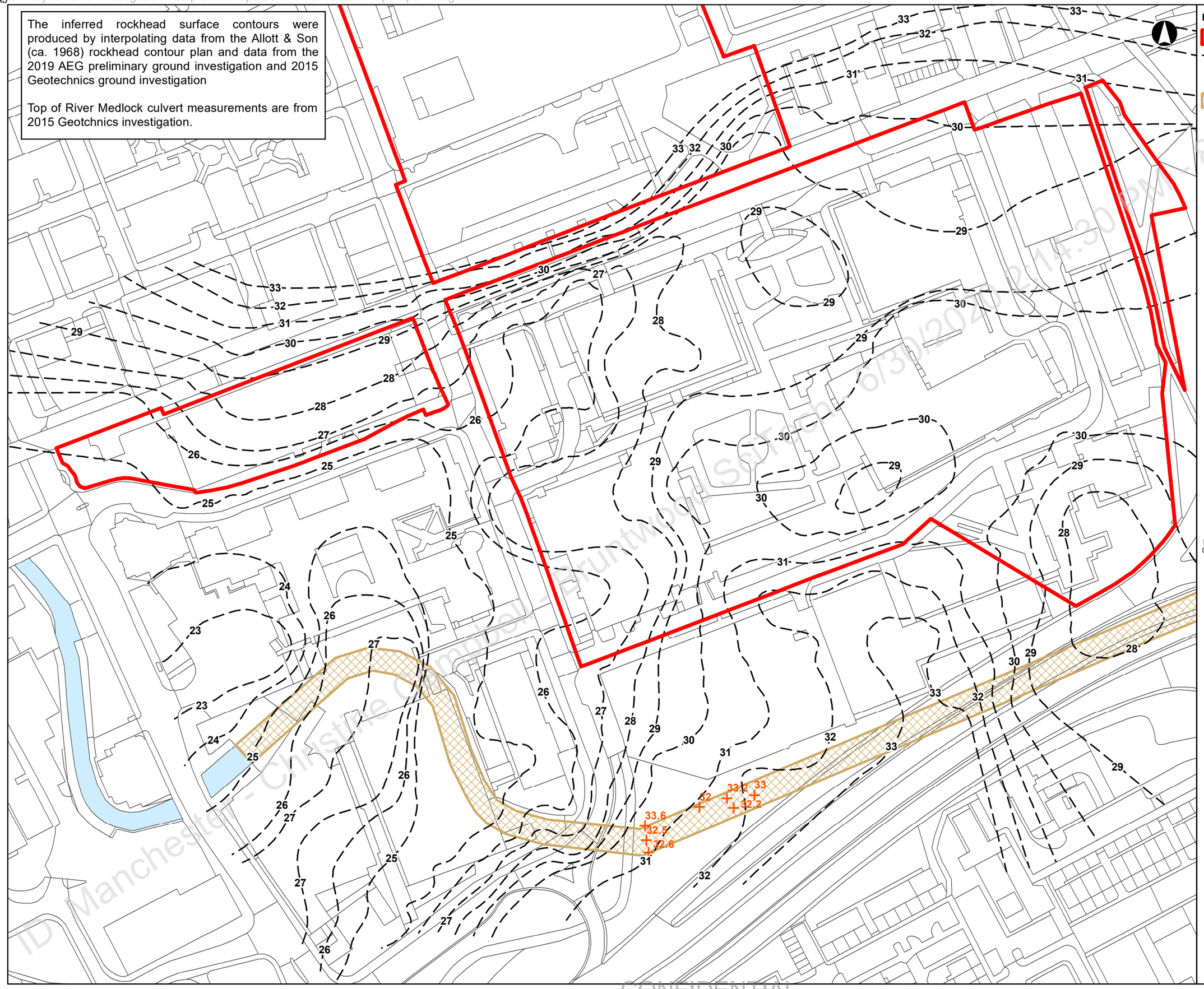
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A3

The inferred rockhead surface contours were produced by interpolating data from the Allott & Son (ca. 1968) rockhead contour plan and data from the 2019 AEG preliminary ground investigation and 2015 Geotechnics ground investigation

Top of River Medlock culvert measurements are from 2015 Geotchnics investigation.



Legend

- Site Boundary
- Rockhead Contours (mOD)
- Culvert Depth Trial Pit (Geotechnics 2015)
- GEO0001 Culverted River Medlock

Issue	Date	By	Chkd	Appd
P1	09/04/2020	JW	MG	MG

Metres

0 20 40 80

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Manchester M1 3BN
Tel+44(0161) 228 2331 Fax+44(0161)228 6879
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Client
University of Manchester

Project Title
ID Manchester

Drawing Title
Depth to top of River Medlock culvert (mOD)

Scale at A3
1:1,400

Arup Job No
265190-00

Suitability
Preliminary

Name
UNMC-ARUP-ZZ-XX-DR-CG-1004

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A3

The inferred rockhead surface contours were produced by interpolating data from the Allott & Son (ca. 1968) rockhead contour plan and data from the 2019 AEG preliminary ground investigation and 2015 Geotechnics ground investigation

Top of River Medlock culvert measurements are from 2015 Geotchnics investigation.

Legend

- Site Boundary

Depth to Rockhead (mbgl)

- Rockhead <3mbgl - shallow foundations may be possible
- Rockhead >3mbgl <7.5mbgl - shallow piles (c. 10m) may be possible
- Rockhead >7.5mbgl - deeper piles (c.15m) may be required

Issue	Date	By	Chkd	Appd
P1	09/04/2020	JW	MG	MG

Metres

0 20 40 80

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6th Floor, 3 Piccadilly Place
Manchester M1 3BN
Tel+44(0161) 228 2331 Fax+44(0161)228 6879
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Client
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Project Title
ID Manchester

Drawing Title
Indicative Rockhead and Foundation Plan

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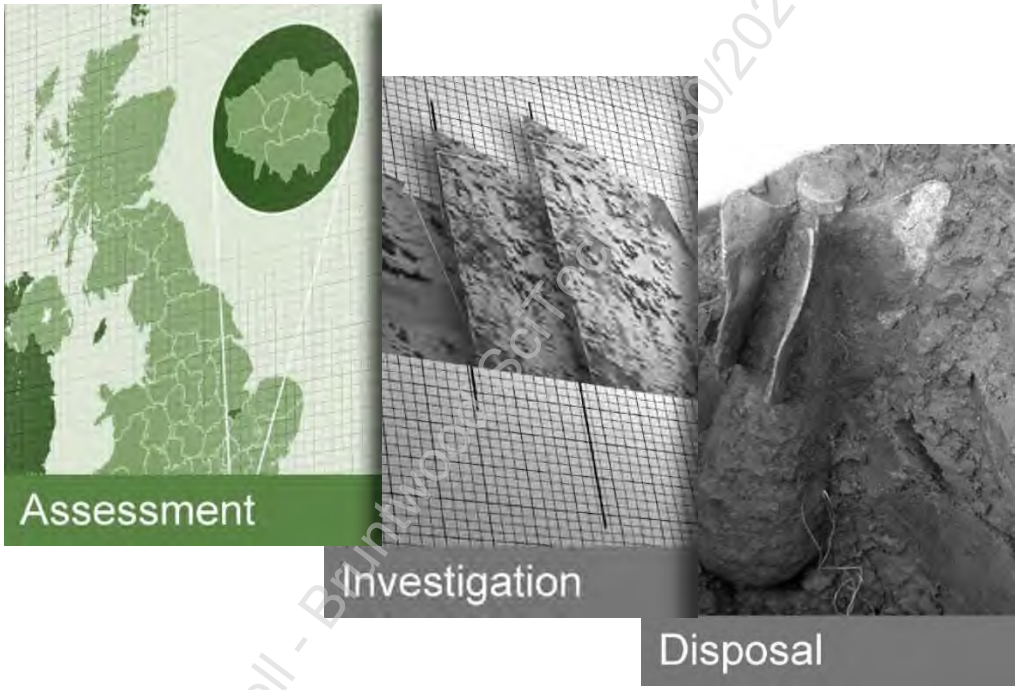
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Appendix A

UXO Desk Study and Risk Assessment

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ID Manchester - UXO Desk Study & Risk Assessment

Drafted by Joe Lingard
Checked by Lucy Warwick
Authorised by Stefan Lang

ID Manchester - Christine Campbell - Brunton - Sent on 30/6/2020 2:14:30 PM - 81.154.246.72

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Document Title	**UXO Desk Study & Risk Assessment**
Document Ref.	**P8155-19-R1**
Revision	**A**
Project Location	**ID Manchester**
Client	**Arup**
Date	**6th September 2019**

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UXO DESK STUDY & RISK ASSESSMENT

EXECUTIVE SUMMARY

Key findings: Potential hazard from Unexploded Bombs (UXB) on the central and southern parts of the Site.

Key actions: Deep UXB detection is required to clear borehole and pile locations and an Explosive Ordnance Clearance (EOC) Engineer is required to supervise excavations in the moderate risk areas.

UXO Hazard Assessment

Records have been found indicating that 12No. High Explosive (HE) bombs fell on the Site during World War Two (WWII). The bombing caused significant damage to buildings on the central and southern parts of the Site, which may have masked the impact of a UXB.

Given this, it is considered prudent to assign these parts of the Site a moderate UXO hazard level.

No significant bombing or other military activity is recorded on the remainder of the Site, which is assigned a low UXO hazard level.

It is considered that the UXO hazard level on the Site can be zoned from low to moderate, as shown in the following Figure, reproduced as Figure 4 in the main report.

Figure	UXO hazard zone plan of the Site



Source: Google Earth *Not to Scale*

Legend					
	Very Low		Low		Moderate
	High		Very High		Site boundary

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Note that the UXO hazard will have been mitigated within the depth and extents of any post-WWII intrusive works. Outside the footprint of these works, between piles and below shallow raft foundations and basements, the UXO hazard level remains unchanged to the maximum bomb penetration depth.

The main findings of the report are summarised below.

- No records of bombing or military activity on the Site during World War One (WWI) have been found.
- During WWII there were many strategic targets in the vicinity of the Site. These included iron and steel works, rubber works, munitions factories, major transport infrastructure and gas works.
- Records have been found indicating that 12No. HE bombs fell on the Site during WWII, in addition to several Incendiary Bombs (IBs).
- No records of any significant post-WWII military activity on the Site have been found.

Data Confidence Level

The findings of this report were based on good corroborative evidence of the military activity and bombing on the Site.

Proposed Works

It is understood that initial works on the Site will comprise an intrusive ground investigation, including boreholes and trial pits.

Future works on the Site are likely to include the demolition of existing structures, bulk excavations and piling.

Risk Assessment

The Table below, reproduced as Table 5 in the main report, provides a UXO risk assessment for the proposed works on the Site.

Further details on the methodology for the risk assessment are provided in Section 7.2 of the main report.

Table	UXO risk assessment for the Site								
Hazard Zone	**Potential UXO Hazard**	**Anticipated Works**	**PE**	**PD**	**P = PE x PD**	**Likelihood**	**Severity**	**Risk Rating**	**UXO Risk**
Moderate	UXB	Shallow Excavations	1	1	1	1	5	5	**Low**
		Deep Excavations	3	2	6	3	5	15	**Moderate**
		Boreholes/Piling	2	3	6	3	4	12	**Moderate**
	Other UXO	Shallow Excavations	1	1	1	1	4	4	**Low**
		Deep Excavations	1	1	1	1	4	4	**Low**
		Boreholes/Piling	1	1	1	1	3	3	**Low**
Low	UXB	Shallow Excavations	1	1	1	1	5	5	**Low**
		Deep Excavations	1	1	1	1	5	5	**Low**
		Boreholes/Piling	1	1	1	1	4	4	**Low**
	Other UXO	Shallow Excavations	1	1	1	1	4	4	**Low**
		Deep Excavations	1	1	1	1	4	4	**Low**
		Boreholes/Piling	1	1	1	1	3	3	**Low**
PE (Probability of Encounter), PD (Probability of Detonation), P (Overall Probability)									
Shallow Excavations defined as <1.0m bgl.									

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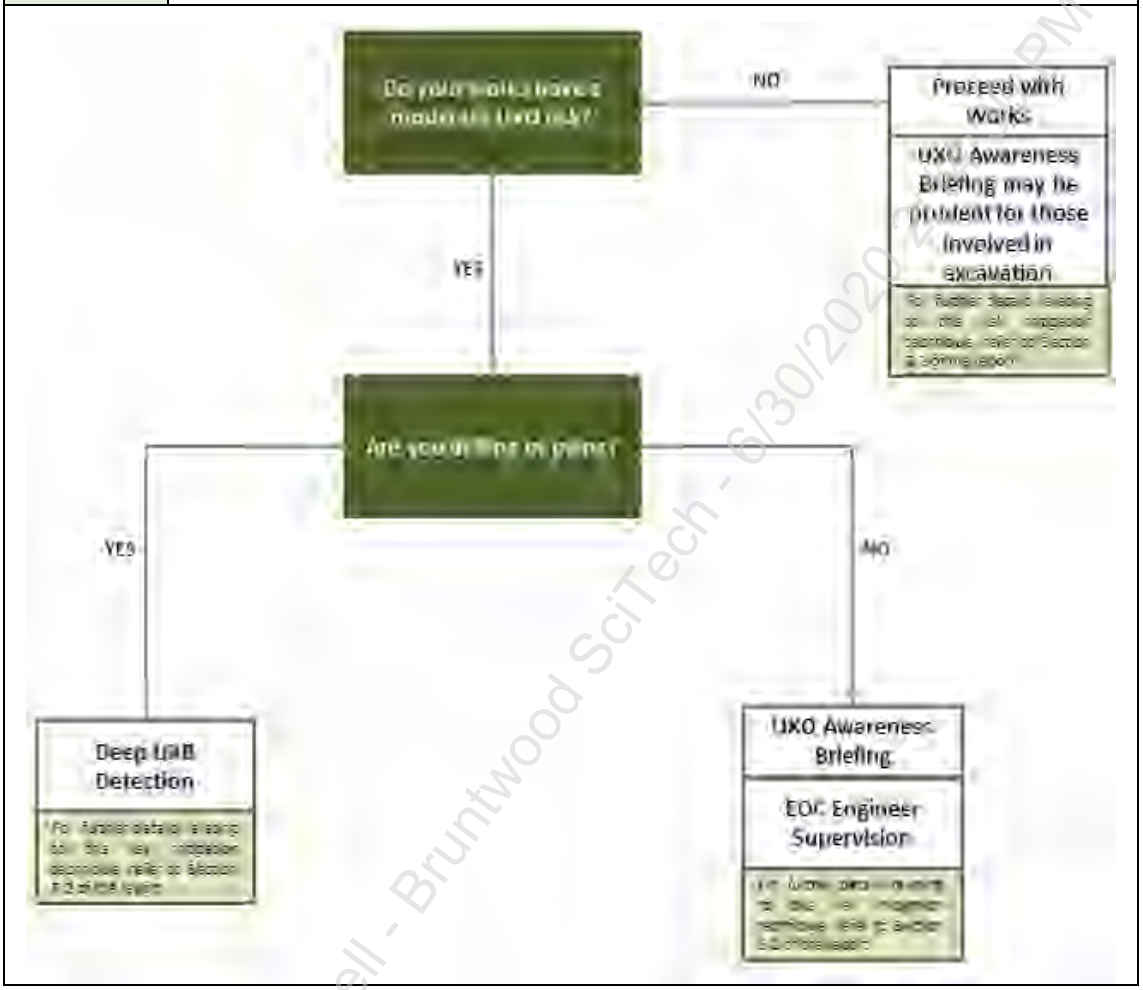
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Risk Mitigation Plan

The Figure below, reproduced as Figure 5 in the main report, provides a risk mitigation plan to ensure that the UXO risk for the proposed works is reduced to As Low As Reasonably Practicable (ALARP).

Figure	Recommended risk mitigation plan for the Site



Further details on the recommended risk mitigation techniques are given in Section 8.2 of this report.

The Table below, reproduced as Table 6 in the main report, summarises the UXO risk for proposed works on the Site and recommended techniques to mitigate the risk.

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Table	Summary of UXO risk and mitigation recommendations

Proposed Works	UXO Risk	Recommended Mitigation
Excavations		**Proceed with works** – if additional comfort is required to address the residual UXO hazard, a formal UXO awareness briefing can be provided.
Boreholes/Piling		**Proceed with works**
Excavations		**EOC Engineer Supervision** – to ensure safety and minimise delays, Explosive Ordnance Clearance (EOC) Engineer supervision is recommended.
Boreholes/Piling		**Deep UXB detection –** to clear borehole or pile locations of potential UXB, an intrusive magnetometer survey should be undertaken until either the maximum bomb penetration or maximum drilling/piling depth is reached.

In summary, it is recommended that the excavations proposed within the moderate risk areas are supervised by an EOC Engineer.

As part of borehole or pile construction, we recommend that deep UXB detection is undertaken to ensure the safety of those working on Site and in the surrounding area.

What Do I Do Next?

If you wish to proceed with UXO risk mitigation, Zetica would be happy to assist. Just contact us via phone (01993 886682) or email (uxo@zetica.com) and we can provide a proposal with options and prices.

If you have other requirements (such as utility services mapping or mapping buried obstructions) we can also provide these surveys, often saving costs if combined with a UXO survey.

If proposed works on the Site change, or additional works are planned, contact Zetica for a re-assessment of the UXO risk and the risk mitigation requirements.

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Appendix 2 Sources of UXO Hazard

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Appendix 5 WWII Bombing Incident List

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Figures, Plates, Tables & Drawings

Figure 1 Site location map

Figure 2 Compiled bomb impact map for the vicinity of the Site

Figure 3 Potential burial setting of UXB on the Site

Figure 4 UXO hazard zone plane of the Site

Figure 5 Recommended risk mitigation plan for the Site

Plate 1 Recent aerial photograph of the Site

Plate 2 Luftwaffe target photograph of central Manchester, 4th October 1940

Plate 3 Aerial photograph, 16th May 1948

Plate 4 Aerial photograph, 13th May 1953

Table 1 Luftwaffe targets in the vicinity of the Site

Table 2 Bombing statistics

Table 3 Estimated average maximum bomb penetration depths (north-west and south)

Table 4 Estimated average maximum bomb penetration depths (south-east and central)

Table 5 UXO risk assessment for the Site

Table 6 Summary of UXO risk and mitigation recommendations

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ABBREVIATIONS

AA	Anti-Aircraft
ACPO	Association of Chief Police Officers
ALARP	As Low As Reasonably Practicable
ARP	Air Raid Precaution
AXO	Abandoned Explosive Ordnance
BD	Bomb Disposal
BDO	Bomb Disposal Officer
BDU	Bomb Disposal Unit
CMD	Conventional Munitions Disposal
DCLG	Department of Communities and Local Government
EO	Explosive Ordnance
EOC	Explosive Ordnance Clearance
EOR	Explosive Ordnance Reconnaissance
ERW	Explosive Remnants of War
ESA	Explosive Substances and Articles
FFE	Free From Explosives
GUTE	Guardian Underground Telephone Exchange
HAA	Heavy Anti-Aircraft
HE	High Explosive
HSE	Health and Safety Executive
JSEODOC	Joint Services EOD Operations Centre
IB	Incendiary Bomb
IED	Improvised Explosive Device
IEDD	Improvised Explosive Device Disposal
LAA	Light Anti-Aircraft
MoD	Ministry of Defence
PM	Parachute Mine
PUCA	Pick Up and Carry Away
RAF	Royal Air Force
TEP	Time Expired Pyrotechnics
UXB	Unexploded Bomb
UXO	Unexploded Ordnance
WWI	World War One
WWII	World War Two

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UXO DESK STUDY & RISK ASSESSMENT

Please read: Zetica has colour coded each paragraph. Paragraphs with black text on a white background are paragraphs that provide site-specific information or information specifically researched as part of this project.

Boxed paragraphs in a dark green text with a green background are paragraphs providing general information and, where appropriate, links to online resources giving further detail. These are all available at www.zeticauxo.com. If you cannot gain access to these resources, Zetica can forward them on request.

1 INTRODUCTION

1.1 Project Outline

Zetica Ltd was commissioned by Arup to carry out a detailed Unexploded Ordnance (UXO) Desk Study and Risk Assessment for an area of approximately 11.6 hectares (ha) centred on Sackville Street in Manchester ('the Site').

The aim of this report is to gain a fair and representative view of the UXO hazard for the Site and its immediate surrounding area in accordance with the Construction Industry Research and Information Association (CIRIA) C681 'Unexploded Ordnance (UXO), a Guide for the Construction Industry'.

Where appropriate, this hazard assessment includes:

- Likelihood of ordnance being present.
- Type of ordnance (size, filling, fuze mechanisms).
- Quantity of ordnance.
- Potential for live ordnance.
- Probable location.
- Ordnance condition.

It should be noted that some military activity providing a source of UXO hazard may not be recorded and therefore there cannot be any guarantee that all UXO hazards affecting the Site have been identified in this report.

1.2 Sources of Information

Zetica Ltd researched the military history of the Site and its surrounding area using a range of information sources. The main sources of information are detailed in the following sections and referenced at the end of this report.

1.2.1 Zetica Ltd Defence Related Site Records

Zetica Ltd's in-house records were consulted, including reference books and archived materials from past work in the region. Relevant documents have been cited within the bibliography of this report.

1.2.2 Zetica Ltd Bombing Density Records and Maps

Reference has been made to the Zetica Ltd bomb risk maps located on Zetica's website (http://zeticauxo.com/downloads-and-resources/risk-maps/

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1.2.3 Ministry of Defence and Government Records

Government departments and units within the Ministry of Defence (MoD) were approached for information of past and present military activity in the area. These included the Department of Communities and Local Government (DCLG) records of abandoned bombs.

1.2.4 Other Historical Records, Maps and Drawings

Numerous reference documents including historical maps, aerial photographs and drawings have been consulted from sources such as the National Archives, the US National Archives & Records Administration (NARA), the Imperial War Museum (IWM), Historic England and the Defence of Britain Project.

The British Geological Survey (BGS) was consulted for borehole information.

1.2.5 Local Authority Records

Information has been obtained from Manchester City Council.

1.2.6 Local Record Offices and Libraries

Information was obtained from The Greater Manchester County Record Office, Manchester Central Library Archive and Manchester University.

1.2.7 Local Historical and Other Groups

Local history groups and archaeological societies were consulted, including the Greater Manchester Historic Environment Record (HER).

1.3 Data Confidence Level

In general, there is a high level of confidence in the researched information sources used for this report.

It should be noted that a small number of the WWII Manchester Bomb Damage cards are missing.

Various other sources (including bomb census maps, anecdotal accounts and historical aerial photographs) have been used to provide a corroborative assessment of the UXO hazard level on the Site.

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2 THE SITE

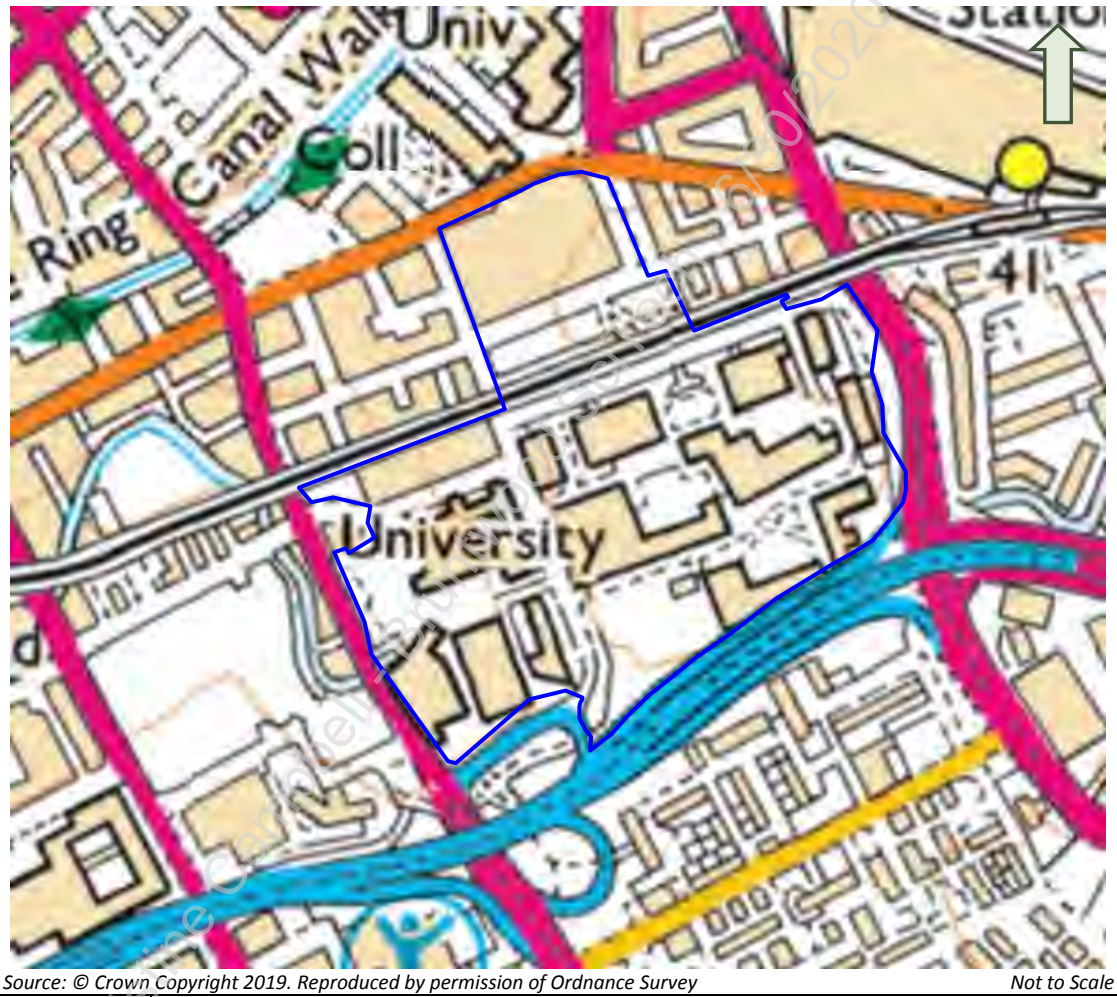
2.1 Site Location

The Site is centred on Ordnance Survey National Grid Reference (OSNGR) SJ 845975. It is centred on Sackville Street, Manchester, approximately 0.2km southwest of Manchester Piccadilly railway station and approximately 3.1km east of Salford Quays.

The Site comprises University of Manchester premises, railway and residential buildings. It is bounded to the north by Aytoun Street, to the east by London Road, to the south by Mancunian Way and to the west by Princess Street.

Figure 1 is a Site location map and Plate 1 is a recent aerial photograph of the Site.

Figure 1	Site location map



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Legend	Site boundary

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Plate 1	Recent aerial photograph of the Site



Source: Google Earth *Not to Scale*

Legend	Site boundary

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3 MILITARY ACTIVITY

The following sections outline the recorded military activity in the vicinity of the Site. The potential UXO hazard from WWI and WWII bombing is detailed in Section 4.

Each sub-section provides hyperlinks to further information on potential sources of UXO hazard. These are also available at www.zeticauxo.com. If you cannot gain access to these resources, Zetica can forward them on request.

3.1 Defences

For further information on military defences, and the potential UXO hazards associated with them, follow the links below:

- Anti-Aircraft Guns
- Anti-Invasion Defences
- Barrage Balloons
- Bombing Decoys
- Home Guard
- Mined Locations
- Mortar & Gun Emplacements
- Pillboxes

No military defences have been identified on the Site.

3.1.1 Anti-Aircraft Guns

Records indicate that there were at least 10No. Anti-Aircraft (AA) gun batteries within 10km of the Site during WWI. The nearest was located at Pendleton (SJ 812991), approximately 3.5km northwest of the Site. It was armed with 1No. 18-pounder (-pdr) gun.

During WWII there were 27No. Heavy AA (HAA) and ZAA rocket batteries within 10km of the Site. The nearest was located in Fallowfield (SJ 858948), approximately 2.8km south of the Site.

The nearest recorded WWII AA shell incidents to the Site are described below.

22nd-23rd December 1940

1No. AA shell fell on Pritchard Street, adjacent to the western boundary of the Site.

1No. AA shell fell on Russel Street, approximately 0.1km south of the Site.

Potential UXO Hazard

Given the number of HAA gun batteries in the surrounding area during WWII, the potential for a UXAA shell to have fallen on the Site unnoticed cannot be totally discounted.

3.1.2 Bombing Decoys

The nearest recorded bombing decoy was located at Reddish (SJ 912939), approximately 7.3km southeast of the Site.

Bombing decoys are not considered to provide a source of UXO hazard to the Site.

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3.2 Military Airfields

For further information on military airfields, and the potential UXO hazards associated with them, follow the links below:

- Military Airfields

No records of any military airfields on or in close proximity to the Site have been found.

Between 1918 and 1924 an aerodrome was operational at Alexandra Park (SJ 835950), approximately 2.9km south of the Site. This was used as a testing station for aircraft produced at the Avro works at Trafford Park, including Avian, Cadet, Tudor and Anson types. The airfield closed in 1924, the buildings were demolished and the area was converted into a public park.

The nearest military airfield during WWII was Royal Air Force (RAF) Ringway (SJ 815844), approximately 12.6km south of the Site. This was an aircraft assembly airfield used by the Fairey and Avro companies, in addition to No. 1 Parachute Training School.

Military airfields are not considered to provide a source of UXO hazard to the Site.

3.3 Aircraft Crashes

For further information on military aircraft crashes, and the potential UXO hazards associated with them, follow the links below:

- Aircraft Crashes

No records of any aircraft crashes on or in close proximity to the Site have been found.

3.4 Explosives Factories, Munitions Depots and Disposal Areas

For further information on explosives factories, munitions depots and disposal areas, and the potential UXO hazards associated with them, follow the links below:

- Explosives Factories
- Munitions Depots
- Munitions Disposal Areas

No records of any explosives factories, munitions depots or munitions disposal areas on or in close proximity to the Site have been found.

3.5 Firing Ranges and Military Training Areas

For further information on firing ranges and military training areas, and the potential UXO hazards associated with them, follow the links below:

- Artillery Ranges
- Bombing Ranges
- Military Training Areas
- Small Arms Ranges

No records of any firing ranges or military training areas on or in close proximity to the Site have been found.

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3.6 Other Military Establishments

Military establishments have been identified on and in close proximity to the Site.

3.6.1 Guardian Underground Telephone Exchange

During the 1950s a secure tunnel was established underneath the Site as part of the Guardian Underground Telephone Exchange (GUTE), a cable system designed to maintain communications in the event of a nuclear attack. The tunnels were established at a depth of approximately 30 metres.

GUTE is not considered to provide a source of UXO hazard to the Site.

3.6.2 Ardwick Barracks

The Ardwick Barracks were established in 1886, approximately 0.3km south of the Site. They were home to the 5th (Ardwick) Volunteer Battalion, becoming the 8th battalion Manchester Regiment in 1908.

During WWII the barracks were used as a detention centre for deserters before being returned to 8th battalion in 1945.

Ardwick Barracks is not considered to provide a source of UXO hazard to the Site.

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4 BOMBING

4.1 WWI Bombing

For further information on WWI bombing in the UK, and the potential UXO hazard associated with it, see Appendix 2.1. Alternatively, use the following link.

- WWI Bombing

No records have been found indicating that the Site was bombed during WWI.

4.2 WWII Bombing

For further information on WWII bombing in the UK, and the potential UXO hazard associated with it, see Appendix 2.2. Alternatively, use the following link.

- WWII Bombing

4.2.1 Bombing in Manchester

Manchester's industrial conurbations and port made it a principal target for enemy bombers. The Luftwaffe possessed detailed target photographs of many industrial complexes from as early as 1937.

Air raids on Manchester began in August 1940 and continued until 1945. The heaviest raid on the city occurred between the 22nd and 24th December 1940, the 'Manchester Blitz', during which more than 400No. HE bombs fell on the city.

More than 1,710No. High Explosive (HE) bombs and 115No. Parachute Mines (PMs) fell across the Manchester region during WWII.

Bombing was concentrated on the city centre and in West Manchester, where the Salford Docks and major industrial works at Trafford Park attracted heavy raids.

Bombing densities generally decreased away from the city centre and far less damage was sustained by properties in these areas.

4.2.2 Strategic Targets

The Site was located in an area which contained several strategic targets, including iron and steel works, rubber works, munitions factories, major transport infrastructure and gas works.

Plate 2 is a Luftwaffe target photograph of central Manchester, dated the 4th September 1940.

It identifies several targets in the vicinity of the Site, including Victoria Station (A), approximately 1.2km north of the Site, and Central Station (B), approximately 0.6km west of the Site.

Other identified targets are listed in Table 1.

Table 1 Luftwaffe targets in the vicinity of the Site

Target No.	Target
A	Victoria Station
B	Central Station
GB 717	Copper Works
GB 829	Foundry
GB 52 86	Gas Works

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Plate 2	Luftwaffe target photograph of central Manchester, 4th October 1940



Source: NARA *Not to Scale*

4.2.3 Bombing Densities and Incidents

Table 2 gives details of the overall bombing statistics recorded for the Local Authority Districts of the Site and surrounding districts. These were categorised as Rural Districts (RD), Urban Districts (UD), Municipal or Metropolitan Boroughs (MB) and County Boroughs (CB). WWII bomb density levels are defined below:

<5 bombs per 405ha is a Very Low regional bombing density.

5-15 bombs per 405ha is Low.

15-50 bombs per 405ha is Moderate.

50-250 bombs per 405ha is High.

>250 bombs per 405ha is Very High.

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Table 2	Bombing statistics				
Area	Bombs Recorded				
	High Explosive	Parachute Mines	Other	Total	Bombs per 405ha (1000 acres)
Manchester CB	**712**	**18**	**7**	**737**	**27.0**
Stretford MB	456	64	0	520	147.3
Salford CB	406	29	16	451	86.7

Note that Table 2 excludes the figures for V1s (Pilotless Aircraft or Flying Bombs), V2s (Long Range Rockets) and Incendiary Bombs (IBs). Discrepancies between this list and other records, such as bomb clearance records, demonstrate that this data is likely to under-represent actual bombing.

Details of the nearest recorded bombing incidents to the Site are given in the following section.

31st August 1940

1No. HE bomb fell on the College of Technology, on the Site.

1No. HE bomb fell on 53 Sackville Street, on the north-western boundary of the Site.

1No. HE bomb fell on the corner of Bombay Street and Venice Street, approximately 60m west of the Site.

22nd-23rd December 1940

Manchester and Salford were heavily bombed between the 22nd and 24th December 1940 (the 'Manchester Blitz'). Over 400No. HE bombs and more than 30,000No. IBs fell across the region.

1No. HE bomb fell on the East India Finishing Works, on the Site.

2No. HE bombs fell near The Albion Inn, Temple Street, on the Site.

1No. HE bomb fell on the junction of Jackson Street and Temple Street, on the Site.

1No. HE bomb fell on 85 Sackville Street, on the Site.

IBs (unspecified number) fell across Sackville Street, on the Site.

HE bombs (unspecified number) fell between Cooke Street, Gray Street and Grosvenor Street, adjacent to the south-western boundary of the Site.

IBs (unspecified number) fell on Whitworth Street, adjacent to the northern boundary of the Site.

IBs (unspecified number) fell on Princess Street, adjacent to the north-western boundary of the Site.

1No. HE bomb fell on the Manchester South and Altrincham Railway Viaduct, adjacent to the north-eastern boundary of the Site.

IBs (unspecified number) fell on Cooke Street, adjacent to the south-western boundary of the Site.

1No. HE bomb fell on 17 Cooke Street, adjacent to the south-western boundary of the Site.

1No. HE bomb and 1No. IB fell on 4 Whitworth Street, approximately 40m northwest of the Site.

1No. HE bomb and IBs (unspecified number) fell on 10 Charles Street, on the north-western boundary of the Site.

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11th March 1941

1No. HE bomb fell on 2 Cooke Street, adjacent to the south-western boundary of the Site.

1st-2nd June 1941

Approximately 110No. bomber aircraft attacked Manchester, dropping 42No. HE bombs and many IBs.

1No. HE bomb fell on 20 Temple Street, on the Site.

2No. HE bombs and 2No. IBs fell on Mount Street, on the Site.

1No. HE bomb fell on the Jackson Street Cotton Mills, on the Site.

1No. HE bomb and 1No. IB fell on the College of Technology, on the Site.

1No. HE bomb fell at the junction of London Road and Jackson Street, adjacent to the south-eastern boundary of the Site.

1No. HE bomb fell on Princess Street, adjacent to the north-western boundary of the Site.

1No. HE bomb fell on 63 Sackville Street, adjacent to the north-western boundary of the Site.

1No. HE bomb fell on 25 Granby Row, adjacent to the north-eastern boundary of the Site.

1No. HE bomb fell on the Police Headquarters, approximately 60m northeast of the Site.

It should be noted that during WWII, many UXB were mapped and subsequently removed as and when conditions and demands on Bomb Disposal teams allowed. Their removal was not always accurately recorded and sometimes records were later destroyed. In practice, most UXB were probably removed and only a much smaller number were actually registered as officially abandoned bombs.

Figure 2 is a map showing the approximate location of recorded bomb impacts in the immediate vicinity of the Site. IBs shown are indicative of larger numbers of similar devices that fell within the given area.

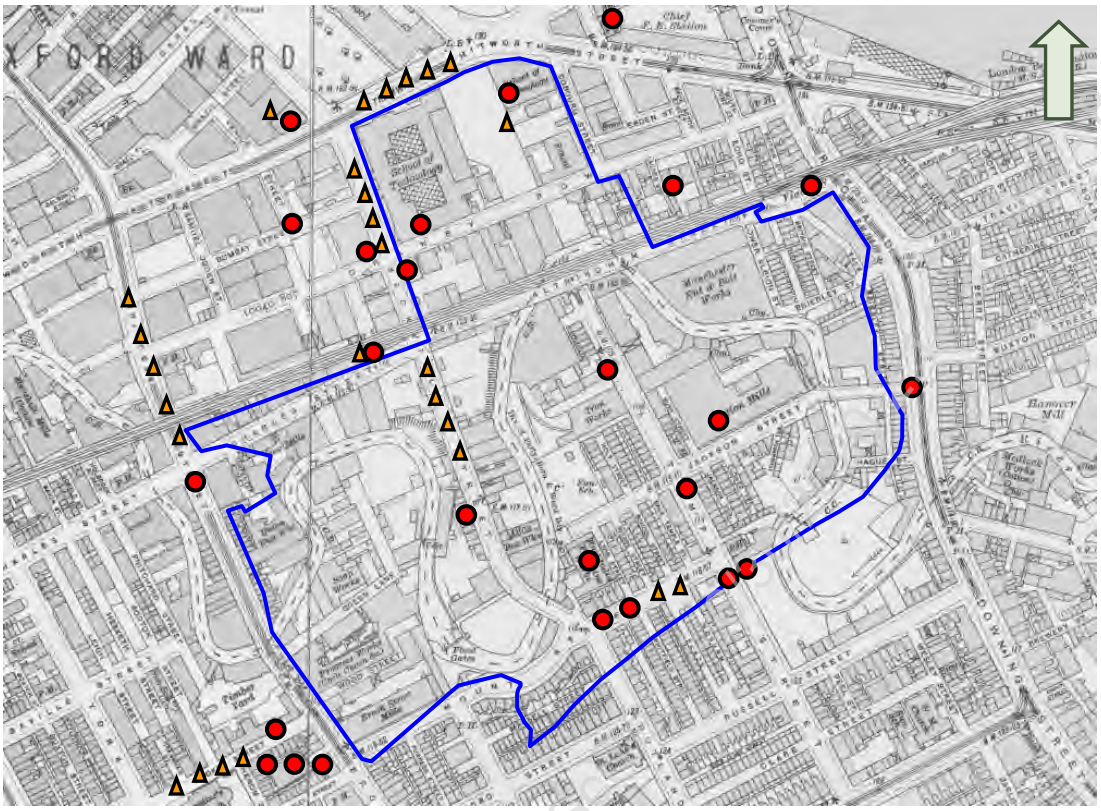
The map has been compiled from a number of different sources including air raid incident reports, historical aerial photographs and bomb census maps.

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Figure 2	Compiled bomb impact map for the vicinity of the Site



Source: © Crown Copyright 2019. Reproduced by permission of Ordnance Survey *Not to Scale*

Legend	Site boundary	HE bomb	IBs

Plates 3 and 4 are aerial photographs, dated the 16th May 1948 and 13th May 1953 respectively.

Extensive areas of demolished buildings have been identified on the Site. Some of these relate to damage sustained during WWII air raids and others are likely to be the result of pre-WWII slum clearance.

An evaluation of historical maps from before and after WWII has enabled an estimation of which demolished areas are more likely to be due to planned slum clearance.

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Plate 3	Aerial photograph, 16th May 1948



Source: Historic England *Not to Scale*

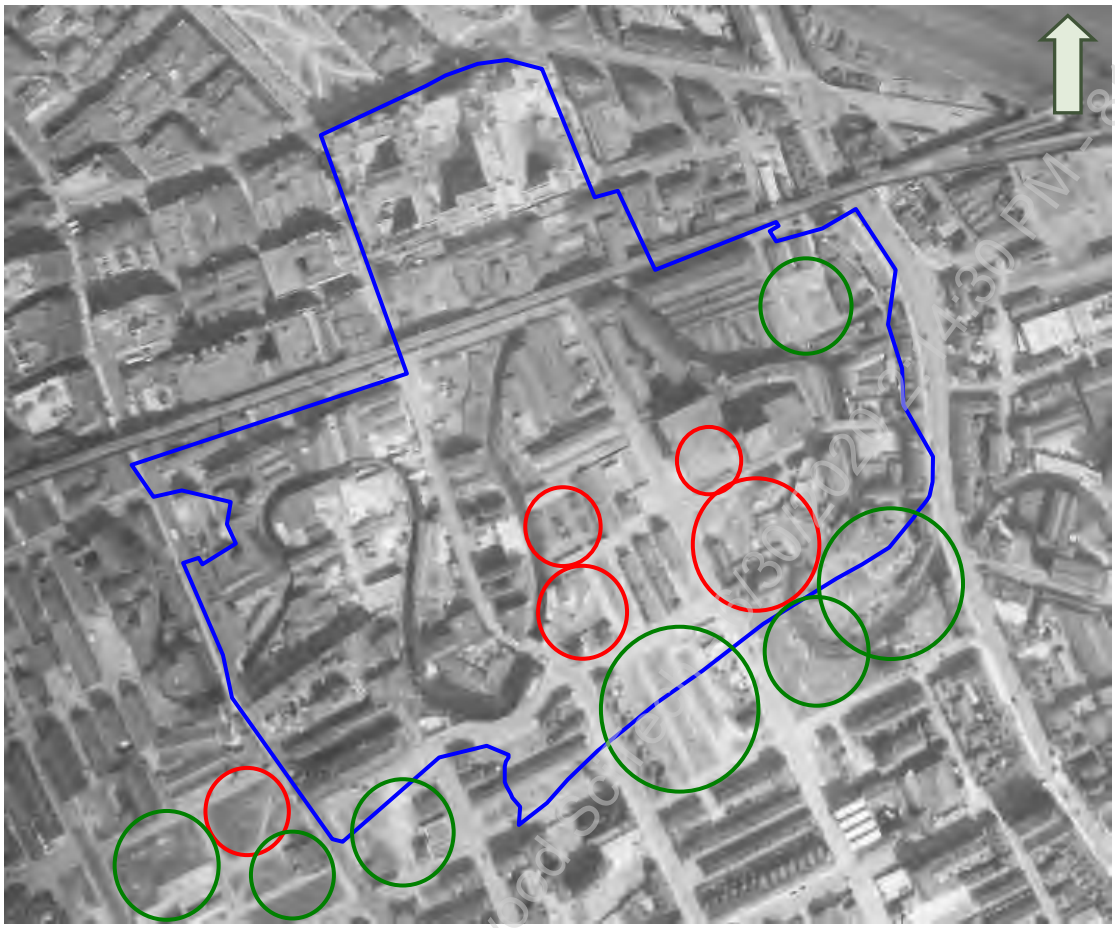
Legend	Site boundary	Possible bomb damage	Possible slum clearance

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Plate 4	Aerial photograph, 13th May 1953



Source: Historic England *Not to Scale*

Legend	Site boundary	Possible bomb damage	Possible slum clearance

Potential UXO Hazard

Records indicate that at least 12No. HE bombs fell on the Site. Most of these fell during the very heavy 'Christmas Blitz' of December 1940 and the remainder fell during another heavy air raid in June 1941.

The bombing resulted in significant damage being caused to buildings on the central and southern parts of the Site.

Given the intensity of the raids on central Manchester, the conflagrations caused by numerous IBs, and the extent of the damage, it is possible that a UXB may have fallen on these parts of the Site unnoticed.

No significant bomb damage likely to mask the impact of a UXB has been identified on the remainder of the Site.

WWII bombing is considered to provide a possible source of UXO hazard to the central and southern parts of the Site.

4.2.4 Geology and Bomb Penetration Depths

It is important to consider the geological materials present at the time that a bomb was dropped in order to establish its maximum penetration depth.

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British Geological Survey (BGS) 1:50,000 Sheet 85, Manchester (Solid & Drift) and BGS borehole records from nearby investigations have been consulted to get an indicative overview of the Site geology.

The geology of the north-western and southern parts of the Site is understood to consist of Made Ground, over Glacial Till overlying the Sherwood Sandstone Group.

Table 3 provides an estimate of average maximum bomb penetration depths assuming ground conditions during WWII of 3m of Made Ground, over 4m of stiff to very stiff clay and 2m of weathered sandstone, overlying thick deposits of weak sandstone.

Table 3	Estimated average maximum bomb penetration depths (north-west and south)	
Estimated average bomb penetration depths for anticipated geology		
Bomb Weight	50kg	2.5m
	250kg	4.0m
	500kg	8.0m

The geology of the south-eastern and central parts of the Site is understood to consist of Made Ground, over Alluvium, overlying the Sherwood Sandstone Ground.

Table 4 provides an estimate of average maximum bomb penetration depths assuming ground conditions during WWII of 2m of Made Ground, over 1m of soft to firm clay and 1m of loose gravely sand, over 2m of weathered sandstone overlying thick deposits of weak sandstone.

Table 4	Estimated average maximum bomb penetration depths (south-east and central)	
Estimated average bomb penetration depths for anticipated geology		
Bomb Weight	50kg	3.0m
	250kg	5.0m
	500kg	8.0m

These calculations can be refined on receipt of further Site-specific borehole logs.

The estimated bomb penetration depths given in Tables 3 and 4 are from the WWII ground level and are based on the following assumptions:

a) High level release of the bomb resulting in an impact velocity of 260m/s (>5,000m altitude).

b) A strike angle of 10 to 15 degrees to the vertical.

c) That the bomb is stable, both in flight and on penetration.

d) That no retarding units are fitted to the bomb.

e) That the soil type is homogenous.

A high altitude release of a bomb will result in ground entry at between 10° and 15° to the vertical with the bomb travelling on this trajectory until momentum is nearly lost. The bomb will then turn abruptly to the horizontal before coming to rest. The distance between the centre of the entry hole and the centre of the bomb at rest is known as the 'offset'. A marked lateral movement from the original line of entry is common.

Low-level attacks may have an impact angle of 45° or more, which will frequently lead to a much greater amount of offset movement during soil penetration.

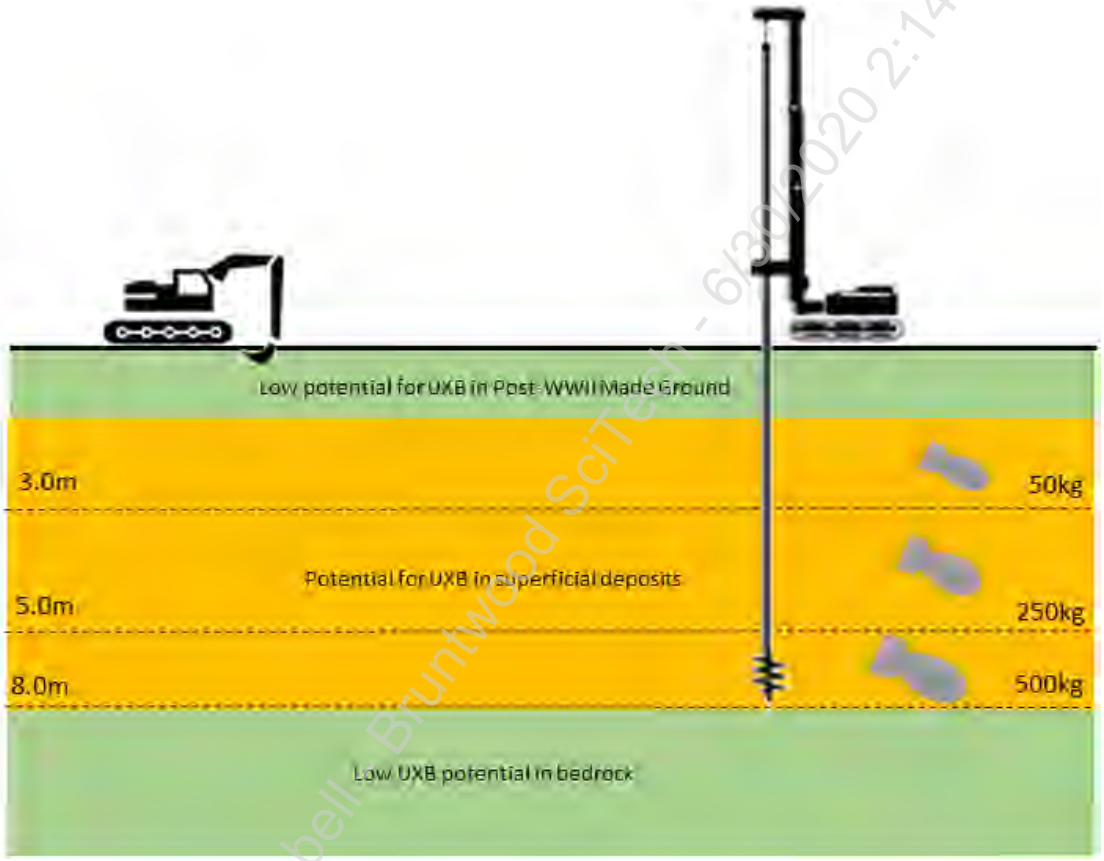
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The average offset is one third of the penetration depth, i.e. an offset of 2m may be expected for a 50kg bomb in dry silts and clays. If hard standings or Made Ground were present during WWII, bomb penetration depths would have been significantly reduced but offset distances may have been up to four times greater.

Figure 3 demonstrates the potential burial setting for a UXB in the moderate hazard zone on the Site, based on the anticipated ground conditions and average maximum bomb penetration depth.

Figure 3 Potential burial setting of UXB on the Site



Source: Zetica *Not to Scale*

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5 EXPLOSIVE ORDNANCE CLEARANCE ACTIVITIES

Official UK bombing statistics have been compiled from both British and German sources. There were differences in the way the figures were originally reported and collated which has led to discrepancies in the summary data.

Based on data from 1939 to 1945, War Office statistics indicate that 200,195No. HE bombs exploded within Great Britain. Additionally, 25,195No. HE bombs (representing 11%) were recorded as UXBs. However, records from the Royal Engineers who were responsible for bomb disposal at the time indicate that as of 27th February 1946 upwards of 45,000No. UXBs were disposed of.

On average 8.5% of UXBs later self-exploded. In some cases the bombs had delayed action fuzes or were never intended to explode, their purpose being to cause inconvenience and fear. Given the discrepancy in records and the fact that UXBs are still being found unexpectedly, it is clear that the original figures are understated and provide only an approximation of the number of potential UXBs in the UK.

War Office statistics also show that between October 1940 and May 1941 most of the UXBs (93%) were either 50kg or 250kg. It should be noted that details of the recovery and the size of the UXB were not always accurately reported. The larger WWII UXBs are often difficult to recover due to both penetration depths and the presence of two or more fuzes, combined with more sensitive fillings of explosive mixtures including Amatol and Trialen.

5.1 Abandoned Bombs

For further information on abandoned bombs, and the potential UXO hazard associated with them, follow the link below:

- Abandoned Bombs

No records have been found indicating that any officially abandoned bombs are located on the Site.

5.2 EOC Tasks

Records held by Zetica Ltd show that the following post-WWII EOC tasks have taken place in the vicinity of the Site.

1960

1No. 1kg IB was discovered on the roof of St Ann's Church, approximately 0.9km northwest of the Site. It was removed.

3rd April 2007

1No. WWII mortar bomb was found on a building site in Cambridge Street, approximately 0.5km west of the Site. It was removed.

8th October 2007

1No. suspected UXB was found on a building site in Middlewood Street, Salford, approximately 1.9km west of the Site. It was made safe and removed.

24th October 2018

1No. WWII anti-tank round was found on a building site in Newquay Street, Salford, approximately 1.5km northwest of the Site. It was removed.

The MoD has provided no additional information on official EOC tasks on the Site.

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6 UXO HAZARD ASSESSMENT

6.1 UXO Hazard Level

The definitions for the levels of UXO hazard are provided below.

Definitions of UXO Hazard Level for a Site	
Hazard Level	**Definition**
Very Low	There is positive evidence that UXO is not present, e.g. through physical constraints or removal.
Low	There is no positive evidence that UXO is present, but its occurrence cannot be totally discounted.
Moderate	There is positive evidence that ordnance was present or that other uncharted ordnance may be present as UXO.
High	There is positive evidence that UXO is present.
Very High	As high, but requires immediate or special attention due to the potential hazard.

Records have been found indicating that 12No. HE bombs fell on the Site during WWII. The bombing caused significant damage to buildings on the central and southern parts of the Site, which may have masked the impact of a UXB.

Given this, it is considered prudent to assign these parts of the Site a moderate UXO hazard level.

No significant bombing or other military activity is recorded on the remainder of the Site, which is assigned a low UXO hazard level.

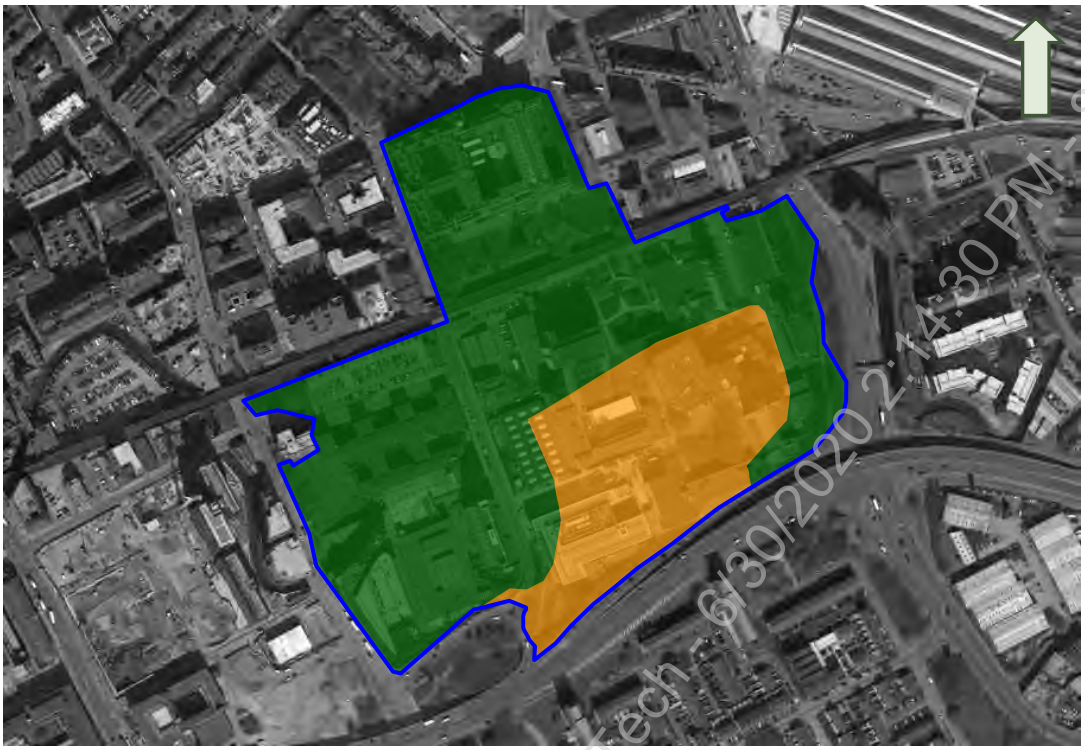
It is considered that the UXO hazard level on the Site can be zoned from low to moderate, as shown in Figure 4 below.

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Figure 4	UXO hazard zone plan of the Site



Source: Google Earth *Not to Scale*

Legend					
	Very Low		Low		Moderate
	High		Very High		Site boundary

Note that the UXO hazard will have been mitigated within the depth and extents of any post-WWII intrusive works. Outside the footprint of these works, between piles and below shallow raft foundations and basements, the UXO hazard level remains unchanged to the maximum bomb penetration depth.

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7 UXO RISK ASSESSMENT

7.1 Proposed Works

It is understood that initial works on the Site will comprise an intrusive ground investigation, including boreholes and trial pits.

Future works on the Site are likely to include the demolition of existing structures, bulk excavations and piling.

7.2 Risk Assessment Methodology

A UXO risk assessment has been undertaken for the proposed works, taking into consideration the identified UXO hazard.

Firstly, the probability of encountering UXO (PE) has been considered and rated for the different construction techniques, as detailed below.

Probability of Encounter (PE)	Rating
Frequent, highly likely, almost certain.	5
Probable, more likely to happen than not.	4
Occasional, increased chance or probability.	3
Remote, unlikely to happen but could.	2
Improbable, highly unlikely.	1
Impossible	0

Secondly, the probability of detonating a UXO (PD) has been considered and rated for the different construction techniques, as detailed below.

Probability of Detonation (PD)	Rating
Frequent, highly likely, almost certain.	5
Probable, more likely to happen than not.	4
Occasional, increased chance or probability.	3
Remote, unlikely to happen but could.	2
Improbable, highly unlikely.	1
Impossible	0

Next, the probability of encountering and detonating the UXO (PE x PD) have been used to generate an overall likelihood rating (P).

P = PE x PD	LIKELIHOOD of Encounter and Detonation	Rating
21 to 25	Frequent, highly likely, almost certain.	5
16 to 20	Probable, more likely to happen than not.	4
6 to 15	Occasional, increased chance or probability.	3
2 to 5	Remote, unlikely to happen but could.	2
1	Improbable, highly unlikely.	1
0	Impossible	0
P ranges from 25, a certainty of UXO being encountered and detonated on the Site by engineering activity, to 0, a certainty that UXO does not occur on the Site and will not be detonated by engineering activity.		

The likelihood of encountering and detonating UXO during site works is multiplied by the severity of such an event occurring (P x S), in order to provide a risk level using the following matrix.

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Severity (S)	Rating
Multiple fatalities	5
Major injury, long term health issues, single fatality.	4
Minor injury, short term health issues, no fatalities.	3
First aid case but no lost time or ill health.	2
Minor injuries, no first aid.	1
No injuries.	0

UXO Risk Matrix							
	SEVERITY (S)						
LIKELIHOOD (P)		5	4	3	2	1	0
	5	25	20	15	10	5	0
	4	20	16	12	8	4	0
	3	15	12	9	6	3	0
	2	10	8	6	4	2	0
	1	5	4	3	2	1	0
	0	0	0	0	0	0	0

7.3 UXO Risk Level

The UXO risk assessment for proposed works on the Site is given in Table 5.

Table 5 UXO risk assessment for the Site

Hazard Zone	Potential UXO Hazard	Anticipated Works	PE	PD	P = PE x PD	Likelihood	Severity	Risk Rating	UXO Risk
Moderate	UXB	Shallow Excavations	1	1	1	1	5	5	Low
		Deep Excavations	3	2	6	3	5	15	Moderate
		Boreholes/Piling	2	3	6	3	4	12	Moderate
	Other UXO	Shallow Excavations	1	1	1	1	4	4	Low
		Deep Excavations	1	1	1	1	4	4	Low
		Boreholes/Piling	1	1	1	1	3	3	Low
Low	UXB	Shallow Excavations	1	1	1	1	5	5	Low
		Deep Excavations	1	1	1	1	5	5	Low
		Boreholes/Piling	1	1	1	1	4	4	Low
	Other UXO	Shallow Excavations	1	1	1	1	4	4	Low
		Deep Excavations	1	1	1	1	4	4	Low
		Boreholes/Piling	1	1	1	1	3	3	Low

PE (Probability of Encounter), PD (Probability of Detonation), P (Overall Probability)

Shallow Excavations defined as <1.0m bgl.

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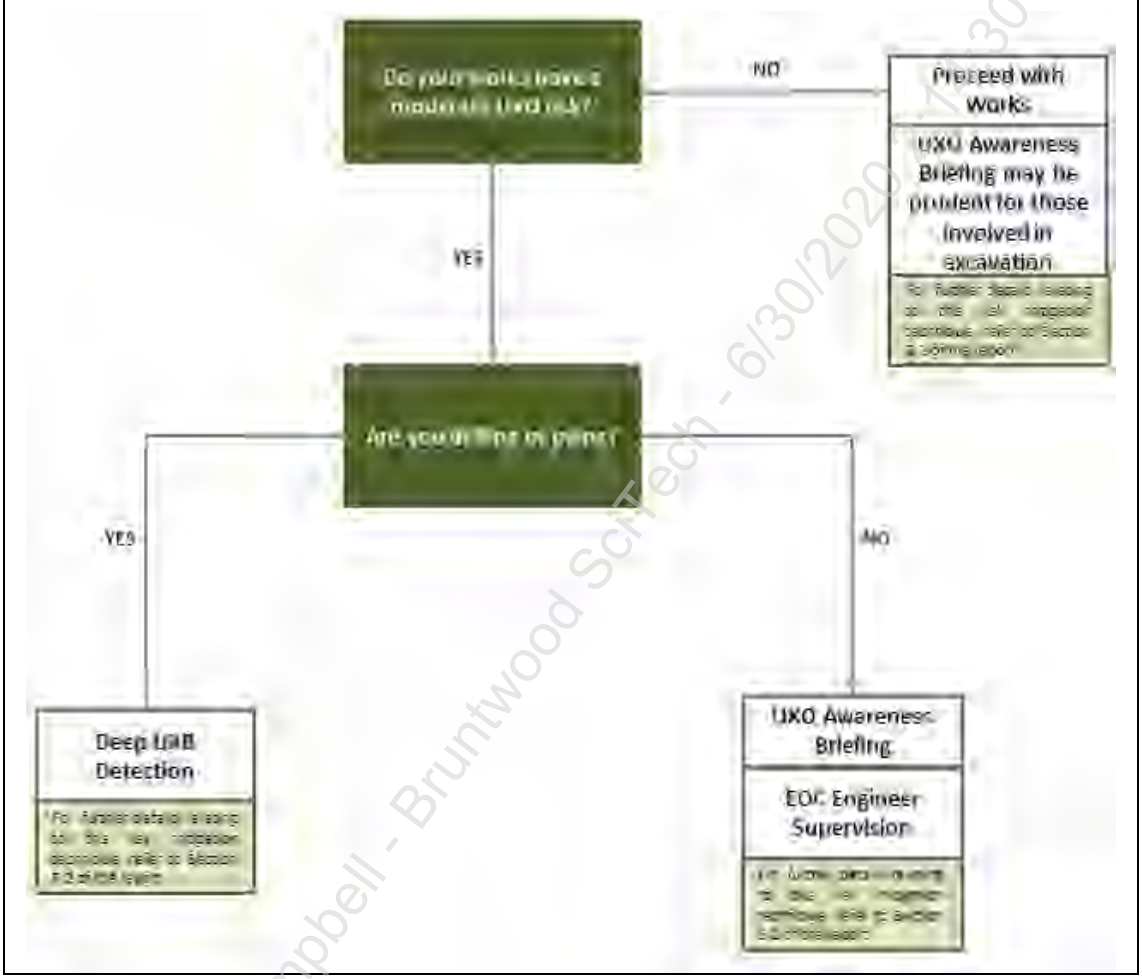
8 RISK MITIGATION PLAN

Key findings: Potential hazard from UXB on the central and southern parts of the Site.

Key actions: Deep UXB detection is required to clear borehole and pile locations and an EOC Engineer is required to supervise excavations in the moderate risk areas.

Figure 5 outlines the recommended steps to reduce the UXO risk to ALARP.

Figure 5	Recommended risk mitigation plan for the Site



8.1 UXO Risk Summary

Table 6 summarises the most appropriate risk mitigation recommendations for the proposed works on the Site.

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Table 6	Summary of UXO risk and mitigation recommendations	
Proposed Works	**UXO Risk**	**Recommended Mitigation**
Excavations		**Proceed with works** – if additional comfort is required to address the residual UXO hazard, a formal UXO awareness briefing can be provided.
Boreholes/Piling		**Proceed with works**
Excavations		**EOC Engineer Supervision** – to ensure safety and minimise delays, Explosive Ordnance Clearance (EOC) Engineer supervision is recommended.
Boreholes/Piling		**Deep UXB detection –** to clear borehole or pile locations of potential UXB, an intrusive magnetometer survey should be undertaken until either the maximum bomb penetration or maximum drilling/piling depth is reached.

In summary, it is recommended that the excavations proposed within the moderate risk areas are supervised by an EOC Engineer.

As part of borehole or pile construction, we recommend that deep UXB detection is undertaken to ensure the safety of those working on Site and in the surrounding area.

8.2 Risk Mitigation Techniques

The section below provides further details of the recommended techniques for mitigating the UXO risk on the Site.

8.2.1 UXO Awareness Briefing

Typically ~1hour in duration, these briefings will be expected to provide site workers with:-

- Background to the potential UXO hazards that could be encountered.
- Awareness of how the UXO hazard could present a risk.
- Knowledge of what to do in the event that a suspect item is encountered.

The briefing is to be provided along with back-up materials such as UXO awareness posters, emergency contact numbers and other background information to assist site workers in becoming familiar with what potential UXO can look like.

The materials can also be used by key staff to pass on the relevant points of the induction to others who visit or work on the Site.

By providing the UXO awareness briefing, it ensures that in the unlikely event that UXO is encountered:-

- All site staff take appropriate action.
- A support mechanism and points of contact are established.
- The likelihood of harm to people or property is reduced.
- Significant delays to site work are prevented.

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8.2.2 EOC Engineer Supervision

Given the amount of Made Ground and the increased potential for buried obstructions on the Site, the effectiveness of a non-intrusive UXO detection survey is likely to be reduced.

It is considered more practical for an EOC Engineer to attend site and supervise during excavation works if required.

The EOC Engineer will carry out a visual assessment on any suspect items uncovered during the excavation works and classify them as potential UXO or other material.

If an item of UXO is uncovered, the EOC Engineer will liaise with the authorities and arrange for its disposal as appropriate.

8.2.3 Deep UXB Detection

To clear borehole or pile positions of potential UXB, an intrusive magnetometer survey should be undertaken.

The survey should be carried out to either the maximum bomb penetration depth or maximum drilling/piling depth, whichever is shallower.

There are two main systems available:-

MagDrill (Boreholes) – this is a system that is suitable for working with ground investigation drillers.

It allows a magnetometer to be lowered into the borehole to ensure the route is clear of potential UXB.

MagCone (Piles) – this is a CPT-based system that facilitates the pushing of a magnetometer into the ground at the proposed location of a pile.

MagCone is suitable for cohesive/loose soils and has a much higher speed of operation compared to MagDrill. It should be noted that where dense soils or buried obstructions are encountered, MagCone is unlikely to be able to penetrate to the required depth.

Detection - Typical radius of detection should be assumed as approximately 1.0m for a 50kg UXB until site conditions are confirmed.

Assuming no objects comparable to the UXB detection range are identified, then the borehole or pile position can be considered clear of UXB.

If any ferrous anomalies are identified at the borehole or pile position, then it may need to be relocated or the anomaly investigated.

It should be noted that in Made Ground or close to buried/adjacent structures, effective UXB detection is compromised due to geophysical noise.

A clearance report should be issued on completion of the site works.

8.3 What Do I Do Next?

If you wish to proceed with UXO risk mitigation, Zetica would be happy to assist. Just contact us via phone (01993 886682) or email (uxo@zetica.com) and we can provide a proposal with options and prices.

If you have other requirements (such as utility services mapping or mapping buried obstructions) we can also provide these surveys, often saving costs if combined with a UXO survey.

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If proposed works on the Site change, or additional works are planned, contact Zetica for a re-assessment of the UXO risk and the risk mitigation requirements.

APPENDICES

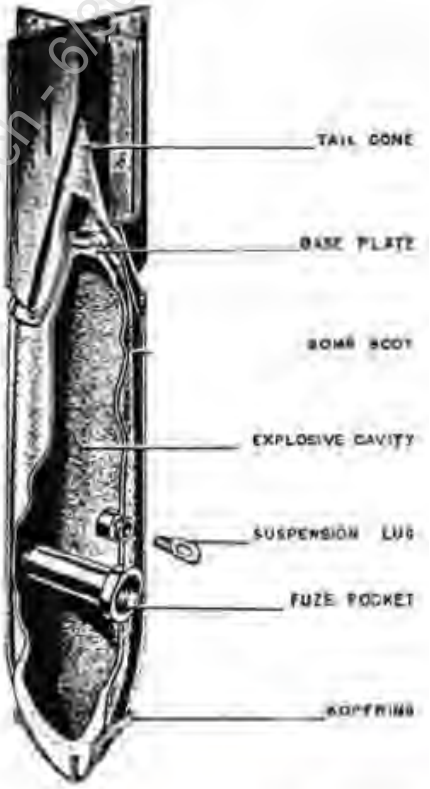
Appendix 1 Anticipated Ordnance Types

The most likely ordnance types to be encountered on the Site are detailed below. For a more comprehensive set of ordnance data sheets, see http://zeticauxo.com/downloads-and-resources/ordnance-data-sheets/.

Information Data Sheet

Category Bomb (Luftwaffe)
Type Sprengbombe-Cylindrisch (SC) 50kg

Variants	8
Body Dimensions	762 x 200mm (30" x 7.9")
Weight	55kg (122lbs)
Charge Weight	25kg (54lbs)
Fuze	Single electric impact fuze. Some have short time delay
Composition	Sheet steel
Description	Thick nose welded to a steel body. Nose may be attached to Kopfring (a triangular section steel ring) or spike. Suspension bolt in eye/body and sheet metal tail attached to body with rivets/screws. Originally painted green-grey with a yellow stripe on the tail. Cast TNT, Amatol or Trialen filling.
Function	Designed to maximise shock waves through air, water and earth and for general demolition. Used against easily damageable targets, including roads, aircraft hangars, rolling stock and small buildings. Spike bombs/ 'Stabo' (SC 50 with spikes attached to nose) were used against rail lines and country roads, with Kopfring used against naval targets.







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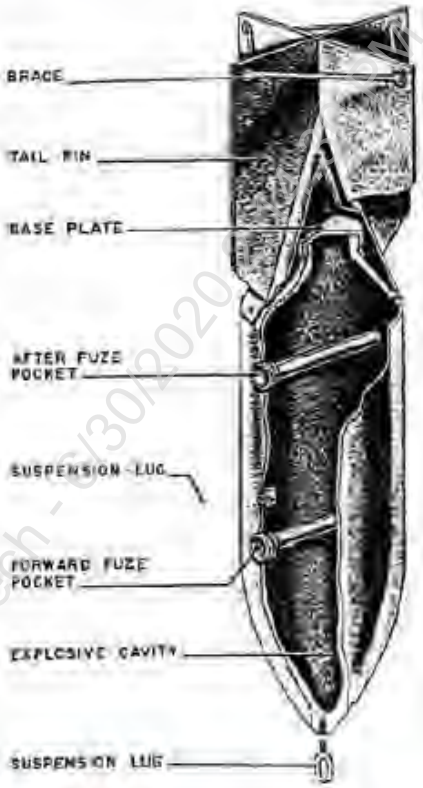
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Information Data Sheet

Category Bomb
Type Sprengbombe-Cylindrisch (SC) 250kg

Variants	6
Body Dimensions	1194mm x 368mm (47" x 14.5")
Weight	249-264 kg (549-582lbs)
Charge Weight	130-145 kg (287-320lbs)
Fuze	Electric impact fuze/electric clockwork time fuse & electric anti-disturbance fuze
Composition	Sheet steel with stays
Description	Thick nose welded to steel body. Nose may be attached to Kopfring (triangular section steel ring) or spike. Sheet metal tail attached to body with rivets/ screws. Suspension eye bolt in the nose/body. Originally painted green-grey with a yellow stripe on the tail. TNT, amatol; TNT and aluminium powder, naphthalene, ammonium nitrate and wax/ wood meal filling.
Function	Designed to maximize shock waves through air, water and earth and general demolition. Used against railway installations, large buildings, ammunition depots and below-ground installations (to 8m). Spike bombs/ 'Stabo' (SC 50 with spikes attached to nose) used against rail lines and country roads.







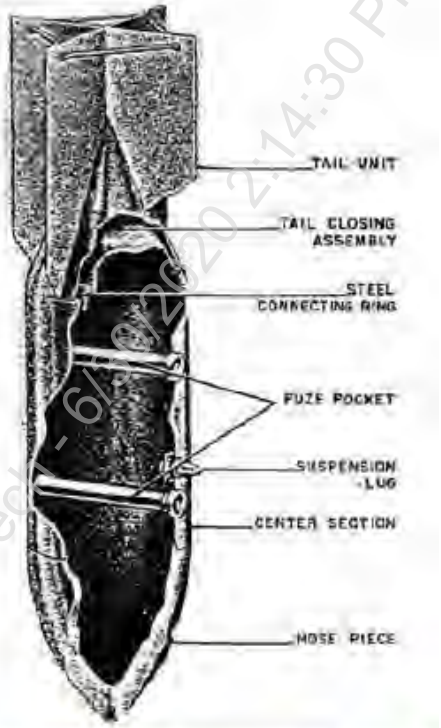
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Information Data Sheet

Category Bomb
Type Sprengbombe-Cylindrisch (SC) 500kg

Variants	-
Body Dimensions	1414–1486mm x 470mm (55.7-58.5" x 18.5")
Weight	500kg (1,100lbs)
Charge Weight	220kg (484lbs)
Fuze	Electric impact fuze/electric clockwork time fuse & electric anti-disturbance fuze.
Composition	Sheet steel with stays or drum
Description	Thick nose welded to steel body. Nose may be attached to Kopfring (triangular section steel ring). Tail either steel sheet or drum-shaped. Suspension band. Originally painted green-grey/ buff (some later versions sky blue) with yellow stripe on tail. Filled with amatol, TNT or trialen.
Function	Designed to maximise shock waves through air, water and earth and for general demolition. Used against railway property, large buildings, shipping and below-ground installations.







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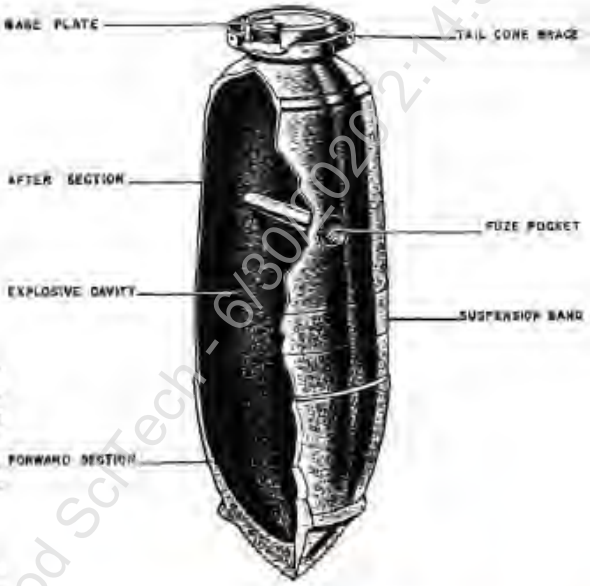
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Information Data Sheet

Category Bomb
Type Sprengbombe-Cylindrisch (SC) 1,000kg (HERMANN)

Variants	3
Body Dimensions	1742-1905mm x 648–660mm (68.6-75" x 25.5-26")
Weight	1,000-1,088kg (2,204-2,398lbs)
Charge Weight	529-619kg (1,166-1,364lbs)
Fuze	Electric impact fuze/ electric clockwork time fuze & electric anti-disturbance fuze
Composition	Magnesium alloy with drum
Description	Thick nose welded to steel body. Nose attached to Kopfring (triangular section steel ring). Drum-shaped tail made of magnesium alloy. Suspension band. Originally painted sky-blue. Filled with amatol, TNT/aluminium/wood meal or trialen.
Function	Designed to maximise shock waves through air, water and earth and for general demolition.







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Information Data Sheet

Category Projectile
Type 3.7" Anti-Aircraft Shell



Variants	6
Body Dimensions	94mm x 360mm (3.7 x 14.7")
Weight	12.7kg (28lb)
Fuze	Mechanical time fuze
Composition	Cast steel
Description	Brass cartridge case. Square-based shell with tapered nose, filled with Amatol, TNT or RDX/TNT. MK6 had forward centring bands and a wider driving band.
Function	Used as a defence against enemy aircraft, fired from fixed batteries and mobile mountings. Could fire approximately 20 rounds per minute with a maximum ceiling of 41,000ft and horizontal range of 20,600 yards.





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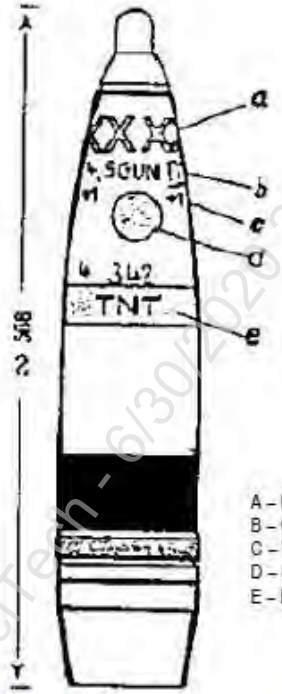
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Information Data Sheet

Category Projectile
Type 4.5" Shell (Mark II – Anti-Aircraft)

Variants	-
Body Dimensions	114mm x 566mm (4.5" x 21.9")
Weight	24.9kg (55lb)
Fuze	Mechanical time fuze
Composition	Cast steel
Description	Square-based, tapered-nosed shell filled with TNT or Amatol. Steel casing, rotating band of either copper or gilding metal located 3.5" in front of the base end with single groove.
Function	Used as field artillery and adapted for use in anti-aircraft defence from fixed batteries. Rate of fire of 8 rounds per minute, maximum ceiling of 44,000ft and horizontal range of 22,800 yards.









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Appendix 2 Sources of UXO Hazard

The sections below provide background information on the most likely sources of UXO hazard affecting the Site. For a more comprehensive set of UXO information sheets, see http://zeticauxo.com/downloads-and-resources/uxo-information-sheets/.

Appendix 2.1 WWI Bombing

It is not generally realised that during World War One (WWI) significant bombing took place across some areas of the UK. An estimated 9,000No. German bombs were dropped on Britain during the course of 51No. airship and 52No. aircraft raids. It was the first time that strategic aerial bombardment had been used. More than 1,400No. people were killed during these raids.

Most air raids were carried out on London and Southeast England. Areas along the East Coast were also targeted regularly due to their proximity to the European continent. Bombing raids further inland were rare and West England and Wales were out of reach for German aircraft of the time.

Aerial bombing during WWI initially relied on visual aiming, with bombsights not developed until later in the war. The inaccuracy inherent in this method meant that bombs often fell some way from their intended targets.

The first recorded raid against England occurred on the 21st December 1914 when 2No. high explosive bombs fell near the Admiralty Pier at Dover. Zeppelin raids intensified during 1915 and 1916, with aircraft raids becoming more frequent after 1917. The last raid of WWI took place on the 19th May 1918, when 38 Gotha and 3 Giant aircraft bombed London and surrounding districts, dropping a total of more than 2,500lbs of bombs.



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The potential of coming across an Unexploded Bomb (UXB) from WWI is far less likely than a WWII UXB given the lower bombing densities during raids in the Great War.

Some areas which were subjected to sustained bombing raids, such as parts of London and coastal towns, recorded a higher number of UXB. In these areas, where there has been no significant development for the last century, the potential of a UXB remaining from WWI cannot be totally discounted.

Appendix 2.2 WWII Bombing

Bombing raids began in the summer of 1940 and continued until the end of WWII. Bombing densities generally increased towards major cities or strategic targets such as docks, harbours, industrial premises, power stations and airfields. In addition to London, industrial cities and ports, including Birmingham, Coventry, Southampton, Liverpool, Hull and Glasgow, were heavily targeted, as well as seaside towns such as Eastbourne and cathedral cities such as Canterbury.

The German bombing campaign saw the extensive use of both High Explosive (HE) bombs and Incendiary Bombs (IBs). The most common HE bombs were the 50kg and 250kg bombs, although 500kg were also used to a lesser extent. More rarely 1,000kg, 1,400kg and 1,800kg bombs were dropped.

The HE bombs tended to contain about half of their weight in explosives and were fitted with one or sometimes two fuzes. Not all HE bombs were intended to explode on impact. Some contained timing mechanisms where detonation could occur more than 70 hours after impact.

Incendiary devices ranged from small 1kg thermite filled, magnesium bodied Incendiary Bombs (IBs) to a 250kg 'Oil Bomb' (OB) and a 500kg 'C300' IB. In some cases the IBs were fitted with a bursting charge. This exploded after the bomb had been alight for a few minutes causing burning debris to be scattered over a greater area. The C300 bombs were similar in appearance to 500kg HE bombs, although their design was sufficiently different to warrant a specially trained unit of the Royal Engineers to deal with their disposal.



Anti-Personnel (AP) bombs and Parachute Mines (PMs) were also deployed. 2No. types of anti-personnel bombs were in common use, the 2kg and the 12kg bomb. The 2kg bomb could inflict injury across an area up to 150m away from the impact. PMs (which were up to 4m in length) could be detonated either magnetically or by noise/vibration.

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Anti-shipping parachute mines were commonly dropped over navigable rivers, dockland areas and coastlines. The Royal Navy was responsible for ensuring that the bombs were made safe. Removal and disposal was still the responsibility of the Bomb Disposal Unit of the Royal Engineers.

In 1944, the Germans introduced new weapons; the V1, a 'flying bomb' and guided missile, and the V2, a ballistic missile rocket that travelled at such speed that no one could see or hear its approach. London was the main target for these attacks.

WWII bomb targeting was inaccurate, especially in the first year of the war. A typical bomb load of 50kg HE bombs mixed with IBs which was aimed at a specific location might not just miss the intended target but fall some considerable distance away.



It is understood that the local Civil Defence authorities in urban areas had a comprehensive system for reporting bomb incidents and dealing with any Unexploded Bombs (UXB) or other UXO. In more rural areas, fewer bombing raids occurred. It is known that Air Raid Precaution (ARP) records under-represent the number and frequency of bombs falling in rural and coastal areas. Bombs were either released over targets or as part of 'tip and run' raids where bomber crews would drop their bombs to avoid anti-aircraft fire or Allied fighter aircraft on the route to and from other strategic targets. Bombs dropped as a result of poor targeting or 'tip and run' raids on rural and coastal areas often went unrecorded or entered as 'fell in open country' or 'fell in the sea'. The Luftwaffe are thought to have dropped approximately 75,000 tons of bombs on Britain throughout the Second World War and an estimated 11% of all bombs dropped during the war failed to detonate.

The potential for a UXB hazard to exist on a site depends on a variety of factors. Were there strategic targets in the surrounding area? Was the site bombed? Could a UXB impact have been missed? Even in rural areas, the potential for UXB cannot be totally discounted and therefore it is essential that detailed local bombing records are obtained when assessing the UXB hazard on any site.

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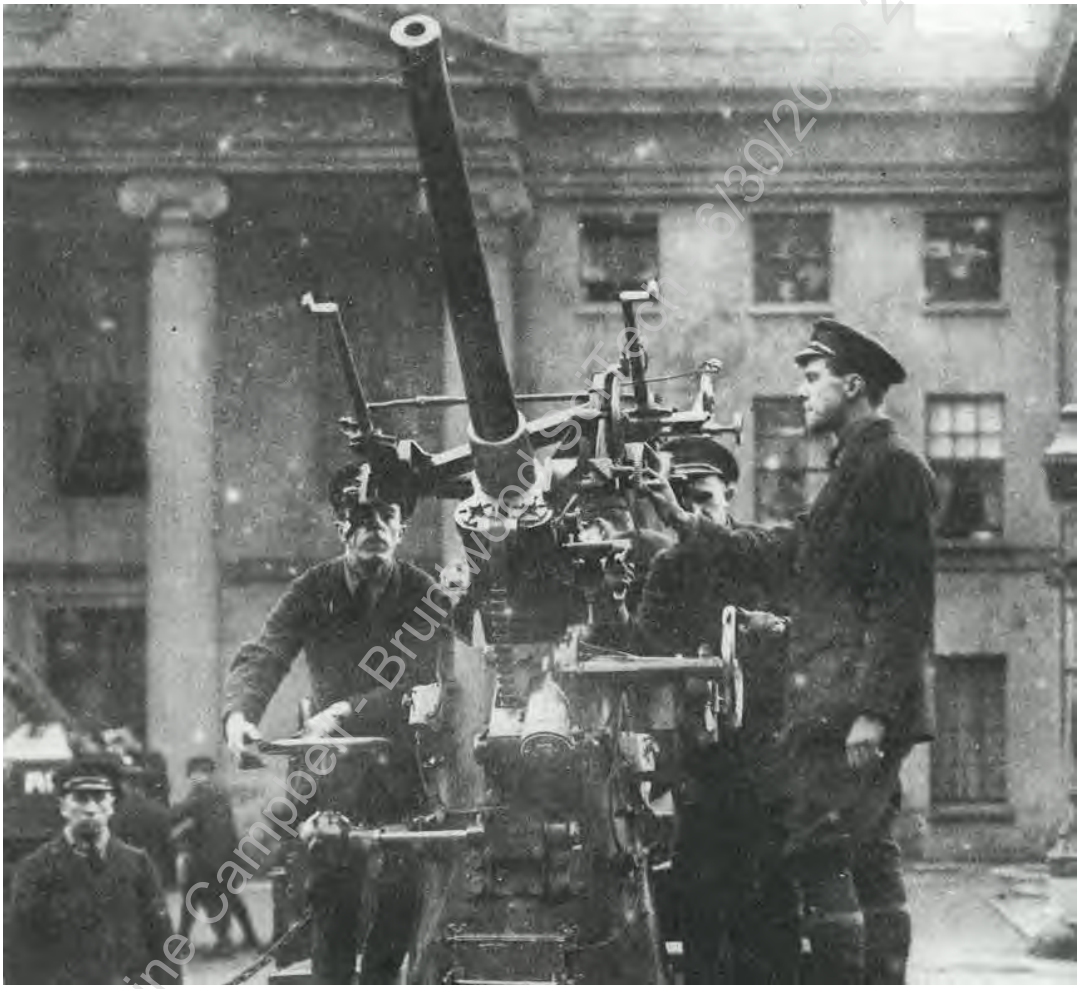
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Appendix 2.3 Anti-Aircraft Guns

As aerial bombardment first began during WWI, Anti-Aircraft (AA) gun batteries were established were gradually established throughout much of England to counter German bombing raids. By June 1916, there were approximately 271No. AA guns and 258No. searchlight installations defending London alone.

Common AA defences during WWI included 3-inch, 75 millimetre, 6-pounder and 1-pounder guns. Many of these guns were mobile, being mounted on lorry chassis. They were driven about following the course of an airship and fired from any area of open land.

During WWI, Unexploded AA (UXAA) shells, could land up to 13km from the firing point, although more typically fell within 10km.



AA gun batteries were used extensively during WWII to counter the threat posed by enemy aircraft. In many instances, AA shells caused damage to Allied territory and in some areas caused significant numbers of civilian fatalities.

During WWII, AA shells could land up to 27km from the firing point, although more typically fell within 15km. These could be distributed over a wide area.

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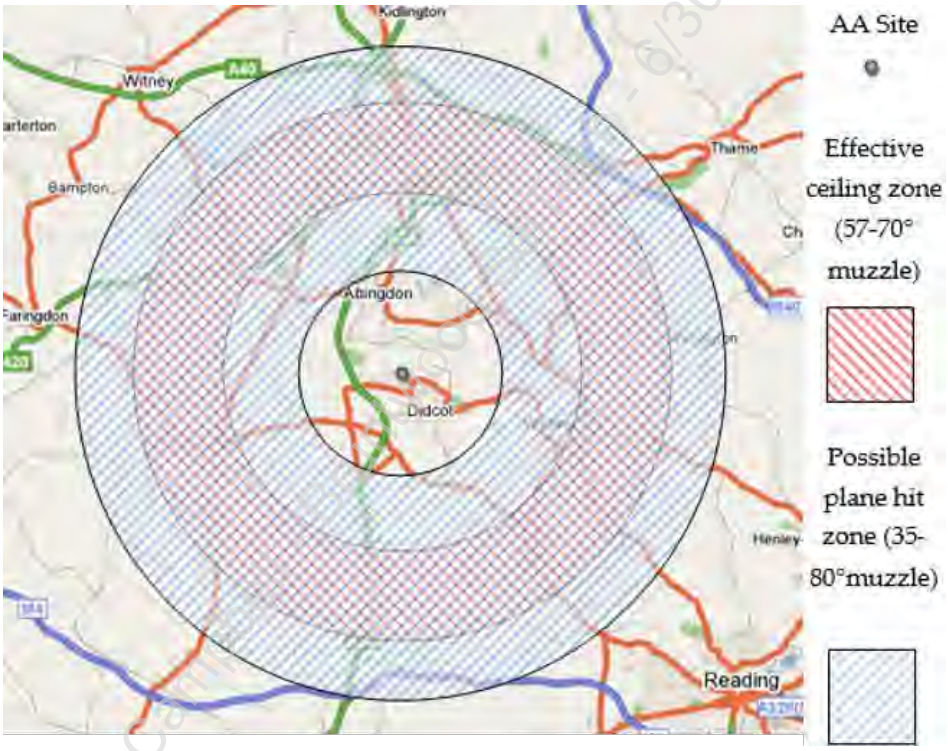
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3No. types of AA batteries existed:

- **Heavy Anti-Aircraft (HAA)** batteries of large guns (typically 3.7", 4.5" and 5.25" calibre) designed to engage high flying bomber aircraft. These tended to be relatively permanent gun emplacements.
- **Light Anti-Aircraft (LAA)** weaponry, designed to counter low flying aircraft. These were often mobile and were moved periodically to new locations around strategic targets such as airfields. They typically fired 40mm shells and machine gun ammunition.
- **Rocket batteries (ZAA)** firing 3" or 3.7" AA rockets with a maximum altitude of 5,800m and a ground range of 9km were typically permanent emplacements.

Unexploded AA (UXAA) shells were a common occurrence during WWII. As the figure below demonstrates, shells were unlikely to fall in the immediate vicinity of a gun battery but in the surrounding area. This would be dependent upon the angle of fire and the flight height of the attacking aircraft.



AA batteries were deliberately targeted by the Luftwaffe and therefore areas surrounding a gun battery may have a greater risk of UXB being present.

Munitions stores were also established around AA batteries. These stored the shells for the batteries and small arms ammunition for troops manning the position. Such stores were typically removed at the end of WWII, although some disposal may have occurred in the immediate vicinity of the gun battery.

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Appendix 3 Recent UXO Finds

UXO finds in the UK are a regular occurrence, although they almost never result in an accidental detonation.

It is still important to note that explosives rarely lose effectiveness with age. In some instances, mechanisms such as fuzes and gaines can become more sensitive and more prone to detonation, regardless of whether the device has been submersed in water or embedded in silt, clay or similar materials.

The effects of an accidental UXO detonation are usually extremely fast, often catastrophic and invariably traumatic to any personnel involved. Such occurrences are largely restricted to current theatres of war and overseas minefields, with occasional events in mainland Europe.

The sections below provide a brief summary of recent significant UXO finds in the UK. To keep up to date with the latest UXO finds, visit http://zeticauxo.com/news/.

On the 15th May 2017, 1No. suspected 250kg German UXB was found on a building site in Aston, Birmingham. Due to the corrosion of the fuzes, the UXB was destroyed in situ on the 17th May 2017.

On the 4th September 2017, 1No. 50kg UXB was found in a ragstone quarry at Kings Hill near West Malling in Kent. It was destroyed in situ in a controlled explosion by an EOD team.

On the 11th February 2018, 1No. 500kg UXB was found in King George V Dock in London, resulting in the temporary closure of the adjacent London City Airport. The UXB was freed from a silt bed and towed along the River Thames to Shoeburyness where it was destroyed in a controlled explosion.

On the 26th February 2018, an EOD team destroyed numerous items of ordnance including shells and 20mm ammunition which had been exposed by storms on Selsey beach. A similar operation was required after more UXO finds on the beach in April 2018.

On the 31st March 2018, 2No. 870lb British PMs were found in waters off Guernsey. They were destroyed in controlled explosions.

On the 20th May 2018, a 1,000kg German sea mine washed ashore at Elmer beach near Bognor Regis, West Sussex. A 1 mile exclusion zone was enforced before an EOD team towed the device out to sea for a controlled explosion.

On the 24th May 2018, numerous ordnance-related items were found on a proposed residential development in Burntwood, Staffordshire.

On the 10th July 2018, a suspected 1,000kg German UXB was found by scuba divers near Teignmouth Pier in Devon. The UXB was towed out into open sea by a RN EOD team for a controlled explosion.

On the 30th August 2018, a 2,000lb German PM was trawled up by a fishing vessel off Mersea in Essex. The PM was moved to an area of open sea where it was destroyed in a controlled explosion by a RN EOD team.

On the 29th November 2018 a large naval projectile was found at Wembury Point, Plymouth. It was destroyed in a controlled explosion.

During January and February 2019 a military EOD was called out to deal with several items of UXO washed up at Medmerry Beach in Selsey. The site of a former gunnery range, it followed on from several similar incidents in 2018.

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On the 21st January 2019 a suspected 1,000lb torpedo was brought into Brixham Harbour by a fishing trawler. It was towed back out to sea and destroyed by a Naval EOD team.

On the 6th February 2019 3No. WWII projectiles were found on Chalkwell Beach near Southend-on-Sea, Essex. They were destroyed in a controlled explosion.

On the 19th February 2019 6No. projectiles were found on the beach at Lilstock, Somerset.

On the 14th March 2019 an unexploded pipe mine was found at the former RAF Manston airfield near Ramsgate, Kent. It was destroyed in a controlled explosion.

On the 21st March 2019 2No. unexploded shells were found on a building site in Brighton. They were removed by an EOD team.

On the 25th March 2019 an unexploded shell was found in Stechford, Birmingham. It was removed to a field and destroyed in a controlled explosion.

On the 22nd May 2019 70No. Self-Igniting Phosphorus (SIP) grenades were found during development works at Tongland Dam in Dumfries & Galloway, Scotland. They were destroyed in a controlled explosion.

On the 23rd May 2019 a 250kg German UXB was found by workers on a building site at Kingston University in London (see plate below). The UXB could not be safely removed and was consequently destroyed in situ by an EOD team.



On the 27th May 2019 24No. SIP grenades were found in a field near Sibton in Suffolk. An EOD team constructed a 2ft deep trench into which the grenades were placed before being destroyed in a controlled explosion.

On the 7th June 2019 a 50kg German fragmentation UXB was found at a building site in Kings Hill at the former RAF West Malling airfield. It was destroyed in a controlled explosion by an EOD team the following day.

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Appendix 4 Glossary and Definitions

Abandoned Explosive Ordnance (AXO)	Abandoned Explosive Ordnance is explosive ordnance that has not been used during an armed conflict, that has been left behind or disposed of by a party to an armed conflict, and which is no longer under control of that party. Abandoned explosive ordnance may or may not have been primed, fuzed, armed or otherwise prepared for use.
Conflagration	A very large self-sustaining destructive fire.
Demil	Derived from the term 'Demilitarisation', it refers to the break down and the recycling or disposal of ordnance components.
Detonation	The high-speed chemical breakdown of an energetic material producing heat, pressure, flame and a shock wave.
Device	This term is used for any component, sub-assembly or completed ordnance, which may or may not have an explosive risk. It can apply to detonators, primers, gaines, fuzes, shells or bombs.
Explosive	The term explosive refers to compounds forming energetic materials that under certain conditions chemically react, rapidly producing gas, heat and pressure. Obviously, these are extremely dangerous and should only be handled by qualified professionals.
Explosive Ordnance (EO)	Explosive Ordnance is all munitions containing explosives, nuclear fission or fusion materials and biological and chemical agents. This includes bombs and warheads, guided and ballistic missiles, artillery, mortar, rocket, small arms ammunition, mines, torpedoes, depth charges, pyrotechnics, cluster bombs & dispensers, cartridge & propellant actuated devices, electro-explosive devices, clandestine & improvised explosive devices, and all similar or related items or components explosive in nature.
Explosive Ordnance Clearance (EOC)	Explosive Ordnance Clearance is a term used to describe the operation of ordnance detection, investigation, identification and removal, with EOD being a separate operation.
Explosive Ordnance Disposal (EOD)	Explosive Ordnance Disposal is the detection, identification, on-site evaluation, rendering safe, recovery and final disposal of unexploded explosive ordnance.
Explosive Ordnance Reconnaissance (EOR)	Explosive Ordnance Reconnaissance is the detection, identification and on-site evaluation of unexploded explosive ordnance before Explosive Ordnance Disposal.
Explosive Remnants of War (ERW)	Explosive Remnants of War are Unexploded Ordnance (UXO) and Abandoned Explosive Ordnance (AXO), excluding landmines.

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Explosive Substances and Articles (ESA)	Explosive substances are solid or liquid substances (or a mixture of substances), which are either: • capable by chemical reaction in itself of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. • designed to produce an effect by heat, light, sound, gas or smoke, or a combination of these as a result of a non-detonative, self-sustaining, exothermic reaction. Explosive article is an article containing one or more explosive substances.
Fuze	A fuze is the part of an explosive device that initiates the main explosive charge to function. In common usage, the word fuze is used indiscriminately, but when being specific (and in particular in a military context), fuze is used to mean a more complicated device, such as a device within military ordnance.
Gaine	Small explosive charge that is sometimes placed between the detonator and the main charge to ensure ignition.
Geophysical survey	A geophysical survey is essentially a range of methods that can be used to detect objects or identify ground conditions without the need for intrusive methods (such as excavation or drilling). This is particularly suited to ordnance as disturbance of ordnance items is to be avoided where ever possible.
Gold line	This is the estimated limit of blast damage from an explosive storage magazine. It usually means that development within this zone is restricted.
High Explosive	Secondary explosives (commonly known as High Explosives (HE)) make up the main charge or filling of an ordnance device. They are usually less sensitive than primary explosives. Examples of secondary explosives are: Nitro glycerine (NG), Trinitrotoluene (TNT), AMATOL (Ammonia nitrate + TNT), Gunpowder (GP), and Cyclotrimethylenetrinitramine (RDX).
Munition	Munition is the complete device charged with explosives, propellants, pyrotechnics, initiating composition, or nuclear, biological or chemical material for use in military operations, including demolitions. This includes those munitions that have been suitably modified for use in training, ceremonial or non-operational purposes. These fall into three distinct categories:- • inert - contain no explosives whatsoever. • live - contain explosives and have not been fired. • blind - have fired but failed to function as intended.

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Primary Explosive	Primary explosives are usually extremely sensitive to friction, heat, and pressure. These are used to initiate less sensitive explosives. Examples of primary explosives are: Lead Azide, Lead Styphnate, and Mercury Fulminate. Primary explosive are commonly found in detonators.
Propellants	Propellants provide ordnance with the ability to travel in a controlled manner and deliver the ordnance to a predetermined target. Propellants burn rapidly producing gas, pressure and flame. Although usually in solid form they can be produced in liquid form. Examples of propellants are: Ballistite often found in a flake form and Cordite used in small arms ammunition.
Pyrotechnic	A pyrotechnic is an explosive article or substance designed to produce an effect by heat, light, sound, gas or smoke, or a combination of any of these, as a result of non-detonative, self-sustaining, exothermic chemical reactions.
Small Arms Ammunition (SAA)	SAA includes projectiles around 12mm or less in calibre and no longer than approximately 100mm. They are fired from a variety of weapons, including rifles, pistols, shotguns and machine guns.
Unexploded Anti-Aircraft (UXAA) Shell	UXAA shells are army ordnance commonly containing HE, though they can also contain pyrotechnic compounds that produce smoke. Most commonly, these were 3.7" and 4.5" HE shells, although they ranged from 2" to 5.25" calibre.
Unexploded Bomb (UXB)	UXB is a common term for unexploded air-dropped munitions.
Unexploded Ordnance (UXO)	UXO is explosive ordnance that has been either primed, fuzed, armed or prepared for use and has been subsequently fired, dropped, launched, projected or placed in such a manner as to present a hazard to operations, persons or objects and remains unexploded either by malfunction or design.
V1	The Vergeltungswaffe-1, V-1, also designated Fieseler Fi 103/FZG-76, known colloquially in English as the Flying Bomb, Buzz Bomb or Doodlebug, was the first guided missile used in WWII and the forerunner of today's cruise missile.
V2	The Vergeltungswaffe 2 (V-2) ('Reprisal Weapon 2') was the first ballistic missile. It was used by the German Army primarily against Belgian and British targets during the later stages of WWII. The V-2 was the first man-made object launched into space, during test flights that reached an altitude of 189km (117 miles) in 1944.

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Appendix 5 WWII Bombing Incident List

31st August 1940

1No. HE bomb fell on the College of Technology, on the Site.

1No. HE bomb fell on 53 Sackville Street, on the north-western boundary of the Site.

1No. HE bomb fell on the corner of Bombay Street and Venice Street, approximately 60m west of the Site.

1No. HE bomb fell on the south-west end of Bridgwater House, Whitworth Street, approximately 0.2km northwest of the Site.

1st October 1940

IBs (unspecified number) fell between Ardwick Green North and Dolphin Street, within approximately 0.3km southeast of the Site.

11th October 1940

1No. HE bomb fell on 36 Sackville Street, approximately 0.1km northwest of the Site.

1No. HE bomb fell on the junction of Sackville Street and Richmond Street, approximately 0.1km northwest of the Site.

1No. HE bomb fell on 60 Richmond Street, approximately 0.1km northwest of the Site.

22nd-23rd December 1940

Manchester and Salford were heavily bombed between the 22nd and 24th December 1940 (the 'Manchester Blitz'). Over 400No. HE bombs and more than 30,000No. IBs fell across the region.

1No. HE bomb fell on the East India Finishing Works, on the Site.

1No. HE bomb fell on The Albion Inn, Temple Street, on the Site.

1No. HE bomb fell on the junction of Jackson Street and Temple Street, on the Site.

1No. HE bomb fell on 85 Sackville Street, on the Site.

IBs (unspecified number) fell across Sackville Street, on the Site.

HE bombs (unspecified number) fell between Cooke Street, Gray Street and Grosvenor Street, adjacent to the south-western boundary of the Site.

IBs (unspecified number) fell on Whitworth Street, adjacent to the northern boundary of the Site.

IBs (unspecified number) fell on Princess Street, adjacent to the north-western boundary of the Site.

1No. HE bomb fell on the Manchester South and Altrincham Railway Viaduct, adjacent to the north-eastern boundary of the Site.

IBs (unspecified number) fell on Cooke Street, adjacent to the south-western boundary of the Site.

1No. HE bomb fell on 17 Cooke Street, adjacent to the western boundary of the Site.

1No. HE bomb and 1No. IB fell on 4 Whitworth Street, approximately 40m northwest of the Site.

1No. HE bomb and IBs (unspecified number) fell on 10 Charles Street, approximately 60m west of the Site.

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1No. PM fell on 77 Temple Street, approximately 0.1km south of the Site.

1No. HE bomb fell on 93 Temple Street, approximately 0.1km south of the Site.

1No. HE bomb fell on 17 Sackville Street, approximately 0.1km north of the Site.

1No. PM and 1No. HE bomb fell on 36 Richmond Street, approximately 0.1km north of the Site.

1No. HE bomb fell on Russel Street, approximately 0.1km south of the Site.

1No. HE bomb fell on 27 Richmond Street, approximately 0.1km north of the Site.

1No. PM fell between Penley Street and Buxton Street, approximately 0.1km east of the Site.

1No. HE bomb fell on the Neptune Hotel, Temple Street, approximately 0.1km south of the Site.

IBs (unspecified number) fell on Greek Street, within approximately 0.1km south of the Site.

1No. HE bomb fell on the Charles Street engineering works, approximately 0.2km west of the Site.

IBs (unspecified number) fell on 6 Chorlton Street, approximately 0.2km north of the Site.

1No. HE bomb fell on 13 Sackville Street, approximately 0.2km north of the Site.

1No. HE bomb fell on 22 Sackville Street, approximately 0.2km north of the Site.

1No. PM and 1No. HE bomb fell on Greek Street, approximately 0.2km south of the Site.

1No. PM fell on the Chapelfield India Rubber Works, approximately 0.2km southeast of the Site.

1No. HE bomb fell on Sheffield Street, approximately 0.2km northeast of the Site

2No. HE bombs fell on the junction of Oxford Road and Grosvenor Street, approximately 0.2km south of the Site.

1No. HE bomb fell on 36 Silver Street, approximately 0.3km north of the Site.

Several HE bombs and IBs were recorded falling between 30 and 50 Major Street, within approximately 0.3km north of the Site.

1No. HE bomb fell on Rushmore Road, Mortuary Chapel, approximately 0.3km south of the Site.

1No. HE bomb fell on 44 Downing Street, approximately 0.3km southeast of the Site.

1No. IB fell on Mayfield Station approximately 0.3km east of the Site.

1No. HE bomb fell on 36 Silver Street, approximately 0.3km north of the Site.

1No. PM fell to the north of Mayfield Station, approximately 0.3km east of the Site.

11th March 1941

1No. HE bomb fell on 2 Cooke Street, adjacent to the south-western boundary of the Site.

1st-2nd June 1941

Approximately 110No. bomber aircraft attacked Manchester, dropping 42No. HE bombs and many IBs.

1No. HE bomb fell on 20 Temple Street, on the Site.

2No. HE bombs and 2No. IBs fell on Mount Street, on the Site.

1No. HE bomb fell on the Jackson Street Cotton Mills, on the Site.

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1No. HE bomb and 1No. IB fell on the College of Technology, on the Site.

1No. HE bomb fell at the junction of London Road and Jackson Street, adjacent to the south-eastern boundary of the Site.

1No. HE bomb fell on Princess Street, adjacent to the north-western boundary of the Site.

1No. HE bomb fell on 63 Sackville Street, adjacent to the north-western boundary of the Site.

1No. HE bomb fell on 25 Granby Row, adjacent to the north-eastern boundary of the Site.

1No. HE bomb fell on the Police Headquarters, approximately 60m northeast of the Site.

1No. HE bomb fell on Grosvenor Street, within approximately 0.1km south of the Site. This was recorded as UXB.

1No. HE bomb fell on Russel Street, approximately 0.1km south of the Site.

1No. HE bomb fell on the Bulls head hotel, Whitworth Street, approximately 0.1km west of the Site.

1No. IB fell on 3 Greek Street, approximately 0.2km south of the Site.

1No. HE bomb fell on a Church and Sunday School, Rusholme Road, approximately 0.3km south of the Site.

1No. HE bomb fell on Rusholme Road Cemetery, approximately 0.3km south of the Site.

1No. HE bomb fell on 61 Rusholme Road, approximately 0.3km south of the Site.

27th July 1942

HE bombs (unspecified number) fell on Russel Street, approximately 0.1km south of the Site.

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Appendix B

Ecological Constraints Assessment

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Memorandum

ARUP

To	Paul Roberts Oliver Cottam	Date	12 September 2019
Copies	Rory Canavan Victoria Newlove Lee Jordan Jordan Weddepohl Bill Wilkins	Reference number	265190-00
From	Joseph Shepherdson	File reference	4-05-14
Subject	ID Manchester (previously called The University of Manchester North Campus), Ecological Constraints Assessment		

ID Manchester Christine Campbell - Bruntwood SciTech - 6/30/2020 2:14:30 PM - 81.154.246.72

1 Introduction

Ove Arup and Partners (Arup) was commissioned by CBRE on behalf of The University of Manchester (UoM) to undertake an ecological constraints assessment of an 11.8ha parcel of The UoM estate (the site).

The site is located in an urban setting in central Manchester. It is bounded by London Road (A6) to the east, Mancunian Way (A57(M)) to the south, Princess Street (A34) to the west and Whitworth Street (B6469) to the north.

2 Methodology

The ecological constraints study assessed 23 locations, which have been identified for ground investigations (see Table 2 and Drawing UMNC-ARUP-ZZ-XX-DR-CG-0006). A Preliminary Ecological Appraisal and a desk study were not undertaken at this stage.

During the ecological constraints assessment, signs of protected/notable species were recorded if observed. In addition, the habitats adjacent to proposed ground investigation were assessed as to their potential to support protected species. The protected species groups sought/assessed included:

- Mammals.
- Birds.
- Herpetofauna (amphibians and reptiles).
- Invertebrates.

An external bat roost suitability assessment of all buildings and trees adjacent to ground investigation locations was undertaken to determine their suitability to support roosting bats. The survey was conducted externally from the ground using binoculars. The survey followed standard

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methodology detailed within the Bat Conservation Trust Good Practice Guidelines[1]. Each tree adjacent to proposed ground investigations were inspected for signs of bat presence including:

- bat droppings;
- scratch and grease marks;
- live or dead bats; and
- noises of bats calling from within the roost.

In addition, features searched for on buildings adjacent to the proposed ground investigations included:

- cracked, missing or lifted roof tiles;
- missing mortar in walls;
- gaps in soffits, fascia or barge boards;
- presence of a cavity wall, and
- any cracks or gaps at least 10mm in size.

The assessment categories used are explained in Table 1.

Table 1: Bat roost suitability categories.

Bat Roost Suitability[1]	Roosting Habitats Description
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only).
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity of hibernation). A tree of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential.
Negligible	Buildings or trees with no potential to support bats.

[1] Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

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2.1 Invasive Species

The list of invasive plant species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (WCA) is extensive and these plants are found in a range of different environments, including aquatic habitats. The survey checked, in particular, for the presence of Japanese knotweed *Reynoutria japonica*, giant knotweed *Reynoutria sachalinensis*, *Reynoutria japonica* x *Reynoutria sachalinensis,* (a hybrid knotweed), giant hogweed *Heracleum mantegazzianum,* and Himalayan balsam *Impatiens glandulifera*.

3 Results

The site predominantly comprises buildings and hardstanding, with areas of amenity grassland and scattered broadleaved trees and scrub.

No waterbodies are present on the site and no waterbodies were identified within 250m of the site.

The results of the ecological constraints assessment at each proposed ground investigation location is detailed in Table 2.

Table 2: Ecological constraints associated with proposed ground investigation.

Proposed Borehole/Trial Pit	Ground Investigation	Approx. Location	Value to Ecology	Ecological Constraint Present (Y/N)
BH001	Percussive borehole with rotary coring	SJ84559764	None.	N
BH002	Percussive borehole	SJ84669762	Located adjacent to silver birch *Betula pendula* tree.	Y
BH003	Percussive borehole	SJ84639760	Located adjacent to ornamental scrub.	Y
BH004	Percussive borehole with rotary coring	SJ84559755	None.	N
BH005	Percussive borehole with rotary coring	SJ84659755	Three beech *Fagus sylvatica* and one Japanese maple *Acer japonicum* present in proximity to the borehole.	Y
BH006	Percussive borehole	SJ84739761	Located adjacent to two sycamore *Acer pseudoplatanus* trees and ornamental scrub.	Y
BH007	Percussive borehole with rotary coring	SJ84769759	None.	N
BH008	Percussive borehole	SJ84769756	None.	N
BH009	Percussive borehole	SJ84759755	None.	N

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BH010	Percussive borehole with rotary coring	SJ84589746	None.	N
BH011	Percussive borehole with rotary coring	SJ84719750	Ten sycamore and one rowan *Sorbus aucuparia* tree present in close proximity to the borehole. In addition, two bird boxes were observed on the sycamore trees.	Y
BH012	Percussive borehole	SJ84619764	None.	N
BH013	Percussive borehole with rotary coring	SJ84389754	Four sycamore trees present.	Y
BH014	Percussive borehole	SJ84499756	None.	N
HC001	Horizontal core	SJ84569762	There is a large cavity present in the wall at approximately SJ84569762. Cavity is approximately 30cm x 30cm square hole and looks to extend behind the clad wall.	Y
HC002	Horizontal core	SJ84599763	None.	N
HC003	Horizontal core	SJ84629765	None.	N
HC004	Horizontal core	SJ84629749	None.	N
TP001	Trial pit	SJ84619754	Three London plane *Platanus x hispanica* trees present.	Y
TP002	Trial pit	SJ84629761	None.	N
TP003	Trial pit	SJ84789751	Located adjacent to approximately five sycamore trees.	Y
DS001	Dynamic sample with rotary core	SJ84779752	None.	N
DS002	Dynamic sample with rotary core	SJ84759749	None.	N

4 Recommendations

Ecological constraints were recorded in proximity to nine locations proposed for ground investigation. It is recommended that all boreholes/trial pits are repositioned to avoid the features detailed in Table 2. An ecologist should be consulted to agree a suitable alternative location for these boreholes. Where this is not feasible, alternative recommendations are outlined in Table 3.

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Table 3: Ecological recommendations for proposed ground investigation.

Point ID	Recommendation
BH002	BH002is located adjacent to a semi-mature silver birch tree. The tree is spindly and was recorded to provide negligible suitability for roosting bats. However, the tree is suitable for breeding birds. All wild birds, their nests, and their eggs are afforded legal protection through the provisions in the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way (CRoW) Act 2000. Consequently, works which are likely to disturb breeding birds must be carried out outside of the breeding bird season (March – August inclusive). If work is scheduled within these months, an ecologist should be consulted prior to commencement. If a tree must be felled to allow for ground investigation, this should take place outside of the breeding bird season and the tree should be replaced at a ratio of 2:1.
BH003	BH003 is located adjacent to scrub, which provides suitable opportunities for breeding birds. All wild birds, their nests, and their eggs are afforded legal protection through the provisions in the Wildlife and Countryside Act 1981 (as amended) and the CRoW Act 2000. Consequently, works which are likely to disturb breeding birds must be carried out outside of the breeding bird season (March – August inclusive). If work is scheduled within these months, an ecologist should be consulted prior to commencement.
BH005	BH005 is located in close proximity to three beech and one Japanese maple trees. The trees did not provide potential roost features (PRFs) for bats and consequently were deemed to have negligible suitability for roosting bats. However, the trees provided suitable opportunities for breeding birds. All wild birds, their nests, and their eggs are afforded legal protection through the provisions in the Wildlife and Countryside Act 1981 (as amended) and the CRoW Act 2000. Consequently, works which are likely to disturb breeding birds must be carried out outside of the breeding bird season (March – August inclusive). If work is scheduled within these months, an ecologist should be consulted prior to commencement. If a tree must be felled to allow for ground investigation, and the tree should be replaced at a ratio of 2:1.
BH006	BH006 is located adjacent to two sycamore trees and ornamental scrub. The trees were of negligible suitability for roosting bats. However, the trees and scrub are suitable for breeding birds. All wild birds, their nests, and their eggs are afforded legal protection through the provisions in the Wildlife and Countryside Act 1981 (as amended) and the CRoW Act 2000. Consequently, works which are likely to disturb breeding birds must be carried out outside of the breeding bird season (March – August inclusive). If work is scheduled within these months, an ecologist should be consulted prior to commencement. If a tree must be felled to allow for ground investigation, the tree should be replaced at a ratio of 2:1.
BH011	BH011 is located adjacent to approximately ten sycamore trees and one rowan tree. The trees were deemed to be suitable for breeding birds. In addition, two bird boxes were observed on the sycamore trees. All wild birds, their nests, and their eggs are afforded legal protection through the provisions in the Wildlife and Countryside Act 1981 (as amended) and the CRoW Act 2000. Consequently, works which are likely to disturb breeding birds must be carried out outside of the breeding bird season (March – August inclusive). If work is scheduled within these months, an ecologist should be consulted prior to commencement. If a tree must be felled to allow for ground investigation should be replaced at a ratio of 2:1. It is recommended that bird nest boxes are removed prior to works commencing, and re-located on site, following consultation with an ecologist.
BH013	BH013 is located adjacent to four sycamore trees. Although all have negligible suitability to roosting bats, they are of value to breeding birds. All wild birds, their nests, and their eggs are afforded legal protection through the provisions in the Wildlife and Countryside Act 1981 (as amended) and the CRoW Act 2000. Consequently, works which are likely to disturb breeding birds must be carried out outside of the breeding bird season (March – August inclusive). If work is

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	scheduled these months, an ecologist should be consulted prior to commencement. If a tree must be felled to allow for ground investigation, and the tree should be replaced at a ratio of 2:1.
HC001	A large cavity approximately 30cm x 30cm is present in the wall at approximately SJ84569762. This was identified as having moderate suitability for roosting bats. British bat species are fully protected through their inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and in Schedule 2 of The Conservation of Habitats and Species Regulations 2010 (as amended). Under the legislation, it is an offence to intentionally kill, injure or take a bat as well as intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat or disturb an animal while it is occupying a structure or place which it uses for that purpose. It is recommended that ground investigation within 30m of the cavity are avoided to prevent disturbance to this potential roost. If a 30m buffer cannot be applied, an ecologist should be consulted as further surveys for bats will be required (May-September).
TP001	TP001 is located adjacent to three London plane trees. Although all have negligible suitability to roosting bats, they are of value to breeding birds. All wild birds, their nests, and their eggs are afforded legal protection through the provisions in the Wildlife and Countryside Act 1981 (as amended) and the CRoW Act 2000. Consequently, works which are likely to disturb breeding birds must be carried out outside of the breeding bird season (March – August inclusive). If work is scheduled within these months, an ecologist should be consulted prior to commencement. If a tree must be felled to allow for ground investigation, and the tree should be replaced at a ratio of 2:1.
TP003	TP003 is located adjacent to approximately five sycamore trees. All five were deemed to have negligible bat roost suitability. However, they are of value to breeding birds. All wild birds, their nests, and their eggs are afforded legal protection through the provisions in the Wildlife and Countryside Act 1981 (as amended) and the CRoW Act 2000. Consequently, works which are likely to disturb breeding birds must be carried out outside of the breeding bird season (March – August inclusive). If work is scheduled within these months, an ecologist should be consulted prior to commencement. If a tree must be felled to allow for ground investigation, and the tree should be replaced at a ratio of 2:1.

This memo is the result of survey work undertaken in September 2019. This report refers, within the limitations stated, to the condition of the proposed scheme site at the time of the inspections. Changes in legislation, guidance, best practice, etc. may necessitate a re-assessment/survey. It is also advised that if there is a delay of over a year in undertaking the works, a re-survey may be required. No warranty is given as to the possibility of future changes in the condition of the site.

This report is produced solely for the benefit of CBRE and no liability is accepted for any reliance placed on it by any other party. This report is prepared for the proposed uses stated in the report and should not be used in a different context.

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A3

384400 384600 384800

397600

BH001
HC003
BH012
HC002
HC001
BH002
TP002
BH006
BH003
BH007
BH014
BH008
BH005
BH004
BH009
TP001
BH013
DS001
TP003
BH011
HC004
DS002
BH010

Key

- Percussive borehole
- Percussive borehole with rotary coring
- Dynamic sample with rotary coring
- Horizontal core
- Trial pit
- Site Boundary

Issue	Date	By	Chkd	Appd
P2	22/08/2019	MG	CL	MW

Metres

0 20 40 80

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University of Manchester

Project Title
North Campus

Drawing Title
Preliminary Ground Investigation: Aerial Imagery of Site

Scale at A3
1:1,400

Arup Job No
265190-00

Suitability
Preliminary

Name
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Appendix C

Human Health Screening Assessment

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Commercial (1% SOM)

Soil concentration exceeds GAC 100

Hole Ref	ARP-BH001	ARP-BH001	ARP-BH002	ARP-BH002	ARP-BH003	ARP-BH003	ARP-BH004	ARP-BH004	ARP-BH005	ARP-BH006	ARP-BH006A
Easting	384566.052	384566.052	384655.294	384655.294	384633.942	384633.942	384554.516	384554.516	384655.497	384734.367	384728.887
Northing	397646.557	397646.557	397617.594	397617.594	397602.655	397602.655	397582.476	397582.476	397554.645	397611.677	397614.035
Elevation (mOD)	37.81	37.81	33.265	33.265	33.095	33.095	34.223	34.223	33.424	33.967	33.996
Sample Top (m)	1.00	3.00	1.00	2.50	1.00	3.50	2.30	5.30	1.00	1.20	1.00
Sample Elevation (mOD)	36.81	34.81	32.27	30.77	32.10	29.60	31.92	28.92	32.42	32.77	33.00
Sample Date	43764	43765	43771	43771	43771	43771	43771	43771	43785	43771	43786
Investigation	AEG 2019	AEG 2019	AEG 2019	AEG 2019	AEG 2019	AEG 2019	AEG 2019	AEG 2019	AEG 2019	AEG 2019	AEG 2019
Geology	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG

Contaminant Name	GAC	Test Units	Total > LOD	Total > GAC	Max											
Asbestos (Presence of)	Presence	---	0 of 51	0	0.0		NAD	NAD	NAD	NAD	Amosite	NAD	NAD	NAD	NAD	Amosite	NAD
Asbestos Analysts Comments	None	---	0 of 51	2	0.0		na	na	na	na	Small bundle	na	na	na	na	Small bundle	na
Asbestos quantification	None	%	3 of 8	0	0.2						<0.001					<0.001	
pH	None	pH Units	47 of 47	0	11.7		8.1	8.4	10.8	8.1	11.5	9.5	10.8	10.7	8.4	8.5	9.0
Cyanide	16200	mg/kg	25 of 47	0	11.0		< 0.1	0.1	< 0.1	1.0	0.2	0.3	0.4	9.0	0.1	1.0	11.0
Antimony	7350	mg/kg	26 of 30	0	260.0		1.5	1.4	1.9	5.8	1.4	1.1	2.4	2.0	3.0	3.2	9.1
Arsenic	635	mg/kg	48 of 49	0	87.0		9.1	10.0	7.7	21.0	10.0	8.2	9.4	13.0	35.0	20.0	25.0
Barium	22100	mg/kg	19 of 19	0	578.0												
Beryllium	11.7	mg/kg	47 of 49	0	2.1		0.9	0.7	0.6	1.1	0.3	0.3	0.5	0.5	1.1	1.3	0.8
Cadmium	190	mg/kg	39 of 49	0	1.2		0.3	0.2	< 0.1	0.4	0.2	< 0.1	1.2	0.5	0.2	0.7	0.8
Chromium	8570	mg/kg	49 of 49	0	210.0		23.0	17.0	14.0	210.0	10.0	11.0	12.0	20.0	25.0	21.0	17.0
Chromium - Hexavalent	49	mg/kg	1 of 47	0	0.3		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	68300	mg/kg	48 of 49	0	440.0		38.0	35.0	24.0	77.0	180.0	110.0	120.0	46.0	130.0	100.0	76.0
Lead	2300	mg/kg	48 of 49	1	2400.0		39.0	200.0	110.0	150.0	88.0	59.0	400.0	98.0	110.0	270.0	180.0
Mercury	289	mg/kg	37 of 49	0	1.6		< 0.05	0.2	0.1	0.2	1.6	0.1	0.4	< 0.05	0.1	0.5	0.4
Nickel	983	mg/kg	49 of 49	0	34.0		30.0	18.0	15.0	30.0	9.5	8.7	9.8	13.0	31.0	28.0	19.0
Selenium	12261	mg/kg	13 of 49	0	2.0		< 0.5	< 0.5	< 0.5	1.3	0.9	< 0.5	1.1	0.7	< 0.5	1.5	< 0.5
Vanadium	6360	mg/kg	49 of 49	0	48.0		29.0	25.0	21.0	32.0	16.0	18.0	23.0	18.0	35.0	39.0	27.0
Zinc	730000	mg/kg	49 of 49	0	620.0		60.0	43.0	43.0	100.0	74.0	31.0	310.0	91.0	96.0	180.0	130.0
Phenol	26000	mg/kg	0 of 47	0	0.0		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	< 0.1	<5.0	< 0.1
Total Organic Carbon	None	%	48 of 51	0	7.8		0.7	0.7	0.4	2.1	1.0	0.4	0.8	0.5	1.7	3.5	1.4
Benzene	26.5978811	mg/kg	0 of 39	0	0.0		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	5706.00	mg/kg	0 of 39	0	0.0		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
m,p xylenes	5923	mg/kg	1 of 9	0	0.009												
O-Xylene	6603	mg/kg	0 of 9	0	0.0												
Toluene	56294	mg/kg	0 of 39	0	0.0		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Xylene	5923	mg/kg	0 of 30	0	0.0		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PAH,Total	None	mg/kg	38 of 49	0	120.0		< 0.10	< 0.10	5.9	0.2	9.6	55.0	49.0	1.4	0.5	3.6	6.9
Acenaphthene	83700	mg/kg	26 of 53	0	4.6		< 0.03	< 0.03	0.1	< 0.03	0.1	2.4	1.2	< 0.03	< 0.03	< 0.03	0.2
Acenaphthylene	83200	mg/kg	20 of 53	0	1.1		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.1	0.1	< 0.03	< 0.03	< 0.03	0.1
Dibenz-a-h-anthracene	3.53	mg/kg	19 of 53	0	1.0		< 0.03	< 0.03	< 0.03	< 0.03	0.1	0.2	0.3	< 0.03	< 0.03	< 0.03	< 0.03
Anthracene	523000	mg/kg	31 of 53	0	6.3		< 0.03	< 0.03	0.2	< 0.03	0.2	3.2	1.4	< 0.03	< 0.03	0.1	0.3
Benzo (g,h,i) perylene	3930	mg/kg	34 of 53	0	7.3		< 0.03	< 0.03	0.1	< 0.03	0.6	0.8	1.2	0.0	< 0.03	0.1	0.1
Benzo(a)anthracene	167	mg/kg	39 of 53	0	11.0		< 0.03	< 0.03	0.4	< 0.03	0.6	2.7	3.5	0.1	0.1	0.2	0.4
Benzo(a)pyrene	35.2	mg/kg	36 of 53	0	12.0		< 0.03	< 0.03	0.2	< 0.03	1.1	1.8	2.4	0.1	< 0.03	0.2	0.3
Benzo(b)fluoranthene	44.3	mg/kg	39 of 53	0	12.0		< 0.03	< 0.03	0.4	< 0.03	1.1	2.4	3.6	0.2	0.0	0.5	0.4
benzo(b,k)fluoranthene	44.3	mg/kg	15 of 21	0	6.2												
Benzo(k)fluoranthene	1170	mg/kg	35 of 53	0	6.9		< 0.03	< 0.03	0.1	< 0.03	0.4	0.8	1.4	0.1	< 0.03	0.3	0.2
Chrysene	346	mg/kg	40 of 53	0	9.3		< 0.03	< 0.03	0.5	< 0.03	0.7	2.9	3.7	0.1	0.1	0.3	0.5
Dibenzofuran	35.2	mg/kg	4 of 7	0	0.2										< 0.1		0.2
Fluoranthene	22600	mg/kg	45 of 53	0	21.0		0.0	< 0.03	1.5	0.1	1.9	9.5	9.8	0.3	0.1	0.7	1.5
Fluorene	63000	mg/kg	25 of 53	0	3.7		< 0.03	< 0.03	0.1	< 0.03	0.1	2.5	1.0	< 0.03	< 0.03	< 0.03	0.1
Indeno(1,2,3-cd)pyrene	501	mg/kg	34 of 53	0	5.0		< 0.03	< 0.03	0.1	< 0.03	0.5	0.7	1.0	0.0	< 0.03	0.1	0.1
Napthalene	193	mg/kg	22 of 53	0	5.7		< 0.03	< 0.03	0.1	< 0.03	< 0.03	3.7	0.6	< 0.03	< 0.03	< 0.03	0.1
Phenanthrene	21900	mg/kg	44 of 53	0	24.0		0.1	0.0	0.8	0.1	0.7	12.0	8.5	0.2	0.1	0.3	1.0
Pyrene	54200	mg/kg	44 of 53	0	21.0		< 0.03	< 0.03	1.3	0.1	1.5	8.8	9.8	0.3	0.1	0.7	1.6
PCB-101 2,2',4,5,5' - Pentachlorobiphenyl	None	mg/kg	0 of 5	0	0.0												
PCB-118 2,3',4,4',5 - Pentachlorobiphenyl	None	mg/kg	0 of 5	0	0.0												
PCB-138 2,2',3,4,4',5' - Hexachlorobiphenyl	None	mg/kg	0 of 5	0	0.0												
PCB-153 2,2',4,4',5,5' - Hexachlorobiphenyl	None	mg/kg	0 of 5	0	0.0												
PCB-180 2,2',3,4,4',5,5' - Heptachlorobiphenyl	None	mg/kg	0 of 5	0	0.0												
PCB-52 2,2',5,5' - Tetrachlorobiphenyl	None	mg/kg	0 of 5	0	0.0												
Aliphatics & Aromatics >C5-35	None	mg/kg	2 of 5	0	545.0												
Aliphatics >C5-6	3190	mg/kg	0 of 5	0	0.0												
Aliphatics >C6-8	7780	mg/kg	1 of 5	0	0.1												
Aliphatics >C8-10	2000	mg/kg	0 of 5	0	0.0												
Aliphatics >C10-12	9690	mg/kg	0 of 5	0	0.0												
Aliphatics >C12-16	58800	mg/kg	0 of 5	0	0.0												
Aliphatics >C16-21	648000	mg/kg	0 of 5	0	0.0												
Aliphatics >C21-35	648000	mg/kg	1 of 5	0	151.0												
Aliphatics >C5-35	None	mg/kg	1 of 5	0	151.0												
Aromatics >C5-7	27	mg/kg	0 of 5	0	0.0												
Aromatics >C7-8	56294	mg/kg	0 of 5	0	0.0												
Aromatics >C8-10	3460	mg/kg	0 of 5	0	0.0												
Aromatics >C10-12	16200	mg/kg	0 of 5	0	0.0												
Aromatics >C12-16	36200	mg/kg	0 of 5	0	0.0												
Aromatics >C16-21	26600	mg/kg	2 of 5	0	27.0												
Aromatics >C21-35	28400	mg/kg	2 of 5	0	367.0												
Aromatics >C5-35	None	mg/kg	2 of 5	0	394.0												

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CONFIDENTIAL

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Commercial (1% SOM)

Soil concentration exceeds GAC 100

Contaminant Name	GAC	Test Units	Total > LOD	Total > GAC	Max	ARP-BH006B 384713.826 397607.847 33.497 0.60 32.90 43786 AEG 2019 MG	ARP-BH007 384765.207 397596.049 34.684 1.00 33.68 43777 AEG 2019 MG	ARP-BH007 384765.207 397596.049 34.684 3.30 31.38 43778 AEG 2019 MG	ARP-BH008 384766.896 397570.397 34.051 5.20 28.85 43779 AEG 2019 MG	ARP-BH008 384766.896 397570.397 34.051 2.20 31.85 43779 AEG 2019 MG	ARP-BH009 384759.087 397550.391 34.203 2.60 31.60 AEG 2019 MG	ARP-BH011 384726.701 397513.893 34.051 3.60 30.45 43778 AEG 2019 MG	ARP-BH011 384726.701 397513.893 34.051 1.00 33.05 43778 AEG 2019 MG	ARP-BH012A 384647.478 397660.412 38.269 7.50 30.77 43765 AEG 2019 MG	ARP-BH012A 384647.478 397660.412 38.269 2.60 35.67 43764 AEG 2019 MG	ARP-BH013 384368.382 397549.44 33.078 1.00 32.08 43766 AEG 2019 MG	ARP-BH013 384368.382 397549.44 33.078 3.50 29.58 43766 AEG 2019 MG	ARP-BH014 384495.592 397565.295 35.705 0.70 35.01 43766 AEG 2019 MG
Asbestos (Presence of)	Presence	---	0 of 51	0	0.0	NAD	NAD	Chrysotile	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
Asbestos Analysts Comments	None	---	0 of 51	2	0.0	na	na	Chrysotile	na	na	na	na	na	na	na	na	na	na	na
Asbestos quantification	None	%	3 of 8	0	0.2			0.192											
pH	None	pH Units	47 of 47	0	11.7	11.1	7.9	11.6	9.2	9.6	8.6	7.7	11.7	7.9	8.5	8.1	10.8	8.4	
Cyanide	16200	mg/kg	25 of 47	0	11.0	0.5	0.4	0.3	0.4	0.3	0.5	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	3.5	
Antimony	7350	mg/kg	26 of 30	0	260.0	< 1.0	< 1.0	2.2	3.9	2.9	1.7	< 1.0	1.5	1.2	< 1.0	1.7	1.5	7.4	
Arsenic	635	mg/kg	48 of 49	0	87.0	7.8	7.7	18.0	28.0	22.0	18.0	16.0	12.0	7.2	6.4	19.0	7.4	32.0	
Barium	22100	mg/kg	19 of 19	0	578.0														
Beryllium	11.7	mg/kg	47 of 49	0	2.1	0.2	0.3	0.6	0.9	0.9	1.0	1.2	0.4	0.7	0.5	0.9	0.6	0.6	
Cadmium	190	mg/kg	39 of 49	0	1.2	0.8	0.4	0.4	0.5	0.4	0.7	0.4	0.9	0.2	0.1	0.3	0.5	0.9	
Chromium	8570	mg/kg	49 of 49	0	210.0	8.2	11.0	20.0	29.0	33.0	15.0	11.0	18.0	18.0	12.0	18.0	11.0	24.0	
Chromium - Hexavalent	49	mg/kg	1 of 47	0	0.3	< 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	
Copper	68300	mg/kg	48 of 49	0	440.0	22.0	24.0	56.0	87.0	65.0	30.0	440.0	32.0	25.0	23.0	36.0	46.0	430.0	
Lead	2300	mg/kg	48 of 49	1	2400.0	30.0	100.0	140.0	250.0	160.0	120.0	290.0	150.0	42.0	34.0	51.0	73.0	230.0	
Mercury	289	mg/kg	37 of 49	0	1.6	0.1	0.1	0.2	0.4	0.3	0.1	< 0.05	0.2	0.1	0.1	0.1	0.2	0.2	
Nickel	983	mg/kg	49 of 49	0	34.0	6.1	7.9	16.0	20.0	22.0	11.0	17.0	9.2	18.0	13.0	22.0	13.0	34.0	
Selenium	12261	mg/kg	13 of 49	0	2.0	0.5	< 0.5	< 0.5	0.5	< 0.5	< 0.5	1.1	0.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Vanadium	6360	mg/kg	49 of 49	0	48.0	11.0	14.0	17.0	25.0	29.0	16.0	23.0	15.0	25.0	17.0	29.0	21.0	24.0	
Zinc	730000	mg/kg	49 of 49	0	620.0	35.0	36.0	86.0	130.0	100.0	170.0	150.0	60.0	48.0	37.0	75.0	84.0	560.0	
Phenol	26000	mg/kg	0 of 47	0	0.0	< 0.1	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
Total Organic Carbon	None	%	48 of 51	0	7.8	0.4	1.6	0.9	2.1	2.4	0.5	0.2	0.3	1.2	0.7	0.8	0.9	1.2	
Benzene	26.5978811	mg/kg	0 of 39	0	0.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Ethylbenzene	5706.00	mg/kg	0 of 39	0	0.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
m,p xylenes	5923	mg/kg	1 of 9	0	0.009														
O-Xylene	6603	mg/kg	0 of 9	0	0.0														
Toluene	56294	mg/kg	0 of 39	0	0.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Xylene	5923	mg/kg	0 of 30	0	0.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
PAH,Total	None	mg/kg	38 of 49	0	120.0	3.7	110.0	7.6	120.0	120.0	0.5	0.1	9.4	< 0.10	< 0.10	15.0	12.0	54.0	
Acenaphthene	83700	mg/kg	26 of 53	0	4.6	0.1	0.5	0.2	4.6	4.2	< 0.03	< 0.03	0.1	< 0.03	< 0.03	0.5	0.3	2.3	
Acenaphthylene	83200	mg/kg	20 of 53	0	1.1	< 0.03	1.1	< 0.03	0.2	0.4	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.1	0.1	
Dibenz-a-h-anthracene	3.53	mg/kg	19 of 53	0	1.0	< 0.03	1.0	< 0.03	0.4	0.5	< 0.03	< 0.03	0.1	< 0.03	< 0.03	0.1	< 0.03	0.2	
Anthracene	523000	mg/kg	31 of 53	0	6.3	0.1	1.4	0.4	6.3	5.7	< 0.03	< 0.03	0.3	< 0.03	< 0.03	0.9	0.5	2.5	
Benzo (g,h,i) perylene	3930	mg/kg	34 of 53	0	7.3	0.1	7.3	0.1	2.7	2.3	< 0.03	< 0.03	0.2	< 0.03	< 0.03	0.2	0.2	0.9	
Benzo(a)anthracene	167	mg/kg	39 of 53	0	11.0	0.3	11.0	0.6	8.6	9.6	0.1	0.0	0.8	< 0.03	< 0.03	0.9	0.8	3.2	
Benzo(a)pyrene	35.2	mg/kg	36 of 53	0	12.0	0.2	12.0	0.4	6.3	6.7	< 0.03	< 0.03	0.6	< 0.03	< 0.03	0.5	0.5	2.1	
Benzo(b)fluoranthene	44.3	mg/kg	39 of 53	0	12.0	0.2	12.0	0.5	6.7	6.4	0.0	0.0	0.7	< 0.03	< 0.03	0.7	0.7	2.8	
benzo(b,k)fluoranthene	44.3	mg/kg	15 of 21	0	6.2														
Benzo(k)fluoranthene	1170	mg/kg	35 of 53	0	6.9	0.1	6.9	0.2	2.8	3.0	< 0.03	< 0.03	0.3	< 0.03	< 0.03	0.3	0.3	1.0	
Chrysene	346	mg/kg	40 of 53	0	9.3	0.3	9.3	0.4	6.9	7.3	0.1	< 0.03	0.7	< 0.03	< 0.03	0.8	0.8	3.0	
Dibenzofuran	35.2	mg/kg	4 of 7	0	0.2	< 0.1													
Fluoranthene	22600	mg/kg	45 of 53	0	21.0	0.8	20.0	1.5	21.0	21.0	0.1	0.0	1.9	< 0.03	< 0.03	3.4	2.9	11.0	
Fluorene	63000	mg/kg	25 of 53	0	3.7	0.0	0.4	0.1	3.6	3.7	< 0.03	< 0.03	0.1	< 0.03	< 0.03	0.5	0.2	1.4	
Indeno(1,2,3-cd)pyrene	501	mg/kg	34 of 53	0	5.0	0.1	5.0	0.1	2.0	1.7	< 0.03	< 0.03	0.2	< 0.03	< 0.03	0.2	0.2	0.7	
Napthalene	193	mg/kg	22 of 53	0	5.7	< 0.03	0.5	0.3	4.2	5.7	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.2	0.1	0.4	
Phenanthrene	21900	mg/kg	44 of 53	0	24.0	0.5	5.6	1.4	24.0	24.0	0.1	0.0	1.6	< 0.03	< 0.03	2.9	1.6	13.0	
Pyrene	54200	mg/kg	44 of 53	0	21.0	0.8	21.0	1.4	20.0	21.0	0.1	0.0	1.8	< 0.03	< 0.03	2.8	2.6	9.9	
PCB-101 2,2',4,5,5' - Pentachlorobiphenyl	None	mg/kg	0 of 5	0	0.0														
PCB-118 2,3',4,4',5 - Pentachlorobiphenyl	None	mg/kg	0 of 5	0	0.0														
PCB-138 2,2',3,4,4',5' - Hexachlorobiphenyl	None	mg/kg	0 of 5	0	0.0														
PCB-153 2,2',4,4',5,5' - Hexachlorobiphenyl	None	mg/kg	0 of 5	0	0.0														
PCB-180 2,2',3,4,4',5,5' - Heptachlorobiphenyl	None	mg/kg	0 of 5	0	0.0														
PCB-52 2,2',5,5' - Tetrachlorobiphenyl	None	mg/kg	0 of 5	0	0.0														
Aliphatics & Aromatics >C5-35	None	mg/kg	2 of 5	0	545.0														
Aliphatics >C5-6	3190	mg/kg	0 of 5	0	0.0														
Aliphatics >C6-8	7780	mg/kg	1 of 5	0	0.1														
Aliphatics >C8-10	2000	mg/kg	0 of 5	0	0.0														
Aliphatics >C10-12	9690	mg/kg	0 of 5	0	0.0														
Aliphatics >C12-16	58800	mg/kg	0 of 5	0	0.0														
Aliphatics >C16-21	648000	mg/kg	0 of 5	0	0.0														
Aliphatics >C21-35	648000	mg/kg	1 of 5	0	151.0														
Aliphatics >C5-35	None	mg/kg	1 of 5	0	151.0														
Aromatics >C5-7	27	mg/kg	0 of 5	0	0.0														
Aromatics >C7-8	56294	mg/kg	0 of 5	0	0.0														
Aromatics >C8-10	3460	mg/kg	0 of 5	0	0.0														
Aromatics >C10-12	16200	mg/kg	0 of 5	0	0.0														
Aromatics >C12-16	36200	mg/kg	0 of 5	0	0.0														
Aromatics >C16-21	26600	mg/kg	2 of 5	0	27.0														
Aromatics >C21-35	28400	mg/kg	2 of 5	0	367.0														
Aromatics >C5-35	None	mg/kg	2 of 5	0	394.0														

ID Matches Tester - Chrissie Cook Date/Time Matches Collection 17/01/2020 12:14:30 PM - Unique Number: 1246.72

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Commercial (1% SOM)

Soil concentration exceeds GAC 100

Contaminant Name	GAC	Test Units	Total > LOD	Total > GAC	Max	ARP-BH014	ARP-DS001	ARP-DS002	ARP-TP001	ARP-TP002	ARP-TP002	CE-2015-CC/WS2	CE-2015-CC/WS3	GEO-2015-CRH01	GEO-2015-CRH01	GEO-2015-CRH01
						384495.592	384774.985	384753.487	384615.418	384628.47	384628.47	384607	384606	384591.66	384591.66	384591.66
						397565.295	397520.083	397492.025	397543.899	397622.871	397622.871	397436	397461	397462.97	397462.97	397462.97
						35.705	34.217	34.087	33.208	32.851	32.851	27.87	30.13	34.29	34.29	34.29
						4.00	0.60	0.80	0.80	1.00	2.50	0.68	0.56	0.20	0.50	2.00
						31.71	33.62	33.29	32.41	31.85	30.35	27.19	29.57	34.09	33.79	32.29
						43771	43799	43800	43766	43767	43767	42080	42080	42193	42193	42193
						AEG 2019	AEG 2019	AEG 2019	AEG 2019	AEG 2019	AEG 2019	nstructive Evaluati	nstructive Evaluati	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015
						MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG
Asbestos (Presence of)	**Presence**	**---**	**0 of 51**	**0**	**0.0**	NAD	Amosite	NAD	NAD	NAD	NAD	Not Detected	Not Detected	Chrysotile	None	
Asbestos Analysts Comments	**None**	**---**	**0 of 51**	**2**	**0.0**	na	Bundle of	na	na	na	na	na	na	Fibre Bundles	na	
Asbestos quantification	**None**	**%**	**3 of 8**	**0**	**0.2**		0.001							0.0		
pH	**None**	**pH Units**	**47 of 47**	**0**	**11.7**	8.6	10.7	8.2	8.4	7.7	9.0	7.6	7.8	8.2	8.8	
Cyanide	**16200**	**mg/kg**	**25 of 47**	**0**	**11.0**	0.3	0.6	1.6	2.9	1.8	0.3	< 2	< 2	<0.5	<0.5	
Antimony	**7350**	**mg/kg**	**26 of 30**	**0**	**260.0**	2.3	3.5	260.0	4.8	6.1	3.3					
Arsenic	**635**	**mg/kg**	**48 of 49**	**0**	**87.0**	13.0	32.0	56.0	87.0	44.0	20.0	< 2	2.0	14.9	10.1	
Barium	**22100**	**mg/kg**	**19 of 19**	**0**	**578.0**							25.0	274.0	212.0	578.0	
Beryllium	**11.7**	**mg/kg**	**47 of 49**	**0**	**2.1**	0.5	0.8	1.3	0.7	1.3	0.6	< 0.5	0.6	1.0	1.3	
Cadmium	**190**	**mg/kg**	**39 of 49**	**0**	**1.2**	0.3	1.2	1.2	0.3	0.3	0.8	< 0.2	0.3	0.9	0.9	
Chromium	**8570**	**mg/kg**	**49 of 49**	**0**	**210.0**	25.0	27.0	33.0	20.0	22.0	15.0	6.0	23.0	17.2	33.3	
Chromium - Hexavalent	**49**	**mg/kg**	**1 of 47**	**0**	**0.3**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2	< 2	<0.3	<0.3	
Copper	**68300**	**mg/kg**	**48 of 49**	**0**	**440.0**	79.0	80.0	160.0	110.0	230.0	100.0	< 4	18.0	73.0	47.0	
Lead	**2300**	**mg/kg**	**48 of 49**	**1**	**2400.0**	82.0	330.0	2400.0	300.0	530.0	250.0	< 3	10.0	170.0	191.0	
Mercury	**289**	**mg/kg**	**37 of 49**	**0**	**1.6**	0.1	0.4	1.1	0.5	1.6	0.7	< 1	< 1	0.4	0.3	
Nickel	**983**	**mg/kg**	**49 of 49**	**0**	**34.0**	20.0	17.0	26.0	17.0	32.0	16.0	4.0	25.0	18.2	20.7	
Selenium	**12261**	**mg/kg**	**13 of 49**	**0**	**2.0**	< 0.5	< 0.5	< 0.5	< 0.5	1.3	< 0.5	< 3	< 3	<1	1.0	
Vanadium	**6360**	**mg/kg**	**49 of 49**	**0**	**48.0**	27.0	28.0	36.0	31.0	37.0	18.0	11.0	26.0	26.0	31.0	
Zinc	**730000**	**mg/kg**	**49 of 49**	**0**	**620.0**	110.0	210.0	470.0	140.0	620.0	220.0	16.0	47.0	177.0	93.0	
Phenol	**26000**	**mg/kg**	**0 of 47**	**0**	**0.0**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	< 2	< 2	<0.01	<0.01	
Total Organic Carbon	**None**	**%**	**48 of 51**	**0**	**7.8**	0.3	1.1	1.8	1.1	3.6	1.5	0.1	0.4	NDP	1.1	0.8
Benzene	**26.5978811**	**mg/kg**	**0 of 39**	**0**	**0.0**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		<0.002			<0.005
Ethylbenzene	**5706.00**	**mg/kg**	**0 of 39**	**0**	**0.0**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		<0.002			<0.005
m,p xylenes	**5923**	**mg/kg**	**1 of 9**	**0**	**0.009**								<0.002			<0.005
O-Xylene	**6603**	**mg/kg**	**0 of 9**	**0**	**0.0**								<0.002			<0.005
Toluene	**56294**	**mg/kg**	**0 of 39**	**0**	**0.0**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		<0.005			<0.005
Xylene	**5923**	**mg/kg**	**0 of 30**	**0**	**0.0**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01					
PAH,Total	**None**	**mg/kg**	**38 of 49**	**0**	**120.0**	0.7	1.8	16.0	< 0.10	1.0	2.6	< 1.6	< 1.6	11.2	3.6	
Acenaphthene	**83700**	**mg/kg**	**26 of 53**	**0**	**4.6**	< 0.03	0.0	0.3	< 0.03	< 0.03	0.1	< 0.1	< 0.1	0.1	<0.05	<0.05
Acenaphthylene	**83200**	**mg/kg**	**20 of 53**	**0**	**1.1**	< 0.03	< 0.03	0.1	< 0.03	< 0.03	< 0.03	< 0.1	< 0.1	0.1	0.1	<0.03
Dibenz-a-h-anthracene	**3.53**	**mg/kg**	**19 of 53**	**0**	**1.0**	< 0.03	< 0.03	0.1	< 0.03	< 0.03	< 0.03	< 0.1	< 0.1	<0.04	<0.04	<0.04
Anthracene	**523000**	**mg/kg**	**31 of 53**	**0**	**6.3**	< 0.03	0.0	0.6	< 0.03	< 0.03	0.1	< 0.1	< 0.1	0.3	0.1	<0.04
Benzo (g,h,i) perylene	**3930**	**mg/kg**	**34 of 53**	**0**	**7.3**	< 0.03	0.1	0.4	< 0.03	0.0	0.1	< 0.1	< 0.1	0.6	0.2	<0.04
Benzo(a)anthracene	**167**	**mg/kg**	**39 of 53**	**0**	**11.0**	0.1	0.1	1.0	< 0.03	0.1	0.2	< 0.1	< 0.1	0.9	0.4	<0.06
Benzo(a)pyrene	**35.2**	**mg/kg**	**36 of 53**	**0**	**12.0**	0.0	0.1	0.9	< 0.03	0.1	0.2	< 0.1	< 0.1	1.0	0.3	<0.04
Benzo(b)fluoranthene	**44.3**	**mg/kg**	**39 of 53**	**0**	**12.0**	0.1	0.1	1.1	< 0.03	0.1	0.2	< 0.1	< 0.1	1.2	0.4	<0.05
benzo(b,k)fluoranthene	**44.3**	**mg/kg**	**15 of 21**	**0**	**6.2**									1.6	0.5	<0.07
Benzo(k)fluoranthene	**1170**	**mg/kg**	**35 of 53**	**0**	**6.9**	< 0.03	0.1	0.4	< 0.03	0.0	0.1	< 0.1	< 0.1	0.5	0.1	<0.02
Chrysene	**346**	**mg/kg**	**40 of 53**	**0**	**9.3**	0.1	0.2	1.2	< 0.03	0.1	0.2	< 0.1	< 0.1	1.0	0.3	0.0
Dibenzofuran	**35.2**	**mg/kg**	**4 of 7**	**0**	**0.2**											
Fluoranthene	**22600**	**mg/kg**	**45 of 53**	**0**	**21.0**	0.1	0.4	3.4	0.0	0.2	0.6	< 0.1	< 0.1	2.2	0.6	0.0
Fluorene	**63000**	**mg/kg**	**25 of 53**	**0**	**3.7**	< 0.03	< 0.03	0.3	< 0.03	< 0.03	0.0	< 0.1	< 0.1	0.1	<0.04	<0.04
Indeno(1,2,3-cd)pyrene	**501**	**mg/kg**	**34 of 53**	**0**	**5.0**	< 0.03	0.1	0.3	< 0.03	0.0	0.1	< 0.1	< 0.1	0.5	0.2	<0.04
Napthalene	**193**	**mg/kg**	**22 of 53**	**0**	**5.7**	0.0	< 0.03	0.2	< 0.03	< 0.03	< 0.03	< 0.1	< 0.1	<0.04	<0.04	<0.04
Phenanthrene	**21900**	**mg/kg**	**44 of 53**	**0**	**24.0**	0.1	0.2	2.7	< 0.03	0.1	0.4	< 0.1	< 0.1	1.1	0.4	<0.03
Pyrene	**54200**	**mg/kg**	**44 of 53**	**0**	**21.0**	0.1	0.4	3.2	0.0	0.2	0.6	< 0.1	< 0.1	1.9	0.6	0.0
PCB-101 2,2',4,5,5' - Pentachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**											<0.005
PCB-118 2,3',4,4',5 - Pentachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**											<0.005
PCB-138 2,2',3,4,4',5' - Hexachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**											<0.005
PCB-153 2,2',4,4',5,5' - Hexachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**											<0.005
PCB-180 2,2',3,4,4',5,5' - Heptachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**											<0.005
PCB-52 2,2',5,5' - Tetrachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**											<0.005
Aliphatics & Aromatics >C5-35	**None**	**mg/kg**	**2 of 5**	**0**	**545.0**								< 42			
Aliphatics >C5-6	**3190**	**mg/kg**	**0 of 5**	**0**	**0.0**								< 0.01			
Aliphatics >C6-8	**7780**	**mg/kg**	**1 of 5**	**0**	**0.1**								0.1			
Aliphatics >C8-10	**2000**	**mg/kg**	**0 of 5**	**0**	**0.0**								< 2			
Aliphatics >C10-12	**9690**	**mg/kg**	**0 of 5**	**0**	**0.0**								< 2			
Aliphatics >C12-16	**58800**	**mg/kg**	**0 of 5**	**0**	**0.0**								< 3			
Aliphatics >C16-21	**648000**	**mg/kg**	**0 of 5**	**0**	**0.0**								< 3			
Aliphatics >C21-35	**648000**	**mg/kg**	**1 of 5**	**0**	**151.0**								< 10			
Aliphatics >C5-35	**None**	**mg/kg**	**1 of 5**	**0**	**151.0**								< 21			
Aromatics >C5-7	**27**	**mg/kg**	**0 of 5**	**0**	**0.0**								< 0.01			
Aromatics >C7-8	**56294**	**mg/kg**	**0 of 5**	**0**	**0.0**								< 0.05			
Aromatics >C8-10	**3460**	**mg/kg**	**0 of 5**	**0**	**0.0**								< 2			
Aromatics >C10-12	**16200**	**mg/kg**	**0 of 5**	**0**	**0.0**								< 2			
Aromatics >C12-16	**36200**	**mg/kg**	**0 of 5**	**0**	**0.0**								< 2			
Aromatics >C16-21	**26600**	**mg/kg**	**2 of 5**	**0**	**27.0**								< 3			
Aromatics >C21-35	**28400**	**mg/kg**	**2 of 5**	**0**	**367.0**								< 10			
Aromatics >C5-35	**None**	**mg/kg**	**2 of 5**	**0**	**394.0**								< 21			

ID Manchester - Christine Bolton (cbolton@tetratech.com) 01302 021214 3:30 PM 9.1.19 246.72

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Commercial (1% SOM)

Soil concentration exceeds GAC 100

Contaminant Name	GAC	Test Units	Total > LOD	Total > GAC	Max	GEO-2015-CRH01	GEO-2015-CRH01	GEO-2015-CRH01	GEO-2015-CRH02	GEO-2015-CRH03	GEO-2015-TP01	GEO-2015-TP02	GEO-2015-TP03	GEO-2015-TP04	GEO-2015-TP05
						384591.66	384592.36	384592.36	348630.83	384600.92	384599.67	384586.51	384608.06	384585.8	384612.57
						397462.97	397423.86	397423.86	397417.52	397382.43	397413.11	397390.56	397404.11	397381.42	397393.36
						34.29	35	35	34.62	38.16	34.76	35.86	34.57	35.97	36.83
						1.00	1.00	2.00	1.00	3.00	0.30	0.50	0.70	0.20	2.00
						33.29	34.00	33.00	33.62	35.16	34.46	35.36	33.87	35.77	34.83
						42193	42193	42193	42193	42193	42193	42193	42193	42193	42193
						Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015
						MG	MG	MG	MG	MG	MG	MG	MG	MG	MG
Asbestos (Presence of)	**Presence**	**---**	**0 of 51**	**0**	**0.0**		None		None	None	Amosite	Chrysotile	None	None	None
Asbestos Analysts Comments	**None**	**---**	**0 of 51**	**2**	**0.0**		na		na	na	Fibre Bundles	Fibre Bundles	na	na	na
Asbestos quantification	**None**	**%**	**3 of 8**	**0**	**0.2**						<0.001	<0.001			
pH	**None**	**pH Units**	**47 of 47**	**0**	**11.7**		8.0			8.6		8.5	8.9	7.5	8.9
Cyanide	**16200**	**mg/kg**	**25 of 47**	**0**	**11.0**		<0.5			<0.5		<0.5	<0.5	<0.5	<0.5
Antimony	**7350**	**mg/kg**	**26 of 30**	**0**	**260.0**										
Arsenic	**635**	**mg/kg**	**48 of 49**	**0**	**87.0**		13.3			5.9	16.5	10.4	2.9	40.4	2.5
Barium	**22100**	**mg/kg**	**19 of 19**	**0**	**578.0**		100.0			351.0	105.0	120.0	38.0	148.0	59.0
Beryllium	**11.7**	**mg/kg**	**47 of 49**	**0**	**2.1**		1.0			1.0	0.8	0.9	0.7	1.1	0.7
Cadmium	**190**	**mg/kg**	**39 of 49**	**0**	**1.2**		<0.1			<0.1	0.4	0.8	<0.1	0.4	<0.1
Chromium	**8570**	**mg/kg**	**49 of 49**	**0**	**210.0**		43.6			49.2	34.2	15.5	10.4	18.0	47.5
Chromium - Hexavalent	**49**	**mg/kg**	**1 of 47**	**0**	**0.3**		<0.3			<0.3		<0.3	<0.3	<0.3	<0.3
Copper	**68300**	**mg/kg**	**48 of 49**	**0**	**440.0**		37.0			24.0	49.0	44.0	11.0	52.0	14.0
Lead	**2300**	**mg/kg**	**48 of 49**	**1**	**2400.0**		78.0			17.0	139.0	83.0	16.0	110.0	24.0
Mercury	**289**	**mg/kg**	**37 of 49**	**0**	**1.6**		0.6			<0.1	0.5	0.2	<0.1	0.2	<0.1
Nickel	**983**	**mg/kg**	**49 of 49**	**0**	**34.0**		21.3			16.0	24.1	17.3	7.5	22.3	8.3
Selenium	**12261**	**mg/kg**	**13 of 49**	**0**	**2.0**		<1			<1	<1	<1	<1	2.0	<1
Vanadium	**6360**	**mg/kg**	**49 of 49**	**0**	**48.0**		25.0			29.0	23.0	22.0	16.0	27.0	21.0
Zinc	**730000**	**mg/kg**	**49 of 49**	**0**	**620.0**		57.0			28.0	98.0	79.0	25.0	100.0	30.0
Phenol	**26000**	**mg/kg**	**0 of 47**	**0**	**0.0**		<0.01			<0.01		<0.01	<0.01	<0.01	<0.01
Total Organic Carbon	**None**	**%**	**48 of 51**	**0**	**7.8**	1.5	2.7	4.4		5.0		NDP	0.3	7.8	0.6
Benzene	**26.5978811**	**mg/kg**	**0 of 39**	**0**	**0.0**	<0.005	<0.005	<0.005							
Ethylbenzene	**5706.00**	**mg/kg**	**0 of 39**	**0**	**0.0**	<0.005	<0.005	<0.005							
m,p xylenes	**5923**	**mg/kg**	**1 of 9**	**0**	**0.009**	<0.005	<0.005	0.009							
O-Xylene	**6603**	**mg/kg**	**0 of 9**	**0**	**0.0**	<0.005	<0.005	<0.005							
Toluene	**56294**	**mg/kg**	**0 of 39**	**0**	**0.0**	<0.005	<0.005	<0.005							
Xylene	**5923**	**mg/kg**	**0 of 30**	**0**	**0.0**										
PAH,Total	**None**	**mg/kg**	**38 of 49**	**0**	**120.0**		<0.6			17.7	7.0	42.3	2.0	21.0	5.0
Acenaphthene	**83700**	**mg/kg**	**26 of 53**	**0**	**4.6**	<0.05	<0.05	<0.05		0.2	<0.05	0.4	<0.05	0.2	<0.05
Acenaphthylene	**83200**	**mg/kg**	**20 of 53**	**0**	**1.1**	<0.03	<0.03	<0.03		0.2	0.0	0.2	<0.03	0.1	0.1
Dibenz-a-h-anthracene	**3.53**	**mg/kg**	**19 of 53**	**0**	**1.0**	<0.04	<0.04	<0.04		0.1	0.1	0.3	<0.04	0.2	<0.04
Anthracene	**523000**	**mg/kg**	**31 of 53**	**0**	**6.3**	<0.04	<0.04	<0.04		0.6	0.1	0.9	0.1	0.6	0.2
Benzo (g,h,i) perylene	**3930**	**mg/kg**	**34 of 53**	**0**	**7.3**	0.1	<0.04	<0.04		0.7	0.4	2.2	0.1	1.1	0.2
Benzo(a)anthracene	**167**	**mg/kg**	**39 of 53**	**0**	**11.0**	0.2	<0.06	<0.06		1.6	0.8	4.3	0.2	1.7	0.5
Benzo(a)pyrene	**35.2**	**mg/kg**	**36 of 53**	**0**	**12.0**	0.2	<0.04	<0.04		1.3	0.7	3.6	0.2	1.9	0.4
Benzo(b)fluoranthene	**44.3**	**mg/kg**	**39 of 53**	**0**	**12.0**	0.2	<0.05	<0.05		1.5	0.8	4.5	0.2	2.1	0.4
benzo(b,k)fluoranthene	**44.3**	**mg/kg**	**15 of 21**	**0**	**6.2**	0.3	<0.07	<0.07		2.0	1.1	6.2	0.2	2.9	0.6
Benzo(k)fluoranthene	**1170**	**mg/kg**	**35 of 53**	**0**	**6.9**	0.1	<0.02	<0.02		0.6	0.3	1.7	0.1	0.8	0.2
Chrysene	**346**	**mg/kg**	**40 of 53**	**0**	**9.3**	0.2	<0.02	<0.02		1.5	0.7	4.2	0.2	1.8	0.5
Dibenzofuran	**35.2**	**mg/kg**	**4 of 7**	**0**	**0.2**										
Fluoranthene	**22600**	**mg/kg**	**45 of 53**	**0**	**21.0**	0.3	<0.03	<0.03		2.9	1.1	7.1	0.4	3.9	0.9
Fluorene	**63000**	**mg/kg**	**25 of 53**	**0**	**3.7**	<0.04	<0.04	<0.04		0.3	<0.04	0.3	<0.04	0.1	<0.04
Indeno(1,2,3-cd)pyrene	**501**	**mg/kg**	**34 of 53**	**0**	**5.0**	0.1	<0.04	<0.04		0.7	0.4	2.1	0.1	1.1	0.2
Napthalene	**193**	**mg/kg**	**22 of 53**	**0**	**5.7**	<0.04	<0.04	<0.04		0.4	0.1	0.2	<0.04	0.1	<0.04
Phenanthrene	**21900**	**mg/kg**	**44 of 53**	**0**	**24.0**	0.2	<0.03	<0.03		2.4	0.6	3.6	0.3	2.0	0.6
Pyrene	**54200**	**mg/kg**	**44 of 53**	**0**	**21.0**	0.3	<0.03	<0.03		2.8	1.1	6.8	0.4	3.5	0.9
PCB-101 2,2',4,5,5' - Pentachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**	<0.005		<0.005							
PCB-118 2,3',4,4',5 - Pentachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**	<0.005		<0.005							
PCB-138 2,2',3,4,4',5' - Hexachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**	<0.005		<0.005							
PCB-153 2,2',4,4',5,5' - Hexachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**	<0.005		<0.005							
PCB-180 2,2',3,4,4',5,5' - Heptachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**	<0.005		<0.005							
PCB-52 2,2',5,5' - Tetrachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**	<0.005		<0.005							
Aliphatics & Aromatics >C5-35	**None**	**mg/kg**	**2 of 5**	**0**	**545.0**		<38								
Aliphatics >C5-6	**3190**	**mg/kg**	**0 of 5**	**0**	**0.0**		<0.1								
Aliphatics >C6-8	**7780**	**mg/kg**	**1 of 5**	**0**	**0.1**		<0.1								
Aliphatics >C8-10	**2000**	**mg/kg**	**0 of 5**	**0**	**0.0**		<0.1								
Aliphatics >C10-12	**9690**	**mg/kg**	**0 of 5**	**0**	**0.0**		<0.2								
Aliphatics >C12-16	**58800**	**mg/kg**	**0 of 5**	**0**	**0.0**		<4								
Aliphatics >C16-21	**648000**	**mg/kg**	**0 of 5**	**0**	**0.0**		<7								
Aliphatics >C21-35	**648000**	**mg/kg**	**1 of 5**	**0**	**151.0**		<7								
Aliphatics >C5-35	**None**	**mg/kg**	**1 of 5**	**0**	**151.0**		<19								
Aromatics >C5-7	**27**	**mg/kg**	**0 of 5**	**0**	**0.0**		<0.1								
Aromatics >C7-8	**56294**	**mg/kg**	**0 of 5**	**0**	**0.0**		<0.1								
Aromatics >C8-10	**3460**	**mg/kg**	**0 of 5**	**0**	**0.0**		<0.1								
Aromatics >C10-12	**16200**	**mg/kg**	**0 of 5**	**0**	**0.0**		<0.2								
Aromatics >C12-16	**36200**	**mg/kg**	**0 of 5**	**0**	**0.0**		<4								
Aromatics >C16-21	**26600**	**mg/kg**	**2 of 5**	**0**	**27.0**		<7								
Aromatics >C21-35	**28400**	**mg/kg**	**2 of 5**	**0**	**367.0**		<7								
Aromatics >C5-35	**None**	**mg/kg**	**2 of 5**	**0**	**394.0**		<19								

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Commercial (1% SOM)

Soil concentration exceeds GAC 100

Contaminant Name	GAC	Test Units	Total > LOD	Total > GAC	Max	GEO-2015-TP05	GEO-2015-TP06	GEO-2015-TP07	GEO-2015-TP08	GEO-2015-TP08	GEO-2015-WLS01	GEO-2015-WLS02	GEO-2015-WLS02	GEO-2015-WLS03	GEO-2015-WLS03
						384612.57	384630.44	384622.03	384582.1	384582.1	384649.9	384604.43	384604.43	384588.26	384588.26
						397393.36	397409.03	397403.88	397369.81	397369.81	397470.74	397437.32	397437.32	397411.22	397411.22
						36.83	35.44	35.27	35.61	35.61	33.7	34.36	34.36	37.76	37.76
						1.40	0.30	1.80	0.80	0.30	1.00	2.00	1.00	3.50	2.50
						35.43	35.14	33.47	34.81	35.31	32.70	32.36	33.36	34.26	35.26
						42193	42193	42193	42193	42193	42193	42193	42193	42193	42193
						Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015
						MG	MG	MG	MG	MG	MG	MG	MG	MG	MG
Asbestos (Presence of)	**Presence**	**---**	**0 of 51**	**0**	**0.0**	None	Chrysotile	None	None	None	None	None		None	None
Asbestos Analysts Comments	**None**	**---**	**0 of 51**	**2**	**0.0**	na	Fibre Bundles	na	na	na	na	na		na	na
Asbestos quantification	**None**	**%**	**3 of 8**	**0**	**0.2**		<0.001								
pH	**None**	**pH Units**	**47 of 47**	**0**	**11.7**	8.6	8.1	8.8			10.2	8.8		8.5	8.8
Cyanide	**16200**	**mg/kg**	**25 of 47**	**0**	**11.0**	<0.5	1.9	<0.5			<0.5	<0.5		<0.5	0.6
Antimony	**7350**	**mg/kg**	**26 of 30**	**0**	**260.0**										
Arsenic	**635**	**mg/kg**	**48 of 49**	**0**	**87.0**	53.3	19.5	2.9	5.4		4.7	10.5		8.1	2.2
Barium	**22100**	**mg/kg**	**19 of 19**	**0**	**578.0**	271.0	184.0	43.0	189.0		50.0	136.0		84.0	70.0
Beryllium	**11.7**	**mg/kg**	**47 of 49**	**0**	**2.1**	2.1	1.3	0.7	1.2		0.6	1.3		0.9	<0.5
Cadmium	**190**	**mg/kg**	**39 of 49**	**0**	**1.2**	0.4	0.7	<0.1	<0.1		<0.1	0.2		0.1	0.2
Chromium	**8570**	**mg/kg**	**49 of 49**	**0**	**210.0**	45.8	31.2	11.8	47.8		52.8	11.1		19.0	57.3
Chromium - Hexavalent	**49**	**mg/kg**	**1 of 47**	**0**	**0.3**	<0.3	<0.3	0.3			<0.3	<0.3		<0.3	<0.3
Copper	**68300**	**mg/kg**	**48 of 49**	**0**	**440.0**	57.0	80.0	11.0	28.0		14.0	82.0		37.0	21.0
Lead	**2300**	**mg/kg**	**48 of 49**	**1**	**2400.0**	32.0	289.0	15.0	12.0		11.0	190.0		56.0	55.0
Mercury	**289**	**mg/kg**	**37 of 49**	**0**	**1.6**	<0.1	0.8	<0.1	<0.1		<0.1	0.2		0.2	1.0
Nickel	**983**	**mg/kg**	**49 of 49**	**0**	**34.0**	32.3	22.9	9.6	33.4		19.6	15.5		22.9	6.6
Selenium	**12261**	**mg/kg**	**13 of 49**	**0**	**2.0**	1.0	<1	<1	<1		<1	<1		<1	<1
Vanadium	**6360**	**mg/kg**	**49 of 49**	**0**	**48.0**	48.0	28.0	17.0	31.0		19.0	18.0		21.0	11.0
Zinc	**730000**	**mg/kg**	**49 of 49**	**0**	**620.0**	55.0	186.0	28.0	76.0		37.0	56.0		62.0	42.0
Phenol	**26000**	**mg/kg**	**0 of 47**	**0**	**0.0**	<0.01	<0.01	<0.01			<0.01	<0.01		<0.01	<0.01
Total Organic Carbon	**None**	**%**	**48 of 51**	**0**	**7.8**	7.4	NDP	0.3			0.8	3.2	0.1	1.1	0.3
Benzene	**26.5978811**	**mg/kg**	**0 of 39**	**0**	**0.0**	<0.005							<0.005	<0.005	<0.005
Ethylbenzene	**5706.00**	**mg/kg**	**0 of 39**	**0**	**0.0**	<0.003							<0.005	<0.005	<0.003
m,p xylenes	**5923**	**mg/kg**	**1 of 9**	**0**	**0.009**	<0.004							<0.005	<0.005	<0.004
O-Xylene	**6603**	**mg/kg**	**0 of 9**	**0**	**0.0**	<0.004							<0.005	<0.005	<0.004
Toluene	**56294**	**mg/kg**	**0 of 39**	**0**	**0.0**	<0.003							<0.005	<0.005	<0.003
Xylene	**5923**	**mg/kg**	**0 of 30**	**0**	**0.0**										
PAH,Total	**None**	**mg/kg**	**38 of 49**	**0**	**120.0**	59.4	18.9	25.9	<0.6		<0.6	40.3		<0.6	49.9
Acenaphthene	**83700**	**mg/kg**	**26 of 53**	**0**	**4.6**	2.5	0.2	0.3	<0.05		<0.05	0.3	<0.05	<0.05	1.6
Acenaphthylene	**83200**	**mg/kg**	**20 of 53**	**0**	**1.1**	0.8	0.1	0.4	<0.03		<0.03	0.2	<0.03	<0.03	<0.03
Dibenz-a-h-anthracene	**3.53**	**mg/kg**	**19 of 53**	**0**	**1.0**	0.2	0.2	0.2	<0.04		<0.04	0.3	<0.04	<0.04	0.4
Anthracene	**523000**	**mg/kg**	**31 of 53**	**0**	**6.3**	2.6	0.4	1.0	<0.04		<0.04	1.1	<0.04	<0.04	1.9
Benzo (g,h,i) perylene	**3930**	**mg/kg**	**34 of 53**	**0**	**7.3**	1.1	1.0	0.9	<0.04		<0.04	1.8	<0.04	<0.04	1.7
Benzo(a)anthracene	**167**	**mg/kg**	**39 of 53**	**0**	**11.0**	4.1	1.5	2.3	<0.06		<0.06	4.2	<0.06	0.1	4.1
Benzo(a)pyrene	**35.2**	**mg/kg**	**36 of 53**	**0**	**12.0**	2.3	1.7	1.7	<0.04		<0.04	3.1	<0.04	0.1	3.0
Benzo(b)fluoranthene	**44.3**	**mg/kg**	**39 of 53**	**0**	**12.0**	2.4	1.9	1.8	<0.05		<0.05	3.9	<0.05	0.1	4.1
benzo(b,k)fluoranthene	**44.3**	**mg/kg**	**15 of 21**	**0**	**6.2**	3.4	2.7	2.5	<0.07		<0.07	5.4	<0.07	0.1	5.7
Benzo(k)fluoranthene	**1170**	**mg/kg**	**35 of 53**	**0**	**6.9**	1.0	0.8	0.7	<0.02		<0.02	1.5	<0.02	0.0	1.6
Chrysene	**346**	**mg/kg**	**40 of 53**	**0**	**9.3**	3.0	1.7	1.9	0.0		<0.02	3.6	<0.02	0.1	3.7
Dibenzofuran	**35.2**	**mg/kg**	**4 of 7**	**0**	**0.2**	0.0					<0.01	0.1			0.0
Fluoranthene	**22600**	**mg/kg**	**45 of 53**	**0**	**21.0**	9.7	3.2	4.1	0.0		<0.03	7.2	0.0	0.1	9.9
Fluorene	**63000**	**mg/kg**	**25 of 53**	**0**	**3.7**	2.2	0.1	0.6	<0.04		<0.04	0.3	<0.04	<0.04	0.8
Indeno(1,2,3-cd)pyrene	**501**	**mg/kg**	**34 of 53**	**0**	**5.0**	1.1	1.0	0.8	<0.04		<0.04	1.9	<0.04	<0.04	2.0
Napthalene	**193**	**mg/kg**	**22 of 53**	**0**	**5.7**	1.5	0.2	0.4	<0.04		<0.04	0.2	<0.04	<0.04	0.1
Phenanthrene	**21900**	**mg/kg**	**44 of 53**	**0**	**24.0**	16.0	1.9	4.6	0.0		<0.03	4.1	0.0	0.1	7.8
Pyrene	**54200**	**mg/kg**	**44 of 53**	**0**	**21.0**	8.8	2.9	4.2	0.0		<0.03	6.7	0.0	0.1	7.2
PCB-101 2,2',4,5,5' - Pentachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**						<0.005		<0.005		
PCB-118 2,3',4,4',5 - Pentachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**						<0.005		<0.005		
PCB-138 2,2',3,4,4',5' - Hexachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**						<0.005		<0.005		
PCB-153 2,2',4,4',5,5' - Hexachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**						<0.005		<0.005		
PCB-180 2,2',3,4,4',5,5' - Heptachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**						<0.005		<0.005		
PCB-52 2,2',5,5' - Tetrachlorobiphenyl	**None**	**mg/kg**	**0 of 5**	**0**	**0.0**						<0.005		<0.005		
Aliphatics & Aromatics >C5-35	**None**	**mg/kg**	**2 of 5**	**0**	**545.0**	545.0								<38	76.0
Aliphatics >C5-6	**3190**	**mg/kg**	**0 of 5**	**0**	**0.0**	<0.1								<0.1	<0.1
Aliphatics >C6-8	**7780**	**mg/kg**	**1 of 5**	**0**	**0.1**	<0.1								<0.1	<0.1
Aliphatics >C8-10	**2000**	**mg/kg**	**0 of 5**	**0**	**0.0**	<0.1								<0.1	<0.1
Aliphatics >C10-12	**9690**	**mg/kg**	**0 of 5**	**0**	**0.0**	<0.2								<0.2	<0.2
Aliphatics >C12-16	**58800**	**mg/kg**	**0 of 5**	**0**	**0.0**	<4								<4	<4
Aliphatics >C16-21	**648000**	**mg/kg**	**0 of 5**	**0**	**0.0**	<7								<7	<7
Aliphatics >C21-35	**648000**	**mg/kg**	**1 of 5**	**0**	**151.0**	151.0								<7	<7
Aliphatics >C5-35	**None**	**mg/kg**	**1 of 5**	**0**	**151.0**	151.0								<19	<19
Aromatics >C5-7	**27**	**mg/kg**	**0 of 5**	**0**	**0.0**	<0.1								<0.1	<0.1
Aromatics >C7-8	**56294**	**mg/kg**	**0 of 5**	**0**	**0.0**	<0.1								<0.1	<0.1
Aromatics >C8-10	**3460**	**mg/kg**	**0 of 5**	**0**	**0.0**	<0.1								<0.1	<0.1
Aromatics >C10-12	**16200**	**mg/kg**	**0 of 5**	**0**	**0.0**	<0.2								<0.2	<0.2
Aromatics >C12-16	**36200**	**mg/kg**	**0 of 5**	**0**	**0.0**	<4								<4	<4
Aromatics >C16-21	**26600**	**mg/kg**	**2 of 5**	**0**	**27.0**	27.0								<7	20.0
Aromatics >C21-35	**28400**	**mg/kg**	**2 of 5**	**0**	**367.0**	367.0								<7	56.0
Aromatics >C5-35	**None**	**mg/kg**	**2 of 5**	**0**	**394.0**	394.0								<19	76.0

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Commercial (1% SOM)

Soil concentration exceeds GAC 100
Soil concentration exceeds theoretical NAPL saturation limit 20

Hole Ref	CE-2015-CC/WS3	CE-2015-CC/WS2	GEO-2015-CRH01	GEO-2015-TP03	GEO-2015-WLS03	GEO-2015-WLS03	GEO-2015-WLS02	GEO-2015-WLS01	GEO-2015-TP02	GEO-2015-CRH01	GEO-2015-CRH01B	GEO-2015-TP07
Easting	384606	384607	384591.66	384608.06	384588.26	384588.26	384604.43	384649.9	384586.51	384591.66	384592.36	384622.03
Northing	397461	397436	397462.97	397404.11	397411.22	397411.22	397437.32	397470.74	397390.56	397462.97	397423.86	397403.88
Elevation (mOD)	30.13	27.87	34.29	34.57	37.76	37.76	34.36	33.7	35.86	34.29	35	35.27
Sample Top (m)	0.56	0.68	0.20	0.70	3.50	2.50	2.00	1.00	0.50	0.50	1.00	1.80
Sample Elevation (mOD)	29.57	27.19	34.09	33.87	34.26	35.26	32.36	32.70	35.36	33.79	34.00	33.47
Sample Date	42080	42080	42193	42193	42193	42193	42193	42193	42193	42193	42193	42193
Investigation	Constructive Evaluation	Constructive Evaluation	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015
Geology	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG

Contaminant Name	GAC	Test Units	Total > LOD	Total > GAC	Max													
1,1,1,2-Tetrachloroethane	108	mg/kg	0 of 2	0	0.0						<0.005							
1,1,1-Trichloroethane	660	mg/kg	0 of 2	0	0.0						<0.005							
1,1,2,2-Tetrachloroethane	274	mg/kg	0 of 2	0	0.0						<0.003							
1,1,2-Trichloroethane	89.1	mg/kg	0 of 2	0	0.0						<0.004							
1,1-Dichloroethane	263	mg/kg	0 of 2	0	0.0						<0.006							
1,1-Dichloroethene	24.3	mg/kg	0 of 2	0	0.0						<0.006							
1,1-Dichloropropene	27	mg/kg	0 of 2	0	0.0						<0.003							
1,2,3 Trichlorobenzene	102	mg/kg	0 of 2	0	0.0						<0.007							
1,2,3-Trichloropropane	26.5978811	mg/kg	0 of 2	0	0.0						<0.004							
1,2,4-Trichlorobenzene	215	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
1,2,4-Trimethylbenzene	39.4	mg/kg	0 of 2	0	0.0						<0.006							
1,2-Dibromo-3-Chloropropane	None	mg/kg	0 of 2	0	0.0						<0.004							
1,2-Dibromoethane	1.96	mg/kg	0 of 2	0	0.0						<0.003							
1,2-Dichlorobenzene	2020	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
1,2-Dichloroethane	0.671	mg/kg	0 of 2	0	0.0						<0.005							
1,2-Dichloropropane	3.13	mg/kg	0 of 2	0	0.0						<0.004							
1,3,5-Trimethylbenzene	39.4	mg/kg	0 of 2	0	0.0						<0.003							
1,3-Dichlorobenzene	29.9	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
1,3-Dichloropropane	None	mg/kg	0 of 2	0	0.0						<0.004							
1,4-Dichlorobenzene	4220	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
2,2-Dichloropropane	None	mg/kg	0 of 2	0	0.0						<0.004							
2,4,5-Trichlorophenol	3850	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
2,4,6-Trichlorophenol	3850	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
2,4-Dichlorophenol	3420	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
2,4-Dimethylphenol	15700	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
2,4-Dinitrotoluene	3720	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
2,6-Dinitrotoluene	1850	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
2-Chloronaphthalene	370	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
2-Chlorophenol	3500	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
2-Chlorotoluene	55.6	mg/kg	0 of 2	0	0.0						<0.003							
2-Methylnaphthalene	193	mg/kg	3 of 4	0	0.1						0.05	0.06	<0.01					
2-Methylphenol	160000	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
2-Nitroaniline	None	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
2-Nitrophenol	3500	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
3-Nitroaniline	None	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
4-Bromophenyl Phenyl Ether	26.5978811	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
4-Chloro-3-Methylphenol	None	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
4-Chlorophenyl Phenyl Ether	None	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
4-Chlorotoluene	55.6	mg/kg	0 of 2	0	0.0						<0.003							
4-Isopropyltoluene	16200	mg/kg	0 of 2	0	0.0						<0.004							
4-Methylphenol	162000	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
4-Nitroaniline	None	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
4-Nitrophenol	None	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Azobenzene	None	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Bis(2-chloroethoxy)methane	None	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Bis(2-chloroethyl)ether	0.671	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Bis(2-chloroisopropyl)ether	None	mg/kg	0 of 0	0	0.0													
Bis(2-ethylhexyl)phthalate	85163	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Bromobenzene	91.5	mg/kg	0 of 2	0	0.0						<0.002							
Bromochloromethane	None	mg/kg	0 of 2	0	0.0						<0.004							
Bromodichloromethane	1.96	mg/kg	0 of 2	0	0.0						<0.004							
Bromomethane	714	mg/kg	0 of 2	0	0.0						<0.001							
Butylbenzylphthalate	940280	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Carbazole	None	mg/kg	3 of 4	0	0.1						0.06	0.12	<0.01					
Chlorobenzene	55.6	mg/kg	0 of 2	0	0.0						<0.004							
Chloroethane	904	mg/kg	0 of 2	0	0.0						<0.006							
Chloroethene	0.0594	mg/kg	0 of 2	0	0.0						<0.002							
Chloroform	99.1	mg/kg	0 of 2	0	0.0						<0.005							
Chloromethane	0.956	mg/kg	0 of 2	0	0.0						<0.003							
cis-1,2-Dichloroethene	13.6	mg/kg	0 of 2	0	0.0						<0.007							
cis1,3-Dichloropropene	None	mg/kg	0 of 2	0	0.0						<0.004							
Dibromochloromethane	None	mg/kg	0 of 2	0	0.0						<0.005							
Dibromomethane	1.96	mg/kg	0 of 2	0	0.0						<0.004							
Dichlorodifluoromethane	None	mg/kg	0 of 2	0	0.0						<0.002							
Dichloromethane	257	mg/kg	0 of 2	0	0.0						<0.007							
Diethylphthalate	144000	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Dimethylphthalate	None	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Di-N-Butyl Phthalate	15400	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Di-N-Octyl Phthalate	89100	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Hexachlorobenzene (HCB)	104	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Hexachlorobutadiene (HCBD)	30.7	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Hexachlorocyclopentadiene	None	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Hexachloroethane	20.9	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Isophorone	None	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Isopropylbenzene	1300	mg/kg	0 of 2	0	0.0						<0.003							
Methyl tert-butyl ether (MTBE)	7480	mg/kg	0 of 9	0	0.0		<0.005			<0.005	<0.006						<0.005	
n-Butylbenzene	26.5978811	mg/kg	0 of 2	0	0.0						<0.004							
Nitrobenzene	26.5978811	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
N-Nitroso-Di-N-Propylamine	None	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
n-propylbenzene	3860	mg/kg	0 of 2	0	0.0						<0.004							
Pentachlorophenol (PCP)	399	mg/kg	0 of 4	0	0.0						<0.01	<0.01	<0.01					
Phenol	26000	mg/kg	0 of 17	0	0.0		< 2	< 2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sec-Butylbenzene	26.5978811	mg/kg	0 of 2	0	0.0						<0.004							
Styrene	3170	mg/kg	0 of 2	0	0.0						<0.003							
Tert-Butylbenzene	26.5978811	mg/kg	0 of 2	0	0.0						<0.005							
Tetrachloroethene	18.6	mg/kg	0 of 2	0	0.0						<0.003							
Tetrachloromethane (Carbon Tetra Chloride)	2.87	mg/kg	0 of 2	0	0.0						<0.004							
trans-1,2-Dichloroethene	20.7	mg/kg	0 of 2	0	0.0						<0.003							
trans-1,3-Dichloropropene	None	mg/kg	0 of 2	0	0.0						<0.003							
Tribromomethane	None	mg/kg	0 of 2	0	0.0						<0.004							
Trichloroethene	1.23	mg/kg	0 of 2	0	0.0						<0.005							
Trichlorofluoromethane	1.96	mg/kg	0 of 2	0	0.0						<0.003							

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Commercial (1% SOM)

Soil concentration exceeds GAC 100
Soil concentration exceeds theoretical NAPL saturation limit 20

Contaminant Name	GAC	Test Units	Total > LOD	Total > GAC	Max	GEO-2015-TP06	GEO-2015-TP05	GEO-2015-TP05	GEO-2015-CRH03	GEO-2015-TP04	GEO-2015-CRH01B	GEO-2015-WLS02	GEO-2015-CRH01	GEO-2015-CRH01
						384630.44	384612.57	384612.57	384600.92	384585.8	384592.36	384604.43	384591.66	384591.66
						397409.03	397393.36	397393.36	397382.43	397381.42	397423.86	397437.32	397462.97	397462.97
						35.44	36.83	36.83	38.16	35.97	35	34.36	34.29	34.29
						0.30	2.00	1.40	3.00	0.20	2.00	1.00	2.00	1.00
						35.14	34.83	35.43	35.16	35.77	33.00	33.36	32.29	33.29
						42193	42193	42193	42193	42193	42193	42193	42193	42193
						Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015	Geotechnics 2015
						MG	MG	MG	MG	MG	MG	MG	MG	MG
1,1,1,2-Tetrachloroethane	108	mg/kg	0 of 2	0	0.0			<0.005						
1,1,1-Trichloroethane	660	mg/kg	0 of 2	0	0.0			<0.005						
1,1,2,2-Tetrachloroethane	274	mg/kg	0 of 2	0	0.0			<0.003						
1,1,2-Trichloroethane	89.1	mg/kg	0 of 2	0	0.0			<0.004						
1,1-Dichloroethane	263	mg/kg	0 of 2	0	0.0			<0.006						
1,1-Dichloroethene	24.3	mg/kg	0 of 2	0	0.0			<0.006						
1,1-Dichloropropene	27	mg/kg	0 of 2	0	0.0			<0.003						
1,2,3 Trichlorobenzene	102	mg/kg	0 of 2	0	0.0			<0.007						
1,2,3-Trichloropropane	26.5978811	mg/kg	0 of 2	0	0.0			<0.004						
1,2,4-Trichlorobenzene	215	mg/kg	0 of 4	0	0.0			<0.01						
1,2,4-Trimethylbenzene	39.4	mg/kg	0 of 2	0	0.0			<0.006						
1,2-Dibromo-3-Chloropropane	None	mg/kg	0 of 2	0	0.0			<0.004						
1,2-Dibromoethane	1.96	mg/kg	0 of 2	0	0.0			<0.003						
1,2-Dichlorobenzene	2020	mg/kg	0 of 4	0	0.0			<0.01						
1,2-Dichloroethane	0.671	mg/kg	0 of 2	0	0.0			<0.005						
1,2-Dichloropropane	3.13	mg/kg	0 of 2	0	0.0			<0.004						
1,3,5-Trimethylbenzene	39.4	mg/kg	0 of 2	0	0.0			<0.003						
1,3-Dichlorobenzene	29.9	mg/kg	0 of 4	0	0.0			<0.01						
1,3-Dichloropropane	None	mg/kg	0 of 2	0	0.0			<0.004						
1,4-Dichlorobenzene	4220	mg/kg	0 of 4	0	0.0			<0.01						
2,2-Dichloropropane	None	mg/kg	0 of 2	0	0.0			<0.004						
2,4,5-Trichlorophenol	3850	mg/kg	0 of 4	0	0.0			<0.01						
2,4,6-Trichlorophenol	3850	mg/kg	0 of 4	0	0.0			<0.01						
2,4-Dichlorophenol	3420	mg/kg	0 of 4	0	0.0			<0.01						
2,4-Dimethylphenol	15700	mg/kg	0 of 4	0	0.0			<0.01						
2,4-Dinitrotoluene	3720	mg/kg	0 of 4	0	0.0			<0.01						
2,6-Dinitrotoluene	1850	mg/kg	0 of 4	0	0.0			<0.01						
2-Chloronaphthalene	370	mg/kg	0 of 4	0	0.0			<0.01						
2-Chlorophenol	3500	mg/kg	0 of 4	0	0.0			<0.01						
2-Chlorotoluene	55.6	mg/kg	0 of 2	0	0.0			<0.003						
2-Methylnaphthalene	193	mg/kg	3 of 4	0	0.1			0.05						
2-Methylphenol	160000	mg/kg	0 of 4	0	0.0			<0.01						
2-Nitroaniline	None	mg/kg	0 of 4	0	0.0			<0.01						
2-Nitrophenol	3500	mg/kg	0 of 4	0	0.0			<0.01						
3-Nitroaniline	None	mg/kg	0 of 4	0	0.0			<0.01						
4-Bromophenyl Phenyl Ether	26.5978811	mg/kg	0 of 4	0	0.0			<0.01						
4-Chloro-3-Methylphenol	None	mg/kg	0 of 4	0	0.0			<0.01						
4-Chlorophenyl Phenyl Ether	None	mg/kg	0 of 4	0	0.0			<0.01						
4-Chlorotoluene	55.6	mg/kg	0 of 2	0	0.0			<0.003						
4-Isopropyltoluene	16200	mg/kg	0 of 2	0	0.0			<0.004						
4-Methylphenol	162000	mg/kg	0 of 4	0	0.0			<0.01						
4-Nitroaniline	None	mg/kg	0 of 4	0	0.0			<0.01						
4-Nitrophenol	None	mg/kg	0 of 4	0	0.0			<0.01						
Azobenzene	None	mg/kg	0 of 4	0	0.0			<0.01						
Bis(2-chloroethoxy)methane	None	mg/kg	0 of 4	0	0.0			<0.01						
Bis(2-chloroethyl)ether	0.671	mg/kg	0 of 4	0	0.0			<0.01						
Bis(2-chloroisopropyl)ether	None	mg/kg	0 of 0	0	0.0									
Bis(2-ethylhexyl)phthalate	85163	mg/kg	0 of 4	0	0.0			<0.01						
Bromobenzene	91.5	mg/kg	0 of 2	0	0.0			<0.002						
Bromochloromethane	None	mg/kg	0 of 2	0	0.0			<0.004						
Bromodichloromethane	1.96	mg/kg	0 of 2	0	0.0			<0.004						
Bromomethane	714	mg/kg	0 of 2	0	0.0			<0.001						
Butylbenzylphthalate	940280	mg/kg	0 of 4	0	0.0			<0.01						
Carbazole	None	mg/kg	3 of 4	0	0.1			0.052						
Chlorobenzene	55.6	mg/kg	0 of 2	0	0.0			<0.004						
Chloroethane	904	mg/kg	0 of 2	0	0.0			<0.006						
Chloroethene	0.0594	mg/kg	0 of 2	0	0.0			<0.002						
Chloroform	99.1	mg/kg	0 of 2	0	0.0			<0.005						
Chloromethane	0.956	mg/kg	0 of 2	0	0.0			<0.003						
cis-1,2-Dichloroethene	13.6	mg/kg	0 of 2	0	0.0			<0.007						
cis1,3-Dichloropropene	None	mg/kg	0 of 2	0	0.0			<0.004						
Dibromochloromethane	None	mg/kg	0 of 2	0	0.0			<0.005						
Dibromomethane	1.96	mg/kg	0 of 2	0	0.0			<0.004						
Dichlorodifluoromethane	None	mg/kg	0 of 2	0	0.0			<0.002						
Dichloromethane	257	mg/kg	0 of 2	0	0.0			<0.007						
Diethylphthalate	144000	mg/kg	0 of 4	0	0.0			<0.01						
Dimethylphthalate	None	mg/kg	0 of 4	0	0.0			<0.01						
Di-N-Butyl Phthalate	15400	mg/kg	0 of 4	0	0.0			<0.01						
Di-N-Octyl Phthalate	89100	mg/kg	0 of 4	0	0.0			<0.01						
Hexachlorobenzene (HCB)	104	mg/kg	0 of 4	0	0.0			<0.01						
Hexachlorobutadiene (HCBD)	30.7	mg/kg	0 of 4	0	0.0			<0.01						
Hexachlorocyclopentadiene	None	mg/kg	0 of 4	0	0.0			<0.01						
Hexachloroethane	20.9	mg/kg	0 of 4	0	0.0			<0.01						
Isophorone	None	mg/kg	0 of 4	0	0.0			<0.01						
Isopropylbenzene	1300	mg/kg	0 of 2	0	0.0			<0.003						
Methyl tert-butyl ether (MTBE)	7480	mg/kg	0 of 9	0	0.0			<0.006			<0.005	<0.005	<0.005	<0.005
n-Butylbenzene	26.5978811	mg/kg	0 of 2	0	0.0			<0.004						
Nitrobenzene	26.5978811	mg/kg	0 of 4	0	0.0			<0.01						
N-Nitroso-Di-N-Propylamine	None	mg/kg	0 of 4	0	0.0			<0.01						
n-propylbenzene	3860	mg/kg	0 of 2	0	0.0			<0.004						
Pentachlorophenol (PCP)	399	mg/kg	0 of 4	0	0.0			<0.01						
Phenol	26000	mg/kg	0 of 17	0	0.0	<0.01	<0.01	<0.01	<0.01	<0.01				
Sec-Butylbenzene	26.5978811	mg/kg	0 of 2	0	0.0			<0.004						
Styrene	3170	mg/kg	0 of 2	0	0.0			<0.003						
Tert-Butylbenzene	26.5978811	mg/kg	0 of 2	0	0.0			<0.005						
Tetrachloroethene	18.6	mg/kg	0 of 2	0	0.0			<0.003						
Tetrachloromethane (Carbon Tetra Chloride)	2.87	mg/kg	0 of 2	0	0.0			<0.004						
trans-1,2-Dichloroethene	20.7	mg/kg	0 of 2	0	0.0			<0.003						
trans-1,3-Dichloropropene	None	mg/kg	0 of 2	0	0.0			<0.003						
Tribromomethane	None	mg/kg	0 of 2	0	0.0			<0.004						
Trichloroethene	1.23	mg/kg	0 of 2	0	0.0			<0.005						
Trichlorofluoromethane	1.96	mg/kg	0 of 2	0	0.0			<0.003						

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Appendix D

Controlled Waters Risk Assessment

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GACs apply to CSM1 - Principal Aquifer and fresh water receptor

Shallow Groundwater concentration exceeds GAC	100
Limit of Detection Value exceeds GAC	**<0.1**

Contaminant Name	GAC	Source	LOD	Units	Total > LOD	Total > GAC	Min	Max		Hole Ref	BH001	BH004	BH005	BH007	BH011	BH013
										Easting	384566.052	384554.516	384655.497	384765.207	384726.701	384368.382
										Northing	397646.557	397582.476	397554.645	397596.049	397513.893	397549.44
										Sample Date	16/01/2020	17/01/2020	17/01/2020	17/01/2020	17/01/2020	16/01/2020
										Investigation	AEG 2019	AEG 2019	AEG 2019	AEG 2019	AEG 2019	AEG 2019
Metals																
Antimony, Dissolved	5	DWS	0.17	ug/l	6 of 6	0	0.18	0.53			0.25	0.18	0.23	0.18	0.28	0.53
Arsenic, Dissolved	10	EQS	0.16	ug/l	6 of 6	1	0.54	15			0.82	4.7	0.54	**15**	0.57	0.78
Beryllium, Dissolved			0.1	ug/l	2 of 6	0	0.2	0.5			< 0.1	< 0.1	0.2	< 0.1	0.5	< 0.1
Cadmium, Dissolved	0.00008	EQS	0.03	ug/l	3 of 6	3	0.04	0.38			**< 0.03**	**< 0.03**	**0.26**	**< 0.03**	**0.38**	**0.04**
Calcium, Dissolved			0.09	mg/l	6 of 6	0	11	140			43	140	11	83	130	140
Chromium, Dissolved	4.7	EQS	0.25	ug/l	4 of 6	1	0.32	9			0.63	< 0.25	< 0.25	0.32	1.1	**9**
Copper, Dissolved	1	EQS	0.4	ug/l	4 of 6	2	0.5	2.4			**2**	< 0.4	1	< 0.4	0.5	**2.4**
Lead, Dissolved	1.2	EQS	0.09	ug/l	6 of 6	1	0.12	3100			0.21	0.12	0.26	0.31	**3100**	0.33
Manganese, Dissolved	50	EQS	0.22	ug/l	6 of 6	6	52	2600			**780**	**1900**	**170**	**2600**	**210**	**52**
Mercury, Dissolved	1	DWS	0.01	ug/l	0 of 6	0					< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	4	EQS	0.5	ug/l	6 of 6	2	1	8.6			**4.3**	1	**8.6**	2.3	3.7	1.5
Selenium, Dissolved	10	DWS	0.25	ug/l	6 of 6	1	0.81	22			2.6	1.5	0.87	0.81	2.4	**22**
Tin, Dissolved			0.4	ug/l	0 of 5	0					< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	
Vanadium, Dissolved	20	EQS	0.6	ug/l	5 of 6	0	0.6	1.3			1.3	0.6	1	< 0.6	0.9	0.8
Zinc, Dissolved	12.3	EQS	1.3	ug/l	6 of 6	2	3.9	45			7.8	3.9	8.8	**13**	**45**	10
Inorganics																
pH	6 to 9	EQS		pH	6 of 6	0	4.8	7			6.7	6.7	6.9	6.8	**4.8**	7
Cyanide, Total	0.001	EQS	40	ug/l	2 of 6	2	78	1000			**< 40**	**< 40**	**< 40**	**< 40**	**1000**	**78**
Dissolved Organic Carbon			2	mg/l	2 of 6	0	2.3	2.6			< 2.0	2.3	< 2.0	< 2.0	< 2.0	2.6
Hardness			0.1	mg/l	6 of 6	0	39.6	420			170	420	39.6	246	349	405
Ammoniacal Nitrogen as N	0.3	EQS	0.015	mg/l	4 of 6	2	0.025	0.53			< 0.015	**0.53**	0.027	< 0.015	**0.31**	0.025
Chloride	250	EQS	0.1	mg/l	6 of 6	0	24	180			26	32	30	24	180	36
Petroleum Hydrocarbons																
Aliphatic C5-C6	15000	WHO	0.1	ug/l	2 of 6	0	2.1	2.7			< 0.1	2.7	2.1	< 0.1	< 0.1	< 0.1
Aliphatic C6-C8	15000	WHO	0.1	ug/l	0 of 6	0					< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C8-C10	300	WHO	0.1	ug/l	4 of 6	0	3.4	9.7			3.9	< 0.1	< 0.1	7.9	9.7	3.4
Aliphatic C10-C12	300	WHO	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C12-C16	300	WHO	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C16-C21			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C21-C35			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C35-C44			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C5-C35			10	ug/l	0 of 6	0					< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	10	WHO	0.1	ug/l	0 of 6	0					< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C7-C8	700	WHO	0.1	ug/l	0 of 6	0					< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C8-C10	300	WHO	0.1	ug/l	0 of 6	0					< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C10-C12	90	WHO	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C12-C16	90	WHO	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C16-C21	90	WHO	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C21-C35	90	WHO	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C35-C44			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C5-C35			10	ug/l	0 of 6	0					< 10	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro Total			10	ug/l	0 of 6	0					< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	EQS	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	74	EQS	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	20	EQS	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylene	30	EQS	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
PAHs																
Naphthalene	2	EQS	0.05	ug/l	3 of 6	1	0.12	4.9			< 0.05	**4.9**	< 0.05	0.42	0.12	< 0.05
Acenaphthylene			0.01	ug/l	2 of 6	0	0.02	0.09			< 0.01	0.09	< 0.01	0.02	< 0.01	< 0.01
Acenaphthene	2000	USEPA	0.01	ug/l	3 of 6	0	0.01	0.37			< 0.01	0.37	< 0.01	0.36	< 0.01	0.01
Fluorene			0.01	ug/l	3 of 6	0	0.01	0.27			0.01	0.27	< 0.01	0.15	< 0.01	< 0.01
Phenanthrene			0.01	ug/l	4 of 6	0	0.01	0.56			0.01	0.56	< 0.01	0.42	0.01	< 0.01
Anthracene	0.1	EQS	0.01	ug/l	2 of 6	0	0.07	0.08			< 0.01	0.08	< 0.01	0.07	< 0.01	< 0.01
Fluoranthene	0.0063	EQS	0.01	ug/l	2 of 6	2	0.09	0.1			**< 0.01**	**0.1**	**< 0.01**	**0.09**	**< 0.01**	**< 0.01**
Pyrene			0.01	ug/l	3 of 6	0	0.01	0.08			< 0.01	0.08	< 0.01	0.07	< 0.01	0.01
Benzo(a)anthracene			0.01	ug/l	0 of 6	0					< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene			0.01	ug/l	0 of 6	0					< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene			0.01	ug/l	0 of 6	0					< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene			0.01	ug/l	0 of 6	0					< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	0.00017	EQS	0.01	ug/l	0 of 6	0					**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**
Indeno(1,2,3-c,d)pyrene			0.01	ug/l	0 of 6	0					< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene			0.01	ug/l	0 of 6	0					< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(g,h,i)perylene			0.01	ug/l	0 of 6	0					< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PAH Total			0.2	ug/l	2 of 6	0	1.6	6.4			< 0.20	6.4	< 0.20	1.6	< 0.20	< 0.20
Phenols																
Phenols, Total			2	ug/l	0 of 6	0					< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
VOCs																
Dichlorodifluoromethane			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Chloromethane			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Vinyl Chloride	0.5	DWS	1	ug/l	0 of 6	0					**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**
Bromomethane			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Chloroethane			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Trichlorofluoromethane			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,1-dichloroethylene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Trans-1,2-dichloroethylene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,1-dichloroethane			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Cis-1,2-dichloroethylene			1	ug/l	1 of 6	0	1	1			< 1	< 1	< 1	1	< 1	< 1
2,2-dichloropropane			2	ug/l	0 of 6	0					< 2	< 2	< 2	< 2	< 2	< 2
Bromochloromethane			4	ug/l	0 of 6	0					< 4	< 4	< 4	< 4	< 4	< 4

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GACs apply to CSM1 - Principal Aquifer and fresh water receptor

Shallow Groundwater concentration exceeds GAC	100
Limit of Detection Value exceeds GAC	<0.1

Contaminant Name	GAC	Source	LOD	Units	Total > LOD	Total > GAC	Min	Max		Hole Ref	BH001	BH004	BH005	BH007	BH011	BH013
										Easting	384566.052	384554.516	384655.497	384765.207	384726.701	384368.382
										Northing	397646.557	397582.476	397554.645	397596.049	397513.893	397549.44
										Sample Date	16/01/2020	17/01/2020	17/01/2020	17/01/2020	17/01/2020	16/01/2020
										Investigation	AEG 2019	AEG 2019	AEG 2019	AEG 2019	AEG 2019	AEG 2019
Chloroform			1	ug/l	1 of 6	0	1	1			< 1	< 1	1	< 1	< 1	< 1
1,1,1-trichloroethane	100	EQS	1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,1-dichloropropene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Carbon tetrachloride			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Benzene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,2-dichloroethane	3	EQS	1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Trichloroethylene			1	ug/l	1 of 6	0	1	1			< 1	< 1	< 1	1	< 1	< 1
1,2-dichloropropane	40	WHO	1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Dibromomethane			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Bromodichloromethane	60	WHO	4	ug/l	0 of 6	0					< 4	< 4	< 4	< 4	< 4	< 4
cis-1,3-dichloropropene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Toluene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
trans-1,3-dichloropropene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-trichloroethane	400	EQS	1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethylene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,3-dichloropropane			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Dibromochloromethane	100	WHO	1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,2-dibromoethane	0.4	WHO	1	ug/l	0 of 6	0					**< 1**	< 1	**< 1**	**< 1**	**< 1**	**< 1**
Chlorobenzene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,1,1,2-tetrachloroethane			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Ethylbenzene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
m+p-Xylene			2	ug/l	0 of 6	0					< 2	< 2	< 2	< 2	< 2	< 2
o-Xylene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Styrene	50	EQS	1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	100	WHO	1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Isopropylbenzene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,1,2,2-tetrachloroethane	400	USEPA	1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Bromobenzene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-trichloropropane			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
n-propylbenzene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
2-chlorotoluene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,3,5-trimethylbenzene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
4-chlorotoluene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Tert-butylbenzene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-trimethylbenzene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
sec-butylbenzene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
p-isopropyltoluene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,3-dichlorobenzene	3000	USEPA	2	ug/l	0 of 6	0					< 2	< 2	< 2	< 2	< 2	< 2
1,4-dichlorobenzene	300	WHO	1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
n-butylbenzene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,2-dichlorobenzene	1000	WHO	1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,2-dibromo-3-chloropropane	1	WHO	1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-trichlorobenzene	70	USEPA	1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
Hexachlorobutadiene	0.6	WHO	1	ug/l	0 of 6	0					**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**
1,2,3-trichlorobenzene			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
MTBE			1	ug/l	0 of 6	0					< 1	< 1	< 1	< 1	< 1	< 1
SVOCs																
Phenol	7.7	EQS	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aniline			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorophenol	50	EQS	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzyl Alcohol			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Methylphenol			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bis(2-chloroisopropyl)ether			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
3&4-Methylphenol			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bis(2-chloroethoxy)methane			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dimethylphenol			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	70	USEPA	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chloro-3-methylphenol	40	EQS	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Methylnaphthalene			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorocyclopentadiene	50	USEPA	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chloronaphthalene			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Nitroaniline			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dinitrotoluene	100	USEPA	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
3-Nitroaniline			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Nitrophenol			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibenzofuran			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,3,4,6-Tetrachlorophenol			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Diethylphthalate			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorophenylphenylether			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Nitroaniline			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Diphenylamine			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Bromophenylphenylether			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobenzene	1	USEPA	1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bis(2-ethylhexyl)ester			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Pentachlorophenol	0.4	EQS	1	ug/l	0 of 6	0					**< 1.0**	**< 1.0**	**< 1.0**	**< 1.0**	**< 1.0**	**< 1.0**
Di-n-butylphthalate			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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GACs apply to CSM1 - Principal Aquifer and fresh water receptor

Shallow Groundwater concentration exceeds GAC	100
Limit of Detection Value exceeds GAC	<0.1

Contaminant Name	GAC	Source	LOD	Units	Total > LOD	Total > GAC	Min	Max		Hole Ref	BH001	BH004	BH005	BH007	BH011	BH013
										Easting	384566.052	384554.516	384655.497	384765.207	384726.701	384368.382
										Northing	397646.557	397582.476	397554.645	397596.049	397513.893	397549.44
										Sample Date	16/01/2020	17/01/2020	17/01/2020	17/01/2020	17/01/2020	16/01/2020
										Investigation	AEG 2019	AEG 2019	AEG 2019	AEG 2019	AEG 2019	AEG 2019
Butylbenzylphthalate			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bis(2-ethylhexyl)phthalate			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dinitrobenzene			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dimethylphthalate			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dinitrobenzene			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,3,5,6-Tetrachlorophenol			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Azobenzene			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Carbazole			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1-Methylnaphthalene			1	ug/l	0 of 6	0					< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Appendix E

Ground Gas Risk Assessment

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Water Depth (mbgl)	1.5	Water depth < top of piezometer (can be discounted)
Carbon Dioxide (%)	5.8	CO2 concentration >5% (extra consideration required)
Methane (%)	1.9	CH4 concentration >1% (extra consideration required)
GSV	0.006	Characteristic situation 1: GSV < 0.07
GSV	0.4	Characteristic situation 2: 0.07 > GSV < 0.7

Hole ID	Easting	Northing	Elevation (mOD)	Response zone top (mbgl)	Response zone base (mbgl)	Date	Geology	Gas Monitoring Round		Water Depth	Flow	Pressure	Carbon Dioxide Peak	Carbon Dioxide Steady	Methane Peak	Methane Steady	Carbon Monoxide	Hydrogen Sulphide	Methane Peak	Methane Steady	Oxygen Low Decline	Oxygen Steady	CO2 GSV	CH4 GSV
									Parameter	Water Depth	Flow	Pressure	Carbon Dioxide Peak	Carbon Dioxide Steady	Methane Peak	Methane Steady	Carbon Monoxide	Hydrogen Sulphide	Methane Peak	Methane Steady	Oxygen Low Decline	Oxygen Steady	CO2 GSV	CH4 GSV
									Units	mbgl	l/hr	mbar	% v/v	% v/v	% v/v	% v/v	ppm	ppm	% LEL	% LEL	%	%		
BH001	384566.1	397646.6	37.81	10	15.5	16/01/20	SS	1		9.50	0.0	997	0.2	0.2	<0.1	<0.1	<1.0	1	<2.0	<2.0	20.4	20.4	0	0
BH001	384566.1	397646.6	37.81	10	15.5	06/02/20	SS	2		9.73	0.0	1031	0.1	0.1	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.5	20.5	0	0
BH001	384566.1	397646.6	37.81	10	15.5	20/02/20	SS	3		9.75	0.0	1001	0.2	0.2	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1	20.4	20.4	0	0
BH001	384566.1	397646.6	37.81	10	15.5	06/03/20	SS	4		9.80	0.0	1001	0.3	0.1	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.2	20.8	0	0
BH002	384655.3	397617.6	33.27	0.5	2.5	21/01/20	MG	1		Dry	0.0	1000	0.1	0.1	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.7	20.7	0	0
BH002	384655.3	397617.6	33.27	0.5	2.5	06/02/20	MG	2		Dry	0.0	1030	0.2	0.2	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.1	20.1	0	0
BH002	384655.3	397617.6	33.27	0.5	2.5	20/02/20	MG	3		Dry	0.0	1001	0.2	0.1	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1	20.3	20.3	0	0
BH002	384655.3	397617.6	33.27	0.5	2.5	06/03/20	MG	4		Wet at Tip	0.0	1001	0.3	0.3	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.3	20.4	0	0
BH002	384655.3	397617.6	33.27	3.2	4	21/01/20	MG	1		Dry	0.0	1000	0.5	0.5	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.5	20.5	0	0
BH002	384655.3	397617.6	33.27	3.2	4	06/02/20	MG	2		Dry	0.0	1031	0.3	0.3	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.0	20.0	0	0
BH002	384655.3	397617.6	33.27	3.2	4	20/02/20	MG	3		Dry	0.0	1001	0.4	0.4	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1	20.0	20.1	0	0
BH002	384655.3	397617.6	33.27	3.2	4	06/03/20	MG	4		Wet at Tip	0.0	1001	0.2	0.1	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.2	20.2	0	0
BH004	384554.5	397582.5	34.22	11	14	21/01/20	SS	1		6.06	0.0	1000	0.3	0.3	<0.1	<0.1	<1.0	1	<2.0	<2.0	20.4	20.4	0	0
BH004	384554.5	397582.5	34.22	11	14	06/02/20	SS	2		6.15	0.0	1030	0.2	0.3	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.3	20.3	0	0
BH004	384554.5	397582.5	34.22	11	14	20/02/20	SS	3		6.20	0.0	1001	0.1	0.1	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1	20.6	20.6	0	0
BH004	384554.5	397582.5	34.22	11	14	06/03/20	SS	4		6.20	0.0	1001	0.2	0.1	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.5	20.5	0	0
BH004A	384553.6	397583.4	34.19	1	4	21/01/20	MG	1		Dry	0.0	999	1.3	1.3	<0.1	<0.1	<1.0	1	<2.0	<2.0	19.6	19.6	0	0
BH004A	384553.6	397583.4	34.19	1	4	06/02/20	MG	2		Dry	0.0	1029	0.4	0.4	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.1	20.1	0	0
BH004A	384553.6	397583.4	34.19	1	4	20/02/20	MG	3		Wet at Tip	0.0	1001	0.5	0.2	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1	20.3	20.3	0	0
BH004A	384553.6	397583.4	34.19	1	4	06/03/20	MG	4		Wet at Tip	0.0	1001	0.6	0.4	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.4	20.5	0	0
BH005	384655.5	397554.6	33.42	18.5	21.5	21/01/20	SS	1		5.60	0.0	1000	0.3	0.3	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.4	20.4	0	0
BH005	384655.5	397554.6	33.42	18.5	21.5	06/02/20	SS	2		5.27	0.0	1030	0.3	0.3	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.4	20.4	0	0
BH005	384655.5	397554.6	33.42	18.5	21.5	20/02/20	SS	3		5.30	0.0	1001	0.3	0.3	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1	20.1	20.1	0	0
BH005	384655.5	397554.6	33.42	18.5	21.5	06/03/20	SS	4		5.25	0.0	1001	0.3	0.2	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.2	20.3	0	0
BH007	384765.2	397596.0	34.68	10.6	13.6	21/01/20	SS	1		6.07	0.0	1000	0.3	0.3	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.6	20.6	0	0
BH007	384765.2	397596.0	34.68	10.6	13.6	06/02/20	SS	2		6.27	0.0	1030	0.1	0.1	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.6	20.6	0	0
BH007	384765.2	397596.0	34.68	10.6	13.6	20/02/20	SS	3		6.20	0.0	1001	0.2	0.2	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1	20.3	20.3	0	0
BH007	384765.2	397596.0	34.68	10.6	13.6	06/03/20	SS	4		6.10	0.0	1001	0.2	0.2	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.3	20.4	0	0
BH008	384766.9	397570.4	34.05	0.3	6.5	21/01/20	MG	1		Wet at Tip	0.0	1000	0.5	0.5	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.2	20.2	0	0
BH008	384766.9	397570.4	34.05	0.3	6.5	06/02/20	MG	2		5.51	0.0	1030	0.4	0.4	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.1	20.1	0	0
BH008	384766.9	397570.4	34.05	0.3	6.5	20/02/20	MG	3		5.50	0.0	1001	0.2	0.2	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1	20.4	20.4	0	0
BH008	384766.9	397570.4	34.05	0.3	6.5	06/03/20	MG	4		5.50	0.0	1001	0.1	<0.1	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.5	20.5	0	0
BH009	384759.1	397550.4	34.20	0.5	1.7	21/01/20	MG	1		Dry	0.0	1000	0.1	0.1	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.6	20.6	0	0
BH009	384759.1	397550.4	34.20	0.5	1.7	06/02/20	MG	2		Dry	0.0	1030	0.1	0.1	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.7	20.7	0	0
BH009	384759.1	397550.4	34.20	0.5	1.7	20/02/20	MG	3		Dry	0.0	1001	0.1	<0.1	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1	20.7	20.8	0	0
BH009	384759.1	397550.4	34.20	0.5	1.7	06/03/20	MG	4		Wet at Tip	0.0	1001	0.1	<0.1	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.4	20.5	0	0
BH011	384726.7	397513.9	34.05	10	13	21/01/20	SS	1		7.40	0.0	1000	0.1	0.1	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.6	20.6	0	0
BH011	384726.7	397513.9	34.05	10	13	06/02/20	SS	2		5.65	0.0	1029	0.1	0.1	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.7	20.7	0	0
BH011	384726.7	397513.9	34.05	10	13	20/02/20	SS	3		5.70	0.0	1001	0.1	0.1	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1	20.6	20.7	0	0
BH011	384726.7	397513.9	34.05	10	13	06/03/20	SS	4		5.60	0.0	1001	0.2	0.2	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.5	20.5	0	0
BH012A	384647.5	397660.4	38.27	2	6	21/01/20	MG	1		Wet at Tip	0.0	1000	0.6	0.1	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.5	20.6	0	0
BH012A	384647.5	397660.4	38.27	2	6	06/02/20	MG	2		5.98	0.0	1029	0.3	0.2	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.5	20.5	0	0
BH012A	384647.5	397660.4	38.27	2	6	20/02/20	MG	3		Wet at Tip	0.0	1001	0.3	0.3	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1	20.2	20.2	0	0
BH012A	384647.5	397660.4	38.27	2	6	06/03/20	MG	4		Wet at Tip	0.0	1001	0.4	0.2	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.2	20.3	0	0
BH013	384368.4	397549.4	33.08	11	16.5	15/01/20	SS	1		5.30	0.2	999	0.5	0.5	<0.1	<0.1	<1.0	1	<2.0	<2.0	20.3	20.3	0.001	0.0002
BH013	384368.4	397549.4	33.08	11	16.5	06/02/20	SS	2		5.40	0.1	1029	0.3	0.3	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.3	20.3	0.0003	0.0001
BH013	384368.4	397549.4	33.08	11	16.5	20/02/20	SS	3		5.40	0.0	1001	0.2	0.2	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1	20.6	20.6	0	0
BH013	384368.4	397549.4	33.08	11	16.5	06/03/20	SS	4		5.30	0.0	1001	0.1	0.1	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.6	20.6	0	0
DS001	384775.0	397520.1	34.22	2	4	21/01/20	MG	1		Wet at Tip	0.0	1000	0.4	0.4	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.2	20.2	0	0

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Water Depth (mbgl)	1.5	Water depth < top of piezometer (can be discounted)
Carbon Dioxide (%)	5.8	CO2 concentration >5% (extra consideration required)
Methane (%)	1.9	CH4 concentration >1% (extra consideration required)
GSV	0.006	Characteristic situation 1: GSV < 0.07
GSV	0.4	Characteristic situation 2: 0.07 > GSV < 0.7

Hole ID	Easting	Northing	Elevation (mOD)	Response zone top (mbgl)	Response zone base (mbgl)	Date	Geology	Gas Monitoring Round	Parameter / Units	Water Depth mbgl	Flow l/hr	Pressure mbar	Carbon Dioxide Peak % v/v	Carbon Dioxide Steady % v/v	Methane Peak % v/v	Methane Steady % v/v	Carbon Monoxide ppm	Hydrogen Sulphide ppm	Methane Peak % LEL	Methane Steady % LEL	Oxygen Low Decline %	Oxygen Steady %	CO2 GSV	CH4 GSV
DS001	384775.0	397520.1	34.22	2	4	06/02/20	MG	2		3.17	0.0	1029	0.3	0.3	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.4	20.4	0	0
DS001	384775.0	397520.1	34.22	2	4	20/02/20	MG	3		3.05	0.0	1001	0.4	0.4	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1	20.5	20.4	0	0
DS001	384775.0	397520.1	34.22	2	4	06/03/20	MG	4		3.00	0.0	1001	0.2	0.2	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.2	20.2	0	0
DS002	384753.5	397492.0	34.09	8.15	9.9	21/01/20	SS	1		9.70	0.0	1000	0.6	0.6	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.1	20.1	0	0
DS002	384753.5	397492.0	34.09	8.15	9.9	06/02/20	SS	2		5.51	0.0	1029	0.5	0.3	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.1	20.1	0	0
DS002	384753.5	397492.0	34.09	8.15	9.9	20/02/20	SS	3		5.45	0.0	1001	0.4	0.4	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1	20.2	20.2	0	0
DS002	384753.5	397492.0	34.09	8.15	9.9	06/03/20	SS	4		5.40	0.0	1001	0.3	0.3	<0.1	<0.1	<1.0	<1.0	<2.0	<2.0	20.4	20.4	0	0

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Appendix F

Chemically Aggressive Ground Assessment

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					Borehole ID	BH001	BH001	BH001	BH001	BH002	BH003	BH003	BH004	BH004	BH004	BH005	BH006A	BH007
					East	384566.05	384566.05	384566.05	384566.05	384655.29	384633.94	384633.94	384554.52	384554.52	384554.52	384655.5	384728.89	384765.21
					North	397646.56	397646.56	397646.56	397646.56	397617.59	397602.66	397602.66	397582.48	397582.48	397582.48	397554.65	397614.04	397596.05
					Sample Depth (mbgl)	1.65	5.5	8-9.50	12.5	1.2	1.2	4.7	9.5-11	6	0.8	0.5	0.5	7.5-8.1
					Date	27/11/19	27/11/19	29/10/19	29/10/19	27/11/19	27/11/19	27/11/19	16/11/19	02/11/19	21/11/19	16/11/19	17/11/19	17/11/19
Contaminant	**LOD**	**Units**	**Min**	**Max**	**Geology**	MG	SS	SS	SS	MG	MG	SS	SS	MG	MG	MG	MG	SS
pH	-	pH	7.6	11.4		9.4	8.9	8.9	8.3	10.3	9.3	10.2	8.2	10	8.3	8.4	10.7	8.1
Sulphate as SO4	10	mg/l	14	1100		430	22	18	16	340	210	160	59	1100	80	89	710	14

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					Borehole ID	BH007	BH007	BH007	BH008	BH008	BH009	BH011	BH011	BH011	BH012A	BH012A	BH013	BH013
					East	384765.21	384765.21	384765.21	384766.9	384766.9	384759.09	384726.7	384726.7	384726.7	384647.48	384647.48	384368.38	384368.38
					North	397596.05	397596.05	397596.05	397570.4	397570.4	397550.39	397513.89	397513.89	397513.89	397660.41	397660.41	397549.44	397549.44
					Sample Depth (mbgl)	4.5	1.2	7.2	2.1	5.5	0.8	7.5-8.5	1.2	5.5	1.7	10	1.5	8
					Date	09/11/19	08/11/19	09/11/19	10/11/19	10/11/19	09/11/19	23/11/19	09/11/19	09/11/19	27/11/19	27/10/19	27/11/19	27/11/19
Contaminant	**LOD**	**Units**	**Min**	**Max**	**Geology**	MG	MG	SS	MG	MG	MG	SS	MG	SS	MG	MG	MG	SS
pH	-	pH	7.6	11.4		10.2	10.6	8.3	11.4	7.8	10.7	7.6	11.2	8.4	8.3	8.1	8.4	8.4
Sulphate as SO4	10	mg/l	14	1100		630	120	39	120	200	410	51	120	68	62	61	120	31

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					Borehole ID	BH013	BH014	TP001	TP002
					East	384368.38	384495.59	384615.42	384628.47
					North	397549.44	397565.3	397543.9	397622.87
					Sample Depth (mbgl)	10.5-12	0.7	0.8	1.5
					Date	30/10/19	27/11/19	27/11/19	27/11/19
Contaminant	**LOD**	**Units**	**Min**	**Max**	**Geology**	SS	MG	MG	MG
pH	-	pH	7.6	11.4		8.4	9.5	8	9.3
Sulphate as SO4	10	mg/l	14	1100		21	42	16	40

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Appendix G

HazWasteOnline Waste Assessment

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ARUP

HazWasteOnline™

Waste Classification Report

T4BCC-MR4SU-PW7SE

Job name

ID Manchester

Description/Comments

Asbestos was not included in this assessment.

Project

ID Manchester

Site

University of Manchester

Related Documents

#	Name	Description
None		

Waste Stream Template

ID Manchester

Classified by

Name:
Mark Griffiths
Date:
15 Jan 2020 11:36 GMT
Telephone:
0161 228 2331

Company:
Ove Arup & Partners International
8th Floor, St James's Buildings
Oxford Street
Manchester
M1 6EL

Report

Created by: Mark Griffiths
Created date: 15 Jan 2020 11:36 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	ARP-BH001	1	Non Hazardous		3
2	ARP-BH001[2]	3	Non Hazardous		5
3	ARP-BH002	1	Non Hazardous		7
4	ARP-BH002[2]	2.5	Non Hazardous		9
5	ARP-BH003	1	Non Hazardous		11
6	ARP-BH003[2]	3.5	Non Hazardous		13
7	ARP-BH004	2.3	Non Hazardous		15
8	ARP-BH004[2]	5.3	Non Hazardous		17
9	ARP-BH005	1	Non Hazardous		19
10	ARP-BH006	1.2	Non Hazardous		21
11	ARP-BH006A	1	Non Hazardous		23
12	ARP-BH006B	0.6	Non Hazardous		25

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#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
13	ARP-BH007	1	Non Hazardous		27
14	ARP-BH007[2]	3.3	Non Hazardous		29
15	ARP-BH008	5.2	Non Hazardous		31
16	ARP-BH008[2]	2.2	Non Hazardous		33
17	ARP-BH009	2.6	Non Hazardous		35
18	ARP-BH011	3.6	Non Hazardous		37
19	ARP-BH011[2]	1	Non Hazardous		39
20	ARP-BH012A	7.5	Non Hazardous		41
21	ARP-BH012A[2]	2.6	Non Hazardous		43
22	ARP-BH013	1	Non Hazardous		45
23	ARP-BH013[2]	3.5	Non Hazardous		47
24	ARP-BH014	0.7	Non Hazardous		49
25	ARP-BH014[2]	4	Non Hazardous		51
26	ARP-DS001	0.6	Non Hazardous		53
27	ARP-DS002	0.8	Non Hazardous		55
28	ARP-TP001	0.8	Non Hazardous		57
29	ARP-TP002	1	Non Hazardous		59
30	ARP-TP002[2]	2.5	Non Hazardous		61
31	CE-2015-CC/WS2	0.68	Non Hazardous		63
32	CE-2015-CC/WS3	0.56	Non Hazardous		65
33	GEO-2015-CRH01	0.2	Non Hazardous		67
34	GEO-2015-CRH01[2]	0.5	Non Hazardous		69
35	GEO-2015-CRH01[3]	2	Non Hazardous		71
36	GEO-2015-CRH01[4]	1	Non Hazardous		73
37	GEO-2015-CRH01B	1	Non Hazardous		75
38	GEO-2015-CRH01B[2]	2	Non Hazardous		77
39	GEO-2015-CRH03	3	Non Hazardous		79
40	GEO-2015-TP01	0.3	Non Hazardous		81
41	GEO-2015-TP02	0.5	Non Hazardous		83
42	GEO-2015-TP03	0.7	Non Hazardous		85
43	GEO-2015-TP04	0.2	Non Hazardous		87
44	GEO-2015-TP05	2	Non Hazardous		89
45	GEO-2015-TP05[2]	1.4	Non Hazardous		91
46	GEO-2015-TP06	0.3	Non Hazardous		93
47	GEO-2015-TP07	1.8	Non Hazardous		95
48	GEO-2015-TP08	0.8	Non Hazardous		97
49	GEO-2015-WLS01	1	Non Hazardous		99
50	GEO-2015-WLS02	2	Non Hazardous		101
51	GEO-2015-WLS02[2]	1	Non Hazardous		103
52	GEO-2015-WLS03	3.5	Non Hazardous		105
53	GEO-2015-WLS03[2]	2.5	Non Hazardous		107

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Classification of sample: ARP-BH001

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

Sample details

Sample Name:
ARP-BH001
Sample Depth:
1 m

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
2	acenaphthylene		205-917-1	208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
3	anthracene		204-371-1	120-12-7		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	1.5 mg/kg		1.5 mg/kg	0.00015 %		
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	9.1 mg/kg		9.1 mg/kg	0.00091 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.3 mg/kg		0.3 mg/kg	0.00003 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				23	mg/kg	1.462	33.616	mg/kg	0.00336 %		
			215-160-9	1308-38-9									
14		chrysene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				38	mg/kg	1.252	47.568	mg/kg	0.00476 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<LOD
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				0.04	mg/kg		0.04	mg/kg	0.000004 %		
			205-912-4	206-44-0									
19		fluorene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	39	mg/kg		39	mg/kg	0.0039 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				<0.05	mg/kg	1.16	<0.058	mg/kg	<0.0000058 %		<LOD
			215-696-3	1344-48-5									
23		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				30	mg/kg	1.545	46.356	mg/kg	0.00464 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-581-5	85-01-8									
26		pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				29	mg/kg	1.785	51.77	mg/kg	0.00518 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				60	mg/kg	1.245	74.683	mg/kg	0.00747 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0308 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH001[2]

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

Sample details

Sample Name:	LoW Code:	
ARP-BH001[2]	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
3 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
2	acenaphthylene		205-917-1	208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
3	anthracene		204-371-1	120-12-7		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	1.4 mg/kg		1.4 mg/kg	0.00014 %		
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	10 mg/kg		10 mg/kg	0.001 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7 mg/kg	2.775	1.943 mg/kg	0.000194 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.2 mg/kg		0.2 mg/kg	0.00002 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				17	mg/kg	1.462	24.846	mg/kg	0.00248 %		
			215-160-9	1308-38-9									
14		chrysene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				35	mg/kg	1.252	43.812	mg/kg	0.00438 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				0.1	mg/kg	1.884	0.188	mg/kg	0.0000188 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-912-4	206-44-0									
19		fluorene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	200	mg/kg		200	mg/kg	0.02 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.16	mg/kg	1.16	0.186	mg/kg	0.0000186 %		
			215-696-3	1344-48-5									
23		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				18	mg/kg	1.545	27.813	mg/kg	0.00278 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				0.04	mg/kg		0.04	mg/kg	0.000004 %		
			201-581-5	85-01-8									
26		pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				25	mg/kg	1.785	44.63	mg/kg	0.00446 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				43	mg/kg	1.245	53.523	mg/kg	0.00535 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.041 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH002

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

Sample details

Sample Name:
ARP-BH002
Sample Depth:
1 m

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		0.12 mg/kg		0.12 mg/kg	0.000012 %		
2	acenaphthylene		205-917-1	208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
3	anthracene		204-371-1	120-12-7		0.17 mg/kg		0.17 mg/kg	0.000017 %		
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	1.9 mg/kg		1.9 mg/kg	0.00019 %		
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	7.7 mg/kg		7.7 mg/kg	0.00077 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.14 mg/kg		0.14 mg/kg	0.000014 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.35 mg/kg		0.35 mg/kg	0.000035 %		
8	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 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.41 mg/kg		0.41 mg/kg	0.000041 %		
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.14 mg/kg		0.14 mg/kg	0.000014 %		
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				14	mg/kg	1.462	20.462	mg/kg	0.00205 %		
			215-160-9	1308-38-9									
14		chrysene				0.51	mg/kg		0.51	mg/kg	0.000051 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				24	mg/kg	1.252	30.043	mg/kg	0.003 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		**<LOD**
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		**<LOD**
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				1.5	mg/kg		1.5	mg/kg	0.00015 %		
			205-912-4	206-44-0									
19		fluorene				0.09	mg/kg		0.09	mg/kg	0.000009 %		
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	110	mg/kg		110	mg/kg	0.011 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.05	mg/kg	1.16	0.058	mg/kg	0.0000058 %		
			215-696-3	1344-48-5									
23		naphthalene				0.06	mg/kg		0.06	mg/kg	0.000006 %		
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				15	mg/kg	1.545	23.178	mg/kg	0.00232 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				0.84	mg/kg		0.84	mg/kg	0.000084 %		
			201-581-5	85-01-8									
26		pyrene				1.3	mg/kg		1.3	mg/kg	0.00013 %		
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		**<LOD**
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				21	mg/kg	1.785	37.489	mg/kg	0.00375 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				43	mg/kg	1.245	53.523	mg/kg	0.00535 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0293 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH002[2]

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

Sample details

Sample Name:	LoW Code:	
ARP-BH002[2]	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
2.5 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
2	acenaphthylene		205-917-1	208-96-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
3	anthracene		204-371-1	120-12-7		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	5.8	mg/kg		5.8	mg/kg	0.00058 %		
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	21	mg/kg		21	mg/kg	0.0021 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1	mg/kg	2.775	3.053	mg/kg	0.000305 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.4	mg/kg		0.4	mg/kg	0.00004 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				210	mg/kg	1.462	306.927	mg/kg	0.0307 %		
			215-160-9	1308-38-9									
14		chrysene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				77	mg/kg	1.252	96.387	mg/kg	0.00964 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				0.09	mg/kg		0.09	mg/kg	0.000009 %		
			205-912-4	206-44-0									
19		fluorene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	150	mg/kg		150	mg/kg	0.015 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.23	mg/kg	1.16	0.267	mg/kg	0.0000267 %		
			215-696-3	1344-48-5									
23		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				30	mg/kg	1.545	46.356	mg/kg	0.00464 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				0.08	mg/kg		0.08	mg/kg	0.000008 %		
			201-581-5	85-01-8									
26		pyrene				0.08	mg/kg		0.08	mg/kg	0.000008 %		
			204-927-3	129-00-0									
27		selenium { selenium }				1.3	mg/kg		1.3	mg/kg	0.00013 %		
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				32	mg/kg	1.785	57.126	mg/kg	0.00571 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				100	mg/kg	1.245	124.471	mg/kg	0.0124 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0816 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH003

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

Sample details

Sample Name:
ARP-BH003
Sample Depth:
1 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
1		acenaphthene 201-469-6 / 83-32-9		0.08 mg/kg		0.08 mg/kg	0.000008 %		
2		acenaphthylene 205-917-1 / 208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
3		anthracene 204-371-1 / 120-12-7		0.17 mg/kg		0.17 mg/kg	0.000017 %		
4		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9	1	1.4 mg/kg		1.4 mg/kg	0.00014 %		
5		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex } 033-002-00-5	1	10 mg/kg		10 mg/kg	0.001 %		
6		benzo[ghi]perylene 205-883-8 / 191-24-2		0.6 mg/kg		0.6 mg/kg	0.00006 %		
7		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		0.57 mg/kg		0.57 mg/kg	0.000057 %		
8		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		1.1 mg/kg		1.1 mg/kg	0.00011 %		
9		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		1.1 mg/kg		1.1 mg/kg	0.00011 %		
10		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		0.4 mg/kg		0.4 mg/kg	0.00004 %		
11		beryllium { beryllium oxide } 004-003-00-8 / 215-133-1 / 1304-56-9		0.3 mg/kg	2.775	0.833 mg/kg	0.0000833 %		
12		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex } 048-001-00-5	1	0.2 mg/kg		0.2 mg/kg	0.00002 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				10	mg/kg	1.462	14.616	mg/kg	0.00146 %		
			215-160-9	1308-38-9									
14		chrysene				0.74	mg/kg		0.74	mg/kg	0.000074 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				180	mg/kg	1.252	225.32	mg/kg	0.0225 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				0.2	mg/kg	1.884	0.377	mg/kg	0.0000377 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				1.9	mg/kg		1.9	mg/kg	0.00019 %		
			205-912-4	206-44-0									
19		fluorene				0.08	mg/kg		0.08	mg/kg	0.000008 %		
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				0.53	mg/kg		0.53	mg/kg	0.000053 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	88	mg/kg		88	mg/kg	0.0088 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				1.6	mg/kg	1.16	1.856	mg/kg	0.000186 %		
			215-696-3	1344-48-5									
23		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				9.5	mg/kg	1.545	14.679	mg/kg	0.00147 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				0.67	mg/kg		0.67	mg/kg	0.000067 %		
			201-581-5	85-01-8									
26		pyrene				1.5	mg/kg		1.5	mg/kg	0.00015 %		
			204-927-3	129-00-0									
27		selenium { selenium }				0.9	mg/kg		0.9	mg/kg	0.00009 %		
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				16	mg/kg	1.785	28.563	mg/kg	0.00286 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				74	mg/kg	1.245	92.109	mg/kg	0.00921 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0488 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH003[2]

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

Sample details

Sample Name:	LoW Code:	
ARP-BH003[2]	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
3.5 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		2.4 mg/kg		2.4 mg/kg	0.00024 %		
2	acenaphthylene		205-917-1	208-96-8		0.09 mg/kg		0.09 mg/kg	0.000009 %		
3	anthracene		204-371-1	120-12-7		3.2 mg/kg		3.2 mg/kg	0.00032 %		
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	1.1 mg/kg		1.1 mg/kg	0.00011 %		
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	8.2 mg/kg		8.2 mg/kg	0.00082 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.81 mg/kg		0.81 mg/kg	0.000081 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		2.7 mg/kg		2.7 mg/kg	0.00027 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.8 mg/kg		1.8 mg/kg	0.00018 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2.4 mg/kg		2.4 mg/kg	0.00024 %		
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.77 mg/kg		0.77 mg/kg	0.000077 %		
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.3 mg/kg	2.775	0.833 mg/kg	0.0000833 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				11	mg/kg	1.462	16.077	mg/kg	0.00161 %		
			215-160-9	1308-38-9									
14		chrysene				2.9	mg/kg		2.9	mg/kg	0.00029 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				110	mg/kg	1.252	137.695	mg/kg	0.0138 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				0.3	mg/kg	1.884	0.565	mg/kg	0.0000565 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				9.5	mg/kg		9.5	mg/kg	0.00095 %		
			205-912-4	206-44-0									
19		fluorene				2.5	mg/kg		2.5	mg/kg	0.00025 %		
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				0.71	mg/kg		0.71	mg/kg	0.000071 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	59	mg/kg		59	mg/kg	0.0059 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.06	mg/kg	1.16	0.0696	mg/kg	0.00000696 %		
			215-696-3	1344-48-5									
23		naphthalene				3.7	mg/kg		3.7	mg/kg	0.00037 %		
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				8.7	mg/kg	1.545	13.443	mg/kg	0.00134 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				12	mg/kg		12	mg/kg	0.0012 %		
			201-581-5	85-01-8									
26		pyrene				8.8	mg/kg		8.8	mg/kg	0.00088 %		
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				18	mg/kg	1.785	32.133	mg/kg	0.00321 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				31	mg/kg	1.245	38.586	mg/kg	0.00386 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0363 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH004

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

Sample details

Sample Name:
ARP-BH004
Sample Depth:
2.3 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
1		acenaphthene 201-469-6 / 83-32-9		1.2 mg/kg		1.2 mg/kg	0.00012 %		
2		acenaphthylene 205-917-1 / 208-96-8		0.1 mg/kg		0.1 mg/kg	0.00001 %		
3		anthracene 204-371-1 / 120-12-7		1.4 mg/kg		1.4 mg/kg	0.00014 %		
4		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9	1	2.4 mg/kg		2.4 mg/kg	0.00024 %		
5		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex } 033-002-00-5	1	9.4 mg/kg		9.4 mg/kg	0.00094 %		
6		benzo[ghi]perylene 205-883-8 / 191-24-2		1.2 mg/kg		1.2 mg/kg	0.00012 %		
7		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		3.5 mg/kg		3.5 mg/kg	0.00035 %		
8		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		2.4 mg/kg		2.4 mg/kg	0.00024 %		
9		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		3.6 mg/kg		3.6 mg/kg	0.00036 %		
10		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		1.4 mg/kg		1.4 mg/kg	0.00014 %		
11		beryllium { beryllium oxide } 004-003-00-8 / 215-133-1 / 1304-56-9		0.5 mg/kg	2.775	1.388 mg/kg	0.000139 %		
12		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex } 048-001-00-5	1	1.2 mg/kg		1.2 mg/kg	0.00012 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				12	mg/kg	1.462	17.539	mg/kg	0.00175 %		
			215-160-9	1308-38-9									
14		chrysene				3.7	mg/kg		3.7	mg/kg	0.00037 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				120	mg/kg	1.252	150.213	mg/kg	0.015 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				0.4	mg/kg	1.884	0.754	mg/kg	0.0000754 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				0.25	mg/kg		0.25	mg/kg	0.000025 %		
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				9.8	mg/kg		9.8	mg/kg	0.00098 %		
			205-912-4	206-44-0									
19		fluorene				1	mg/kg		1	mg/kg	0.0001 %		
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				1	mg/kg		1	mg/kg	0.0001 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	400	mg/kg		400	mg/kg	0.04 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.43	mg/kg	1.16	0.499	mg/kg	0.0000499 %		
			215-696-3	1344-48-5									
23		naphthalene				0.61	mg/kg		0.61	mg/kg	0.000061 %		
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				9.8	mg/kg	1.545	15.143	mg/kg	0.00151 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				8.5	mg/kg		8.5	mg/kg	0.00085 %		
			201-581-5	85-01-8									
26		pyrene				9.8	mg/kg		9.8	mg/kg	0.00098 %		
			204-927-3	129-00-0									
27		selenium { selenium }				1.1	mg/kg		1.1	mg/kg	0.00011 %		
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				23	mg/kg	1.785	41.059	mg/kg	0.00411 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				310	mg/kg	1.245	385.861	mg/kg	0.0386 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.108 %		

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

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Classification of sample: ARP-BH004[2]

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

Sample details

Sample Name:	LoW Code:	
ARP-BH004[2]	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
5.3 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
3		anthracene		204-371-1	120-12-7		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
4		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2	mg/kg		2	mg/kg	0.0002 %		
5		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	13	mg/kg		13	mg/kg	0.0013 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		0.04	mg/kg		0.04	mg/kg	0.000004 %		
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.09	mg/kg		0.09	mg/kg	0.000009 %		
8		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 %		
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.2	mg/kg		0.2	mg/kg	0.00002 %		
10		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.11	mg/kg		0.11	mg/kg	0.000011 %		
11		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.5	mg/kg	2.775	1.388	mg/kg	0.000139 %		
12		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.5	mg/kg		0.5	mg/kg	0.00005 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				20	mg/kg	1.462	29.231	mg/kg	0.00292 %		
			215-160-9	1308-38-9									
14		chrysene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				46	mg/kg	1.252	57.582	mg/kg	0.00576 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				9	mg/kg	1.884	16.956	mg/kg	0.0017 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				0.3	mg/kg		0.3	mg/kg	0.00003 %		
			205-912-4	206-44-0									
19		fluorene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				0.04	mg/kg		0.04	mg/kg	0.000004 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	98	mg/kg		98	mg/kg	0.0098 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				<0.05	mg/kg	1.16	<0.058	mg/kg	<0.0000058 %		<LOD
			215-696-3	1344-48-5									
23		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				13	mg/kg	1.545	20.087	mg/kg	0.00201 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
			201-581-5	85-01-8									
26		pyrene				0.25	mg/kg		0.25	mg/kg	0.000025 %		
			204-927-3	129-00-0									
27		selenium { selenium }				0.7	mg/kg		0.7	mg/kg	0.00007 %		
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				18	mg/kg	1.785	32.133	mg/kg	0.00321 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				91	mg/kg	1.245	113.269	mg/kg	0.0113 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0387 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH005

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

Sample details

Sample Name:
ARP-BH005
Sample Depth:
1 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
3		anthracene		204-371-1	120-12-7		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
4		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	3	mg/kg		3	mg/kg	0.0003 %		
5		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	35	mg/kg		35	mg/kg	0.0035 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.05	mg/kg		0.05	mg/kg	0.000005 %		
8		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.04	mg/kg		0.04	mg/kg	0.000004 %		
10		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
11		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1	mg/kg	2.775	3.053	mg/kg	0.000305 %		
12		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.2	mg/kg		0.2	mg/kg	0.00002 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				25	mg/kg	1.462	36.539	mg/kg	0.00365 %		
			215-160-9	1308-38-9									
14		chrysene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				130	mg/kg	1.252	162.731	mg/kg	0.0163 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				0.1	mg/kg	1.884	0.188	mg/kg	0.0000188 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		dibenzofuran				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-071-3	132-64-9									
19		fluoranthene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
			205-912-4	206-44-0									
20		fluorene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	110	mg/kg		110	mg/kg	0.011 %		
		082-001-00-6											
23		mercury { mercury(II) sulphide }				0.13	mg/kg	1.16	0.151	mg/kg	0.0000151 %		
			215-696-3	1344-48-5									
24		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		nickel { nickel(IV) oxide (nickel dioxide) }				31	mg/kg	1.545	47.901	mg/kg	0.00479 %		
		028-004-00-8	234-823-3	12035-36-8									
26		phenanthrene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
			201-581-5	85-01-8									
27		pyrene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
			204-927-3	129-00-0									
28		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
29		vanadium { divanadium pentaoxide; vanadium pentoxide }				35	mg/kg	1.785	62.481	mg/kg	0.00625 %		
		023-001-00-8	215-239-8	1314-62-1									
30		zinc { zinc oxide }				96	mg/kg	1.245	119.493	mg/kg	0.0119 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0582 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH006

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

Sample details

Sample Name:	LoW Code:	
ARP-BH006	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
1.2 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
2	acenaphthylene		205-917-1	208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
3	anthracene		204-371-1	120-12-7		0.08 mg/kg		0.08 mg/kg	0.000008 %		
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	3.2 mg/kg		3.2 mg/kg	0.00032 %		
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	20 mg/kg		20 mg/kg	0.002 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.13 mg/kg		0.13 mg/kg	0.000013 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.24 mg/kg		0.24 mg/kg	0.000024 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.18 mg/kg		0.18 mg/kg	0.000018 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.5 mg/kg		0.5 mg/kg	0.00005 %		
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.29 mg/kg		0.29 mg/kg	0.000029 %		
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.3 mg/kg	2.775	3.608 mg/kg	0.000361 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.7 mg/kg		0.7 mg/kg	0.00007 %		

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#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
13		chromium { chromium(III) oxide }		215-160-9	1308-38-9		21	mg/kg	1.462	30.693	mg/kg	0.00307 %		
14		chrysene	601-048-00-0	205-923-4	218-01-9		0.3	mg/kg		0.3	mg/kg	0.00003 %		
15		copper { copper(II) oxide }	029-016-00-6	215-269-1	1317-38-0		100	mg/kg	1.252	125.178	mg/kg	0.0125 %		
16		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 %		
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
18		fluoranthene		205-912-4	206-44-0		0.72	mg/kg		0.72	mg/kg	0.000072 %		
19		fluorene		201-695-5	86-73-7		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
20		indeno[123-cd]pyrene		205-893-2	193-39-5		0.12	mg/kg		0.12	mg/kg	0.000012 %		
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	270	mg/kg		270	mg/kg	0.027 %		
22		mercury { mercury(II) sulphide }		215-696-3	1344-48-5		0.48	mg/kg	1.16	0.557	mg/kg	0.0000557 %		
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
24		nickel { nickel(IV) oxide (nickel dioxide) }	028-004-00-8	234-823-3	12035-36-8		28	mg/kg	1.545	43.265	mg/kg	0.00433 %		
25		phenanthrene		201-581-5	85-01-8		0.29	mg/kg		0.29	mg/kg	0.000029 %		
26		pyrene		204-927-3	129-00-0		0.74	mg/kg		0.74	mg/kg	0.000074 %		
27		selenium { selenium }	034-001-00-2	231-957-4	7782-49-2		1.5	mg/kg		1.5	mg/kg	0.00015 %		
28		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		39	mg/kg	1.785	69.622	mg/kg	0.00696 %		
29		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		180	mg/kg	1.245	224.049	mg/kg	0.0224 %		
											Total:	0.0798 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH006A

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

Sample details

Sample Name:	LoW Code:	
ARP-BH006A	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
1 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
1		acenaphthene 201-469-6 / 83-32-9		0.21 mg/kg		0.21 mg/kg	0.000021 %		
2		acenaphthylene 205-917-1 / 208-96-8		0.05 mg/kg		0.05 mg/kg	0.000005 %		
3		anthracene 204-371-1 / 120-12-7		0.33 mg/kg		0.33 mg/kg	0.000033 %		
4		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9	1	9.1 mg/kg		9.1 mg/kg	0.00091 %		
5		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex } 033-002-00-5	1	25 mg/kg		25 mg/kg	0.0025 %		
6		benzo[ghi]perylene 205-883-8 / 191-24-2		0.14 mg/kg		0.14 mg/kg	0.000014 %		
7		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		0.38 mg/kg		0.38 mg/kg	0.000038 %		
8		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		0.32 mg/kg		0.32 mg/kg	0.000032 %		
9		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		0.42 mg/kg		0.42 mg/kg	0.000042 %		
10		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		0.16 mg/kg		0.16 mg/kg	0.000016 %		
11		beryllium { beryllium oxide } 004-003-00-8 / 215-133-1 / 1304-56-9		0.8 mg/kg	2.775	2.22 mg/kg	0.000222 %		
12		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex } 048-001-00-5	1	0.8 mg/kg		0.8 mg/kg	0.00008 %		

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#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
13		chromium { chromium(III) oxide }		215-160-9	1308-38-9		17	mg/kg	1.462	24.846	mg/kg	0.00248 %		
14		chrysene	601-048-00-0	205-923-4	218-01-9		0.48	mg/kg		0.48	mg/kg	0.000048 %		
15		copper { copper(II) oxide }	029-016-00-6	215-269-1	1317-38-0		76	mg/kg	1.252	95.135	mg/kg	0.00951 %		
16		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				11	mg/kg	1.884	20.724	mg/kg	0.00207 %		
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
18		dibenzofuran		205-071-3	132-64-9		0.2	mg/kg		0.2	mg/kg	0.00002 %		
19		fluoranthene		205-912-4	206-44-0		1.5	mg/kg		1.5	mg/kg	0.00015 %		
20		fluorene		201-695-5	86-73-7		0.13	mg/kg		0.13	mg/kg	0.000013 %		
21		indeno[123-cd]pyrene		205-893-2	193-39-5		0.13	mg/kg		0.13	mg/kg	0.000013 %		
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	180	mg/kg		180	mg/kg	0.018 %		
23		mercury { mercury(II) sulphide }		215-696-3	1344-48-5		0.39	mg/kg	1.16	0.452	mg/kg	0.0000452 %		
24		naphthalene	601-052-00-2	202-049-5	91-20-3		0.05	mg/kg		0.05	mg/kg	0.000005 %		
25		nickel { nickel(IV) oxide (nickel dioxide) }	028-004-00-8	234-823-3	12035-36-8		19	mg/kg	1.545	29.359	mg/kg	0.00294 %		
26		phenanthrene		201-581-5	85-01-8		1	mg/kg		1	mg/kg	0.0001 %		
27		pyrene		204-927-3	129-00-0		1.6	mg/kg		1.6	mg/kg	0.00016 %		
28		selenium { selenium }	034-001-00-2	231-957-4	7782-49-2		<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
29		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		27	mg/kg	1.785	48.2	mg/kg	0.00482 %		
30		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		130	mg/kg	1.245	161.813	mg/kg	0.0162 %		
											Total:	0.0605 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH006B

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

Sample details

Sample Name:	LoW Code:	
ARP-BH006B	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
0.6 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		0.05	mg/kg		0.05	mg/kg	0.000005 %		
2		acenaphthylene		205-917-1	208-96-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
3		anthracene		204-371-1	120-12-7		0.1	mg/kg		0.1	mg/kg	0.00001 %		
4		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
5		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	7.8	mg/kg		7.8	mg/kg	0.00078 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		0.11	mg/kg		0.11	mg/kg	0.000011 %		
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.27	mg/kg		0.27	mg/kg	0.000027 %		
8		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 %		
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.24	mg/kg		0.24	mg/kg	0.000024 %		
10		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.1	mg/kg		0.1	mg/kg	0.00001 %		
11		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.2	mg/kg	2.775	0.555	mg/kg	0.0000555 %		
12		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.8	mg/kg		0.8	mg/kg	0.00008 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				8.2	mg/kg	1.462	11.985	mg/kg	0.0012 %		
			215-160-9	1308-38-9									
14		chrysene				0.32	mg/kg		0.32	mg/kg	0.000032 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				22	mg/kg	1.252	27.539	mg/kg	0.00275 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				0.5	mg/kg	1.884	0.942	mg/kg	0.0000942 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		dibenzofuran				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-071-3	132-64-9									
19		fluoranthene				0.81	mg/kg		0.81	mg/kg	0.000081 %		
			205-912-4	206-44-0									
20		fluorene				0.04	mg/kg		0.04	mg/kg	0.000004 %		
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	30	mg/kg		30	mg/kg	0.003 %		
		082-001-00-6											
23		mercury { mercury(II) sulphide }				0.05	mg/kg	1.16	0.058	mg/kg	0.0000058 %		
			215-696-3	1344-48-5									
24		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		nickel { nickel(IV) oxide (nickel dioxide) }				6.1	mg/kg	1.545	9.426	mg/kg	0.000943 %		
		028-004-00-8	234-823-3	12035-36-8									
26		phenanthrene				0.54	mg/kg		0.54	mg/kg	0.000054 %		
			201-581-5	85-01-8									
27		pyrene				0.82	mg/kg		0.82	mg/kg	0.000082 %		
			204-927-3	129-00-0									
28		selenium { selenium }				0.5	mg/kg		0.5	mg/kg	0.00005 %		
		034-001-00-2	231-957-4	7782-49-2									
29		vanadium { divanadium pentaoxide; vanadium pentoxide }				11	mg/kg	1.785	19.637	mg/kg	0.00196 %		
		023-001-00-8	215-239-8	1314-62-1									
30		zinc { zinc oxide }				35	mg/kg	1.245	43.565	mg/kg	0.00436 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0158 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH007

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

Sample details

Sample Name:
ARP-BH007
Sample Depth:
1 m

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		0.53 mg/kg		0.53 mg/kg	0.000053 %		
2	acenaphthylene		205-917-1	208-96-8		1.1 mg/kg		1.1 mg/kg	0.00011 %		
3	anthracene		204-371-1	120-12-7		1.4 mg/kg		1.4 mg/kg	0.00014 %		
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	7.7 mg/kg		7.7 mg/kg	0.00077 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		7.3 mg/kg		7.3 mg/kg	0.00073 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		11 mg/kg		11 mg/kg	0.0011 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		12 mg/kg		12 mg/kg	0.0012 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		12 mg/kg		12 mg/kg	0.0012 %		
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		6.9 mg/kg		6.9 mg/kg	0.00069 %		
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.3 mg/kg	2.775	0.833 mg/kg	0.0000833 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.4 mg/kg		0.4 mg/kg	0.00004 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				11	mg/kg	1.462	16.077	mg/kg	0.00161 %		
			215-160-9	1308-38-9									
14		chrysene				9.3	mg/kg		9.3	mg/kg	0.00093 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				24	mg/kg	1.252	30.043	mg/kg	0.003 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				0.4	mg/kg	1.884	0.754	mg/kg	0.0000754 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				1	mg/kg		1	mg/kg	0.0001 %		
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				20	mg/kg		20	mg/kg	0.002 %		
			205-912-4	206-44-0									
19		fluorene				0.38	mg/kg		0.38	mg/kg	0.000038 %		
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				5	mg/kg		5	mg/kg	0.0005 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	100	mg/kg		100	mg/kg	0.01 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.07	mg/kg	1.16	0.0812	mg/kg	0.00000812 %		
			215-696-3	1344-48-5									
23		naphthalene				0.53	mg/kg		0.53	mg/kg	0.000053 %		
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				7.9	mg/kg	1.545	12.207	mg/kg	0.00122 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				5.6	mg/kg		5.6	mg/kg	0.00056 %		
			201-581-5	85-01-8									
26		pyrene				21	mg/kg		21	mg/kg	0.0021 %		
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				14	mg/kg	1.785	24.993	mg/kg	0.0025 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				36	mg/kg	1.245	44.81	mg/kg	0.00448 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0354 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH007[2]

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

Sample details

Sample Name:	LoW Code:	
ARP-BH007[2]	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
3.3 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		0.23	mg/kg		0.23	mg/kg	0.000023 %		
2		acenaphthylene		205-917-1	208-96-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
3		anthracene		204-371-1	120-12-7		0.37	mg/kg		0.37	mg/kg	0.000037 %		
4		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.2	mg/kg		2.2	mg/kg	0.00022 %		
5		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	18	mg/kg		18	mg/kg	0.0018 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		0.14	mg/kg		0.14	mg/kg	0.000014 %		
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.56	mg/kg		0.56	mg/kg	0.000056 %		
8		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.43	mg/kg		0.43	mg/kg	0.000043 %		
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.46	mg/kg		0.46	mg/kg	0.000046 %		
10		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.2	mg/kg		0.2	mg/kg	0.00002 %		
11		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6	mg/kg	2.775	1.665	mg/kg	0.000167 %		
12		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.4	mg/kg		0.4	mg/kg	0.00004 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				20	mg/kg	1.462	29.231	mg/kg	0.00292 %		
			215-160-9	1308-38-9									
14		chrysene				0.43	mg/kg		0.43	mg/kg	0.000043 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				56	mg/kg	1.252	70.099	mg/kg	0.00701 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				0.3	mg/kg	1.884	0.565	mg/kg	0.0000565 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				1.5	mg/kg		1.5	mg/kg	0.00015 %		
			205-912-4	206-44-0									
19		fluorene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	140	mg/kg		140	mg/kg	0.014 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.2	mg/kg	1.16	0.232	mg/kg	0.0000232 %		
			215-696-3	1344-48-5									
23		naphthalene				0.25	mg/kg		0.25	mg/kg	0.000025 %		
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				16	mg/kg	1.545	24.723	mg/kg	0.00247 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				1.4	mg/kg		1.4	mg/kg	0.00014 %		
			201-581-5	85-01-8									
26		pyrene				1.4	mg/kg		1.4	mg/kg	0.00014 %		
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				17	mg/kg	1.785	30.348	mg/kg	0.00303 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				86	mg/kg	1.245	107.045	mg/kg	0.0107 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0433 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH008

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

Sample details

Sample Name:	LoW Code:	
ARP-BH008	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
5.2 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
1		acenaphthene 201-469-6 / 83-32-9		4.6 mg/kg		4.6 mg/kg	0.00046 %		
2		acenaphthylene 205-917-1 / 208-96-8		0.16 mg/kg		0.16 mg/kg	0.000016 %		
3		anthracene 204-371-1 / 120-12-7		6.3 mg/kg		6.3 mg/kg	0.00063 %		
4		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9	1	3.9 mg/kg		3.9 mg/kg	0.00039 %		
5		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex } 033-002-00-5	1	28 mg/kg		28 mg/kg	0.0028 %		
6		benzo[ghi]perylene 205-883-8 / 191-24-2		2.7 mg/kg		2.7 mg/kg	0.00027 %		
7		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		8.6 mg/kg		8.6 mg/kg	0.00086 %		
8		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		6.3 mg/kg		6.3 mg/kg	0.00063 %		
9		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		6.7 mg/kg		6.7 mg/kg	0.00067 %		
10		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		2.8 mg/kg		2.8 mg/kg	0.00028 %		
11		beryllium { beryllium oxide } 004-003-00-8 / 215-133-1 / 1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
12		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex } 048-001-00-5	1	0.5 mg/kg		0.5 mg/kg	0.00005 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				29	mg/kg	1.462	42.385	mg/kg	0.00424 %		
			215-160-9	1308-38-9									
14		chrysene				6.9	mg/kg		6.9	mg/kg	0.00069 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				87	mg/kg	1.252	108.905	mg/kg	0.0109 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				0.4	mg/kg	1.884	0.754	mg/kg	0.0000754 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				0.36	mg/kg		0.36	mg/kg	0.000036 %		
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				21	mg/kg		21	mg/kg	0.0021 %		
			205-912-4	206-44-0									
19		fluorene				3.6	mg/kg		3.6	mg/kg	0.00036 %		
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				2	mg/kg		2	mg/kg	0.0002 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	250	mg/kg		250	mg/kg	0.025 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.41	mg/kg	1.16	0.476	mg/kg	0.0000476 %		
			215-696-3	1344-48-5									
23		naphthalene				4.2	mg/kg		4.2	mg/kg	0.00042 %		
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				20	mg/kg	1.545	30.904	mg/kg	0.00309 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				24	mg/kg		24	mg/kg	0.0024 %		
			201-581-5	85-01-8									
26		pyrene				20	mg/kg		20	mg/kg	0.002 %		
			204-927-3	129-00-0									
27		selenium { selenium }				0.5	mg/kg		0.5	mg/kg	0.00005 %		
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				25	mg/kg	1.785	44.63	mg/kg	0.00446 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				130	mg/kg	1.245	161.813	mg/kg	0.0162 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0795 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH008[2]

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

Sample details

Sample Name:	LoW Code:
ARP-BH008[2]	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
2.2 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		4.2 mg/kg		4.2 mg/kg	0.00042 %		
2	acenaphthylene		205-917-1	208-96-8		0.37 mg/kg		0.37 mg/kg	0.000037 %		
3	anthracene		204-371-1	120-12-7		5.7 mg/kg		5.7 mg/kg	0.00057 %		
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.9 mg/kg		2.9 mg/kg	0.00029 %		
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	22 mg/kg		22 mg/kg	0.0022 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		2.3 mg/kg		2.3 mg/kg	0.00023 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		9.6 mg/kg		9.6 mg/kg	0.00096 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		6.7 mg/kg		6.7 mg/kg	0.00067 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		6.4 mg/kg		6.4 mg/kg	0.00064 %		
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		3 mg/kg		3 mg/kg	0.0003 %		
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.4 mg/kg		0.4 mg/kg	0.00004 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				33	mg/kg	1.462	48.231	mg/kg	0.00482 %		
			215-160-9	1308-38-9									
14		chrysene				7.3	mg/kg		7.3	mg/kg	0.00073 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				65	mg/kg	1.252	81.365	mg/kg	0.00814 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				0.3	mg/kg	1.884	0.565	mg/kg	0.0000565 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				0.45	mg/kg		0.45	mg/kg	0.000045 %		
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				21	mg/kg		21	mg/kg	0.0021 %		
			205-912-4	206-44-0									
19		fluorene				3.7	mg/kg		3.7	mg/kg	0.00037 %		
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				1.7	mg/kg		1.7	mg/kg	0.00017 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	160	mg/kg		160	mg/kg	0.016 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.3	mg/kg	1.16	0.348	mg/kg	0.0000348 %		
			215-696-3	1344-48-5									
23		naphthalene				5.7	mg/kg		5.7	mg/kg	0.00057 %		
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				22	mg/kg	1.545	33.994	mg/kg	0.0034 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				24	mg/kg		24	mg/kg	0.0024 %		
			201-581-5	85-01-8									
26		pyrene				21	mg/kg		21	mg/kg	0.0021 %		
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				29	mg/kg	1.785	51.77	mg/kg	0.00518 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				100	mg/kg	1.245	124.471	mg/kg	0.0124 %		
		030-013-00-7	215-222-5	1314-13-2									
										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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH009

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

Sample details

Sample Name:
ARP-BH009
Sample Depth:
2.6 m

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
2	acenaphthylene		205-917-1	208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
3	anthracene		204-371-1	120-12-7		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	1.7 mg/kg		1.7 mg/kg	0.00017 %		
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	18 mg/kg		18 mg/kg	0.0018 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.07 mg/kg		0.07 mg/kg	0.000007 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.04 mg/kg		0.04 mg/kg	0.000004 %		
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1 mg/kg	2.775	2.775 mg/kg	0.000278 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.7 mg/kg		0.7 mg/kg	0.00007 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				15	mg/kg	1.462	21.923	mg/kg	0.00219 %		
			215-160-9	1308-38-9									
14		chrysene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				30	mg/kg	1.252	37.553	mg/kg	0.00376 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				0.5	mg/kg	1.884	0.942	mg/kg	0.0000942 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
			205-912-4	206-44-0									
19		fluorene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	120	mg/kg		120	mg/kg	0.012 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.1	mg/kg	1.16	0.116	mg/kg	0.0000116 %		
			215-696-3	1344-48-5									
23		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				11	mg/kg	1.545	16.997	mg/kg	0.0017 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				0.09	mg/kg		0.09	mg/kg	0.000009 %		
			201-581-5	85-01-8									
26		pyrene				0.09	mg/kg		0.09	mg/kg	0.000009 %		
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				16	mg/kg	1.785	28.563	mg/kg	0.00286 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				170	mg/kg	1.245	211.601	mg/kg	0.0212 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0462 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH011

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

Sample details

Sample Name:	LoW Code:	
ARP-BH011	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
3.6 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
2	acenaphthylene		205-917-1	208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
3	anthracene		204-371-1	120-12-7		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<1 mg/kg		<1 mg/kg	<0.0001 %		<**LOD**
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	16 mg/kg		16 mg/kg	0.0016 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.04 mg/kg		0.04 mg/kg	0.000004 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.03 mg/kg		0.03 mg/kg	0.000003 %		
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.2 mg/kg	2.775	3.33 mg/kg	0.000333 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.4 mg/kg		0.4 mg/kg	0.00004 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				11	mg/kg	1.462	16.077	mg/kg	0.00161 %		
			215-160-9	1308-38-9									
14		chrysene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				440	mg/kg	1.252	550.782	mg/kg	0.0551 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<LOD
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				0.04	mg/kg		0.04	mg/kg	0.000004 %		
			205-912-4	206-44-0									
19		fluorene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	290	mg/kg		290	mg/kg	0.029 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				<0.05	mg/kg	1.16	<0.058	mg/kg	<0.0000058 %		<LOD
			215-696-3	1344-48-5									
23		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				17	mg/kg	1.545	26.268	mg/kg	0.00263 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				0.03	mg/kg		0.03	mg/kg	0.000003 %		
			201-581-5	85-01-8									
26		pyrene				0.04	mg/kg		0.04	mg/kg	0.000004 %		
			204-927-3	129-00-0									
27		selenium { selenium }				1.1	mg/kg		1.1	mg/kg	0.00011 %		
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				23	mg/kg	1.785	41.059	mg/kg	0.00411 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				150	mg/kg	1.245	186.707	mg/kg	0.0187 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.113 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Report created by Mark Griffiths on 15 Jan 2020

Classification of sample: ARP-BH011[2]

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

Sample details

Sample Name:	LoW Code:	
ARP-BH011[2]	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
1 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		0.1	mg/kg		0.1	mg/kg	0.00001 %		
2	acenaphthylene		205-917-1	208-96-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
3	anthracene		204-371-1	120-12-7		0.34	mg/kg		0.34	mg/kg	0.000034 %		
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	1.5	mg/kg		1.5	mg/kg	0.00015 %		
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	12	mg/kg		12	mg/kg	0.0012 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.22	mg/kg		0.22	mg/kg	0.000022 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.78	mg/kg		0.78	mg/kg	0.000078 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.59	mg/kg		0.59	mg/kg	0.000059 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.69	mg/kg		0.69	mg/kg	0.000069 %		
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.29	mg/kg		0.29	mg/kg	0.000029 %		
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.4	mg/kg	2.775	1.11	mg/kg	0.000111 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.9	mg/kg		0.9	mg/kg	0.00009 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				18	mg/kg	1.462	26.308	mg/kg	0.00263 %		
			215-160-9	1308-38-9									
14		chrysene				0.73	mg/kg		0.73	mg/kg	0.000073 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				32	mg/kg	1.252	40.057	mg/kg	0.00401 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<LOD
		006-007-00-5											
17		dibenz[a,h]anthracene				0.06	mg/kg		0.06	mg/kg	0.000006 %		
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				1.9	mg/kg		1.9	mg/kg	0.00019 %		
			205-912-4	206-44-0									
19		fluorene				0.09	mg/kg		0.09	mg/kg	0.000009 %		
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	150	mg/kg		150	mg/kg	0.015 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.22	mg/kg	1.16	0.255	mg/kg	0.0000255 %		
			215-696-3	1344-48-5									
23		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				9.2	mg/kg	1.545	14.216	mg/kg	0.00142 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				1.6	mg/kg		1.6	mg/kg	0.00016 %		
			201-581-5	85-01-8									
26		pyrene				1.8	mg/kg		1.8	mg/kg	0.00018 %		
			204-927-3	129-00-0									
27		selenium { selenium }				0.9	mg/kg		0.9	mg/kg	0.00009 %		
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				15	mg/kg	1.785	26.778	mg/kg	0.00268 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				60	mg/kg	1.245	74.683	mg/kg	0.00747 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0358 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Report created by Mark Griffiths on 15 Jan 2020

Classification of sample: ARP-BH012A

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

Sample details

Sample Name:	LoW Code:	
ARP-BH012A	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
7.5 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
3		anthracene		204-371-1	120-12-7		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
4		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	1.2	mg/kg		1.2	mg/kg	0.00012 %		
5		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	7.2	mg/kg		7.2	mg/kg	0.00072 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
8		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
10		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
11		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7	mg/kg	2.775	1.943	mg/kg	0.000194 %		
12		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.2	mg/kg		0.2	mg/kg	0.00002 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				18	mg/kg	1.462	26.308	mg/kg	0.00263 %		
			215-160-9	1308-38-9									
14		chrysene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				25	mg/kg	1.252	31.294	mg/kg	0.00313 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				0.1	mg/kg	1.884	0.188	mg/kg	0.0000188 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-912-4	206-44-0									
19		fluorene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	42	mg/kg		42	mg/kg	0.0042 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.09	mg/kg	1.16	0.104	mg/kg	0.0000104 %		
			215-696-3	1344-48-5									
23		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				18	mg/kg	1.545	27.813	mg/kg	0.00278 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-581-5	85-01-8									
26		pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				25	mg/kg	1.785	44.63	mg/kg	0.00446 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				48	mg/kg	1.245	59.746	mg/kg	0.00597 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0244 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Report created by Mark Griffiths on 15 Jan 2020

Classification of sample: ARP-BH012A[2]

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

Sample details

Sample Name:
ARP-BH012A[2]
Sample Depth:
2.6 m

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
2	acenaphthylene		205-917-1	208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
3	anthracene		204-371-1	120-12-7		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	6.4 mg/kg		6.4 mg/kg	0.00064 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.5 mg/kg	2.775	1.388 mg/kg	0.000139 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.1 mg/kg		0.1 mg/kg	0.00001 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				12	mg/kg	1.462	17.539	mg/kg	0.00175 %		
			215-160-9	1308-38-9									
14		chrysene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				23	mg/kg	1.252	28.791	mg/kg	0.00288 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<LOD
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-912-4	206-44-0									
19		fluorene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	34	mg/kg		34	mg/kg	0.0034 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.06	mg/kg	1.16	0.0696	mg/kg	0.00000696 %		
			215-696-3	1344-48-5									
23		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				13	mg/kg	1.545	20.087	mg/kg	0.00201 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-581-5	85-01-8									
26		pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				17	mg/kg	1.785	30.348	mg/kg	0.00303 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				37	mg/kg	1.245	46.054	mg/kg	0.00461 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0187 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH013

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

Sample details

Sample Name:
ARP-BH013
Sample Depth:
1 m

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		0.48 mg/kg		0.48 mg/kg	0.000048 %		
2	acenaphthylene		205-917-1	208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
3	anthracene		204-371-1	120-12-7		0.91 mg/kg		0.91 mg/kg	0.000091 %		
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	1.7 mg/kg		1.7 mg/kg	0.00017 %		
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	19 mg/kg		19 mg/kg	0.0019 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.24 mg/kg		0.24 mg/kg	0.000024 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.86 mg/kg		0.86 mg/kg	0.000086 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.54 mg/kg		0.54 mg/kg	0.000054 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.74 mg/kg		0.74 mg/kg	0.000074 %		
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.27 mg/kg		0.27 mg/kg	0.000027 %		
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.3 mg/kg		0.3 mg/kg	0.00003 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				18	mg/kg	1.462	26.308	mg/kg	0.00263 %		
			215-160-9	1308-38-9									
14		chrysene				0.78	mg/kg		0.78	mg/kg	0.000078 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				36	mg/kg	1.252	45.064	mg/kg	0.00451 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<LOD
		006-007-00-5											
17		dibenz[a,h]anthracene				0.06	mg/kg		0.06	mg/kg	0.000006 %		
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				3.4	mg/kg		3.4	mg/kg	0.00034 %		
			205-912-4	206-44-0									
19		fluorene				0.46	mg/kg		0.46	mg/kg	0.000046 %		
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	51	mg/kg		51	mg/kg	0.0051 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.11	mg/kg	1.16	0.128	mg/kg	0.0000128 %		
			215-696-3	1344-48-5									
23		naphthalene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				22	mg/kg	1.545	33.994	mg/kg	0.0034 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				2.9	mg/kg		2.9	mg/kg	0.00029 %		
			201-581-5	85-01-8									
26		pyrene				2.8	mg/kg		2.8	mg/kg	0.00028 %		
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				29	mg/kg	1.785	51.77	mg/kg	0.00518 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				75	mg/kg	1.245	93.354	mg/kg	0.00934 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0341 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH013[2]

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

Sample details

Sample Name:	LoW Code:	
ARP-BH013[2]	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
3.5 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		0.26 mg/kg		0.26 mg/kg	0.000026 %		
2	acenaphthylene		205-917-1	208-96-8		0.06 mg/kg		0.06 mg/kg	0.000006 %		
3	anthracene		204-371-1	120-12-7		0.46 mg/kg		0.46 mg/kg	0.000046 %		
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	1.5 mg/kg		1.5 mg/kg	0.00015 %		
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	7.4 mg/kg		7.4 mg/kg	0.00074 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.22 mg/kg		0.22 mg/kg	0.000022 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.84 mg/kg		0.84 mg/kg	0.000084 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.54 mg/kg		0.54 mg/kg	0.000054 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.71 mg/kg		0.71 mg/kg	0.000071 %		
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.25 mg/kg		0.25 mg/kg	0.000025 %		
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.5 mg/kg		0.5 mg/kg	0.00005 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				11	mg/kg	1.462	16.077	mg/kg	0.00161 %		
			215-160-9	1308-38-9									
14		chrysene				0.81	mg/kg		0.81	mg/kg	0.000081 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				46	mg/kg	1.252	57.582	mg/kg	0.00576 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<LOD
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				2.9	mg/kg		2.9	mg/kg	0.00029 %		
			205-912-4	206-44-0									
19		fluorene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	73	mg/kg		73	mg/kg	0.0073 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.24	mg/kg	1.16	0.278	mg/kg	0.0000278 %		
			215-696-3	1344-48-5									
23		naphthalene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				13	mg/kg	1.545	20.087	mg/kg	0.00201 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				1.6	mg/kg		1.6	mg/kg	0.00016 %		
			201-581-5	85-01-8									
26		pyrene				2.6	mg/kg		2.6	mg/kg	0.00026 %		
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				21	mg/kg	1.785	37.489	mg/kg	0.00375 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				84	mg/kg	1.245	104.556	mg/kg	0.0105 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0333 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH014

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

Sample details

Sample Name:
ARP-BH014
Sample Depth:
0.7 m

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		2.3 mg/kg		2.3 mg/kg	0.00023 %		
2	acenaphthylene		205-917-1	208-96-8		0.08 mg/kg		0.08 mg/kg	0.000008 %		
3	anthracene		204-371-1	120-12-7		2.5 mg/kg		2.5 mg/kg	0.00025 %		
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	7.4 mg/kg		7.4 mg/kg	0.00074 %		
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	32 mg/kg		32 mg/kg	0.0032 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.86 mg/kg		0.86 mg/kg	0.000086 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		3.2 mg/kg		3.2 mg/kg	0.00032 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		2.1 mg/kg		2.1 mg/kg	0.00021 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2.8 mg/kg		2.8 mg/kg	0.00028 %		
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.95 mg/kg		0.95 mg/kg	0.000095 %		
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.9 mg/kg		0.9 mg/kg	0.00009 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				24	mg/kg	1.462	35.077	mg/kg	0.00351 %		
			215-160-9	1308-38-9									
14		chrysene				3	mg/kg		3	mg/kg	0.0003 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				430	mg/kg	1.252	538.264	mg/kg	0.0538 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				3.5	mg/kg	1.884	6.594	mg/kg	0.000659 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				11	mg/kg		11	mg/kg	0.0011 %		
			205-912-4	206-44-0									
19		fluorene				1.4	mg/kg		1.4	mg/kg	0.00014 %		
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				0.7	mg/kg		0.7	mg/kg	0.00007 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	230	mg/kg		230	mg/kg	0.023 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.17	mg/kg	1.16	0.197	mg/kg	0.0000197 %		
			215-696-3	1344-48-5									
23		naphthalene				0.42	mg/kg		0.42	mg/kg	0.000042 %		
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				34	mg/kg	1.545	52.536	mg/kg	0.00525 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				13	mg/kg		13	mg/kg	0.0013 %		
			201-581-5	85-01-8									
26		pyrene				9.9	mg/kg		9.9	mg/kg	0.00099 %		
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				24	mg/kg	1.785	42.844	mg/kg	0.00428 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				560	mg/kg	1.245	697.04	mg/kg	0.0697 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.17 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-BH014[2]

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

Sample details

Sample Name:
ARP-BH014[2]
Sample Depth:
4 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
3		anthracene		204-371-1	120-12-7		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
4		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.3	mg/kg		2.3	mg/kg	0.00023 %		
5		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	13	mg/kg		13	mg/kg	0.0013 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.06	mg/kg		0.06	mg/kg	0.000006 %		
8		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.04	mg/kg		0.04	mg/kg	0.000004 %		
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.05	mg/kg		0.05	mg/kg	0.000005 %		
10		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
11		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.5	mg/kg	2.775	1.388	mg/kg	0.000139 %		
12		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.3	mg/kg		0.3	mg/kg	0.00003 %		

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#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
13		chromium { chromium(III) oxide }		215-160-9	1308-38-9		25	mg/kg	1.462	36.539	mg/kg	0.00365 %		
14		chrysene	601-048-00-0	205-923-4	218-01-9		0.06	mg/kg		0.06	mg/kg	0.000006 %		
15		copper { copper(II) oxide }	029-016-00-6	215-269-1	1317-38-0		79	mg/kg	1.252	98.89	mg/kg	0.00989 %		
16		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				0.3	mg/kg	1.884	0.565	mg/kg	0.0000565 %		
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
18		fluoranthene		205-912-4	206-44-0		0.14	mg/kg		0.14	mg/kg	0.000014 %		
19		fluorene		201-695-5	86-73-7		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
20		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	82	mg/kg		82	mg/kg	0.0082 %		
22		mercury { mercury(II) sulphide }		215-696-3	1344-48-5		0.12	mg/kg	1.16	0.139	mg/kg	0.0000139 %		
23		naphthalene	601-052-00-2	202-049-5	91-20-3		0.04	mg/kg		0.04	mg/kg	0.000004 %		
24		nickel { nickel(IV) oxide (nickel dioxide) }	028-004-00-8	234-823-3	12035-36-8		20	mg/kg	1.545	30.904	mg/kg	0.00309 %		
25		phenanthrene		201-581-5	85-01-8		0.14	mg/kg		0.14	mg/kg	0.000014 %		
26		pyrene		204-927-3	129-00-0		0.14	mg/kg		0.14	mg/kg	0.000014 %		
27		selenium { selenium }	034-001-00-2	231-957-4	7782-49-2		<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
28		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		27	mg/kg	1.785	48.2	mg/kg	0.00482 %		
29		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		110	mg/kg	1.245	136.919	mg/kg	0.0137 %		
											Total:	0.0453 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-DS001

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

Sample details

Sample Name:	LoW Code:	
ARP-DS001	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
0.6 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		0.03	mg/kg		0.03	mg/kg	0.000003 %		
2		acenaphthylene		205-917-1	208-96-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
3		anthracene		204-371-1	120-12-7		0.04	mg/kg		0.04	mg/kg	0.000004 %		
4		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	3.5	mg/kg		3.5	mg/kg	0.00035 %		
5		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	32	mg/kg		32	mg/kg	0.0032 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		0.06	mg/kg		0.06	mg/kg	0.000006 %		
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.13	mg/kg		0.13	mg/kg	0.000013 %		
8		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.11	mg/kg		0.11	mg/kg	0.000011 %		
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.14	mg/kg		0.14	mg/kg	0.000014 %		
10		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.06	mg/kg		0.06	mg/kg	0.000006 %		
11		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.8	mg/kg	2.775	2.22	mg/kg	0.000222 %		
12		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	1.2	mg/kg		1.2	mg/kg	0.00012 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				27	mg/kg	1.462	39.462	mg/kg	0.00395 %		
			215-160-9	1308-38-9									
14		chrysene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				80	mg/kg	1.252	100.142	mg/kg	0.01 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				0.6	mg/kg	1.884	1.13	mg/kg	0.000113 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				0.39	mg/kg		0.39	mg/kg	0.000039 %		
			205-912-4	206-44-0									
19		fluorene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				0.06	mg/kg		0.06	mg/kg	0.000006 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	330	mg/kg		330	mg/kg	0.033 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.37	mg/kg	1.16	0.429	mg/kg	0.0000429 %		
			215-696-3	1344-48-5									
23		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				17	mg/kg	1.545	26.268	mg/kg	0.00263 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
			201-581-5	85-01-8									
26		pyrene				0.37	mg/kg		0.37	mg/kg	0.000037 %		
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				28	mg/kg	1.785	49.985	mg/kg	0.005 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				210	mg/kg	1.245	261.39	mg/kg	0.0261 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.085 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-DS002

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

Sample details

Sample Name:	LoW Code:	
ARP-DS002	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
0.8 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		0.25 mg/kg		0.25 mg/kg	0.000025 %		
2	acenaphthylene		205-917-1	208-96-8		0.1 mg/kg		0.1 mg/kg	0.00001 %		
3	anthracene		204-371-1	120-12-7		0.56 mg/kg		0.56 mg/kg	0.000056 %		
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	260 mg/kg		260 mg/kg	0.026 %		
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	56 mg/kg		56 mg/kg	0.0056 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.41 mg/kg		0.41 mg/kg	0.000041 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1 mg/kg		1 mg/kg	0.0001 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.88 mg/kg		0.88 mg/kg	0.000088 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.1 mg/kg		1.1 mg/kg	0.00011 %		
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.44 mg/kg		0.44 mg/kg	0.000044 %		
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.3 mg/kg	2.775	3.608 mg/kg	0.000361 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	1.2 mg/kg		1.2 mg/kg	0.00012 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				33	mg/kg	1.462	48.231	mg/kg	0.00482 %		
			215-160-9	1308-38-9									
14		chrysene				1.2	mg/kg		1.2	mg/kg	0.00012 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				160	mg/kg	1.252	200.284	mg/kg	0.02 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				1.6	mg/kg	1.884	3.014	mg/kg	0.000301 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				3.4	mg/kg		3.4	mg/kg	0.00034 %		
			205-912-4	206-44-0									
19		fluorene				0.3	mg/kg		0.3	mg/kg	0.00003 %		
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				0.32	mg/kg		0.32	mg/kg	0.000032 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	2400	mg/kg		2400	mg/kg	0.24 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				1.1	mg/kg	1.16	1.276	mg/kg	0.000128 %		
			215-696-3	1344-48-5									
23		naphthalene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				26	mg/kg	1.545	40.175	mg/kg	0.00402 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				2.7	mg/kg		2.7	mg/kg	0.00027 %		
			201-581-5	85-01-8									
26		pyrene				3.2	mg/kg		3.2	mg/kg	0.00032 %		
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				36	mg/kg	1.785	64.267	mg/kg	0.00643 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				470	mg/kg	1.245	585.016	mg/kg	0.0585 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.368 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-TP001

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

Sample details

Sample Name:	LoW Code:	
ARP-TP001	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
0.8 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
2	acenaphthylene		205-917-1	208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
3	anthracene		204-371-1	120-12-7		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	4.8 mg/kg		4.8 mg/kg	0.00048 %		
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	87 mg/kg		87 mg/kg	0.0087 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7 mg/kg	2.775	1.943 mg/kg	0.000194 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.3 mg/kg		0.3 mg/kg	0.00003 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				20	mg/kg	1.462	29.231	mg/kg	0.00292 %		
			215-160-9	1308-38-9									
14		chrysene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				110	mg/kg	1.252	137.695	mg/kg	0.0138 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				2.9	mg/kg	1.884	5.464	mg/kg	0.000546 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				0.03	mg/kg		0.03	mg/kg	0.000003 %		
			205-912-4	206-44-0									
19		fluorene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	300	mg/kg		300	mg/kg	0.03 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.45	mg/kg	1.16	0.522	mg/kg	0.0000522 %		
			215-696-3	1344-48-5									
23		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				17	mg/kg	1.545	26.268	mg/kg	0.00263 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-581-5	85-01-8									
26		pyrene				0.03	mg/kg		0.03	mg/kg	0.000003 %		
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				31	mg/kg	1.785	55.341	mg/kg	0.00553 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				140	mg/kg	1.245	174.26	mg/kg	0.0174 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0824 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-TP002

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

Sample details

Sample Name:
ARP-TP002
Sample Depth:
1 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
1		acenaphthene 201-469-6 / 83-32-9		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
2		acenaphthylene 205-917-1 / 208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
3		anthracene 204-371-1 / 120-12-7		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
4		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9	1	6.1 mg/kg		6.1 mg/kg	0.00061 %		
5		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex } 033-002-00-5	1	44 mg/kg		44 mg/kg	0.0044 %		
6		benzo[ghi]perylene 205-883-8 / 191-24-2		0.04 mg/kg		0.04 mg/kg	0.000004 %		
7		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		0.09 mg/kg		0.09 mg/kg	0.000009 %		
8		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		0.08 mg/kg		0.08 mg/kg	0.000008 %		
9		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		0.13 mg/kg		0.13 mg/kg	0.000013 %		
10		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		0.03 mg/kg		0.03 mg/kg	0.000003 %		
11		beryllium { beryllium oxide } 004-003-00-8 / 215-133-1 / 1304-56-9		1.3 mg/kg	2.775	3.608 mg/kg	0.000361 %		
12		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex } 048-001-00-5	1	0.3 mg/kg		0.3 mg/kg	0.00003 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				22	mg/kg	1.462	32.154	mg/kg	0.00322 %		
			215-160-9	1308-38-9									
14		chrysene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				230	mg/kg	1.252	287.909	mg/kg	0.0288 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				1.8	mg/kg	1.884	3.391	mg/kg	0.000339 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				0.19	mg/kg		0.19	mg/kg	0.000019 %		
			205-912-4	206-44-0									
19		fluorene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				0.04	mg/kg		0.04	mg/kg	0.000004 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	530	mg/kg		530	mg/kg	0.053 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				1.6	mg/kg	1.16	1.856	mg/kg	0.000186 %		
			215-696-3	1344-48-5									
23		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				32	mg/kg	1.545	49.446	mg/kg	0.00494 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
			201-581-5	85-01-8									
26		pyrene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
			204-927-3	129-00-0									
27		selenium { selenium }				1.3	mg/kg		1.3	mg/kg	0.00013 %		
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				37	mg/kg	1.785	66.052	mg/kg	0.00661 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				620	mg/kg	1.245	771.723	mg/kg	0.0772 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.18 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: ARP-TP002[2]

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

Sample details

Sample Name:	LoW Code:	
ARP-TP002[2]	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
2.5 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		0.05 mg/kg		0.05 mg/kg	0.000005 %		
2	acenaphthylene		205-917-1	208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
3	anthracene		204-371-1	120-12-7		0.07 mg/kg		0.07 mg/kg	0.000007 %		
4	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	3.3 mg/kg		3.3 mg/kg	0.00033 %		
5	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	20 mg/kg		20 mg/kg	0.002 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.09 mg/kg		0.09 mg/kg	0.000009 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.2 mg/kg		0.2 mg/kg	0.00002 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.16 mg/kg		0.16 mg/kg	0.000016 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.2 mg/kg		0.2 mg/kg	0.00002 %		
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.07 mg/kg		0.07 mg/kg	0.000007 %		
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
12	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.8 mg/kg		0.8 mg/kg	0.00008 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		chromium { chromium(III) oxide }				15	mg/kg	1.462	21.923	mg/kg	0.00219 %		
			215-160-9	1308-38-9									
14		chrysene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
		601-048-00-0	205-923-4	218-01-9									
15		copper { copper(II) oxide }				100	mg/kg	1.252	125.178	mg/kg	0.0125 %		
		029-016-00-6	215-269-1	1317-38-0									
16		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 }				0.3	mg/kg	1.884	0.565	mg/kg	0.0000565 %		
		006-007-00-5											
17		dibenz[a,h]anthracene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				0.55	mg/kg		0.55	mg/kg	0.000055 %		
			205-912-4	206-44-0									
19		fluorene				0.03	mg/kg		0.03	mg/kg	0.000003 %		
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				0.08	mg/kg		0.08	mg/kg	0.000008 %		
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	250	mg/kg		250	mg/kg	0.025 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				0.67	mg/kg	1.16	0.777	mg/kg	0.0000777 %		
			215-696-3	1344-48-5									
23		naphthalene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				16	mg/kg	1.545	24.723	mg/kg	0.00247 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				0.36	mg/kg		0.36	mg/kg	0.000036 %		
			201-581-5	85-01-8									
26		pyrene				0.55	mg/kg		0.55	mg/kg	0.000055 %		
			204-927-3	129-00-0									
27		selenium { selenium }				<0.5	mg/kg		<0.5	mg/kg	<0.00005 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				18	mg/kg	1.785	32.133	mg/kg	0.00321 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				220	mg/kg	1.245	273.837	mg/kg	0.0274 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0758 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: CE-2015-CC/WS2

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

Sample details

Sample Name:
CE-2015-CC/WS2
Sample Depth:
0.68 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
2		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
3		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
4		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
5		barium { barium sulfate }		231-784-4	7727-43-7		25	mg/kg	1.7	42.488	mg/kg	0.00425 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
8		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
10		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
11		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5	mg/kg	2.775	<1.388	mg/kg	<0.000139 %		<LOD
12		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
13		chromium { chromium(III) oxide }		215-160-9	1308-38-9		6	mg/kg	1.462	8.769	mg/kg	0.000877 %		

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#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
15		copper { copper(II) oxide }	029-016-00-6	215-269-1	1317-38-0		<4	mg/kg	1.252	<5.007	mg/kg	<0.000501 %		<LOD
16		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				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
18		fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
19		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
20		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	<3	mg/kg		<3	mg/kg	<0.0003 %		<LOD
22		mercury { mercury(II) sulphide }		215-696-3	1344-48-5		<1	mg/kg	1.16	<1.16	mg/kg	<0.000116 %		<LOD
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		nickel { nickel(IV) oxide (nickel dioxide) }	028-004-00-8	234-823-3	12035-36-8		4	mg/kg	1.545	6.181	mg/kg	0.000618 %		
25		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		selenium { selenium }	034-001-00-2	231-957-4	7782-49-2		<3	mg/kg		<3	mg/kg	<0.0003 %		<LOD
28		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		11	mg/kg	1.785	19.637	mg/kg	0.00196 %		
29		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		16	mg/kg	1.245	19.915	mg/kg	0.00199 %		
											Total:	0.0118 %		

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 Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: CE-2015-CC/WS3

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

Sample details

Sample Name:
CE-2015-CC/WS3
Sample Depth:
0.56 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number									
1		acenaphthene 201-469-6 / 83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
2		acenaphthylene 205-917-1 / 208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
3		anthracene 204-371-1 / 120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
4		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex } 033-002-00-5	1	2	mg/kg		2	mg/kg	0.0002 %		
5		barium { barium sulfate } 231-784-4 / 7727-43-7		274	mg/kg	1.7	465.668	mg/kg	0.0466 %		
6		benzo[ghi]perylene 205-883-8 / 191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
7		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
8		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
9		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
10		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
11		beryllium { beryllium oxide } 004-003-00-8 / 215-133-1 / 1304-56-9		0.6	mg/kg	2.775	1.665	mg/kg	0.000167 %		
12		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex } 048-001-00-5	1	0.3	mg/kg		0.3	mg/kg	0.00003 %		
13		chromium { chromium(III) oxide } 215-160-9 / 1308-38-9		23	mg/kg	1.462	33.616	mg/kg	0.00336 %		

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#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
15		copper { copper(II) oxide }	029-016-00-6	215-269-1	1317-38-0		18	mg/kg	1.252	22.532	mg/kg	0.00225 %		
16		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				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
18		fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
19		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
20		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	10	mg/kg		10	mg/kg	0.001 %		
22		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
23		mercury { mercury(II) sulphide }		215-696-3	1344-48-5		<1	mg/kg	1.16	<1.16	mg/kg	<0.000116 %		<LOD
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		nickel { nickel(IV) oxide (nickel dioxide) }	028-004-00-8	234-823-3	12035-36-8		25	mg/kg	1.545	38.63	mg/kg	0.00386 %		
26		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		selenium { selenium }	034-001-00-2	231-957-4	7782-49-2		<3	mg/kg		<3	mg/kg	<0.0003 %		<LOD
29		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		26	mg/kg	1.785	46.415	mg/kg	0.00464 %		
30		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		47	mg/kg	1.245	58.502	mg/kg	0.00585 %		
											Total:	0.0689 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-CRH01

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

Sample details

Sample Name:
GEO-2015-CRH01
Sample Depth:
0.2 m

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		0.12 mg/kg		0.12 mg/kg	0.000012 %		
2	acenaphthylene		205-917-1	208-96-8		0.06 mg/kg		0.06 mg/kg	0.000006 %		
3	anthracene		204-371-1	120-12-7		0.26 mg/kg		0.26 mg/kg	0.000026 %		
4	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	14.9 mg/kg		14.9 mg/kg	0.00149 %		
5	barium { barium sulfate }		231-784-4	7727-43-7		212 mg/kg	1.7	360.298 mg/kg	0.036 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.58 mg/kg		0.58 mg/kg	0.000058 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.91 mg/kg		0.91 mg/kg	0.000091 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.96 mg/kg		0.96 mg/kg	0.000096 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.16 mg/kg		1.16 mg/kg	0.000116 %		
10	benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		1.61 mg/kg		1.61 mg/kg	0.000161 %		
11	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.45 mg/kg		0.45 mg/kg	0.000045 %		
12	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1 mg/kg	2.775	2.775 mg/kg	0.000278 %		
13	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.9 mg/kg		0.9 mg/kg	0.00009 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium { chromium(III) oxide }				17.2	mg/kg	1.462	25.139	mg/kg	0.00251 %		
			215-160-9	1308-38-9									
15		chrysene				0.98	mg/kg		0.98	mg/kg	0.000098 %		
		601-048-00-0	205-923-4	218-01-9									
16		copper { copper(II) oxide }				73	mg/kg	1.252	91.38	mg/kg	0.00914 %		
		029-016-00-6	215-269-1	1317-38-0									
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 }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
18		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
19		fluoranthene				2.16	mg/kg		2.16	mg/kg	0.000216 %		
			205-912-4	206-44-0									
20		fluorene				0.09	mg/kg		0.09	mg/kg	0.000009 %		
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				0.48	mg/kg		0.48	mg/kg	0.000048 %		
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	170	mg/kg		170	mg/kg	0.017 %		
		082-001-00-6											
23		mercury { mercury(II) sulphide }				0.4	mg/kg	1.16	0.464	mg/kg	0.0000464 %		
			215-696-3	1344-48-5									
24		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		nickel { nickel(IV) oxide (nickel dioxide) }				18.2	mg/kg	1.545	28.122	mg/kg	0.00281 %		
		028-004-00-8	234-823-3	12035-36-8									
26		phenanthrene				1.09	mg/kg		1.09	mg/kg	0.000109 %		
			201-581-5	85-01-8									
27		pyrene				1.89	mg/kg		1.89	mg/kg	0.000189 %		
			204-927-3	129-00-0									
28		selenium { selenium }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
29		vanadium { divanadium pentaoxide; vanadium pentoxide }				26	mg/kg	1.785	46.415	mg/kg	0.00464 %		
		023-001-00-8	215-239-8	1314-62-1									
30		zinc { zinc oxide }				177	mg/kg	1.245	220.314	mg/kg	0.022 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0976 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-CRH01[2]

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

Sample details

Sample Name:
GEO-2015-CRH01[2]
Sample Depth:
0.5 m

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	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 %		
3	anthracene		204-371-1	120-12-7		0.1	mg/kg		0.1	mg/kg	0.00001 %		
4	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	10.1	mg/kg		10.1	mg/kg	0.00101 %		
5	barium { barium sulfate }		231-784-4	7727-43-7		578	mg/kg	1.7	982.321	mg/kg	0.0982 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.19	mg/kg		0.19	mg/kg	0.000019 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.35	mg/kg		0.35	mg/kg	0.000035 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.3	mg/kg		0.3	mg/kg	0.00003 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.36	mg/kg		0.36	mg/kg	0.000036 %		
10	benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		0.5	mg/kg		0.5	mg/kg	0.00005 %		
11	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.14	mg/kg		0.14	mg/kg	0.000014 %		
12	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.3	mg/kg	2.775	3.608	mg/kg	0.000361 %		
13	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.9	mg/kg		0.9	mg/kg	0.00009 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium { chromium(III) oxide }				33.3	mg/kg	1.462	48.67	mg/kg	0.00487 %		
			215-160-9	1308-38-9									
15		chrysene				0.34	mg/kg		0.34	mg/kg	0.000034 %		
		601-048-00-0	205-923-4	218-01-9									
16		copper { copper(II) oxide }				47	mg/kg	1.252	58.834	mg/kg	0.00588 %		
		029-016-00-6	215-269-1	1317-38-0									
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 }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
18		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
19		fluoranthene				0.63	mg/kg		0.63	mg/kg	0.000063 %		
			205-912-4	206-44-0									
20		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	191	mg/kg		191	mg/kg	0.0191 %		
		082-001-00-6											
23		mercury { mercury(II) sulphide }				0.3	mg/kg	1.16	0.348	mg/kg	0.0000348 %		
			215-696-3	1344-48-5									
24		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		nickel { nickel(IV) oxide (nickel dioxide) }				20.7	mg/kg	1.545	31.985	mg/kg	0.0032 %		
		028-004-00-8	234-823-3	12035-36-8									
26		phenanthrene				0.39	mg/kg		0.39	mg/kg	0.000039 %		
			201-581-5	85-01-8									
27		pyrene				0.63	mg/kg		0.63	mg/kg	0.000063 %		
			204-927-3	129-00-0									
28		selenium { selenium }				1	mg/kg		1	mg/kg	0.0001 %		
		034-001-00-2	231-957-4	7782-49-2									
29		vanadium { divanadium pentaoxide; vanadium pentoxide }				31	mg/kg	1.785	55.341	mg/kg	0.00553 %		
		023-001-00-8	215-239-8	1314-62-1									
30		zinc { zinc oxide }				93	mg/kg	1.245	115.758	mg/kg	0.0116 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.151 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-CRH01[3]

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

Sample details

Sample Name:
GEO-2015-CRH01[3]
Sample Depth:
2 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		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		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
3		anthracene		204-371-1	120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
4		benzo[ghi]perylene		205-883-8	191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<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[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
10		chrysene	601-048-00-0	205-923-4	218-01-9		0.04 mg/kg		0.04 mg/kg	0.000004 %		
11		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
12		fluoranthene		205-912-4	206-44-0		0.04 mg/kg		0.04 mg/kg	0.000004 %		
13		fluorene		201-695-5	86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
14		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
15		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
17	●	phenanthrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-581-5	85-01-8									
18	●	pyrene				0.04	mg/kg		0.04	mg/kg	0.000004 %		
			204-927-3	129-00-0									
										Total:	0.00007 %		

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)
<LOD	Below limit of detection
ND	Not detected

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Classification of sample: GEO-2015-CRH01[4]

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

Sample details

Sample Name:	LoW Code:	
GEO-2015-CRH01[4]	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
1 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
1	●	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		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
3	●	anthracene 204-371-1 / 120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<**LOD**
4	●	benzo[ghi]perylene 205-883-8 / 191-24-2		0.09 mg/kg		0.09 mg/kg	0.000009 %		
5		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		0.22 mg/kg		0.22 mg/kg	0.000022 %		
6		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		0.15 mg/kg		0.15 mg/kg	0.000015 %		
7		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		0.19 mg/kg		0.19 mg/kg	0.000019 %		
8	●	benzo[bk]fluoranthene [1] 205-911-9 [2] 205-916-6 / [1] 205-99-2 [2] 207-08-9		0.26 mg/kg		0.26 mg/kg	0.000026 %		
9		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		0.07 mg/kg		0.07 mg/kg	0.000007 %		
10		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		0.22 mg/kg		0.22 mg/kg	0.000022 %		
11		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<**LOD**
12	●	fluoranthene 205-912-4 / 206-44-0		0.34 mg/kg		0.34 mg/kg	0.000034 %		
13	●	fluorene 201-695-5 / 86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<**LOD**
14	●	indeno[123-cd]pyrene 205-893-2 / 193-39-5		0.08 mg/kg		0.08 mg/kg	0.000008 %		
15		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4] 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]		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<**LOD**

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		**<LOD**
		601-052-00-2	202-049-5	91-20-3									
17	•	phenanthrene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
			201-581-5	85-01-8									
18	•	pyrene				0.32	mg/kg		0.32	mg/kg	0.000032 %		
			204-927-3	129-00-0									
										Total:	0.00023 %		

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)
<LOD	Below limit of detection
ND	Not detected

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Classification of sample: GEO-2015-CRH01B

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

Sample details

Sample Name:
GEO-2015-CRH01B
Sample Depth:
1 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		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		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
3		anthracene		204-371-1	120-12-7		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
4		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	13.3	mg/kg		13.3	mg/kg	0.00133 %		
5		barium { barium sulfate }		231-784-4	7727-43-7		100	mg/kg	1.7	169.952	mg/kg	0.017 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.06	mg/kg		<0.06	mg/kg	<0.000006 %		<LOD
8		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
10		benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		<0.07	mg/kg		<0.07	mg/kg	<0.000007 %		<LOD
11		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
12		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1	mg/kg	2.775	2.775	mg/kg	0.000278 %		
13		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium { chromium(III) oxide }				43.6	mg/kg	1.462	63.724	mg/kg	0.00637 %		
			215-160-9	1308-38-9									
15		chrysene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
16		copper { copper(II) oxide }				37	mg/kg	1.252	46.316	mg/kg	0.00463 %		
		029-016-00-6	215-269-1	1317-38-0									
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 }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
18		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
19		fluoranthene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-912-4	206-44-0									
20		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	78	mg/kg		78	mg/kg	0.0078 %		
		082-001-00-6											
23		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<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]									
24		mercury { mercury(II) sulphide }				0.6	mg/kg	1.16	0.696	mg/kg	0.0000696 %		
			215-696-3	1344-48-5									
25		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		nickel { nickel(IV) oxide (nickel dioxide) }				21.3	mg/kg	1.545	32.912	mg/kg	0.00329 %		
		028-004-00-8	234-823-3	12035-36-8									
27		phenanthrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-581-5	85-01-8									
28		pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			204-927-3	129-00-0									
29		selenium { selenium }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
30		vanadium { divanadium pentaoxide; vanadium pentoxide }				25	mg/kg	1.785	44.63	mg/kg	0.00446 %		
		023-001-00-8	215-239-8	1314-62-1									
31		zinc { zinc oxide }				57	mg/kg	1.245	70.949	mg/kg	0.00709 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0526 %		

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 Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-CRH01B[2]

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

Sample details

Sample Name:
GEO-2015-CRH01B[2]
Sample Depth:
2 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	●	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		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
3	●	anthracene		204-371-1	120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
4	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<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[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
10		chrysene	601-048-00-0	205-923-4	218-01-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
11		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
12	●	fluoranthene		205-912-4	206-44-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
13	●	fluorene		201-695-5	86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
14	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
15		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]		0.009 mg/kg		0.009 mg/kg	0.0000009 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
17	•	phenanthrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-581-5	85-01-8									
18	•	pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			204-927-3	129-00-0									
										Total:	0.00006 %		

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)
<LOD	Below limit of detection
ND	Not detected

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 Unlikely to be flammable due to dilution and low concentration.

Hazard Statements hit:

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

Because of determinand:

o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]: (conc.: 9.0e-07%)

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Classification of sample: GEO-2015-CRH03

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

Sample details

Sample Name:
GEO-2015-CRH03
Sample Depth:
3 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		0.22	mg/kg		0.22	mg/kg	0.000022 %		
2		acenaphthylene		205-917-1	208-96-8		0.24	mg/kg		0.24	mg/kg	0.000024 %		
3		anthracene		204-371-1	120-12-7		0.62	mg/kg		0.62	mg/kg	0.000062 %		
4		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	5.9	mg/kg		5.9	mg/kg	0.00059 %		
5		barium { barium sulfate }		231-784-4	7727-43-7		351	mg/kg	1.7	596.531	mg/kg	0.0597 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		0.68	mg/kg		0.68	mg/kg	0.000068 %		
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.64	mg/kg		1.64	mg/kg	0.000164 %		
8		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.29	mg/kg		1.29	mg/kg	0.000129 %		
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.45	mg/kg		1.45	mg/kg	0.000145 %		
10		benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		2.02	mg/kg		2.02	mg/kg	0.000202 %		
11		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.57	mg/kg		0.57	mg/kg	0.000057 %		
12		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1	mg/kg	2.775	2.775	mg/kg	0.000278 %		
13		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**

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#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
14		chromium { chromium(III) oxide }		49.2 mg/kg	1.462	71.909 mg/kg	0.00719 %		
		215-160-9 / 1308-38-9							
15		chrysene		1.46 mg/kg		1.46 mg/kg	0.000146 %		
		601-048-00-0 / 205-923-4 / 218-01-9							
16		copper { copper(II) oxide }		24 mg/kg	1.252	30.043 mg/kg	0.003 %		
		029-016-00-6 / 215-269-1 / 1317-38-0							
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 }		<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
		006-007-00-5							
18		dibenz[a,h]anthracene		0.1 mg/kg		0.1 mg/kg	0.00001 %		
		601-041-00-2 / 200-181-8 / 53-70-3							
19		fluoranthene		2.89 mg/kg		2.89 mg/kg	0.000289 %		
		205-912-4 / 206-44-0							
20		fluorene		0.3 mg/kg		0.3 mg/kg	0.00003 %		
		201-695-5 / 86-73-7							
21		indeno[123-cd]pyrene		0.7 mg/kg		0.7 mg/kg	0.00007 %		
		205-893-2 / 193-39-5							
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }	1	17 mg/kg		17 mg/kg	0.0017 %		
		082-001-00-6							
23		mercury { mercury(II) sulphide }		<0.1 mg/kg	1.16	<0.116 mg/kg	<0.0000116 %		<LOD
		215-696-3 / 1344-48-5							
24		naphthalene		0.41 mg/kg		0.41 mg/kg	0.000041 %		
		601-052-00-2 / 202-049-5 / 91-20-3							
25		nickel { nickel(IV) oxide (nickel dioxide) }		16 mg/kg	1.545	24.723 mg/kg	0.00247 %		
		028-004-00-8 / 234-823-3 / 12035-36-8							
26		phenanthrene		2.36 mg/kg		2.36 mg/kg	0.000236 %		
		201-581-5 / 85-01-8							
27		pyrene		2.79 mg/kg		2.79 mg/kg	0.000279 %		
		204-927-3 / 129-00-0							
28		selenium { selenium }		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
		034-001-00-2 / 231-957-4 / 7782-49-2							
29		vanadium { divanadium pentaoxide; vanadium pentoxide }		29 mg/kg	1.785	51.77 mg/kg	0.00518 %		
		023-001-00-8 / 215-239-8 / 1314-62-1							
30		zinc { zinc oxide }		28 mg/kg	1.245	34.852 mg/kg	0.00349 %		
		030-013-00-7 / 215-222-5 / 1314-13-2							
						Total:	0.0857 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-TP01

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

Sample details

Sample Name:	LoW Code:
GEO-2015-TP01	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.3 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	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		0.04	mg/kg		0.04	mg/kg	0.000004 %		
3	anthracene		204-371-1	120-12-7		0.13	mg/kg		0.13	mg/kg	0.000013 %		
4	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	16.5	mg/kg		16.5	mg/kg	0.00165 %		
5	barium { barium sulfate }		231-784-4	7727-43-7		105	mg/kg	1.7	178.449	mg/kg	0.0178 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		0.43	mg/kg		0.43	mg/kg	0.000043 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.76	mg/kg		0.76	mg/kg	0.000076 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.66	mg/kg		0.66	mg/kg	0.000066 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.78	mg/kg		0.78	mg/kg	0.000078 %		
10	benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		1.09	mg/kg		1.09	mg/kg	0.000109 %		
11	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.31	mg/kg		0.31	mg/kg	0.000031 %		
12	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.8	mg/kg	2.775	2.22	mg/kg	0.000222 %		
13	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.4	mg/kg		0.4	mg/kg	0.00004 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium { chromium(III) oxide }	215-160-9	1308-38-9		34.2	mg/kg	1.462	49.985	mg/kg	0.005 %		
15		chrysene	205-923-4	218-01-9		0.65	mg/kg		0.65	mg/kg	0.000065 %		
		601-048-00-0											
16		copper { copper(II) oxide }	215-269-1	1317-38-0		49	mg/kg	1.252	61.337	mg/kg	0.00613 %		
		029-016-00-6											
17		dibenz[a,h]anthracene	200-181-8	53-70-3		0.07	mg/kg		0.07	mg/kg	0.000007 %		
		601-041-00-2											
18		fluoranthene	205-912-4	206-44-0		1.07	mg/kg		1.07	mg/kg	0.000107 %		
19		fluorene	201-695-5	86-73-7		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
20		indeno[123-cd]pyrene	205-893-2	193-39-5		0.41	mg/kg		0.41	mg/kg	0.000041 %		
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	139	mg/kg		139	mg/kg	0.0139 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }	215-696-3	1344-48-5		0.5	mg/kg	1.16	0.58	mg/kg	0.000058 %		
23		naphthalene	202-049-5	91-20-3		0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-052-00-2											
24		nickel { nickel(IV) oxide (nickel dioxide) }	234-823-3	12035-36-8		24.1	mg/kg	1.545	37.239	mg/kg	0.00372 %		
		028-004-00-8											
25		phenanthrene	201-581-5	85-01-8		0.56	mg/kg		0.56	mg/kg	0.000056 %		
26		pyrene	204-927-3	129-00-0		1.06	mg/kg		1.06	mg/kg	0.000106 %		
27		selenium { selenium }	231-957-4	7782-49-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		034-001-00-2											
28		vanadium { divanadium pentaoxide; vanadium pentoxide }	215-239-8	1314-62-1		23	mg/kg	1.785	41.059	mg/kg	0.00411 %		
		023-001-00-8											
29		zinc { zinc oxide }	215-222-5	1314-13-2		98	mg/kg	1.245	121.982	mg/kg	0.0122 %		
		030-013-00-7											
										Total:	0.0658 %		

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 Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-TP02

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

Sample details

Sample Name:	LoW Code:
GEO-2015-TP02	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.5 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		0.41 mg/kg		0.41 mg/kg	0.000041 %		
2	acenaphthylene		205-917-1	208-96-8		0.17 mg/kg		0.17 mg/kg	0.000017 %		
3	anthracene		204-371-1	120-12-7		0.9 mg/kg		0.9 mg/kg	0.00009 %		
4	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	10.4 mg/kg		10.4 mg/kg	0.00104 %		
5	barium { barium sulfate }		231-784-4	7727-43-7		120 mg/kg	1.7	203.942 mg/kg	0.0204 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		2.21 mg/kg		2.21 mg/kg	0.000221 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		4.32 mg/kg		4.32 mg/kg	0.000432 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		3.58 mg/kg		3.58 mg/kg	0.000358 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		4.47 mg/kg		4.47 mg/kg	0.000447 %		
10	benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		6.21 mg/kg		6.21 mg/kg	0.000621 %		
11	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		1.74 mg/kg		1.74 mg/kg	0.000174 %		
12	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
13	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.8 mg/kg		0.8 mg/kg	0.00008 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium { chromium(III) oxide }				15.5	mg/kg	1.462	22.654	mg/kg	0.00227 %		
			215-160-9	1308-38-9									
15		chrysene				4.17	mg/kg		4.17	mg/kg	0.000417 %		
		601-048-00-0	205-923-4	218-01-9									
16		copper { copper(II) oxide }				44	mg/kg	1.252	55.078	mg/kg	0.00551 %		
		029-016-00-6	215-269-1	1317-38-0									
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 }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<**LOD**
		006-007-00-5											
18		dibenz[a,h]anthracene				0.31	mg/kg		0.31	mg/kg	0.000031 %		
		601-041-00-2	200-181-8	53-70-3									
19		fluoranthene				7.11	mg/kg		7.11	mg/kg	0.000711 %		
			205-912-4	206-44-0									
20		fluorene				0.28	mg/kg		0.28	mg/kg	0.000028 %		
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				2.07	mg/kg		2.07	mg/kg	0.000207 %		
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	83	mg/kg		83	mg/kg	0.0083 %		
		082-001-00-6											
23		mercury { mercury(II) sulphide }				0.2	mg/kg	1.16	0.232	mg/kg	0.0000232 %		
			215-696-3	1344-48-5									
24		naphthalene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
		601-052-00-2	202-049-5	91-20-3									
25		nickel { nickel(IV) oxide (nickel dioxide) }				17.3	mg/kg	1.545	26.732	mg/kg	0.00267 %		
		028-004-00-8	234-823-3	12035-36-8									
26		phenanthrene				3.57	mg/kg		3.57	mg/kg	0.000357 %		
			201-581-5	85-01-8									
27		pyrene				6.76	mg/kg		6.76	mg/kg	0.000676 %		
			204-927-3	129-00-0									
28		selenium { selenium }				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		034-001-00-2	231-957-4	7782-49-2									
29		vanadium { divanadium pentaoxide; vanadium pentoxide }				22	mg/kg	1.785	39.274	mg/kg	0.00393 %		
		023-001-00-8	215-239-8	1314-62-1									
30		zinc { zinc oxide }				79	mg/kg	1.245	98.332	mg/kg	0.00983 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0593 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-TP03

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

Sample details

Sample Name:
GEO-2015-TP03
Sample Depth:
0.7 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		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		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
3		anthracene		204-371-1	120-12-7		0.07	mg/kg		0.07	mg/kg	0.000007 %		
4		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	2.9	mg/kg		2.9	mg/kg	0.00029 %		
5		barium { barium sulfate }		231-784-4	7727-43-7		38	mg/kg	1.7	64.582	mg/kg	0.00646 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		0.09	mg/kg		0.09	mg/kg	0.000009 %		
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.17	mg/kg		0.17	mg/kg	0.000017 %		
8		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.16	mg/kg		0.16	mg/kg	0.000016 %		
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.17	mg/kg		0.17	mg/kg	0.000017 %		
10		benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		0.24	mg/kg		0.24	mg/kg	0.000024 %		
11		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.07	mg/kg		0.07	mg/kg	0.000007 %		
12		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7	mg/kg	2.775	1.943	mg/kg	0.000194 %		
13		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium { chromium(III) oxide }				10.4	mg/kg	1.462	15.2	mg/kg	0.00152 %		
			215-160-9	1308-38-9									
15		chrysene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
		601-048-00-0	205-923-4	218-01-9									
16		copper { copper(II) oxide }				11	mg/kg	1.252	13.77	mg/kg	0.00138 %		
		029-016-00-6	215-269-1	1317-38-0									
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 }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
18		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
19		fluoranthene				0.38	mg/kg		0.38	mg/kg	0.000038 %		
			205-912-4	206-44-0									
20		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				0.09	mg/kg		0.09	mg/kg	0.000009 %		
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	16	mg/kg		16	mg/kg	0.0016 %		
		082-001-00-6											
23		mercury { mercury(II) sulphide }				<0.1	mg/kg	1.16	<0.116	mg/kg	<0.0000116 %		<LOD
			215-696-3	1344-48-5									
24		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		nickel { nickel(IV) oxide (nickel dioxide) }				7.5	mg/kg	1.545	11.589	mg/kg	0.00116 %		
		028-004-00-8	234-823-3	12035-36-8									
26		phenanthrene				0.31	mg/kg		0.31	mg/kg	0.000031 %		
			201-581-5	85-01-8									
27		pyrene				0.36	mg/kg		0.36	mg/kg	0.000036 %		
			204-927-3	129-00-0									
28		selenium { selenium }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
29		vanadium { divanadium pentaoxide; vanadium pentoxide }				16	mg/kg	1.785	28.563	mg/kg	0.00286 %		
		023-001-00-8	215-239-8	1314-62-1									
30		zinc { zinc oxide }				25	mg/kg	1.245	31.118	mg/kg	0.00311 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.019 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-TP04

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

Sample details

Sample Name:	LoW Code:
GEO-2015-TP04	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.2 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		0.15 mg/kg		0.15 mg/kg	0.000015 %		
2	acenaphthylene		205-917-1	208-96-8		0.11 mg/kg		0.11 mg/kg	0.000011 %		
3	anthracene		204-371-1	120-12-7		0.56 mg/kg		0.56 mg/kg	0.000056 %		
4	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	40.4 mg/kg		40.4 mg/kg	0.00404 %		
5	barium { barium sulfate }		231-784-4	7727-43-7		148 mg/kg	1.7	251.529 mg/kg	0.0252 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		1.08 mg/kg		1.08 mg/kg	0.000108 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.66 mg/kg		1.66 mg/kg	0.000166 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.87 mg/kg		1.87 mg/kg	0.000187 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2.11 mg/kg		2.11 mg/kg	0.000211 %		
10	benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		2.93 mg/kg		2.93 mg/kg	0.000293 %		
11	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.82 mg/kg		0.82 mg/kg	0.000082 %		
12	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1 mg/kg	2.775	3.053 mg/kg	0.000305 %		
13	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.4 mg/kg		0.4 mg/kg	0.00004 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium { chromium(III) oxide }				18	mg/kg	1.462	26.308	mg/kg	0.00263 %		
			215-160-9	1308-38-9									
15		chrysene				1.78	mg/kg		1.78	mg/kg	0.000178 %		
		601-048-00-0	205-923-4	218-01-9									
16		copper { copper(II) oxide }				52	mg/kg	1.252	65.092	mg/kg	0.00651 %		
		029-016-00-6	215-269-1	1317-38-0									
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 }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
18		dibenz[a,h]anthracene				0.15	mg/kg		0.15	mg/kg	0.000015 %		
		601-041-00-2	200-181-8	53-70-3									
19		fluoranthene				3.91	mg/kg		3.91	mg/kg	0.000391 %		
			205-912-4	206-44-0									
20		fluorene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				1.09	mg/kg		1.09	mg/kg	0.000109 %		
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	110	mg/kg		110	mg/kg	0.011 %		
		082-001-00-6											
23		mercury { mercury(II) sulphide }				0.2	mg/kg	1.16	0.232	mg/kg	0.0000232 %		
			215-696-3	1344-48-5									
24		naphthalene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-052-00-2	202-049-5	91-20-3									
25		nickel { nickel(IV) oxide (nickel dioxide) }				22.3	mg/kg	1.545	34.458	mg/kg	0.00345 %		
		028-004-00-8	234-823-3	12035-36-8									
26		phenanthrene				1.98	mg/kg		1.98	mg/kg	0.000198 %		
			201-581-5	85-01-8									
27		pyrene				3.54	mg/kg		3.54	mg/kg	0.000354 %		
			204-927-3	129-00-0									
28		selenium { selenium }				2	mg/kg		2	mg/kg	0.0002 %		
		034-001-00-2	231-957-4	7782-49-2									
29		vanadium { divanadium pentaoxide; vanadium pentoxide }				27	mg/kg	1.785	48.2	mg/kg	0.00482 %		
		023-001-00-8	215-239-8	1314-62-1									
30		zinc { zinc oxide }				100	mg/kg	1.245	124.471	mg/kg	0.0124 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0731 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-TP05

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

Sample details

Sample Name:
GEO-2015-TP05
Sample Depth:
2 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		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 %		
3		anthracene		204-371-1	120-12-7		0.18	mg/kg		0.18	mg/kg	0.000018 %		
4		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	2.5	mg/kg		2.5	mg/kg	0.00025 %		
5		barium { barium sulfate }		231-784-4	7727-43-7		59	mg/kg	1.7	100.272	mg/kg	0.01 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		0.22	mg/kg		0.22	mg/kg	0.000022 %		
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.53	mg/kg		0.53	mg/kg	0.000053 %		
8		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.39	mg/kg		0.39	mg/kg	0.000039 %		
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.44	mg/kg		0.44	mg/kg	0.000044 %		
10		benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		0.61	mg/kg		0.61	mg/kg	0.000061 %		
11		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.17	mg/kg		0.17	mg/kg	0.000017 %		
12		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7	mg/kg	2.775	1.943	mg/kg	0.000194 %		
13		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium { chromium(III) oxide }				47.5	mg/kg	1.462	69.424	mg/kg	0.00694 %		
			215-160-9	1308-38-9									
15		chrysene				0.46	mg/kg		0.46	mg/kg	0.000046 %		
		601-048-00-0	205-923-4	218-01-9									
16		copper { copper(II) oxide }				14	mg/kg	1.252	17.525	mg/kg	0.00175 %		
		029-016-00-6	215-269-1	1317-38-0									
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 }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
18		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
19		fluoranthene				0.89	mg/kg		0.89	mg/kg	0.000089 %		
			205-912-4	206-44-0									
20		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	24	mg/kg		24	mg/kg	0.0024 %		
		082-001-00-6											
23		mercury { mercury(II) sulphide }				<0.1	mg/kg	1.16	<0.116	mg/kg	<0.0000116 %		<LOD
			215-696-3	1344-48-5									
24		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		nickel { nickel(IV) oxide (nickel dioxide) }				8.3	mg/kg	1.545	12.825	mg/kg	0.00128 %		
		028-004-00-8	234-823-3	12035-36-8									
26		phenanthrene				0.57	mg/kg		0.57	mg/kg	0.000057 %		
			201-581-5	85-01-8									
27		pyrene				0.89	mg/kg		0.89	mg/kg	0.000089 %		
			204-927-3	129-00-0									
28		selenium { selenium }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
29		vanadium { divanadium pentaoxide; vanadium pentoxide }				21	mg/kg	1.785	37.489	mg/kg	0.00375 %		
		023-001-00-8	215-239-8	1314-62-1									
30		zinc { zinc oxide }				30	mg/kg	1.245	37.341	mg/kg	0.00373 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0311 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-TP05[2]

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

Sample details

Sample Name:
GEO-2015-TP05[2]
Sample Depth:
1.4 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		2.48	mg/kg		2.48	mg/kg	0.000248 %		
2		acenaphthylene		205-917-1	208-96-8		0.84	mg/kg		0.84	mg/kg	0.000084 %		
3		anthracene		204-371-1	120-12-7		2.63	mg/kg		2.63	mg/kg	0.000263 %		
4		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	53.3	mg/kg		53.3	mg/kg	0.00533 %		
5		barium { barium sulfate }		231-784-4	7727-43-7		271	mg/kg	1.7	460.569	mg/kg	0.0461 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		1.13	mg/kg		1.13	mg/kg	0.000113 %		
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		4.09	mg/kg		4.09	mg/kg	0.000409 %		
8		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		2.3	mg/kg		2.3	mg/kg	0.00023 %		
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2.44	mg/kg		2.44	mg/kg	0.000244 %		
10		benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		3.39	mg/kg		3.39	mg/kg	0.000339 %		
11		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.95	mg/kg		0.95	mg/kg	0.000095 %		
12		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		2.1	mg/kg	2.775	5.828	mg/kg	0.000583 %		
13		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.4	mg/kg		0.4	mg/kg	0.00004 %		

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#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		chromium { chromium(III) oxide }		215-160-9	1308-38-9		45.8	mg/kg	1.462	66.939	mg/kg	0.00669 %		
15		chrysene	601-048-00-0	205-923-4	218-01-9		2.99	mg/kg		2.99	mg/kg	0.000299 %		
16		copper { copper(II) oxide }	029-016-00-6	215-269-1	1317-38-0		57	mg/kg	1.252	71.351	mg/kg	0.00714 %		
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				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		**<LOD**
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.19	mg/kg		0.19	mg/kg	0.000019 %		
19		dibenzofuran		205-071-3	132-64-9		0.044	mg/kg		0.044	mg/kg	0.0000044 %		
20		fluoranthene		205-912-4	206-44-0		9.7	mg/kg		9.7	mg/kg	0.00097 %		
21		fluorene		201-695-5	86-73-7		2.21	mg/kg		2.21	mg/kg	0.000221 %		
22		indeno[123-cd]pyrene		205-893-2	193-39-5		1.13	mg/kg		1.13	mg/kg	0.000113 %		
23		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	32	mg/kg		32	mg/kg	0.0032 %		
24		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		**<LOD**
25		mercury { mercury(II) sulphide }		215-696-3	1344-48-5		<0.1	mg/kg	1.16	<0.116	mg/kg	<0.0000116 %		**<LOD**
26		naphthalene	601-052-00-2	202-049-5	91-20-3		1.53	mg/kg		1.53	mg/kg	0.000153 %		
27		nickel { nickel(IV) oxide (nickel dioxide) }	028-004-00-8	234-823-3	12035-36-8		32.3	mg/kg	1.545	49.909	mg/kg	0.00499 %		
28		phenanthrene		201-581-5	85-01-8		16.04	mg/kg		16.04	mg/kg	0.0016 %		
29		pyrene		204-927-3	129-00-0		8.79	mg/kg		8.79	mg/kg	0.000879 %		
30		selenium { selenium }	034-001-00-2	231-957-4	7782-49-2		1	mg/kg		1	mg/kg	0.0001 %		
31		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		48	mg/kg	1.785	85.689	mg/kg	0.00857 %		
32		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		55	mg/kg	1.245	68.459	mg/kg	0.00685 %		
											Total:	0.0959 %		

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 Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-TP06

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

Sample details

Sample Name:	LoW Code:	
GEO-2015-TP06	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
0.3 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	acenaphthene		201-469-6	83-32-9		0.23	mg/kg		0.23	mg/kg	0.000023 %		
2	acenaphthylene		205-917-1	208-96-8		0.14	mg/kg		0.14	mg/kg	0.000014 %		
3	anthracene		204-371-1	120-12-7		0.39	mg/kg		0.39	mg/kg	0.000039 %		
4	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	19.5	mg/kg		19.5	mg/kg	0.00195 %		
5	barium { barium sulfate }		231-784-4	7727-43-7		184	mg/kg	1.7	312.711	mg/kg	0.0313 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		1.02	mg/kg		1.02	mg/kg	0.000102 %		
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.5	mg/kg		1.5	mg/kg	0.00015 %		
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.67	mg/kg		1.67	mg/kg	0.000167 %		
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.94	mg/kg		1.94	mg/kg	0.000194 %		
10	benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		2.7	mg/kg		2.7	mg/kg	0.00027 %		
11	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.76	mg/kg		0.76	mg/kg	0.000076 %		
12	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.3	mg/kg	2.775	3.608	mg/kg	0.000361 %		
13	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.7	mg/kg		0.7	mg/kg	0.00007 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium { chromium(III) oxide }				31.2	mg/kg	1.462	45.601	mg/kg	0.00456 %		
			215-160-9	1308-38-9									
15		chrysene				1.67	mg/kg		1.67	mg/kg	0.000167 %		
		601-048-00-0	205-923-4	218-01-9									
16		copper { copper(II) oxide }				80	mg/kg	1.252	100.142	mg/kg	0.01 %		
		029-016-00-6	215-269-1	1317-38-0									
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 }				1.9	mg/kg	1.884	3.58	mg/kg	0.000358 %		
		006-007-00-5											
18		dibenz[a,h]anthracene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
		601-041-00-2	200-181-8	53-70-3									
19		fluoranthene				3.15	mg/kg		3.15	mg/kg	0.000315 %		
			205-912-4	206-44-0									
20		fluorene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				1.02	mg/kg		1.02	mg/kg	0.000102 %		
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	289	mg/kg		289	mg/kg	0.0289 %		
		082-001-00-6											
23		mercury { mercury(II) sulphide }				0.8	mg/kg	1.16	0.928	mg/kg	0.0000928 %		
			215-696-3	1344-48-5									
24		naphthalene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
		601-052-00-2	202-049-5	91-20-3									
25		nickel { nickel(IV) oxide (nickel dioxide) }				22.9	mg/kg	1.545	35.385	mg/kg	0.00354 %		
		028-004-00-8	234-823-3	12035-36-8									
26		phenanthrene				1.9	mg/kg		1.9	mg/kg	0.00019 %		
			201-581-5	85-01-8									
27		pyrene				2.93	mg/kg		2.93	mg/kg	0.000293 %		
			204-927-3	129-00-0									
28		selenium { selenium }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
29		vanadium { divanadium pentaoxide; vanadium pentoxide }				28	mg/kg	1.785	49.985	mg/kg	0.005 %		
		023-001-00-8	215-239-8	1314-62-1									
30		zinc { zinc oxide }				186	mg/kg	1.245	231.517	mg/kg	0.0232 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.112 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-TP07

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

Sample details

Sample Name:
GEO-2015-TP07
Sample Depth:
1.8 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		0.34	mg/kg		0.34	mg/kg	0.000034 %		
2		acenaphthylene		205-917-1	208-96-8		0.42	mg/kg		0.42	mg/kg	0.000042 %		
3		anthracene		204-371-1	120-12-7		1.04	mg/kg		1.04	mg/kg	0.000104 %		
4		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	2.9	mg/kg		2.9	mg/kg	0.00029 %		
5		barium { barium sulfate }		231-784-4	7727-43-7		43	mg/kg	1.7	73.079	mg/kg	0.00731 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		0.88	mg/kg		0.88	mg/kg	0.000088 %		
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		2.25	mg/kg		2.25	mg/kg	0.000225 %		
8		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.65	mg/kg		1.65	mg/kg	0.000165 %		
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.79	mg/kg		1.79	mg/kg	0.000179 %		
10		benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		2.48	mg/kg		2.48	mg/kg	0.000248 %		
11		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.69	mg/kg		0.69	mg/kg	0.000069 %		
12		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7	mg/kg	2.775	1.943	mg/kg	0.000194 %		
13		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium { chromium(III) oxide }				11.8	mg/kg	1.462	17.246	mg/kg	0.00172 %		
			215-160-9	1308-38-9									
15		chrysene				1.85	mg/kg		1.85	mg/kg	0.000185 %		
		601-048-00-0	205-923-4	218-01-9									
16		copper { copper(II) oxide }				11	mg/kg	1.252	13.77	mg/kg	0.00138 %		
		029-016-00-6	215-269-1	1317-38-0									
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 }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
18		dibenz[a,h]anthracene				0.15	mg/kg		0.15	mg/kg	0.000015 %		
		601-041-00-2	200-181-8	53-70-3									
19		fluoranthene				4.11	mg/kg		4.11	mg/kg	0.000411 %		
			205-912-4	206-44-0									
20		fluorene				0.63	mg/kg		0.63	mg/kg	0.000063 %		
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				0.84	mg/kg		0.84	mg/kg	0.000084 %		
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	15	mg/kg		15	mg/kg	0.0015 %		
		082-001-00-6											
23		mercury { mercury(II) sulphide }				<0.1	mg/kg	1.16	<0.116	mg/kg	<0.0000116 %		<LOD
			215-696-3	1344-48-5									
24		naphthalene				0.43	mg/kg		0.43	mg/kg	0.000043 %		
		601-052-00-2	202-049-5	91-20-3									
25		nickel { nickel(IV) oxide (nickel dioxide) }				9.6	mg/kg	1.545	14.834	mg/kg	0.00148 %		
		028-004-00-8	234-823-3	12035-36-8									
26		phenanthrene				4.62	mg/kg		4.62	mg/kg	0.000462 %		
			201-581-5	85-01-8									
27		pyrene				4.24	mg/kg		4.24	mg/kg	0.000424 %		
			204-927-3	129-00-0									
28		selenium { selenium }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
29		vanadium { divanadium pentaoxide; vanadium pentoxide }				17	mg/kg	1.785	30.348	mg/kg	0.00303 %		
		023-001-00-8	215-239-8	1314-62-1									
30		zinc { zinc oxide }				28	mg/kg	1.245	34.852	mg/kg	0.00349 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0235 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-TP08

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

Sample details

Sample Name:	LoW Code:
GEO-2015-TP08	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.8 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	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		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<**LOD**
3	anthracene		204-371-1	120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<**LOD**
4	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	5.4 mg/kg		5.4 mg/kg	0.00054 %		
5	barium { barium sulfate }		231-784-4	7727-43-7		189 mg/kg	1.7	321.209 mg/kg	0.0321 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<**LOD**
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<**LOD**
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<**LOD**
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<**LOD**
10	benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<**LOD**
11	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<**LOD**
12	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.2 mg/kg	2.775	3.33 mg/kg	0.000333 %		
13	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium { chromium(III) oxide }				47.8	mg/kg	1.462	69.862	mg/kg	0.00699 %		
			215-160-9	1308-38-9									
15		chrysene				0.02	mg/kg		0.02	mg/kg	0.000002 %		
		601-048-00-0	205-923-4	218-01-9									
16		copper { copper(II) oxide }				28	mg/kg	1.252	35.05	mg/kg	0.0035 %		
		029-016-00-6	215-269-1	1317-38-0									
17		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
18		fluoranthene				0.03	mg/kg		0.03	mg/kg	0.000003 %		
			205-912-4	206-44-0									
19		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
20		indeno[123-cd]pyrene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-893-2	193-39-5									
21		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	12	mg/kg		12	mg/kg	0.0012 %		
		082-001-00-6											
22		mercury { mercury(II) sulphide }				<0.1	mg/kg	1.16	<0.116	mg/kg	<0.0000116 %		<LOD
			215-696-3	1344-48-5									
23		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
24		nickel { nickel(IV) oxide (nickel dioxide) }				33.4	mg/kg	1.545	51.609	mg/kg	0.00516 %		
		028-004-00-8	234-823-3	12035-36-8									
25		phenanthrene				0.03	mg/kg		0.03	mg/kg	0.000003 %		
			201-581-5	85-01-8									
26		pyrene				0.03	mg/kg		0.03	mg/kg	0.000003 %		
			204-927-3	129-00-0									
27		selenium { selenium }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				31	mg/kg	1.785	55.341	mg/kg	0.00553 %		
		023-001-00-8	215-239-8	1314-62-1									
29		zinc { zinc oxide }				76	mg/kg	1.245	94.598	mg/kg	0.00946 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.065 %		

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 Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-WLS01

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

Sample details

Sample Name:
GEO-2015-WLS01
Sample Depth:
1 m

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

Hazard properties

None identified

Determinands

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

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	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		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
3	anthracene		204-371-1	120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
4	arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	4.7 mg/kg		4.7 mg/kg	0.00047 %		
5	barium { barium sulfate }		231-784-4	7727-43-7		50 mg/kg	1.7	84.976 mg/kg	0.0085 %		
6	benzo[ghi]perylene		205-883-8	191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
7	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
8	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
9	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
10	benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
11	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
12	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
13	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium { chromium(III) oxide }				52.8	mg/kg	1.462	77.17	mg/kg	0.00772 %		
			215-160-9	1308-38-9									
15		chrysene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
16		copper { copper(II) oxide }				14	mg/kg	1.252	17.525	mg/kg	0.00175 %		
		029-016-00-6	215-269-1	1317-38-0									
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 }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
18		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
19		dibenzofuran				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			205-071-3	132-64-9									
20		fluoranthene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-912-4	206-44-0									
21		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
22		indeno[123-cd]pyrene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-893-2	193-39-5									
23		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	11	mg/kg		11	mg/kg	0.0011 %		
		082-001-00-6											
24		mercury { mercury(II) sulphide }				<0.1	mg/kg	1.16	<0.116	mg/kg	<0.0000116 %		<LOD
			215-696-3	1344-48-5									
25		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		nickel { nickel(IV) oxide (nickel dioxide) }				19.6	mg/kg	1.545	30.286	mg/kg	0.00303 %		
		028-004-00-8	234-823-3	12035-36-8									
27		phenanthrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-581-5	85-01-8									
28		pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			204-927-3	129-00-0									
29		selenium { selenium }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
30		vanadium { divanadium pentaoxide; vanadium pentoxide }				19	mg/kg	1.785	33.919	mg/kg	0.00339 %		
		023-001-00-8	215-239-8	1314-62-1									
31		zinc { zinc oxide }				37	mg/kg	1.245	46.054	mg/kg	0.00461 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.031 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Report created by Mark Griffiths on 15 Jan 2020

Classification of sample: GEO-2015-WLS02

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

Sample details

Sample Name:
GEO-2015-WLS02
Sample Depth:
2 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
1		acenaphthene – / 201-469-6 / 83-32-9		0.28 mg/kg		0.28 mg/kg	0.000028 %		
2		acenaphthylene – / 205-917-1 / 208-96-8		0.22 mg/kg		0.22 mg/kg	0.000022 %		
3		anthracene – / 204-371-1 / 120-12-7		1.11 mg/kg		1.11 mg/kg	0.000111 %		
4		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex } 033-002-00-5 / – / –	1	10.5 mg/kg		10.5 mg/kg	0.00105 %		
5		barium { barium sulfate } – / 231-784-4 / 7727-43-7		136 mg/kg	1.7	231.134 mg/kg	0.0231 %		
6		benzo[ghi]perylene – / 205-883-8 / 191-24-2		1.79 mg/kg		1.79 mg/kg	0.000179 %		
7		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		4.15 mg/kg		4.15 mg/kg	0.000415 %		
8		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		3.09 mg/kg		3.09 mg/kg	0.000309 %		
9		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		3.85 mg/kg		3.85 mg/kg	0.000385 %		
10		benzo[bk]fluoranthene – / [1] 205-911-9 [2] 205-916-6 / [1] 205-99-2 [2] 207-08-9		5.35 mg/kg		5.35 mg/kg	0.000535 %		
11		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		1.5 mg/kg		1.5 mg/kg	0.00015 %		
12		beryllium { beryllium oxide } 004-003-00-8 / 215-133-1 / 1304-56-9		1.3 mg/kg	2.775	3.608 mg/kg	0.000361 %		
13		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex } 048-001-00-5 / – / –	1	0.2 mg/kg		0.2 mg/kg	0.00002 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium { chromium(III) oxide }				11.1	mg/kg	1.462	16.223	mg/kg	0.00162 %		
			215-160-9	1308-38-9									
15		chrysene				3.59	mg/kg		3.59	mg/kg	0.000359 %		
		601-048-00-0	205-923-4	218-01-9									
16		copper { copper(II) oxide }				82	mg/kg	1.252	102.646	mg/kg	0.0103 %		
		029-016-00-6	215-269-1	1317-38-0									
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 }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
18		dibenz[a,h]anthracene				0.32	mg/kg		0.32	mg/kg	0.000032 %		
		601-041-00-2	200-181-8	53-70-3									
19		dibenzofuran				0.071	mg/kg		0.071	mg/kg	0.0000071 %		
			205-071-3	132-64-9									
20		fluoranthene				7.18	mg/kg		7.18	mg/kg	0.000718 %		
			205-912-4	206-44-0									
21		fluorene				0.27	mg/kg		0.27	mg/kg	0.000027 %		
			201-695-5	86-73-7									
22		indeno[123-cd]pyrene				1.92	mg/kg		1.92	mg/kg	0.000192 %		
			205-893-2	193-39-5									
23		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	190	mg/kg		190	mg/kg	0.019 %		
		082-001-00-6											
24		mercury { mercury(II) sulphide }				0.2	mg/kg	1.16	0.232	mg/kg	0.0000232 %		
			215-696-3	1344-48-5									
25		naphthalene				0.15	mg/kg		0.15	mg/kg	0.000015 %		
		601-052-00-2	202-049-5	91-20-3									
26		nickel { nickel(IV) oxide (nickel dioxide) }				15.5	mg/kg	1.545	23.95	mg/kg	0.0024 %		
		028-004-00-8	234-823-3	12035-36-8									
27		phenanthrene				4.11	mg/kg		4.11	mg/kg	0.000411 %		
			201-581-5	85-01-8									
28		pyrene				6.72	mg/kg		6.72	mg/kg	0.000672 %		
			204-927-3	129-00-0									
29		selenium { selenium }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
30		vanadium { divanadium pentaoxide; vanadium pentoxide }				18	mg/kg	1.785	32.133	mg/kg	0.00321 %		
		023-001-00-8	215-239-8	1314-62-1									
31		zinc { zinc oxide }				56	mg/kg	1.245	69.704	mg/kg	0.00697 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0728 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-WLS02[2]

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

Sample details

Sample Name:
GEO-2015-WLS02[2]
Sample Depth:
1 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	●	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		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
3	●	anthracene		204-371-1	120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
4	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<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[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
10		chrysene	601-048-00-0	205-923-4	218-01-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
11		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
12	●	fluoranthene		205-912-4	206-44-0		0.03 mg/kg		0.03 mg/kg	0.000003 %		
13	●	fluorene		201-695-5	86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
14	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
15		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		**<LOD**
		601-052-00-2	202-049-5	91-20-3									
17	•	phenanthrene				0.03	mg/kg		0.03	mg/kg	0.000003 %		
			201-581-5	85-01-8									
18	•	pyrene				0.03	mg/kg		0.03	mg/kg	0.000003 %		
			204-927-3	129-00-0									
										Total:	0.00006 %		

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)
<LOD	Below limit of detection
ND	Not detected

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Classification of sample: GEO-2015-WLS03

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

Sample details

Sample Name:
GEO-2015-WLS03
Sample Depth:
3.5 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		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		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
3		anthracene		204-371-1	120-12-7		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
4		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	8.1	mg/kg		8.1	mg/kg	0.00081 %		
5		barium { barium sulfate }		231-784-4	7727-43-7		84	mg/kg	1.7	142.759	mg/kg	0.0143 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.07	mg/kg		0.07	mg/kg	0.000007 %		
8		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 %		
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.06	mg/kg		0.06	mg/kg	0.000006 %		
10		benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		0.08	mg/kg		0.08	mg/kg	0.000008 %		
11		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.02	mg/kg		0.02	mg/kg	0.000002 %		
12		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9	mg/kg	2.775	2.498	mg/kg	0.00025 %		
13		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.1	mg/kg		0.1	mg/kg	0.00001 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium { chromium(III) oxide }				19	mg/kg	1.462	27.77	mg/kg	0.00278 %		
			215-160-9	1308-38-9									
15		chrysene				0.06	mg/kg		0.06	mg/kg	0.000006 %		
		601-048-00-0	205-923-4	218-01-9									
16		copper { copper(II) oxide }				37	mg/kg	1.252	46.316	mg/kg	0.00463 %		
		029-016-00-6	215-269-1	1317-38-0									
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 }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
18		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
19		fluoranthene				0.07	mg/kg		0.07	mg/kg	0.000007 %		
			205-912-4	206-44-0									
20		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-893-2	193-39-5									
22		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	56	mg/kg		56	mg/kg	0.0056 %		
		082-001-00-6											
23		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<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]									
24		mercury { mercury(II) sulphide }				0.2	mg/kg	1.16	0.232	mg/kg	0.0000232 %		
			215-696-3	1344-48-5									
25		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		nickel { nickel(IV) oxide (nickel dioxide) }				22.9	mg/kg	1.545	35.385	mg/kg	0.00354 %		
		028-004-00-8	234-823-3	12035-36-8									
27		phenanthrene				0.06	mg/kg		0.06	mg/kg	0.000006 %		
			201-581-5	85-01-8									
28		pyrene				0.06	mg/kg		0.06	mg/kg	0.000006 %		
			204-927-3	129-00-0									
29		selenium { selenium }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
30		vanadium { divanadium pentaoxide; vanadium pentoxide }				21	mg/kg	1.785	37.489	mg/kg	0.00375 %		
		023-001-00-8	215-239-8	1314-62-1									
31		zinc { zinc oxide }				62	mg/kg	1.245	77.172	mg/kg	0.00772 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0437 %		

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 Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Classification of sample: GEO-2015-WLS03[2]

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

Sample details

Sample Name:
GEO-2015-WLS03[2]
Sample Depth:
2.5 m

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

Hazard properties

None identified

Determinands

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

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		1.61	mg/kg		1.61	mg/kg	0.000161 %		
2		acenaphthylene		205-917-1	208-96-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
3		anthracene		204-371-1	120-12-7		1.94	mg/kg		1.94	mg/kg	0.000194 %		
4		arsenic { arsenic compounds, with the exception of those specified elsewhere in this Annex }	033-002-00-5			1	2.2	mg/kg		2.2	mg/kg	0.00022 %		
5		barium { barium sulfate }		231-784-4	7727-43-7		70	mg/kg	1.7	118.966	mg/kg	0.0119 %		
6		benzo[ghi]perylene		205-883-8	191-24-2		1.71	mg/kg		1.71	mg/kg	0.000171 %		
7		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		4.09	mg/kg		4.09	mg/kg	0.000409 %		
8		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		3.04	mg/kg		3.04	mg/kg	0.000304 %		
9		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		4.08	mg/kg		4.08	mg/kg	0.000408 %		
10		benzo[bk]fluoranthene		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9		5.67	mg/kg		5.67	mg/kg	0.000567 %		
11		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		1.59	mg/kg		1.59	mg/kg	0.000159 %		
12		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5	mg/kg	2.775	<1.388	mg/kg	<0.000139 %		<**LOD**
13		cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }	048-001-00-5			1	0.2	mg/kg		0.2	mg/kg	0.00002 %		

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#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium { chromium(III) oxide }				57.3	mg/kg	1.462	83.747	mg/kg	0.00837 %		
			215-160-9	1308-38-9									
15		chrysene				3.69	mg/kg		3.69	mg/kg	0.000369 %		
		601-048-00-0	205-923-4	218-01-9									
16		copper { copper(II) oxide }				21	mg/kg	1.252	26.287	mg/kg	0.00263 %		
		029-016-00-6	215-269-1	1317-38-0									
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 }				0.6	mg/kg	1.884	1.13	mg/kg	0.000113 %		
		006-007-00-5											
18		dibenz[a,h]anthracene				0.35	mg/kg		0.35	mg/kg	0.000035 %		
		601-041-00-2	200-181-8	53-70-3									
19		dibenzofuran				0.042	mg/kg		0.042	mg/kg	0.0000042 %		
			205-071-3	132-64-9									
20		fluoranthene				9.89	mg/kg		9.89	mg/kg	0.000989 %		
			205-912-4	206-44-0									
21		fluorene				0.83	mg/kg		0.83	mg/kg	0.000083 %		
			201-695-5	86-73-7									
22		indeno[123-cd]pyrene				1.97	mg/kg		1.97	mg/kg	0.000197 %		
			205-893-2	193-39-5									
23		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	55	mg/kg		55	mg/kg	0.0055 %		
		082-001-00-6											
24		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<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]									
25		mercury { mercury(II) sulphide }				1	mg/kg	1.16	1.16	mg/kg	0.000116 %		
			215-696-3	1344-48-5									
26		naphthalene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-052-00-2	202-049-5	91-20-3									
27		nickel { nickel(IV) oxide (nickel dioxide) }				6.6	mg/kg	1.545	10.198	mg/kg	0.00102 %		
		028-004-00-8	234-823-3	12035-36-8									
28		phenanthrene				7.76	mg/kg		7.76	mg/kg	0.000776 %		
			201-581-5	85-01-8									
29		pyrene				7.23	mg/kg		7.23	mg/kg	0.000723 %		
			204-927-3	129-00-0									
30		selenium { selenium }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		034-001-00-2	231-957-4	7782-49-2									
31		vanadium { divanadium pentaoxide; vanadium pentoxide }				11	mg/kg	1.785	19.637	mg/kg	0.00196 %		
		023-001-00-8	215-239-8	1314-62-1									
32		zinc { zinc oxide }				42	mg/kg	1.245	52.278	mg/kg	0.00523 %		
		030-013-00-7	215-222-5	1314-13-2									
										Total:	0.0429 %		

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 Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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Appendix A: Classifier defined and non CLP 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: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

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: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

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: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

arsenic compounds, with the exception of those specified elsewhere in this Annex

CLP index number: 033-002-00-5
Description/Comments: Worst Case: IARC considers arsenic compounds Group 1; Carcinogenic to humans
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 1A H350
Reason for additional Hazards Statement(s)/Risk Phrase(s):
03 Jun 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

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 Chronic 1 H410 , Aquatic Acute 1 H400

cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex

CLP index number: 048-001-00-5
Description/Comments: Worst Case: IARC considers cadmium compounds Group 1; Carcinogenic to humans
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 1A H350
Reason for additional Hazards Statement(s)/Risk Phrase(s):
29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

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

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

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)/Risk Phrase(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

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- **dibenzofuran** (EC Number: 205-071-3, CAS Number: 132-64-9)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Aquatic Chronic 2 H411 , Acute Tox. 4 H332 , Acute Tox. 4 H312 , Acute Tox. 4 H302

- **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: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

- **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 Chronic 1 H410 , Aquatic Acute 1 H400

- **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**

CLP index number: 082-001-00-6
Description/Comments: Least-worst case: Lead REACH Consortium considers some lead compounds Carcinogenic category 2B
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s)/Risk Phrase(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

- **mercury(II) sulphide** (EC Number: 215-696-3, CAS Number: 1344-48-5)

Conversion factor: 1.16
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: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT RE 2 H373 , Acute Tox. 2 H300 , Acute Tox. 1 H310 , Acute Tox. 3 H331

- **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: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

- **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: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

- **barium sulfate** (EC Number: 231-784-4, CAS Number: 7727-43-7)

Conversion factor: 1.7
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: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , STOT RE 2 H373 , Acute Tox. 4 H302 , Acute Tox. 4 H332

- **benzo[bk]fluoranthene** (EC Number: [1] 205-911-9 [2] 205-916-6, CAS Number: [1] 205-99-2 [2] 207-08-9)

Description/Comments: Combined data from harmonised entries in CLP for benzo[b] and benzo[k]fluoranthene; C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Carc. 1B H350

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Appendix B: Rationale for selection of metal species

antimony {antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex}

Most likely compound based on site history.

arsenic {arsenic compounds, with the exception of those specified elsewhere in this Annex}

Most likely compound based on site history.

beryllium {beryllium oxide}

Most likely compound based on site history.

cadmium {cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex}

Most likely compound based on site history.

chromium {chromium(III) oxide}

Most likely compound based on site history.

copper {copper(II) oxide}

Most likely compound based on site history.

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}

Most likely compound based on site history.

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

Most likely compound based on site history.

mercury {mercury(II) sulphide}

Most likely compound based on site history.

nickel {nickel(IV) oxide (nickel dioxide)}

Most likely compound based on site history.

selenium {selenium}

Most likely compound based on site history.

vanadium {divanadium pentaoxide; vanadium pentoxide}

Most likely compound based on site history.

zinc {zinc oxide}

Most likely compound based on site history.

barium {barium sulfate}

Most likely compound based on site history.

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2020.13.4139.8254 (13 Jan 2020)
HazWasteOnline Database: 2020.13.4139.8254 (13 Jan 2020)

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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 Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
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
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

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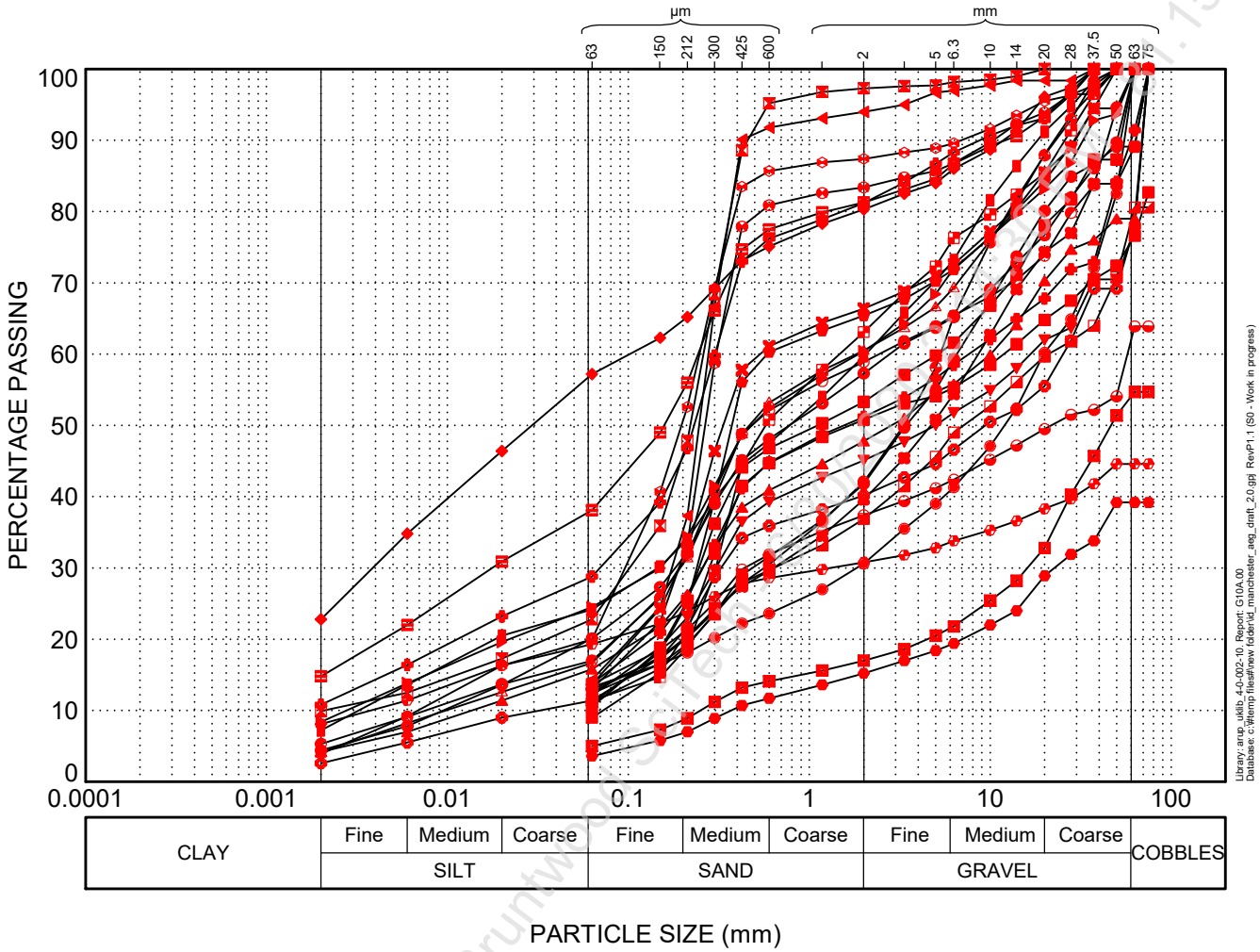
Appendix H

Geotechnical Laboratory Data and Plots

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- ARP-BH002, 32.1mOD
- ARP-BH003, 31.4mOD
- ARP-BH006A, 33.2mOD
- ARP-BH006B, 33.1mOD
- ARP-BH008, 33.5mOD
- ARP-BH008, 31.6mOD
- ARP-BH008, 29.6mOD
- ARP-BH009, 33.2mOD
- ARP-BH009, 30.5mOD
- ARP-BH012A, 31.8mOD
- ARP-BH012A, 29.3mOD
- ARP-BH014, 34.5mOD
- ARP-BH014, 32.7mOD
- ARP-BH001, 37.3mOD
- ARP-BH001, 34.8mOD
- ARP-BH004, 32.8mOD
- ARP-BH004, 29.2mOD
- ARP-BH007, 34.1mOD
- ARP-BH007, 32.2mOD
- ARP-BH011, 31.4mOD
- ARP-BH013, 31.4mOD
- ARP-TP001, 32.4mOD
- ARP-TP001, 31.7mOD
- ARP-TP002, 31.9mOD
- ARP-TP002, 30.4mOD
- ARP-TP003, 33.2mOD
- ARP-TP003, 31.2mOD
- ARP-BH005, 32.6mOD
- ARP-DS001, 33.5mOD
- ARP-DS002, 33.3mOD

Library: arup_ukllb_4-0-002-10, Report: G10A.00
Database: c:\#temp files#new folder\id_manchester_aeg_draft_2.0.gpj RevP1.1 (S0 - Work in progress)

ARUP, gINT v8.30.004
Made by Jordan Weddell on 24-Jan-20

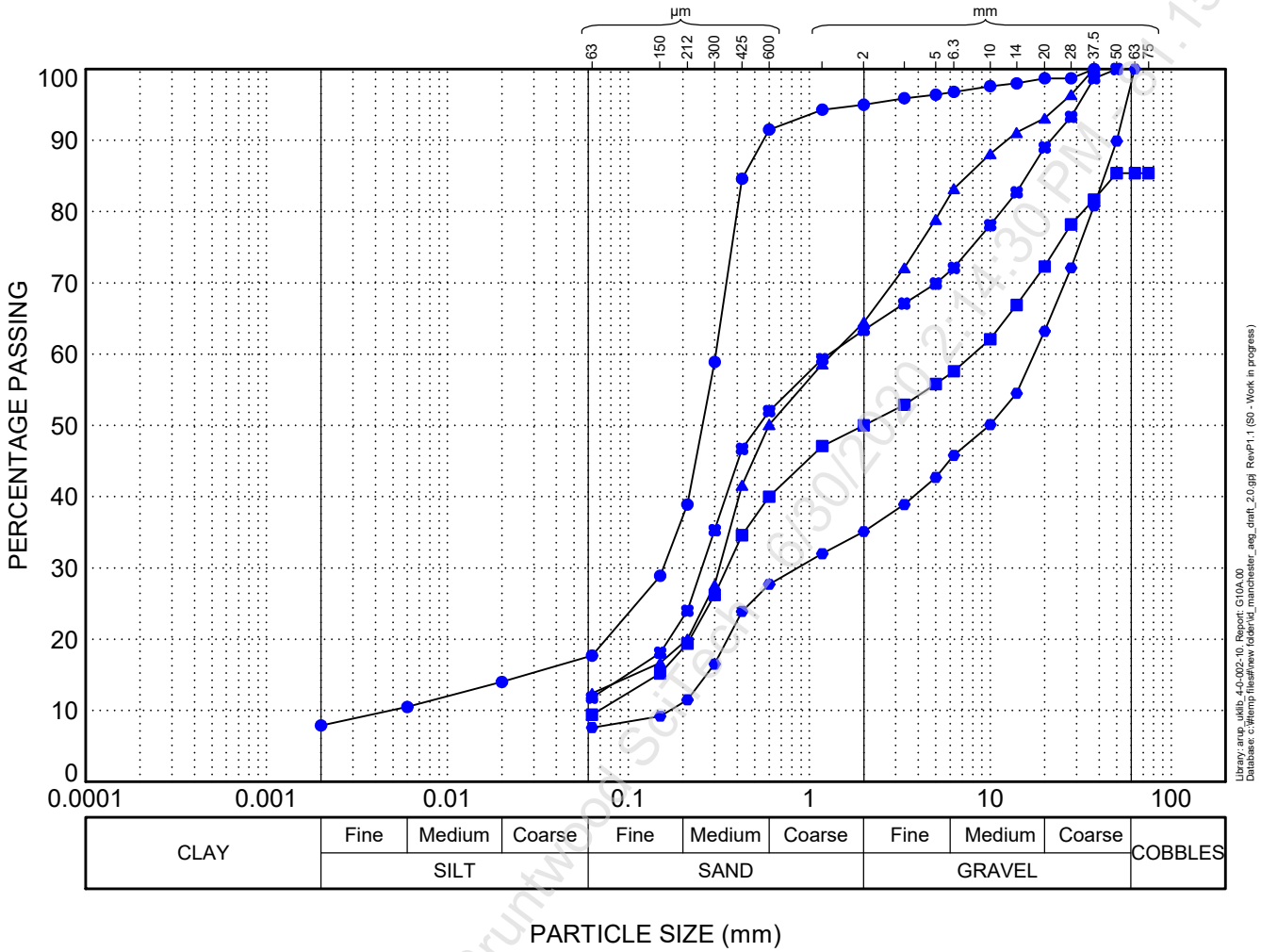
ID MANCHESTER
PARTICLE SIZE DISTRIBUTION
MADE GROUND

265190-00

FIGURE 001

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ID MANCHESTER
PARTICLE SIZE DISTRIBUTION
ALLUVIUM

265190-00

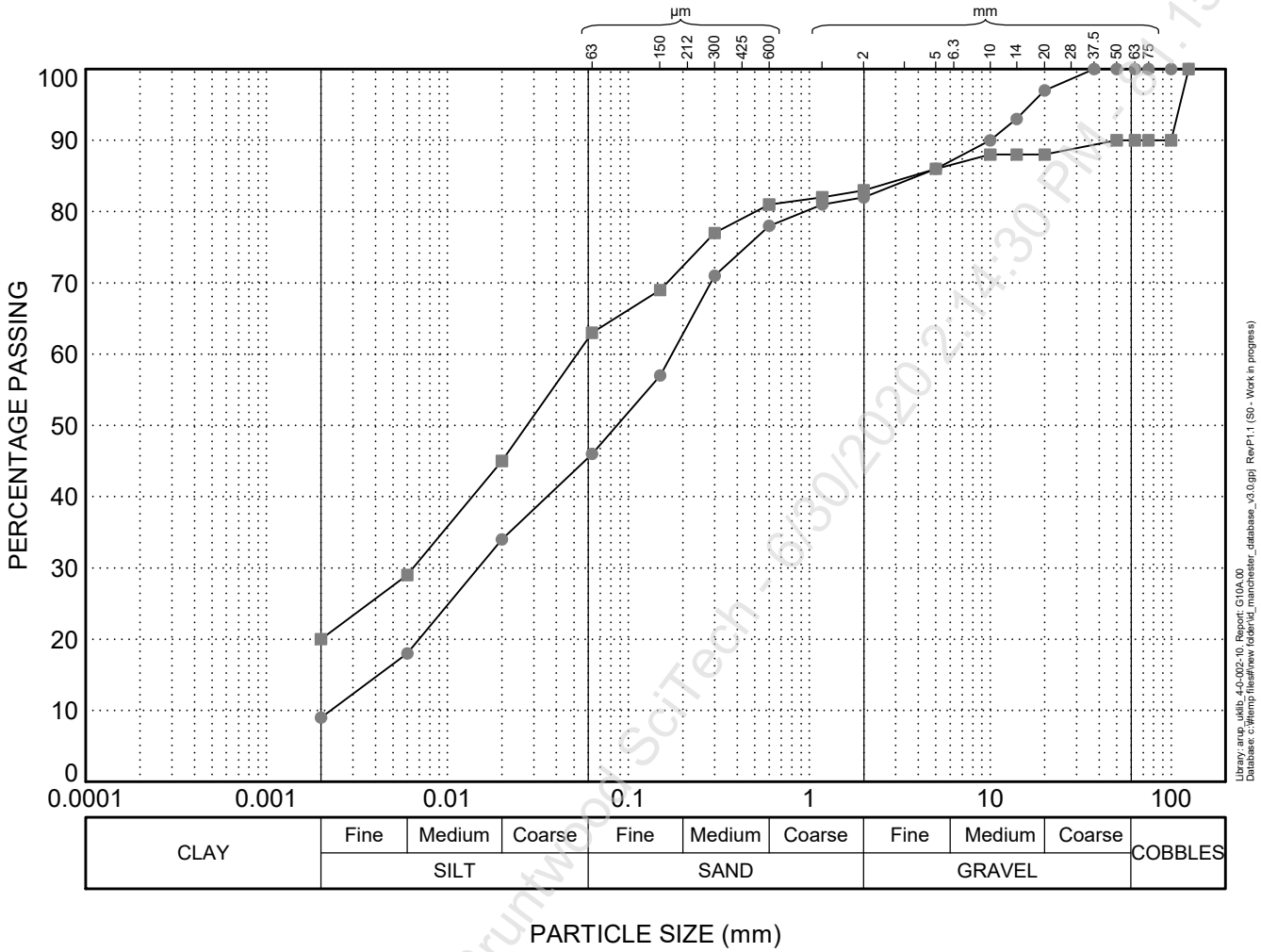
FIGURE 002

ARUP, gINT v8.30.004
Made by Jordan Weddell on 24-Jan-20

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ID Manchester - Christine Campbell - Bruntwood SciTech - 6/30/2020 2:14:30 PM - 131.154.246.72

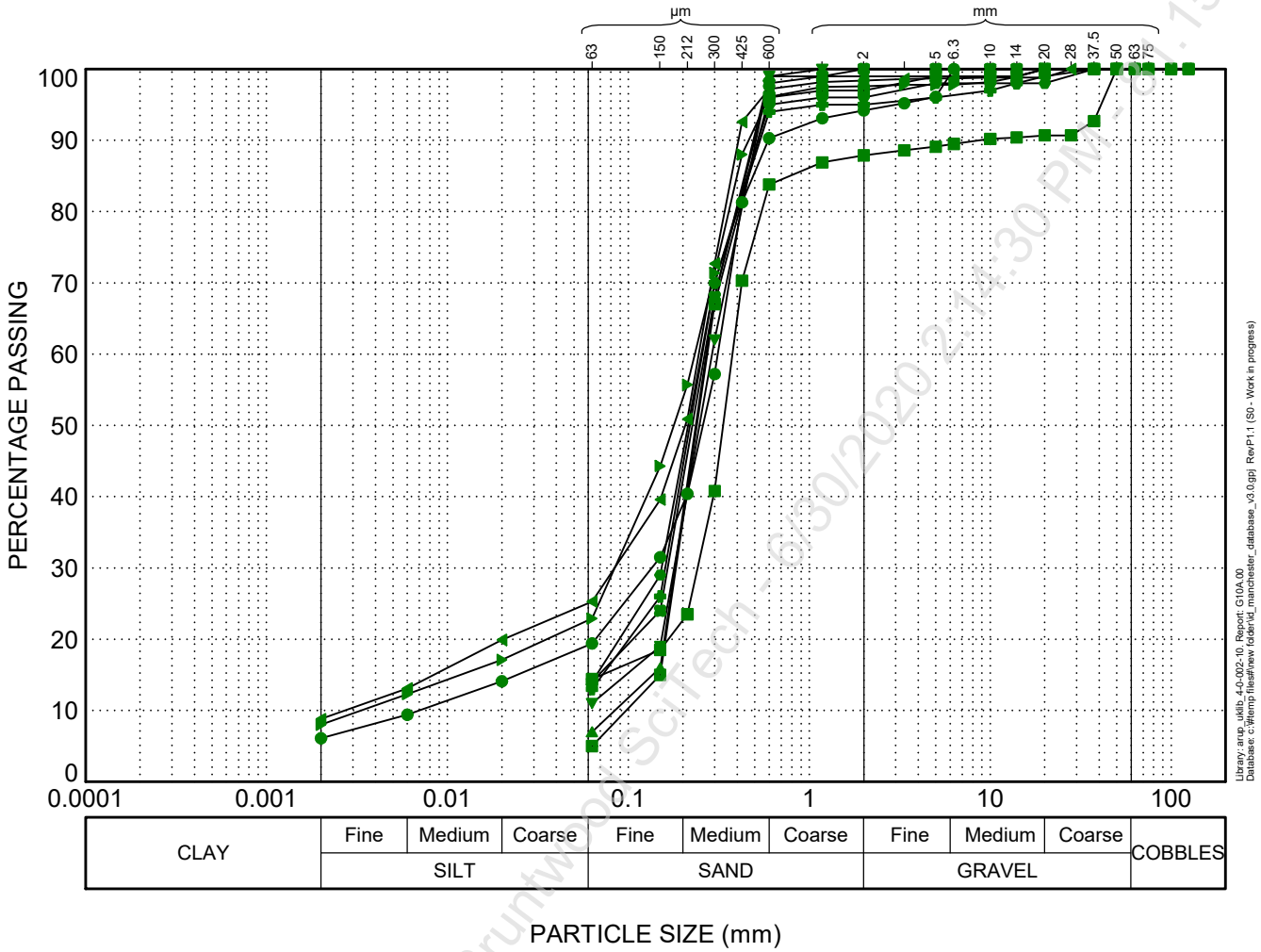
ID MANCHESTER
PARTICLE SIZE DISTRIBUTION
GLACIAL TILL DEPOSITS

FIGURE 003

ARUP, gINT v8.30.004
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- ARP-BH002, 29.6mOD
- ARP-BH003, 28.4mOD
- GEO-2015-CRH02A, 27.5mOD
- GEO-2015-CRH02A, 23.5mOD
- GEO-2015-CRH02A, 17.5mOD
- GEO-2015-CRH03, 30.2mOD
- GEO-2015-CRH03, 25.7mOD
- GEO-2015-CRH03, 21.2mOD
- ARP-BH001, 32.8mOD
- ARP-BH011, 29.4mOD

ID Manchester - Christine Campbell - Bruntwood SciTech - 6/30/2020 2:14:30 PM - 81.154.246.72

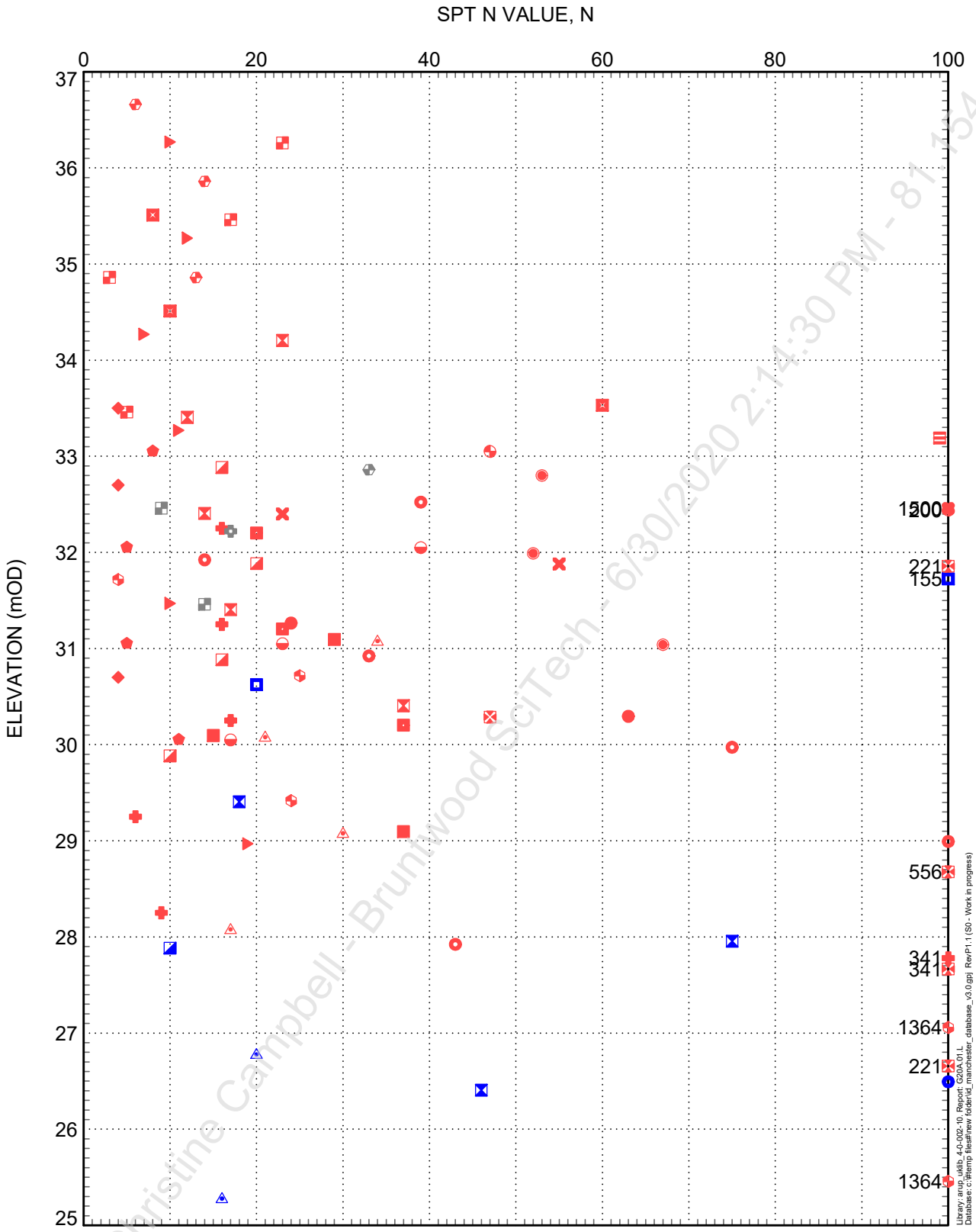
ARUP_gINT v8.30.004
Made by Jordan Weddell on 24-Jan-20

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PARTICLE SIZE DISTRIBUTION
SHERWOOD SANDSTONE

FIGURE 004

,

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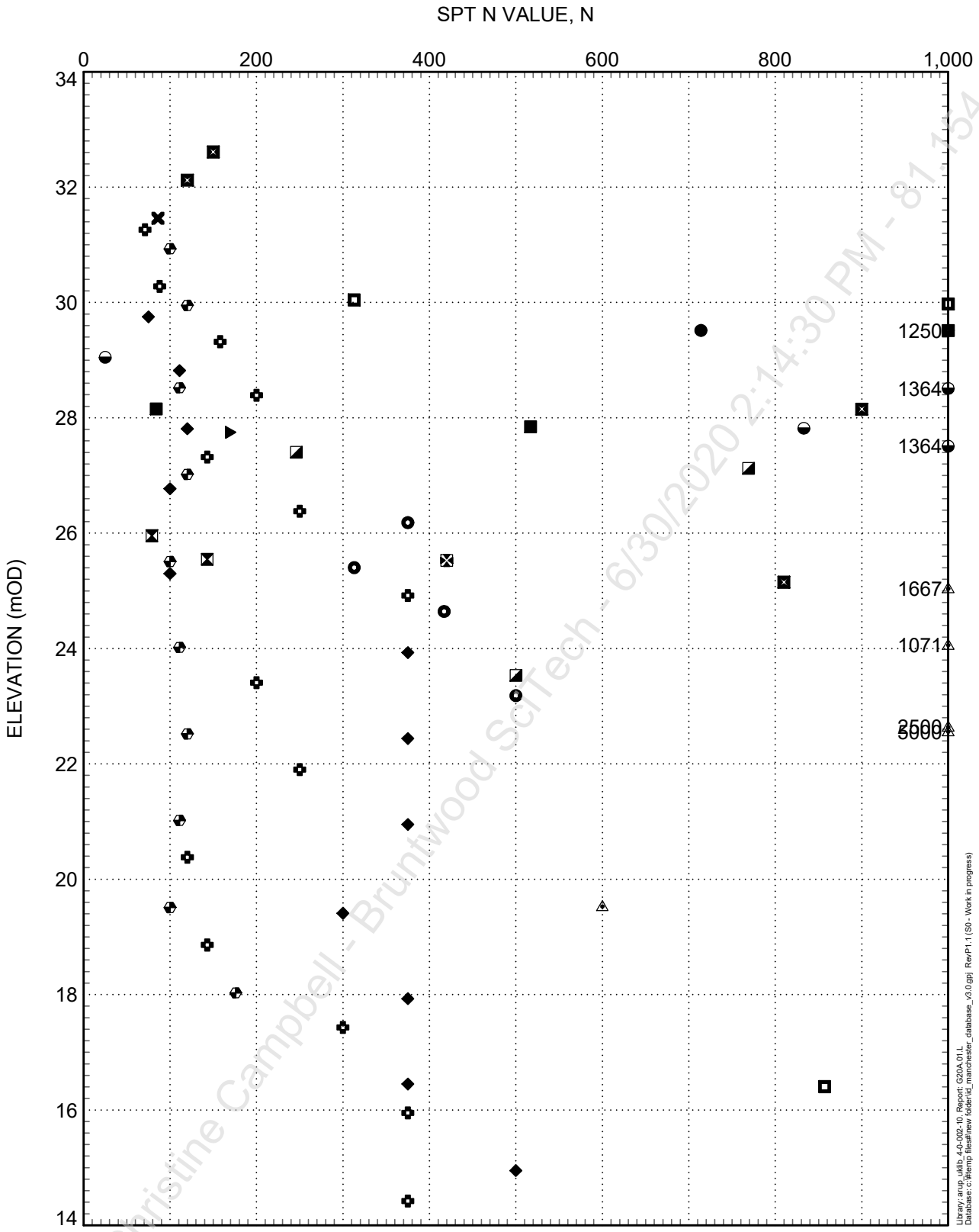
ID Manchester - Christine Campbell - Bruntwood SciTech - 6/30/2020 2:14:30 PM - 81.154.246.72

ID MANCHESTER
STANDARD PENETRATION TESTS
SUPERFICIALS

FIGURE 005

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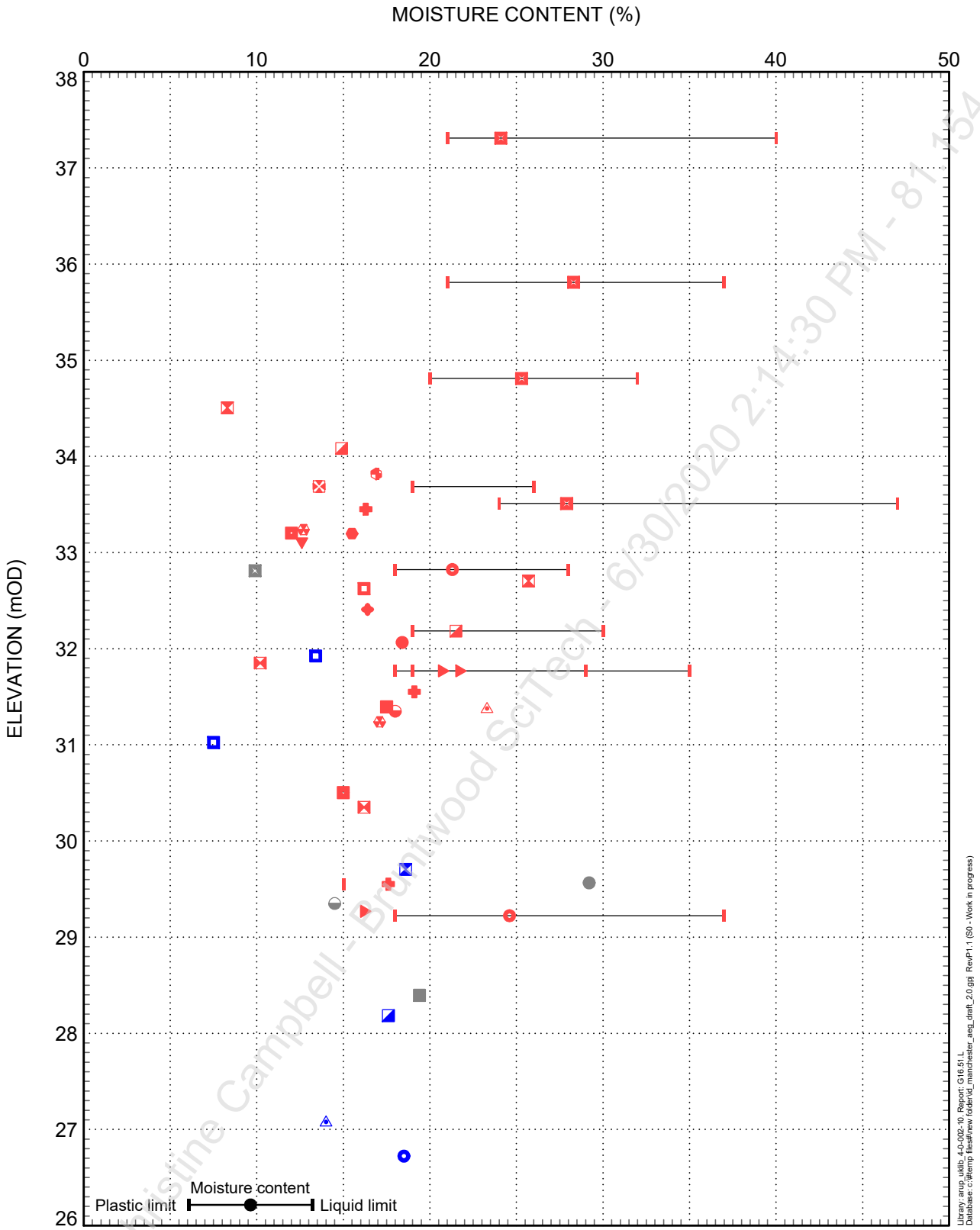


ID Manchester - Christine Campbell - Bruntwood SciTech - 6/30/2020 2:14:30 PM - 81.154.246.72

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STANDARD PENETRATION TESTS
SHERWOOD SANDSTONE

FIGURE 006

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- Made Ground (MG)
- Alluvium (ALV)
- Sherwood Sandstone (SS)
- ARP-BH002
- ARP-BH003
- ARP-BH006A
- ARP-BH006B
- ARP-BH008
- ARP-BH009
- ARP-BH012A
- ARP-BH014
- ARP-BH001
- ARP-BH004
- ARP-BH007
- ARP-BH011
- ARP-BH013
- ARP-TP001
- ARP-TP002
- ARP-TP003
- ARP-BH005
- ARP-DS001
- ARP-DS002

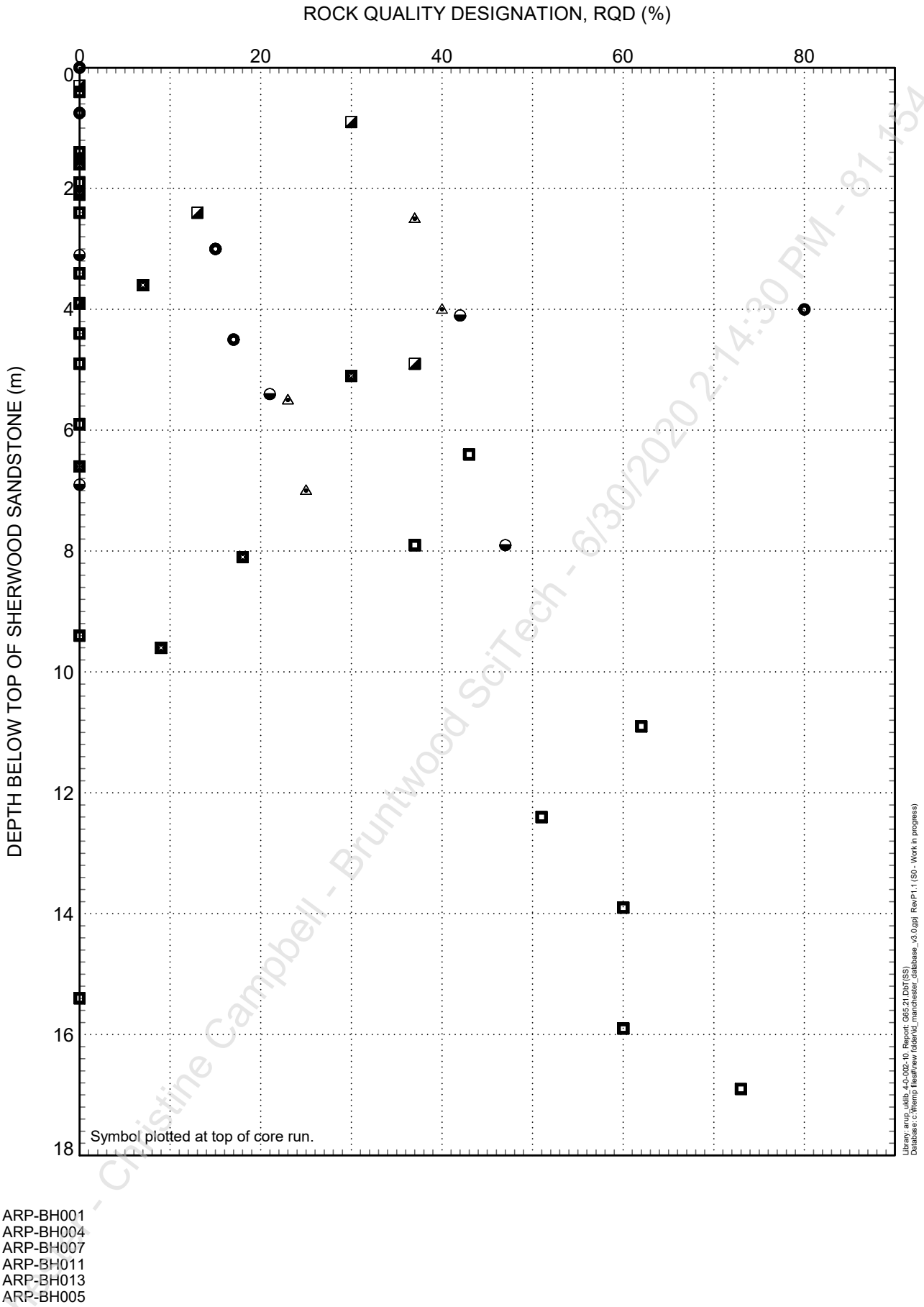
ID MANCHESTER
ATTERBERG LIMITS

265190-00

FIGURE 007

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Library: arup_uklib_4-0_002-10_Report: G65 21 DbT(GS)
Database: c:\temp files\new folder\id_manchester_database_v3.0.ggpj Rev:P1.1 (S0 - Work in progress)

ARUP, gINT v6.30.004
Made by Jordan Weddell on 24-Jan-20

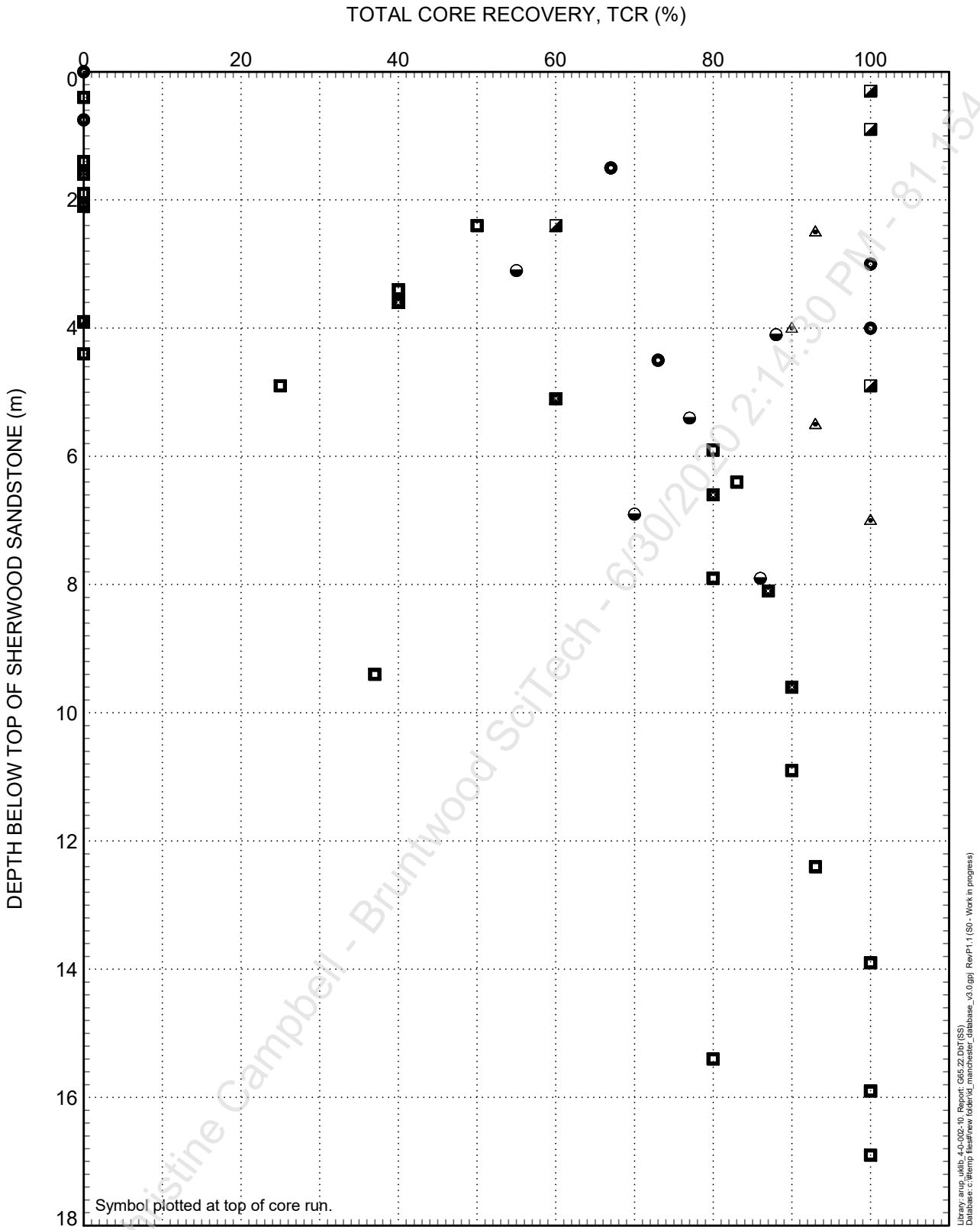
ID MANCHESTER
ROCK QUALITY DESIGNATION

FIGURE 008

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ARP-BH001
ARP-BH004
ARP-BH007
ARP-BH011
ARP-BH013
ARP-BH005

ARUP, gINT v8.30.004
Made by Jordan Weddell on 24-Jan-20

ID MANCHESTER
TOTAL CORE RECOVERY

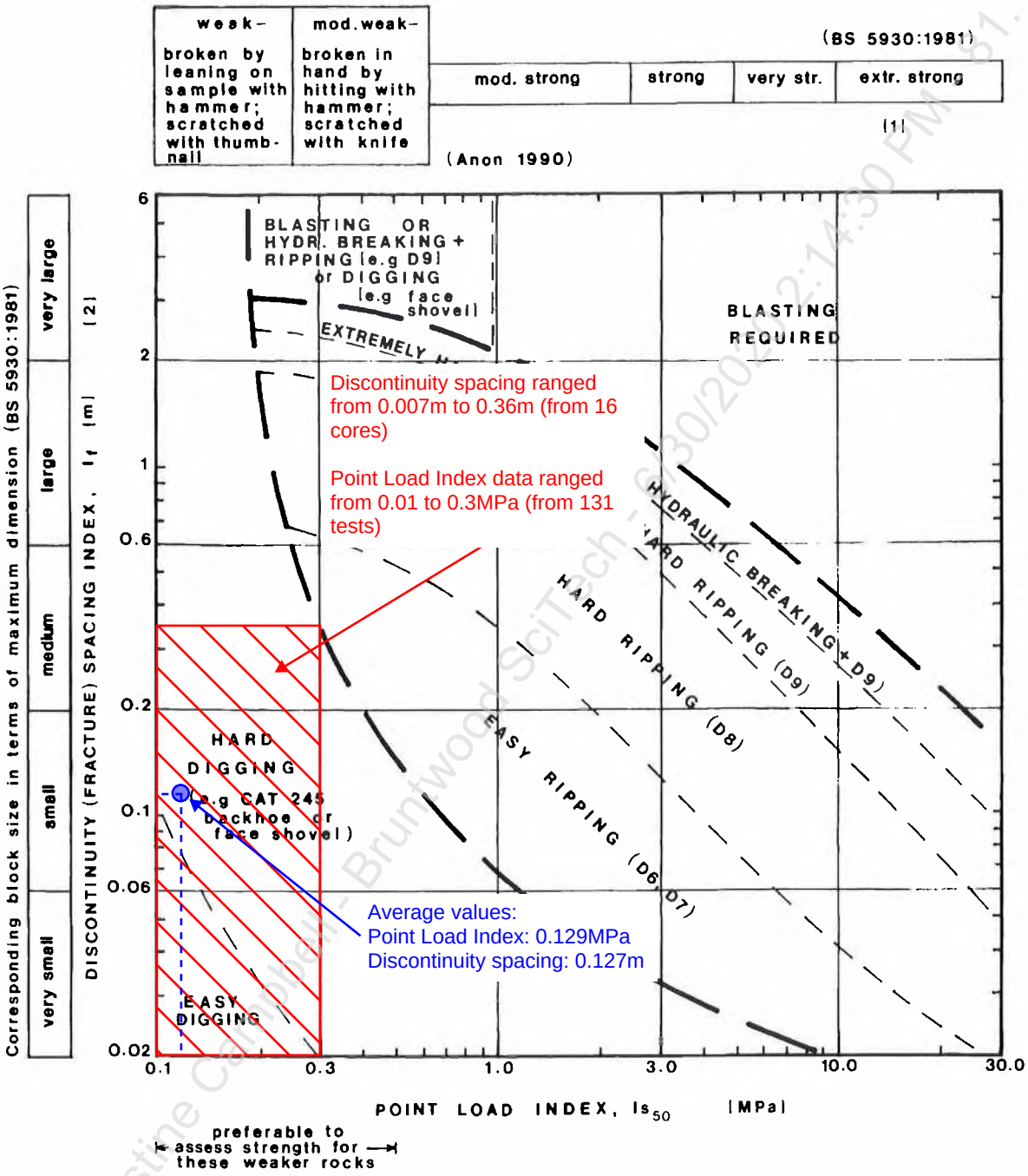
FIGURE 009

,

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Notes [1] Approx. correlation with point load index (UCS = 20 Is_{50} – This Study).

[2] Where the rock mass structure is unfavourable for ripping, I_f values should be increased (see Table 5).

$Jv = 3/I_f$, for a rock mass with three intersecting joint sets, where I_f is determined on a unit volume basis (see Table 4). RQD = 115 – 3.3 Jv approx. (ISRM 1981).

FIG. 10. Revised excavatability graph.

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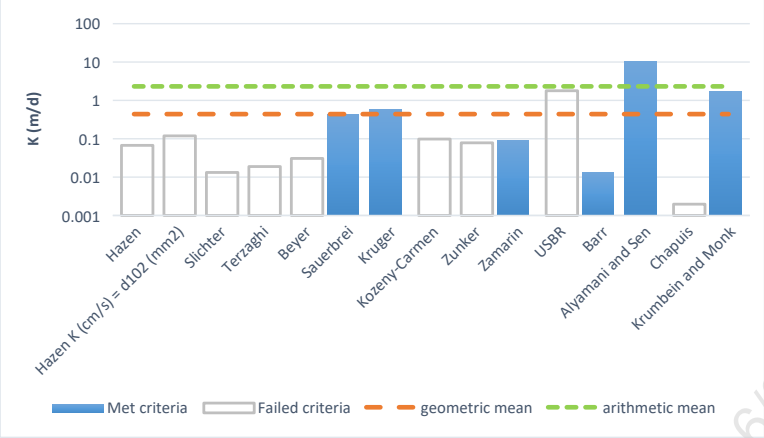
[redacted]

K from Grain Size Analysis Report Date: 23/01/2020

Sample Name: TP001 (0.8mbgl)

Mass Sample (g): _____ T (oC) _____

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	.779E-04	.779E-06	0.07
Hazen K (cm/s) = d_{10} (mm)	.138E-03	.138E-05	0.12
Slichter	.153E-04	.153E-06	0.01
Terzaghi	.218E-04	.218E-06	0.02
Beyer	.355E-04	.355E-06	0.03
Sauerbrei	.507E-03	.507E-05	0.44
Kruger	.723E-03	.723E-05	0.62
Kozeny-Carmen	.114E-03	.114E-05	0.10
Zunker	.906E-04	.906E-06	0.08
Zamarin	.112E-03	.112E-05	0.10
USBR	.207E-02	.207E-04	1.79
Barr	.164E-04	.164E-06	0.01
Alyamani and Sen	.127E-01	.127E-03	11.00
Chapuis	.228E-05	.228E-07	0.00
Krumbein and Monk	.201E-02	.201E-04	1.74
geometric mean	.508E-03	.508E-05	0.44
arithmetic mean	.268E-02	.268E-04	2.32

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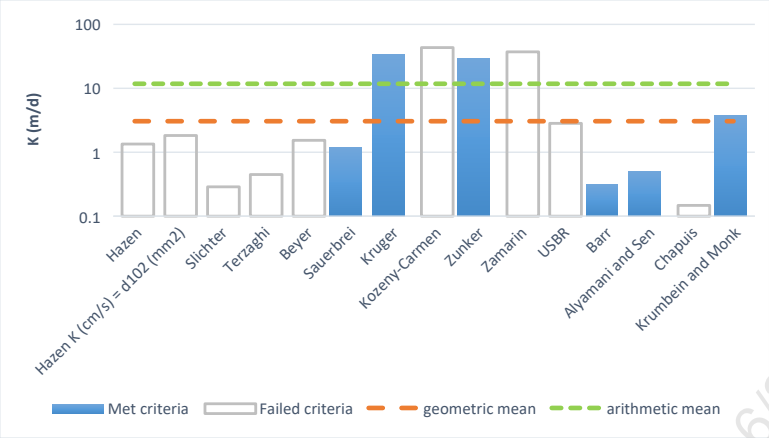
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K from Grain Size Analysis Report Date: 23/01/2020

Sample Name: TP001 (1.5mbgl)

Mass Sample (g): T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	.156E-02	.156E-04	1.34
Hazen K (cm/s) = d_{10} (mm)	.211E-02	.211E-04	1.83
Slichter	.333E-03	.333E-05	0.29
Terzaghi	.518E-03	.518E-05	0.45
Beyer	.178E-02	.178E-04	1.54
Sauerbrei	.141E-02	.141E-04	1.22
Kruger	.397E-01	.397E-03	34.30
Kozeny-Carmen	.502E-01	.502E-03	43.35
Zunker	.353E-01	.353E-03	30.48
Zamarin	.430E-01	.430E-03	37.17
USBR	.328E-02	.328E-04	2.83
Barr	.374E-03	.374E-05	0.32
Alyamani and Sen	.605E-03	.605E-05	0.52
Chapuis	.171E-03	.171E-05	0.15
Krumbein and Monk	.439E-02	.439E-04	3.80
geometric mean	.354E-02	.354E-04	3.06
arithmetic mean	.136E-01	.136E-03	11.77

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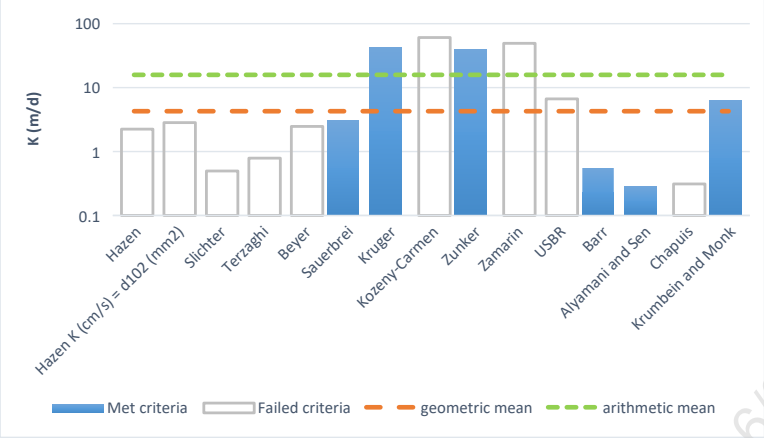
Preliminary Ground Investigation Interpretive Report and Final Factual Report.pdf - Page 265

K from Grain Size Analysis Report Date: 23/01/2020

Sample Name: TP002 (1mbgl)

Mass Sample (g): _____ T (oC) _____

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	.259E-02	.259E-04	2.24
Hazen K (cm/s) = d_{10} (mm)	.328E-02	.328E-04	2.83
Slichter	.574E-03	.574E-05	0.50
Terzaghi	.913E-03	.913E-05	0.79
Beyer	.286E-02	.286E-04	2.47
Sauerbrei	.361E-02	.361E-04	3.12
Kruger	.505E-01	.505E-03	43.60
Kozeny-Carmen	.703E-01	.703E-03	60.71
Zunker	.473E-01	.473E-03	40.89
Zamarin	.570E-01	.570E-03	49.28
USBR	.771E-02	.771E-04	6.66
Barr	.657E-03	.657E-05	0.57
Alyamani and Sen	.344E-03	.344E-05	0.30
Chapuis	.360E-03	.360E-05	0.31
Krumbein and Monk	.752E-02	.752E-04	6.49
geometric mean	.495E-02	.495E-04	4.27
arithmetic mean	.183E-01	.183E-03	15.83

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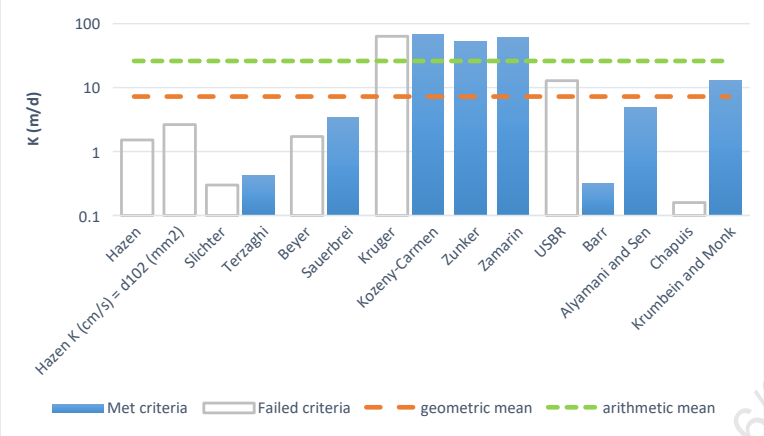
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K from Grain Size Analysis Report Date: 23/01/2020

Sample Name: TP002 (2.5mbgl)

Mass Sample (g): _____ T (oC) _____

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	.176E-02	.176E-04	1.52
Hazen K (cm/s) = d_{10} (mm)	.305E-02	.305E-04	2.64
Slichter	.346E-03	.346E-05	0.30
Terzaghi	.497E-03	.497E-05	0.43
Beyer	.199E-02	.199E-04	1.72
Sauerbrei	.405E-02	.405E-04	3.50
Kruger	.735E-01	.735E-03	63.49
Kozeny-Carmen	.809E-01	.809E-03	69.91
Zunker	.616E-01	.616E-03	53.19
Zamarin	.730E-01	.730E-03	63.09
USBR	.149E-01	.149E-03	12.83
Barr	.372E-03	.372E-05	0.32
Alyamani and Sen	.584E-02	.584E-04	5.05
Chapuis	.184E-03	.184E-05	0.16
Krumbein and Monk	.154E-01	.154E-03	13.29
geometric mean	.839E-02	.839E-04	7.25
arithmetic mean	.302E-01	.302E-03	26.10

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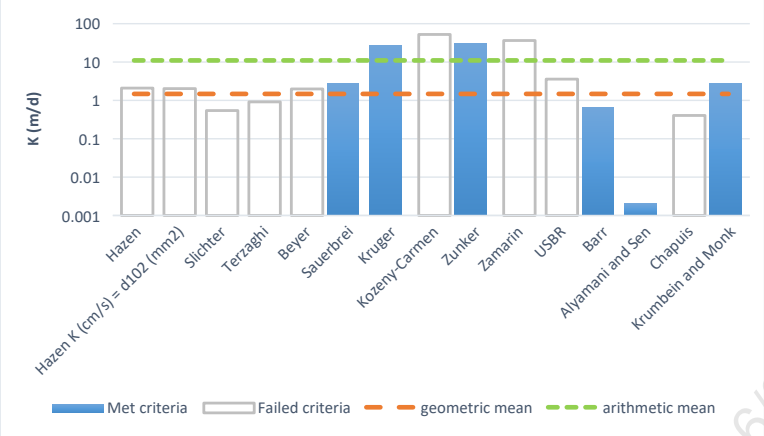
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K from Grain Size Analysis Report Date: 23/01/2020

Sample Name: TP003 (1mbgl)

Mass Sample (g): _____ T (oC) _____

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	.242E-02	.242E-04	2.09
Hazen K (cm/s) = d_{10} (mm)	.235E-02	.235E-04	2.03
Slichter	.629E-03	.629E-05	0.54
Terzaghi	.106E-02	.106E-04	0.91
Beyer	.230E-02	.230E-04	1.99
Sauerbrei	.323E-02	.323E-04	2.79
Kruger	.334E-01	.334E-03	28.83
Kozeny-Carmen	.606E-01	.606E-03	52.34
Zunker	.358E-01	.358E-03	30.91
Zamarin	.421E-01	.421E-03	36.39
USBR	.415E-02	.415E-04	3.58
Barr	.779E-03	.779E-05	0.67
Alyamani and Sen	.245E-05	.245E-07	0.00
Chapuis	.468E-03	.468E-05	0.40
Krumbein and Monk	.338E-02	.338E-04	2.92
geometric mean	.171E-02	.171E-04	1.48
arithmetic mean	.128E-01	.128E-03	11.02

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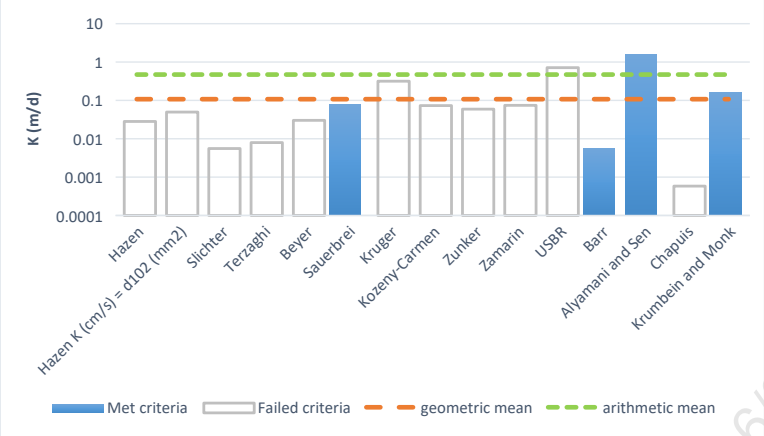
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K from Grain Size Analysis Report Date: 23/01/2020

Sample Name: TP003 (3mbgl)

Mass Sample (g): _____ T (oC) _____

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	.327E-04	.327E-06	0.03
Hazen K (cm/s) = d_{10} (mm)	.574E-04	.574E-06	0.05
Slichter	.643E-05	.643E-07	0.01
Terzaghi	.919E-05	.919E-07	0.01
Beyer	.349E-04	.349E-06	0.03
Sauerbrei	.935E-04	.935E-06	0.08
Kruger	.366E-03	.366E-05	0.32
Kozeny-Carmen	.847E-04	.847E-06	0.07
Zunker	.685E-04	.685E-06	0.06
Zamarin	.860E-04	.860E-06	0.07
USBR	.826E-03	.826E-05	0.71
Barr	.690E-05	.690E-07	0.01
Alyamani and Sen	.188E-02	.188E-04	1.63
Chapuis	.674E-06	.674E-08	0.00
Krumbein and Monk	.198E-03	.198E-05	0.17
geometric mean	.125E-03	.125E-05	0.11
arithmetic mean	.545E-03	.545E-05	0.47

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Appendix I

Preliminary Ground Investigation Rationale

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ARUP

ID Manchester: Surveys

Preliminary Ground Investigation Rationale

UNMC-ARUP-ZZ-XX-RP-CG-0002

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1. Introduction

Arup has been appointed to design a ground investigation based on the findings of earlier desk study and constraints mapping work for the ID Manchester plot.

Appointment

- Ove Arup & Partners Ltd (Arup) has previously provided support to the University of Manchester (UoM) relating to geotechnical and geoenvironmental constraints identification. This work was undertaken to support masterplan optioneering and developing a cost plan for the proposed ID Manchester development. This work is summarised in the following reports, drawings and registers:
  - UNMC-ARUP -XX-RPT-CG-0001 Ground Conditions Desk Study
  - UMNC-ARUP -XX-DRG-CG-0001 Contamination Constraints
  - UMNC-ARUP -XX-DRG-CG-0002 Geotechnical Constraints
  - UMNC-ARUP -XX-DRG-CG-0003 Contamination Potential
  - UMNC-ARUP -XX-DRG-CG-0004 Indicative Rockhead and Foundations Plan
  - UMNC-ARUP -XX-SHT-CG-0018 Ground Conditions Constraints Tracker
- Arup has been appointed by UoM to design a ground investigation to provide data to increase confidence on the level of risk associated with abnormal ground conditions and site features identified during the desk study and constraint mapping work.

Scope

- Arup has recommended a preliminary ground investigation with a focus on collecting data for those constraints that are likely to have the biggest impact on ground related costs. This includes collecting data on:
  - the depth to rock in particular near to the BT tunnel;
  - the infill within the former River Medlock;
  - contamination within the plots of the former oil works and chemical works;
  - the material behind the Altrincham Road retaining wall; and
  - soakaway tests to help with drainage assessment.
- The ground investigation design presented within this document is based upon this scope.
- In addition to this rationale report Arup has been appointed to prepare a drawing showing the proposed ground investigation positions, a schedule outlining in more detail the purpose of individual exploratory holes and provide a budget for the ground investigation based on this.
- The ground investigation design has focussed on the area shown shaded in blue in Figure 1.
- Further ground investigation will be required in the future for detailed design and to discharge planning conditions.

Limitations

- This report was prepared by Arup on behalf of the University of Manchester in connection with the ID Manchester site. It takes into account our Client's particular instructions and requirements and addresses their priorities at the time.
- All reasonable skill, care and diligence have been exercised within the timescale available and in accordance with the technical requirements of the brief.



Figure 1: Wider ID Manchester Site and area of preliminary ground investigation (blue)

ID Manchester - Christine Campbell - Wyntwood SciTech (30/3/2020 2:14:30 PM - 81.154.240.72

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2. Summary of geotechnical and geoenvironmental constraints (wider ID site)

The site was once within a valley of the Medlock and with a varied development history dating back to the 18th Century. There is potential for soft ground, physical constraints as well as restrictions on construction around the BT tunnel.

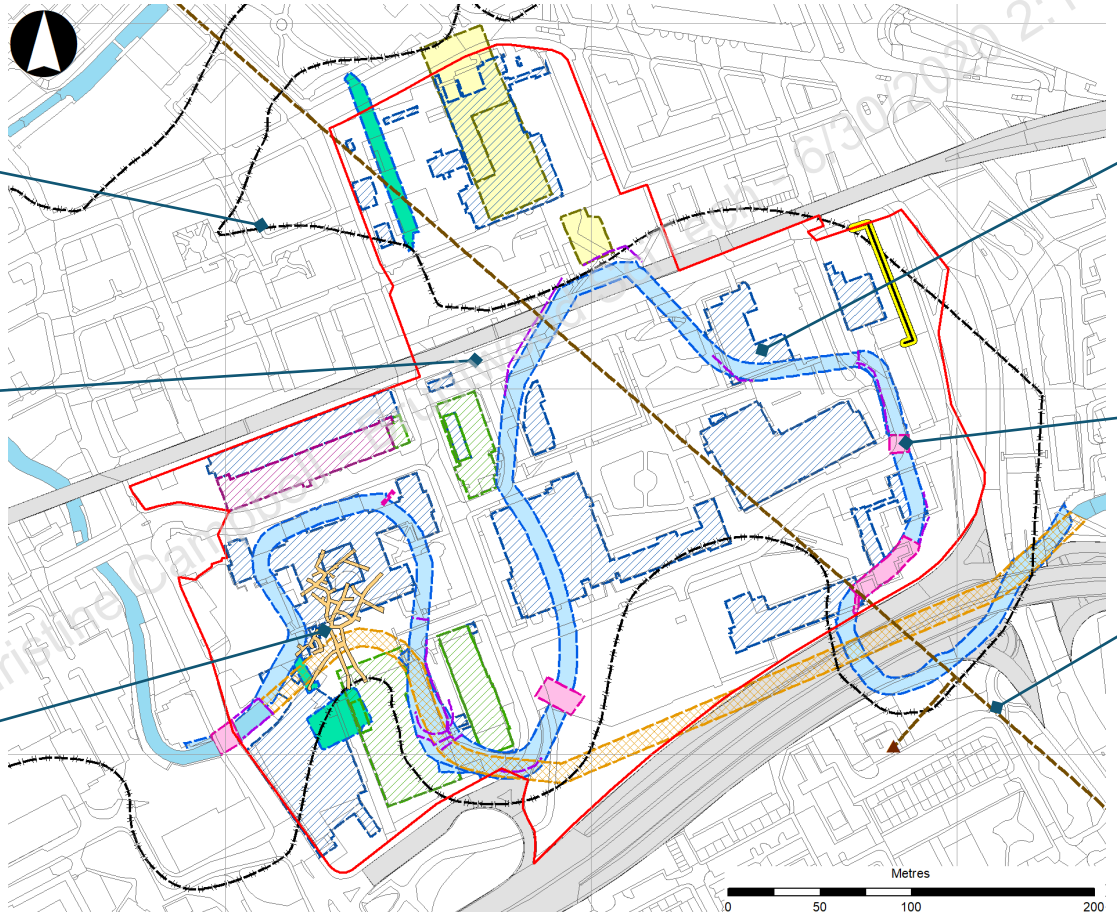


Figure 2: Summary of geotechnical constraints (refer to Drawing UMNC-ARUP-ZZ-XX-DR-CG-0002)

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2. Summary of geotechnical and geoenvironmental constraints (wider ID site)

There is a moderate contamination potential in former industrial land and areas of backfill across much of the site with certain areas of greater contamination risk such as the former chemical and oil works

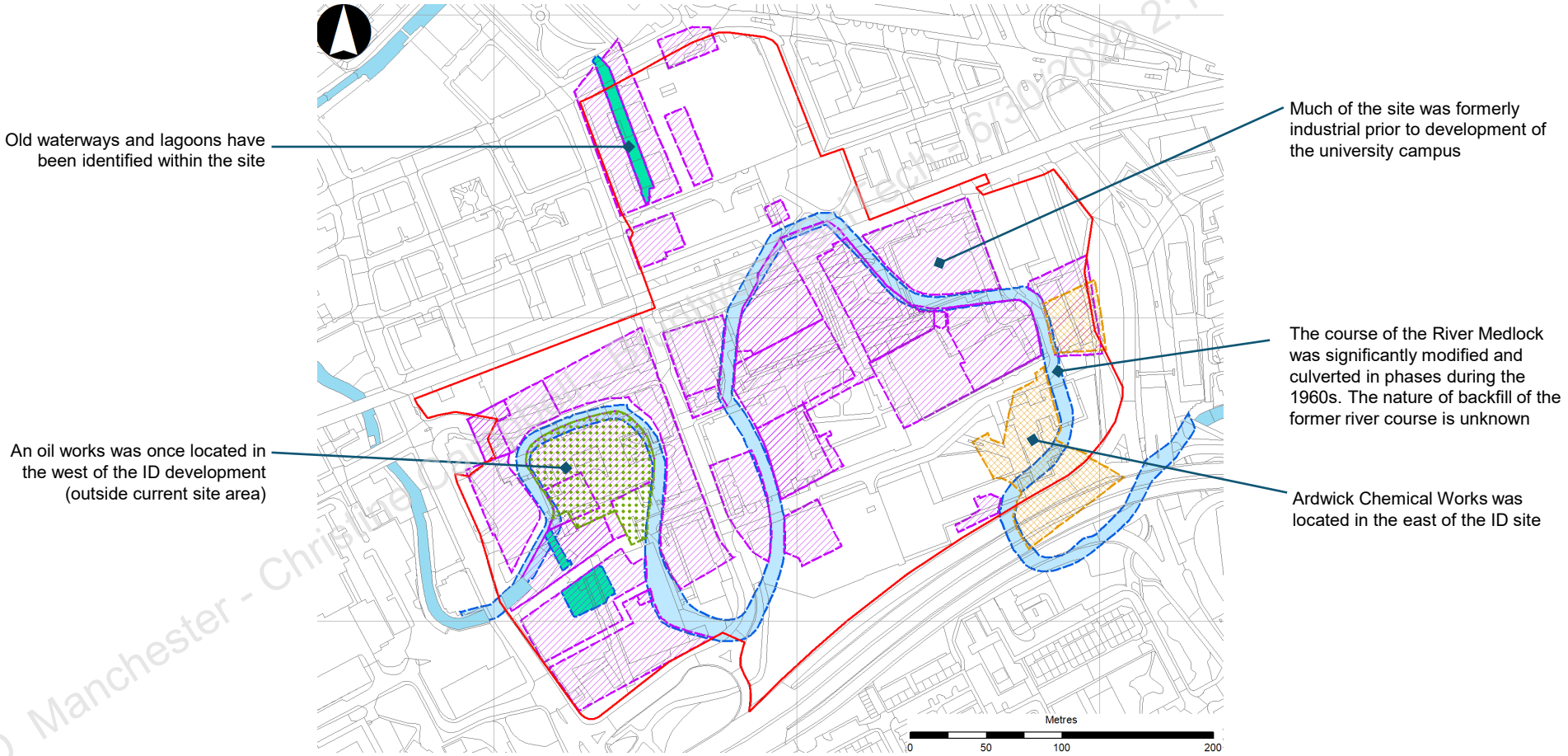


Figure 3: Summary of geoenvironmental constraints (refer to Drawing UMNC-ARUP-ZZ-XX-DR-CG-0001)

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3. Preliminary ground model

The ground conditions are expected to be highly variable due to the nature of the glacial and fluvial processes which formed the landscape and more recent modification by industrial development and university campus.

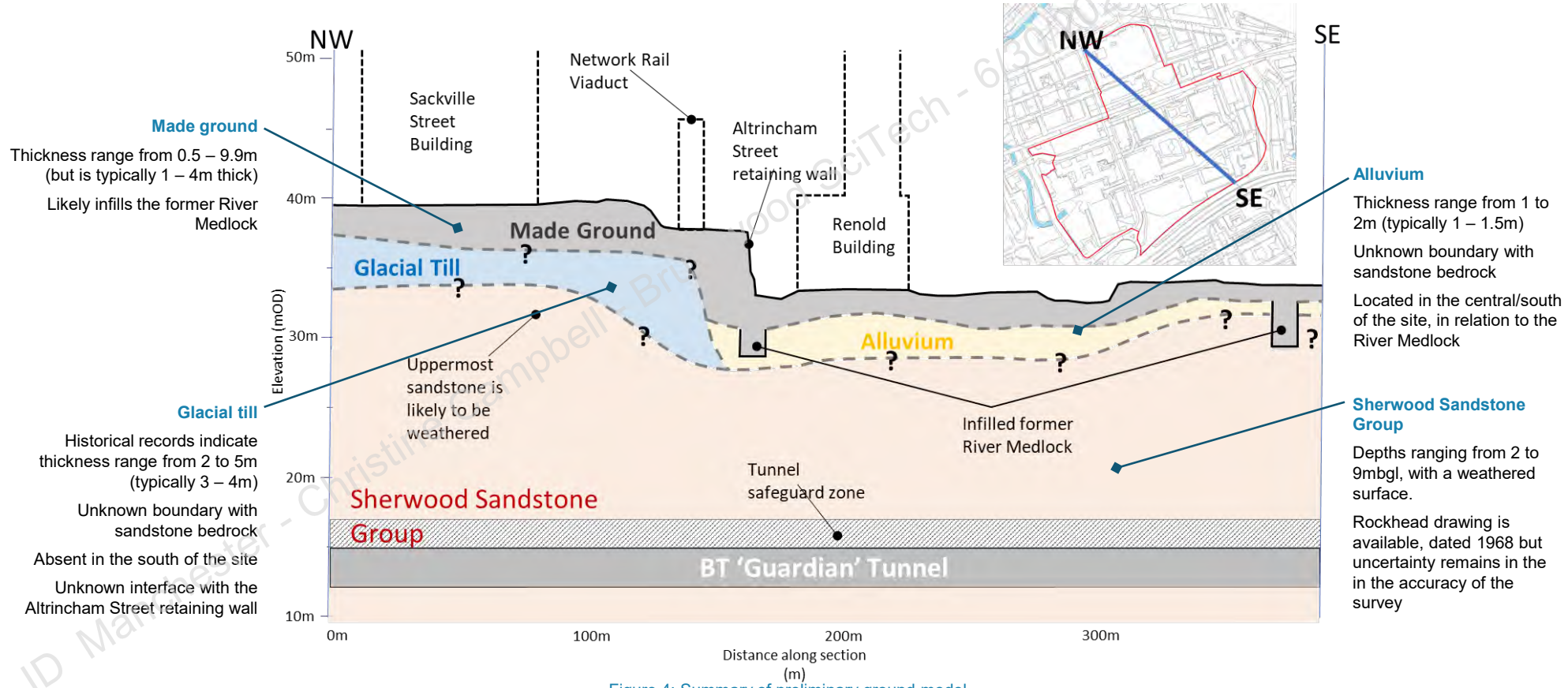


Figure 4: Summary of preliminary ground model

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4. Ground investigation design

Arup has designed a ground investigation focussing on higher risk constraints and abnormal ground conditions to provide early information to support ground related cost estimates and decision making.

Summary

- Arup has designed a ground investigation to investigate higher risk geotechnical constraints and abnormal ground conditions identified through desk based analysis (see earlier slides). Further detail on the main focus of the ground investigation is presented in the following slides and a summary of the scope presented in Figure 5 and described in the next section.



Figure 5: Ground investigation targeting rockhead (shown in blue)

- Investigation to the north of Altrincham Road is not recommended at this stage. This is because the current development proposals involve refurbishing existing structures and some external works in that area. Ground investigation will be required in this area in the future to inform external works design but is considered inappropriate at this stage.

Ground investigation scope

- 6 no. cable percussive boreholes to 10m depth
- 5 no. cable percussive borehole followed by rotary coring for 6m into sandstone bedrock
- 2 no. dynamic sample holes to 10m depth in areas with restricted access, with rotary coring in bedrock
- 3 no. trial pits to a maximum depth of 3m
- 4 no. horizontal cores in retaining walls
- Groundwater monitoring wells installed in 7 no. boreholes
- Ground gas monitoring installations in 5 no. boreholes
- Soakaway testing in the three trial pits and in situ soil/ rock density testing in boreholes
- Collection of samples for geotechnical laboratory testing (see below)
- Collection of geoenvironmental samples for laboratory for contaminants expected based on the land use (see below)
- Collection of groundwater samples and testing for contaminants expected based on the former land use (see below)
- 4 rounds of monitoring to measure groundwater levels and ground gases

Geotechnical laboratory testing (for basic classification testing)

- **Soils:** Moisture content, Atterberg limits, particle size distribution (PSD), chemical aggressivity testing (for concrete)
- **Rock:** Point load, uniaxial compressive stress (UCS), chemical aggressivity testing

Geoenvironmental laboratory testing (for initial risk assessment)

- **Soils:** Asbestos, heavy metals, polycyclic aromatic hydrocarbons (PAH), benzene, toluene, ethylbenzene, xylenes (BTEX), banded total petroleum hydrocarbons (TPH CWG) and volatile as well as semi volatile organic compounds (VOC and SVOC) in selected locations.
- **Groundwater:** Asbestos, heavy metals, inorganics, PAH, BTEX, TPH CWG as well as VOC and SVOC in selected locations.

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4. Ground investigation design

The investigation will provide data on the depth to sandstone which will be important for foundation design, especially nearby to the BT tunnel. The former course of the Medlock will be targeted to better understand this constraint.

Rockhead

- Arup has recommended thirteen boreholes to provide data on the depth to rockhead and collect data on the rock properties to inform later design. This includes five boreholes within close(>3m) proximity (but >3m) to the BT/ Guardian tunnel where the depth to rockhead has a greater importance in understanding foundation and building load configurations. It is proposed to utilise cable percussive techniques where access allows followed by rotary coring. In areas of limited access dynamic sampling is proposed to advance to rockhead before switching to rotary drilling.



Figure 6: Ground investigation targeting rockhead (shown in blue)

Former River Medlock

- The River Medlock was infilled in stages in the 1960s. The nature of the backfill is unknown. Ground investigation is recommended to provide data on the geotechnical composition of the infill which may contain poorly compacted materials, voids. These boreholes will also provide data on the geo-environmental properties of the river infill to inform risk assessment and waste disposal options should this material need to be removed from site.



Figure 7: Ground investigation targeting the former River Medlock (shown in blue)

ID Manchester - Christine Campbell - Buntwood Services - 10/06/2020 2:14:36 PM - 81.154.240.72

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4. Ground investigation design

Part of the site was a chemical works and may require specialist remediation, the investigation will provide data to assess this. The investigation will provide data on the construction and condition of retaining walls on site.

Abnormal contamination

- Much of the site was formerly industrial and although the activities may have resulted in contamination of the soil and groundwater this is expected to be typical of an urban area. However, an area in the southeast of the site was once occupied by Ardwick Chemical works and there is possibly a higher risk of contamination in that area that may require specialist remediation. Ground investigation is recommended to provide data on the levels of contamination in the soil and groundwater to inform risk assessment and remediation options in that area.



Figure 8: Ground investigation targeting abnormal contamination (blue)

Altrincham Road and other retaining walls

- Ground levels to the south of Altrincham Road undulate. At low points Altrincham Road is situated on a retaining wall that was constructed prior to 1849. The material being retained and the construction/ design of the wall is unknown. Arup recommends undertaking three horizontal cores through the retaining wall to provide data on the wall thickness and wall material. In addition to a borehole north of the retaining wall to collect data on the soil being retained.
- Arup also recommends investigating the construction build-up of, and soil behind, a retaining wall for the ramp to the basement of the Pariser building.



Figure 9: Ground investigation targeting retaining walls (blue)

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4. Ground investigation design

The investigation will include monitoring of groundwater levels and ground gas to inform structural and earthworks design and soakaways to assess the potential for infiltration drainage.

Infiltration drainage

- Infiltration drainage may be possible in certain areas of the site, where low permeability glacial deposits have been eroded and replaced by more permeable alluvium. Arup recommends soakaway testing is undertaken in selected locations to provide data on infiltration rates to support drainage options assessment and costs. Current costs are based on an assumption that infiltration drainage will not be possible and drainage will require a new outfall to the River Medlock culvert.



Figure 10: Locations proposed for soakaway testing (blue)

Monitoring

- Groundwater levels and ground gas monitoring is recommended to provide initial data to understand ground gas protection and provide data for, earthworks, pile design and groundwater flow direction and groundwater contaminant transport directions.



Figure 11: Indicative monitoring locations (blue)

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5. Ground investigation constraints

Constraints have been identified at the site which may have an impact on the scope, programme and cost of the ground investigation

Access

- Arup has undertaken a site walkover as part of the ground investigation scoping to identify locations where ground investigation plant can access the site without the need to create accessways or obtain permissions from third parties. Much of the site is formed of buildings and Arup considers the costs associated with in-building investigation will outweigh the benefits of the data obtained. Other constrains include narrow passages and gates which may limit access for certain plant and where this is the case investigation methods have been modified.
- Network Rail own the viaduct north of Altrincham Road and Arup has positioned investigation so not to interfere with this structure. However, approvals and a licence from Network Rail may still be required. Arup has made initial queries with Network Rail and are awaiting a response. Contingency options have been identified in the event it is not possible to undertake investigation around the rail viaduct.

UXO

- Manchester was a bomb target during the Second World War and there is evidence of bomb strikes across Manchester. A Preliminary UXO risk assessment obtained during the desk study has identified a medium UXO risk. Arup has undertaken additional risk assessment, following the approach outlined in Ciria C681, to review the outcome of the more generic preliminary assessment. Arup has concluded there is a low risk of encountering UXO on this site. This is largely due to the significant post war development.
- UXO mitigation has therefore been excluded from the ground investigation scope at this time. However, Arup recommends that UoM undertake a Detailed UXO risk assessment for the site to confirm the level of risk.

Ecology

- Arup is unaware of any ecological studies for the ID site and has assumed that there are no specific ecology requirements for the preliminary ground investigation. However, we have made an allowance under the contract for an ecology survey to confirm this.

Archaeology

- Industrial archaeology is becoming of increasing interest and given the history of this site, dating back to the mid to late 18th Century it is possible that the ground investigation may require the oversite of an archaeologist. The scope excludes this.

Utilities

- Arup has used available service and utility records provided by UoM to position investigation locations to avoid clashes with known utilities. Additional mitigation will be implemented during the fieldwork and will include hand dug inspection pits (to 1.2m below ground level) and CAT scanning prior to commencing any intrusive works.

Traffic and pedestrian management

- Traffic and pedestrian management is likely to be required to minimise health and safety risks to students, staff and other users of the site during the fieldwork.

Reinstatement

- Arup has chosen investigation locations to reduce the surface disruption and therefore reduce reinstatement costs. Boreholes have been positioned in areas of hard surfacing and trial pits in areas of soft landscaping. Arup has assumed that excavations in landscaping areas can be carefully backfilled and do not require replacement turf.

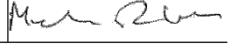
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7. Document verification

Job title		ID Manchester			**Job number** 265190-00
Document title		Preliminary Ground Investigation Rationale			**File reference** 4-05-11.3
Document ref		UNMC-ARUP-ZZ-XX-RP-CG-0002			
Revision	**Date**	**Filename**	UoM_North_Campus_GI_Rationale ISSUE.pptx		
ISSUE	20/08/19	**Description**	Issue for comment		
			Prepared by	Checked by	Approved by
		Name	Mark Griffiths	Carl Lowe	Michael Wilton
		Signature		pp 	
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
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		Name			
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		Name			
		Signature			
Issue Document verification with document					☑

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ID MANCHESTER PRELIMINARY GROUND INVESTIGATION



Final Factual Report (Rev.00)

Contract Number: NW1588
Client: University of Manchester
Consulting Engineer: Arup

Date: April 2020

Allied Exploration & Geotechnics Ltd.

Head Office (Registered Office)
Unit 25 Stella Gill Industrial Estate
Pelton Fell
Chester-le-Street
Co. Durham
DH2 2RG
☎ 0191 3874700
🕮 0191 3874710

Regional Office
Unit 20 Business Development Centre
Eanam Wharf
Blackburn
BB1 5BL
☎ 01254 503 200
🕮 01254 662 590

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ALLIED EXPLORATION & GEOTECHNICS LIMITED

REPORT CONTROL SHEET

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Location	**Manchester**
National Grid Reference	SJ 843 975

Report Details

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Report Recipient	Mark Griffiths	Arup	

Client/Consultant Engineer Details

Client	Consultant Engineer
University of Manchester	**Arup** **6th Floor** **3 Piccadilly Place** **Manchester** **M1 3BN**

Signed & Approved
On Behalf of Allied Exploration & Geotechnics Limited

Reports Engineer **Laura Clarke** BSc (Hons).	**Approved:**	**Date:** 16/04/2020
Technical Manager **Kerry Wade** BSc (Hons), MSc, FGS, MCMI	**Approved:**	**Date:** 16/04/2020
Managing Director **Nick Vater** BSc (Hons), MSc, CGeol, EurGeol, FGS.	**Approved:**	**Date:** 16/04/2020

Head Office (Registered Office): Unit 25, Stella G Industrial Estate, Potton Rd, Chester-le-Street, Co. Durham, DH2 2RS. Tel: 0191 3874700 Fax: 0191 3874710
Regional Office: Unit 20, Business Development Centre, Lanam Wharf, Blackburn, BB1 5BL. Tel: 01254502200 Fax: 01254682540

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ID MANCHESTER PRELIMINARY GROUND INVESTIGATION

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Abbreviation	Definition
CC	Concrete Coring
CP	Cable Percussion
DS	Dynamic Sampling
RC	Rotary Coring
RO	Rotary Openhole

Text Abbreviations

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1. INTRODUCTION

It is proposed to redevelop an area of land approximately 0.5km to the west of Manchester Picadilly Train Station. The works were commissioned in order to determine to ground and groundwater conditions on site to aid the design of the proposed works,

Allied Exploration & Geotechnics Limited (AEG) were contracted by the University of Manchester with Arup acting in the capacity of Consulting Engineer to perform a ground investigation at this site in order to provide information on the subsurface ground and groundwater conditions as well as to obtain samples for geotechnical and specialist chemical testing.

1.1 Scope of Works

The investigation works consisted of the following main elements:

- Seventeen cable percussion boreholes, six of which were further advanced using rotary coring techniques.
- Two dynamic sampling holes, both of which were continued using rotary openhole/coring techniques.
- Four concrete core holes.
- Three mechanically excavated trial pits.
- Associated sampling.
- *In-situ* Standard Penetration and Water Quality Parameter Testing.
- Installation of gas/groundwater monitoring instrumentation.
- Post site works gas and groundwater monitoring.

Site work was carried out between the 26th October and 1st December 2019 with subsequent post site work monitoring, laboratory testing and reporting thereafter. A factual report only was requested.

The comments and opinions expressed in this report are based on the ground conditions encountered during the site work and on the results of tests carried out in the field and in the laboratory. There may, however, be special conditions prevailing on the site which have not been disclosed by this investigation and which have not been taken into account by this report.

2. THE SITE

2.1 Location

The National Grid Reference of the approximate centre of the site is SJ 843 975. This can be found on Ordnance Survey 1:50,000 Sheet Number 109 (Manchester, Bolton & Warrington). Part of this sheet is reproduced as Figure 1, the Site Location Plan.

The site is located in Manchester City Centre approximately 0.5km east of Manchester Piccadilly Train Station.

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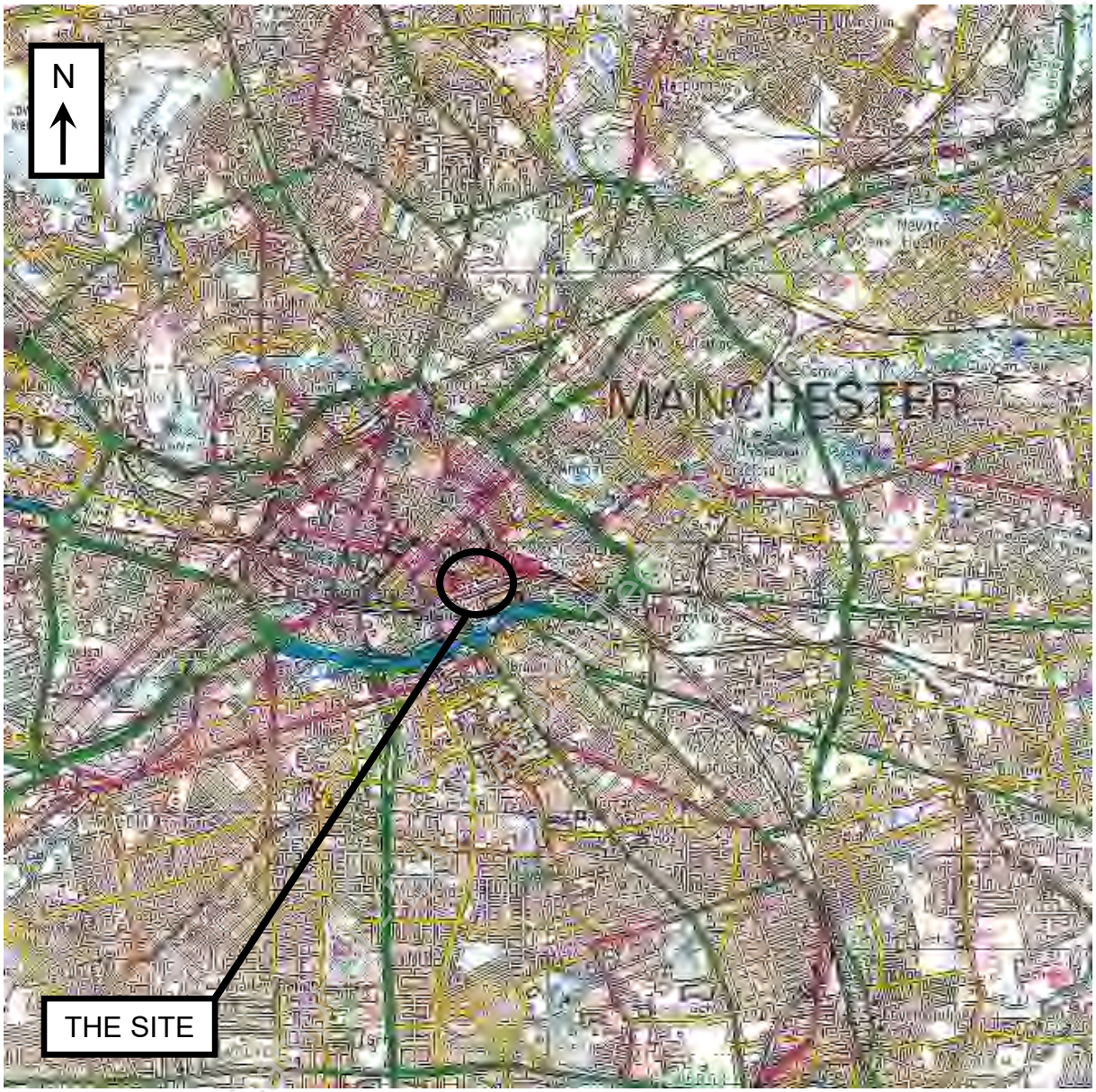


Figure 1: Site Location Plan

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2.2 Site Description and Topography

The site is located approximately 0.5km to the west of Piccadilly Train Station in Manchester and comprises a number of buildings owned by the University of Manchester along with associated landscaping, verges and roads. The site has a varied history of previous land uses including (but not limited to) mills, metal works, engineering works, timber works dye works and chemical works. The site is bound by the railway line to the north, the A57(M) to the south, London Road to the east and Sackville Street to the west.

3. SITE OPERATIONS

3.1 General

All exploratory hole work, associated sampling, *in-situ* testing and logging was carried out in accordance with techniques outlined in Table 1, as appropriate; at positions as near as practicable to those supplied by the Consulting Engineer. These are shown on the Exploratory Hole Location Plan, Field Data Enclosure 1.

Reference Code Number	Title
BS 1377:1990	Methods of Test for Soils for Civil Engineering Purposes (where not in contravention or superseded by Eurocode references)
BS 5930:2015	Code of Practice for Ground Investigation (where not in contravention or superseded by Eurocode references)
BS EN ISO 14689-1:2003	Identification and Classification of Rock
BS EN ISO 14688-1:2002 & 14688-2:2004	Identification and Classification of Soil
BS 10175:2011+A2:2017	Investigation of Potentially Contaminated Sites
BS EN ISO 22476-3: 2005	Geotechnical investigation and testing - Field testing - Part 3 Standard Penetration Testing

Table 1: British Standard Reference Code Number

The depths of all exploratory holes, descriptions of the material encountered, details of any groundwater encountered, samples taken and *in-situ* testing carried out together with any other relevant information can be found on the Borehole, Dynamic Sample Hole, Concrete Core Hole and Trial Pit Records, Field Data Enclosures 2, 3, 4 and 5 respectively. A key to all symbols and abbreviations used throughout the report is included in the Key Sheets.

In accordance with the Site Investigation Steering Group publication “Guidelines for the Safe Investigation by Drilling of Landfills and Contaminated Land” the site was classified YELLOW.

The primary purpose of ground investigation exploratory holes is to probe the stratified sequences of soil and/or rock. From the results of these probings no conclusion should be drawn concerning the presence of, size, lithological nature, and numbers per unit volume of ground cobbles and boulders in soil types such as glacial till (boulder clay). With respect to rotary coring, driller’s records and observations of the recovered core are used to determine any zones of no recovery (core loss). These zones are based on the interpretation of the logging engineer and are therefore subjective.

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3.2 Health & Safety Considerations: Services

Before the commencement of any exploratory hole a search for underground services was conducted as prescribed in HSE publication '*Avoiding Underground Services (HSG47)*' and in accordance with in-house internal safety procedure AEG-14.

Service plans were provided by the Client and were consulted prior to using a service locating device (such as a Cable Avoidance Tool or C.A.T.) to scan a working area around the proposed exploratory hole location. Where no services were indicated a '*Permit-to-Work*' form was issued by the investigation supervisor and, with the exception of trial pits, the position was commenced with a hand excavated inspection pit. The inspection pit was also scanned during the excavation procedure. It should be noted that the digging of an inspection pit only confirms or guards against the possible presence of underground public utility services within the excavated pit. Where no services were indicated by the scanning procedure or inspection pit the exploratory hole was commenced in accordance with the Contract Specification.

Where services were located or there was reasonable belief that they were present, the position was relocated in agreement with the Client. Details of any services uncovered/located during this investigation are given in Table 2.

Exploratory Hole Number	Type of Service	Orientation & Depth (size where indicated)	Status (Damaged/Undamaged)	Additional Remarks
BH012A	Ceramic drain (redundant)	047˚ at 1.10m BGL (125mm diameter)	Damaged	None

Table 2: Services Encountered

3.3 Exploratory Holes: Boreholes

Seventeen boreholes were sunk using a Dando 2000 drilling rig, utilising cable percussive (shell and clay cutter) techniques, to depths of between 0.35m (BH012) and 10.80m BGL (BH012A). Six of the boreholes were further advanced using a Comacchio GEO 205 drilling rig, utilising rotary openhole/coring methods, to depths of between 13.00m (BH011) and 21.50m BGL (BH005).

Rotary openhole drilling was performed using various diameter tri-cone rock bits in combination with water flush. Rotary coring employed a GeoBor 'S' wireline system (146mm OD) barrel in combination with an Easycut drill bit together with water/polymer flushing medium. This coring assembly was used to recover 102mm lined cylindrical specimens of rock core.

The Borehole Records are presented along with a Summary Table as Field Data Enclosure 2.

3.4 Exploratory Holes: Dynamic Sample Holes

Two dynamic sample holes were sunk using a Premier Compact 110 Series tracked rig utilising a removable liner system, to depths of 9.30m (DS001) and 9.90m BGL (DS002). The Dynamic Sample Hole Records are presented as Field Data Enclosure 3 and a summary of any relevant remarks are detailed in Table 3.

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Exploratory Hole Number	Drilling Method	Completion Depth (m BGL)	Installation	Remarks
DS001	DS/RO	9.30	Yes – refer to Section 3.9	Advanced to required depth.
DS002	DS/RO/RC	9.90	Yes – refer to Section 3.9	Advanced to required depth.
Any relevant photographs are presented after the applicable Dynamic Sample Hole Record				

Table 3: Dynamic Sample Hole Summary

3.5 Exploratory Holes: Concrete Core Holes

Four concrete core holes were advanced using an Xcalibre Vulcan coring rig to depths of either 0.46m (HC004) or 2.00m BGL (HC001 to HC003 inclusive). The Concrete Core Records are presented as Field Data Enclosure 4 and a summary of any relevant remarks are detailed in Table 4.

Exploratory Hole Number	Drilling Method	Completion Depth (m BGL)	Installation	Remarks
HC001	CC	2.00	No – reinstated	Advanced to required depth.
HC002	CC	2.00	No – reinstated	Advanced to required depth.
HC003	CC	2.00	No – reinstated	Advanced to required depth.
HC004	CC	0.46	No – reinstated	Terminated due to unsuitable material.
Any relevant photographs are presented after the applicable Concrete Core Hole Record				

Table 4: Concrete Core Hole Summary

3.6 Exploratory Holes: Mechanically Excavated Trial Pits

Three trial pits were mechanically excavated using a TB240 excavator to depths of between 2.60m (TP001) and 3.00m BGL (TP003). The Trial Pit Records are presented as Field Data Enclosure 5 and a summary of any relevant remarks are detailed in Table 5.

Exploratory Hole Number	Excavation Method	Completion Depth (m BGL)	Remarks
TP001	Machine Excavated	2.60	Terminated due to side stability. Soakaway test attempted between 1.40-2.60m BGL – unsuitable.
TP002	Machine Excavated	2.80	Advanced to required depth.
TP003	Machine Excavated	3.00	Advanced to required depth.
Any relevant photographs are presented after the applicable Trial Pit Record			

Table 5: Trial Pit Summary

3.7 Samples

Representative samples of soil, concrete core and rock were obtained from the exploratory holes and were taken to the laboratory for selected geotechnical and specialist chemical testing.

Environmental samples were taken in accordance with the contract specification during the investigation using an approved selection of container types in order to suit the encountered material properties and designated laboratory analytical parameters. Full chain of custody procedures were in place post sampling and during the transportation stage to the nominated specialist chemical laboratory. Environmental samples were administered appropriately following the best practice guidance provided in the contract specification.

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3.8 Groundwater

The comments on groundwater conditions are based on the observations made at the time of investigation. It should be noted that groundwater levels may vary due to seasonal and other effects. Furthermore, water was added during advancement of the majority of boreholes in order to facilitate drilling operations. As a consequence there is a possibility that this could have masked the discrete ingress of natural groundwater into the boreholes, which subsequently may have been sealed as a result of progressing the casing.

Distinct groundwater strikes were not encountered in any of the exploratory holes during the site works operation. Standing water levels were recorded in some boreholes and dynamic sample holes at the beginning and/or end of each drilling shift. The water level is indicated on the applicable Borehole and Dynamic Sample Hole Record as part of the boring progress information.

3.9 Instrumentation & Monitoring

Eleven boreholes and both dynamic sample holes were installed with monitoring instrumentation in accordance with the requirements of the Consulting Engineer. Details of the installations are shown in Table 6 and on the relevant Borehole and Dynamic Sample Hole Records.

Exploratory Hole Number	Instrumentation	Installation Depth (m BGL)	Response Zone (m BGL)
BH001	1 No. 50mm diameter slotted standpipe	15.50	10.00-15.50
BH002	2 No. 50mm diameter slotted standpipe	2.50 and 4.00	0.50-3.00 and 3.20-4.00
BH004	1 No. 50mm diameter slotted standpipe	14.00	11.00-14.00
BH004A	1 No. 50mm diameter slotted standpipe	4.00	1.00-4.00
BH005	1 No. 50mm diameter slotted standpipe	21.50	18.50-21.50
BH007	1 No. 50mm diameter slotted standpipe	13.60	10.60-13.60
BH008	1 No. 50mm diameter slotted standpipe	6.50	0.30-6.50
BH009	1 No. 50mm diameter slotted standpipe	1.70	0.50-1.70
BH011	1 No. 50mm diameter slotted standpipe	13.00	6.00-13.00
BH012A	1 No. 50mm diameter slotted standpipe	6.00	2.00-6.00
BH013	1 No. 50mm diameter slotted standpipe	16.50	11.00-16.50
DS001	1 No. 50mm diameter slotted standpipe	4.00	2.00-4.00
DS002	1 No. 50mm diameter slotted standpipe	9.90	8.15-9.90

Table 6: Instrumentation Summary

Instruments were monitored during site works on up to two occasions for groundwater. Post site work gas and groundwater monitoring was undertaken on four occasions at fortnightly intervals after the completion of the site works in accordance with the Contract Specification. A record of the readings is presented as Field Data Enclosure 6 (Groundwater Monitoring Results) and Field Data Enclosure 7 (Gas Monitoring Results).

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In addition during one round of post site works monitoring groundwater samples were obtained from all available instruments using low flow methods. Water Quality Parameters will be recorded for the purged water prior to sampling (see Section 4.3).

3.10 Operative Observations: Potential Contamination

For the purposes of determining the condition of the site, with regard to human health and environmental issues, reference should specifically be made to any specialist chemical testing undertaken as part of the investigation scheme, as well as any supporting desk study and risk assessment documentation. The information given herein collates the observations made by the operatives involved in the investigation only and comments that have been indicated on the engineering records.

Where there was potential evidence of contamination, principally as a consequence of olfactory and visual identification, information is provided in Table 7.

Exploratory Hole Number	Occurrence (*in-situ*/surface/ laboratory sample)	Visual / Olfactory / Laboratory Testing	Depth (m BGL)	Occurrence Type	Additional Remarks
No occurrences recorded during the investigation.					

Table 7: Potential Contamination Encountered

It should be stressed that the information provided herein is subjective, as it is based on the perceptions of individuals and not specialists routinely involved in the chemical determination of contaminated residues, liquors, vapours or solid contaminants.

3.11 Surveying

The investigation positions were surveyed after completion of site works by specialist subcontractor Site Surveying Services. These positions have been subsequently plotted in AutoCAD® software and are shown on the Exploratory Hole Location Plan, Field Data Enclosure 1.

4. *IN-SITU* TESTING

4.1 General

In-situ testing as specified by the Consulting Engineer was carried out in selected boreholes and dynamic sample holes in accordance with techniques outlined in the relevant British Standard and/or AEG Quality Procedure. The results are presented in the *In-situ* Testing Enclosures with a number of the test results summarised at the relevant depth on the Borehole and Dynamic Sample Hole Records.

4.2 Standard Penetration Test Results

Standard Penetration Testing (SPT) was carried out in the boreholes and dynamic sample holes in accordance with techniques outlined in BS EN ISO 22476-3: 2005 in order to determine the relative density and consistency of the strata encountered. The 'N' value (number of blows per 300mm penetration) or the

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penetration per blow was recorded for each test. Uncorrected 'N' values or penetration per blow data are provided on the applicable Borehole and Dynamic Sample Hole Records. (Refer to page 6 of the key sheets for further details).

More detailed information concerning the standard penetration testing is given in *In-situ* Testing Enclosure 1 which includes the following;

- Initial exploratory hole conditions prior to the test procedure.
- Calibration and energy ratio (E_m) information for the SPT hammer device used to carry out the test.
- A breakdown of blows for each 75mm penetration interval.
- Rod length (C_R) and energy (C_E) correction ratios.
- Uncorrected 'N' value.
- Corrected 'N_{60}' value that applies the rod (C_R) and energy (C_E) corrections indicated.
- Pertinent remarks corresponding to the test procedure.

In addition to the above, a graph has been prepared for each exploratory hole which plots the uncorrected and corrected 'N' value results against depth. Calibration certificates for the SPT apparatus used during the testing procedure are also presented for reference within this *In-situ* Testing Enclosure.

4.3 *In-situ* Water Quality Parameter Testing

Groundwater samples were obtained from all available installations during one round of post site works monitoring in accordance with techniques outlined in the relevant British Standard and/or AEG Quality Procedure. Water Quality Parameters were recorded for the purged water prior to sampling. The parameters tested were pH, temperature, electrical conductivity, redox potential and dissolved oxygen. The results are presented in tabular format as *In-situ* Testing Enclosure 2.

5. LABORATORY TESTING

5.1 General

Laboratory testing as scheduled by the Consulting Engineer was carried out on selected samples in accordance with techniques outlined in BS 1377:1990, AEG Laboratory Quality Procedures or other appropriate standard as quoted.

5.2 Geotechnical Testing

The results are presented in the Laboratory Enclosures with an outline list of the procedures undertaken given in Table 8.

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Test	Procedure
Moisture Content	BS 1377 Part 2 1990 (BS EN ISO 17892-1:2014)
Plasticity Index and Moisture Content	BS 1377 Part 2 1990 (BS EN ISO 17892-1:2014)
Particle Size Distribution Sieving	BS 1377 Part 2 1990
Particle Size Distribution Sedimentation	BS 1377 Part 2 1990
Determination of Total Sulphur, Sulphate and pH (Tested externally)	See External Laboratory Certificates
Determination of Dry Density/Moisture Content Relationship	BS 1377 Part 4 1990
Determination of One Dimensional Consolidation Properties	BS 1377 Part 5 1990
Consolidated Undrained Shear Strength in Triaxial Cell with Measurement of Pore Pressure	BS 1377 Part 8 1990
Moisture Content of Rock	ISRM 1981
Determination of Point Load Index (Some Tested Externally)	ISRM 1985
Determination of Unconfined Compressive Strength (Tested Externally)	ISRM 1985

Table 8: Geotechnical Testing

5.3 Specialist Chemical Testing

Selected samples have been submitted for chemical analysis as specified by the Consulting Engineer, conducted under a subcontract arrangement with Derwentside Environmental Testing Services (DETS). The results of this testing are presented as Appendix I.

5.4 Laboratory Identified Asbestos

Selected samples were analysed for asbestos content as specified by the Consulting Engineer. Any identified asbestos is presented in Table 9 which has been summarised from specialist chemical testing results (see Appendix I for further details).

Exploratory Hole Number	Occurrence	Depth (m BGL)	Occurrence Type	Additional Remarks
BH003	Laboratory Sample	1.00	Brown asbestos	Small bundle of Amosite
BH006	Laboratory Sample	1.20	Brown asbestos	Small bundle of Amosite
BH007	Laboratory Sample	3.30	White asbestos	Chrysotile present as microscopic loose fibrous asbestos debris
DS001	Laboratory Sample	0.60	Brown asbestos	Bundle of Amosite

Table 9: Laboratory Identified Asbestos

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Key Sheets

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Allied Exploration and Geotechnics Limited
Key Sheets

INTRODUCTION

The following explanatory notes define the terminologies, abbreviations and symbols pertaining to each individual column or section of the Exploratory Hole records. 'Exploratory Hole' is used as a general term in this report to comprise borehole, drillhole, and trial pit. All exploratory hole records have been produced using ' gINT®', which is an integrated software environment for the storage and manipulation of subsurface data.

The primary purpose of ground investigation exploratory holes is to probe the stratified sequences of soil and/or rock. From the results of these probings no conclusion should be drawn concerning the presence of, size, lithological nature, and numbers per unit volume of ground cobbles and boulders in soil types such as glacial till (boulder clay). With respect to rotary coring, driller's records and observations of the recovered core are used to determine any zones of no recovery (core loss). These zones are based on the interpretation of the logging engineer and are therefore potentially subjective. In addition, where relevant, every effort is made to highlight material/zones that may relate to suspected old workings. However, it should be noted that this is not straightforward (especially without detailed information regarding anticipated subsurface conditions) and therefore no guarantee can be made with regards to the accuracy of the interpretation of the recovered core.

INFORMATION COMMON TO ALL EXPLORATORY HOLE RECORDS

Status Box
The status box in the top right hand corner of each exploratory hole record gives the status of each individual record i.e. PRELIM1, PRELIM2, PRELIM3 FINAL etc. The date shown relates to the last instance the data was revised. This information is for AEG Quality Assurance only.

Exploratory Hole No
The identity number used throughout the report.

Project
The ground investigation project name. Occasionally the project name may be shortened or abbreviated due to string length restraints imposed by the gINT® computer programme.

Client
Client's name responsible for funding the ground investigation project. The Client's name may be shortened or abbreviated due to string length restraints imposed by the gINT® computer programme.

Location
The exploratory hole position given as either national grid co-ordinates, local grid if specified, or a reference name normally pertaining to the area of investigation.

Method (Equipment)
Represents the drilling, excavation or boring method(s) or equipment used.

Ground Level (m(AOD))
The precise ground level in metres above Ordnance Datum at the exploratory hole location from which the reduced level for each stratigraphic boundary is calculated.

Date
The date relating to the start of the exploratory hole excavation.

Sheet
The sheet number and total number of sheets for the particular record.

Checked By
Printed signature of the person who has carried out the technical quality check on the log.

Logged By
The name of the engineer who has carried out the logging of the exploratory hole.

Contract No.
The Allied Exploration & Geotechnics Limited reference number for the project.

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Key Sheets

INFORMATION RELEVANT TO BOREHOLE AND WINDOW/WINDOWLESS SAMPLE HOLE RECORDS

Sample & Tests Columns

Depth	The depth over which a sample or test is taken is shown in depth column of the exploratory hole record in a "from...to" format.
Type No	Indicates the type of sample/test and number given by the driller.
Test Result	Result of the test given in the applicable units.

Water Column

Water Strike	Level of groundwater strike within an exploratory hole. The symbol 1▼ denotes a water strike and is suffixed with a number, which indicates the strike order. The corresponding unfilled symbol ▽ is the depth the strike rose to.
Seepage	Groundwater seepage within an exploratory hole is denoted by the ≈ symbol.

Strata Columns

Reduced Level	The corresponding reduced level of each soil or rock boundary in metres Ordnance Datum.
Legend	A graphical representation of the materials encountered using BS 5930:1999 Amendment No.2 (Aug 2010) recommended symbols for soil and rock.
Depth (Thickness)	The depth below ground level of each soil or rock boundary in metres and the thickness of each individual stratigraphic unit (given in brackets).
Description	Engineering description of each individual soil or rock type follows recommendations outlined in Section 6 of BS 5930:1999 Amendment No.2 (Aug 2010) with the following implementation:

1 The amendment of section 6 incorporates the guidance indicated in BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004 and BS EN ISO 14689-1:2003 European Standard with particular emphasis on current UK practice.

2 Supplementary laboratory or in-situ assessed measurements of undrained strength are provided where applicable information is available in parenthesis in accordance with clause 41.3.2 BS 5930:1999 Amendment No.2 (Aug 2010) after the field strength determined consistency. The description based measurement table indicating the quantitative undrained strength classification divisions is provided in Key Sheets Table 1.

Term based on measurement	**Undrained strength classification definition cu, in kPa** (from BS EN ISO 14688-2:2004, 5.3, Table 5)
Extremely low	<10
Very low	10-20
Low	20-40
Medium	40-75
High	75-150
Very High	150-300
Extremely High	300-600

KEY SHEETS TABLE 1

3 Cobble and boulder content is expressed in accordance with the terms provided in EN ISO 14688-2: 2004 where visually identified in trial pit excavations, or inferred/recovered during the drilling operations. The assessment of frequency and spatial occurrence of coarse and very coarse rock material should not be considered as precise, but only an indicator or estimate of the potential conditions. It should be noted that the recovery of coarse or very coarse particles in boreholes is dependent on the limitations imposed by the casing diameter. The terminology used is outlined in Key Sheets Table 2.

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Key Sheets

Fraction	Percent by Mass	Term
Boulders	<5	Low boulder content
	5 to 20	Medium boulder content
	>20	High boulder content
Cobbles	<10	Low cobble content
	10 to 20	Medium cobble content
	>20	High cobble content

KEY SHEETS TABLE 2

4 Rock Strength based on assessed field or measured unconfined compressive strength follows the classification scheme given in clause 44.2.1 BS5930:1999 Amendment No.2 (Aug 2010) as outlined in Key Sheets Table 3.

Term for use in field or based on measurement	Definition for field use	Definition on basis of Unconfined Compressive Strength measurement (MPa)	*Old Classification of rock strength: Terminology (Strength Range MPa)*	*Old Classification of rock strength: Determination Method*
Extremely weak	Can be indented by thumbnail. Gravel sized lumps crush between finger and thumb.	0.6-1.0	*Very Weak (<1.25)*	*Lumps can be crushed between fingers*
Very weak	Crumbles under firm blows with point of geological hammer. Can be peeled by a pocket knife.	1-5	*Weak (1.25 – 5)*	*Lumps can be broken with heavy hand pressure*
Weak	Can be peeled by a pocket knife with difficulty. Shallow indentations made by firm blow with the point of geological hammer.	5-25	*Moderately Weak (5-12.50)*	*This slab can be broken with heavy pressure*
Medium Strong	Cannot be scraped with pocket knife. Can be fractured with a single firm blow of geological hammer.	25-50	*Moderately Strong (12.50-50)*	*Rock can be broken in the hand with a hammer*
Strong	Requires more than one blow of geological hammer to fracture.	50-100	*Strong (50-100)*	*Rock can be broken on a flat surface using a hammer*
Very Strong	Requires many blows of geological hammer to fracture.	100-250	*Very Strong (100-200)*	*Rock chipped by blows with a hammer*
Extremely strong	Can only be chipped with geological hammer.	>250	*Extremely Strong (>200)*	*Rock rings when hit with a hammer*
Based on BS EN ISO 14689-1:2003 4.2.7, Table 5			*BS5930: 1999 – Section 6 (Superseded Version)*	

KEY SHEETS TABLE 3

5 Where 'rock weathering classification' can be applied it is 'Approach 4' which will be used. If any other approach is used the factual text of the report will provide details of the applicable specific approach. (Ref.: Figure 19, p143, BS 5930:1999 Amendment No.2 (Aug 2010)). An outline of the 'Approach 4' rock weathering classification scheme is provided as Key Sheets Table 4.

APPROACH 4 CLASSIFICATION INCORPORATING MATERIAL AND MASS FEATURES		
Class	**Classifier**	**Typical characteristics**
A	Unweathered	Original strength, colour, fracture spacing
B	Partially weathered	Slightly reduced strength, slightly closer fracture spacing, weathering penetrating in from fractures, brown oxidation
C	Distinctly weathered	Further weathered, much closer fracture spacing grey reduction
D	Destructured	Greatly weakened, mottled, ordered lithorelics in matrix becoming weakened and disordered, bedding disturbed.
E	Residual or reworked	Matrix with occasional altered random or 'apparent' lithorelics, bedding destroyed. Classed as reworked when foreign inclusions are present as a result of transportation.

KEY SHEETS TABLE 4

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Instrument/Backfill Column

A graphical representation of backfill material or instrumentation detail using graphic legends. Its placement in the column is relative to depth in metres and corresponds to the exploratory hole in scale.

Boring Progress and Water Observations Columns

This section provides information on each day's production as a daily log.

Date	Date of shift.
Depth	Depth of hole at the start of the shift.
Casing	Casing's depth at the start of the shift.
Casing Dia	Casing's diameter at the start of the shift.
Water Depth	Water level within the borehole at the start and end of shift.

Chiselling Columns

Indicates where hard strata occurred in the borehole and breaking out was carried out to advance the borehole.

From	The depth commenced.
To	The depth finished.
Hours	The time spent for breaking out.

Water Added Columns

Indicates the depth range where water was added to the borehole to facilitate boring or to prevent stress relief disturbance "blowing/boiling" in granular soils.

From	Depth in metres from where water was added.
To	Depth in metres to where water was added.

General Remarks

Any remarks believed to be relevant to the exploratory hole.

INFORMATION RELEVANT TO PIT/TRENCH RECORDS

The pit/trench records follow the same format as the borehole and window/windowless sample hole records for the Samples & Tests, Water and Strata columns. However, in addition to these there are the following:

Plan

A schematic plan view of the pit showing its excavated dimensions together with its orientation, given as a compass bearing to magnetic north.

Groundwater

Notes on water bearing horizons.

Stability

The engineer's comments outlining the stability of the sides during pit excavation.

General Remarks

The engineer's comments of any other information relevant to construction of the pit.

Additional Information

An indication if a sketch and/or photographs accompany the record.

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Underground Services

Depth	Depth service was encountered.
Orientation	Orientation given as a compass bearing to magnetic north.
Type	Type of service encountered.
Diameter	Diameter of service encountered.
Condition	Condition the service encountered was noticed in.

INFORMATION RELEVANT TO DRILLHOLE RECORDS AND ROTARY CONTINUATION

Run Details Columns

Depth	Each drill run is highlighted by a horizontal line with the top and bottom depths shown in metres. Core diameter (C Dia) is presented also within each run.
TCR (SCR) RQD	Information provided on the total core recovery, solid core recovery and rock quality designation. Refer to Abbreviations for further details.
Fracture Index	Information given relating to the fracture index of the rock.

Strata Columns

As the strata columns for borehole and window/windowless sample hole records except for description which is as follows:

Discontinuities Detail	Information on core discontinuities, localised variations in weathering, lithology, strength and structure follows recommendations outlined in Section 6 BS 5930:1999 Amendment No.2 (Aug 2010):Clause 44.
Main	Engineering description of each individual soil or rock type follows recommendations outlined in Section 6 of BS 5930:1999 Amendment No.2 (Aug 2010).

Instrument/Backfill Column

A graphical representation of backfill material or instrumentation detail using graphic legends. Its placement in the column is relative to depth in metres and corresponds to the exploratory hole in scale.

Drilling Progress and Water Observations Columns

Date	Date of shift.
Depth	Depth of hole at the start of the shift.
Casing	Casing's depth at the start of the shift.
Water Strike	Depth at which water was encountered.
Water Standing	Depth at which water in the hole levelled off.
Water Remarks	Any remarks believed to be relevant to the water e.g. Artesian.

Standard Penetration Test

Depth	The depth commenced.
Type	Type of standard penetration test (SPT).
Result	Result of SPT.

Flush

From	The depth commenced.
To	The depth finished.
Type	Details of the type of flush used. A = Air, F = Foam, W = Water and Pol = Polymer.
Returns	An indication of the percentage of the returned flush material.

General Remarks

Any remarks believed to be relevant to the exploratory hole.

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Key Sheets

SAMPLES

B	Bulk disturbed sample.
ES	Environmental soil sample.
EW	Environmental water sample.
G	Gas sample.
J	Small disturbed sample.
LB	Large bulk disturbed sample.
P	Piston sample.
P*	An attempted but failed undisturbed piston sample.
U	Undisturbed sample.
U*	An attempted but failed general purpose undisturbed sample.
$U_{(ss)}$	Sample has been subsampled.
$ES_{(U)}$	Brackets following a sample denotes a subsample. The sample information within the brackets is the origin of the subsample.
W	Water sample.

IN-SITU TESTS

CBR	California Bearing Ratio mould sample or test.
HSV	In-situ hand shear vane.
HSV*	An attempted but failed in-situ hand shear vane.
HSV result of e.g 80(20)kPa	Denotes average HSV peak result followed by average HSV residual result (in brackets).
HP	Hand penetrometer test.
K (F)	Falling head permeability test.
K (R)	Rising head permeability test.
K (C)	Constant head permeability test.
K (P)	Packer permeability test.
PT	Pressuremeter test.
PID	Photo ionisation detector test.
FID	Flame ionisation detector test.
S	Standard Penetration Test (SPT) using the split barrel sampler (shoe). The corresponding uncorrected 'N' value is given in the test result column with more detailed information provided in the In-Situ Testing Enclosures where applicable. Testing has been conducted in accordance with BS EN ISO 22476-3: 2005.
C	Denotes SPT test using a solid cone in preference to the split barrel sampler (usually in coarse granular soil) with all other reporting requirements as outlined above for the split barrel sampler.
S/C result of e.g. 1/2.94	Denotes where full penetration has not been achieved during the SPT test. In such cases the penetration (mm) per blow is recorded in the test result column e.g. 1/2.94 is 2.94mm of penetration per single blow.
SV	In-situ down-the-hole shear vane test. The remoulded shear strength is given in brackets.

ROCK QUALITY AND CORE RECOVERY

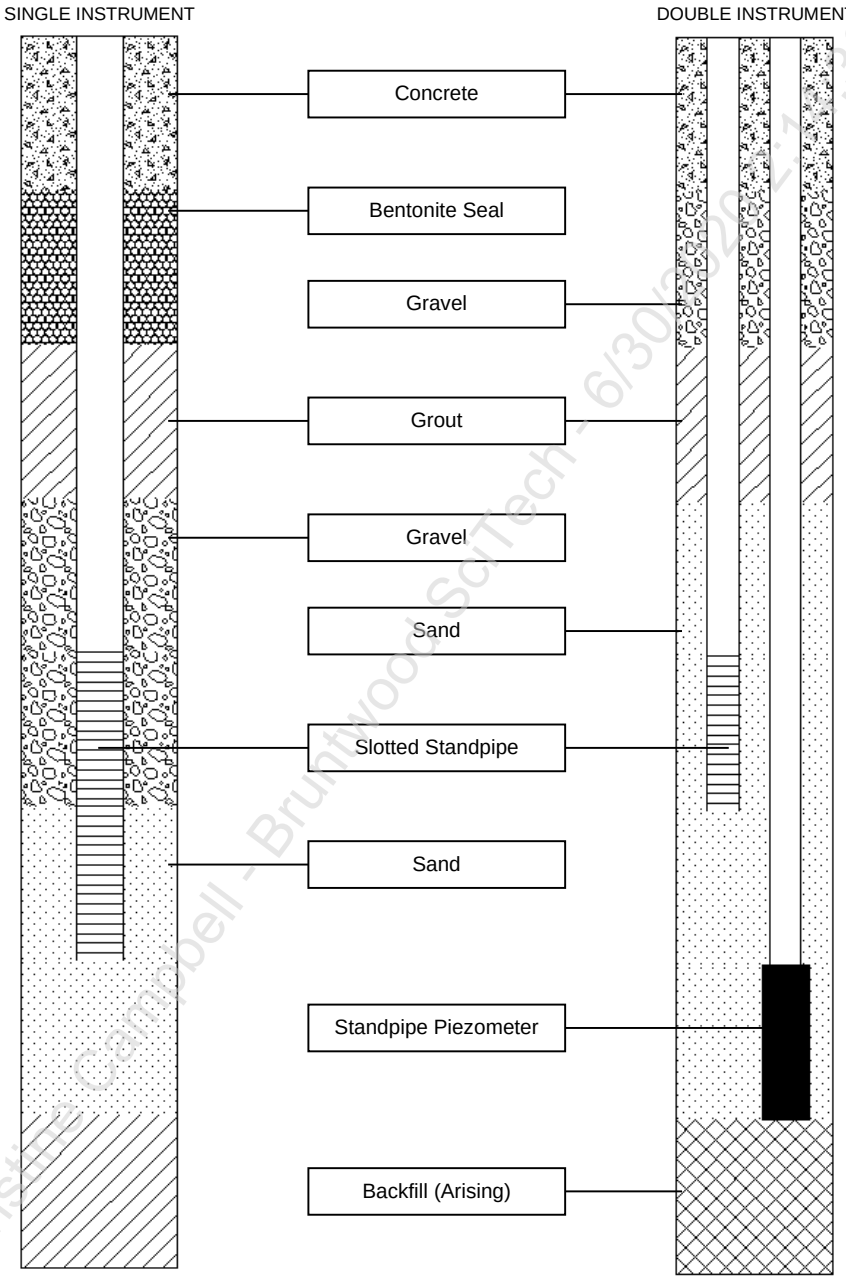
TCR	Total Core Recovery - the length of the recovered core expressed as a percentage of the length of core run.
SCR	Solid Core Recovery - the sum length of all core pieces that are recovered with at least one full diameter, expressed as a percentage of the length of core run.
RQD	Rock Quality Designation - The sum length of all core pieces that are 100mm or longer (measured along the centre of the core), expressed as a percentage of the length of core run.
FI	Fracture Index - The number of fractures per 1000mm length of solid core.
NI	Non-intact - The material recovered in a non-intact state.
NR	No recovery from the core run. These zones are based on the interpretation of the logging engineer and are therefore potentially subjective.

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Key Sheets

Symbols and Abbreviations: Explanation of Instrumentation Legends Used



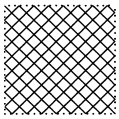
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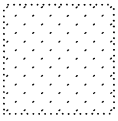
Symbols and Abbreviations: Explanation of Legends Used

Soils	Rocks		
	Sedimentary	*Metamorphic*	*Igneous*

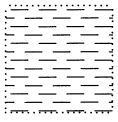

Made Ground


Cobbles and Boulders

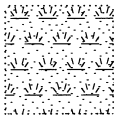

Gravel


Sand


Silt

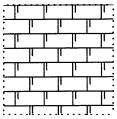

Clay

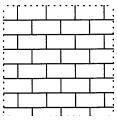

Peat

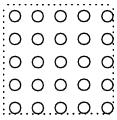

Topsoil

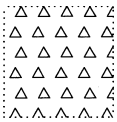
Note: Composite soil types will be signified by combined symbols e.g.

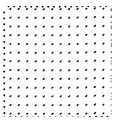

Silty Sand

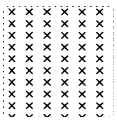

Chalk


Limestone


Conglomerate


Breccia


Sandstone


Siltstone

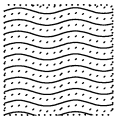

Mudstone

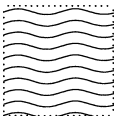

Shale


Coal

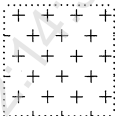

Pyroclastic (Volcanic Ash)

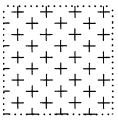

Gypsum


Coarse Grained


Medium Grained


Fine Grained


Coarse Grained


Medium Grained


Fine Grained

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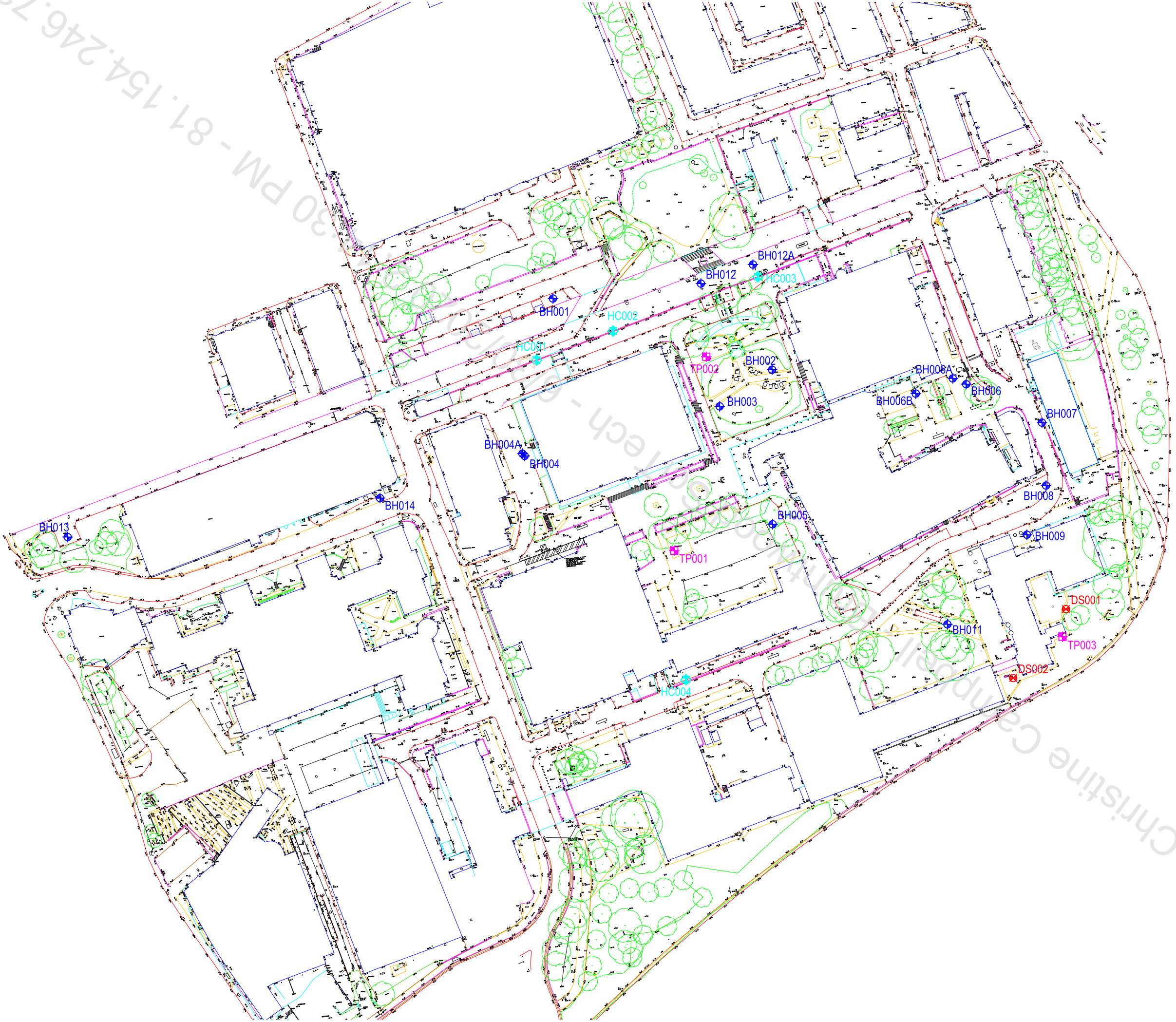
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FIELD DATA ENCLOSURE 1

Exploratory Hole Location Plan

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Unit 25 Stella Gill Industrial Estate
Pelton Fell
Chester - Le - Street
Co Durham
DH2 2RG
(Tel): 0191 387 4700
(Fax): 0191 387 4710
(Email): enquiries@aeg.uk.net

KEY:

BOREHOLE/DRILLHOLE

DYNAMIC SAMPLE HOLE

TRIAL PIT

CONCRETE CORING

N
W E
S

Base Plan Supplied by Consulting Engineer

Drawing Title:
ENC 01 : Exploratory Hole Location Plan

Drawing No.:
AEG/NW1588/03

Contract Title:
ID Manchester Preliminary Ground Investigation

Client:
University of Manchester

Consultant:
Arup
6th Floor, 3 Piccadilly Place,
Manchester, M1 3BN

Contract No.:
NW1588

Scale:
1:1500 @ A3

Date:
14/04/2020

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FIELD DATA ENCLOSURE 2

Borehole Records

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Borehole Summary Table

Exploratory Hole Number	Drilling Method	Completion Depth (m BGL)	Depth of instrumentation (m BGL)	Instrumentation Response zone (m BGL)	Remarks
BH001	CP/RC	15.50	15.50	10.00-15.50	Advanced to required depth.
BH002	CP	4.00	2.50	0.50-3.00	Terminated due to refusal.
			4.00	3.20-4.00	
BH003	CP	5.40	-	-	Terminated due to refusal.
BH004	CP/RC	14.00	14.00	11.00-14.00	Advanced to required depth.
BH004A	CP	4.00	4.00	1.00-4.00	Advanced to required depth.
BH005	CP/RC	21.50	21.50	18.50-21.50	Advanced to required depth.
BH006	CP	1.60	-	-	Terminated due to obstruction.
BH006A	CP	1.30	-	-	Terminated due to concrete obstruction.
BH006B	CP	0.70	-	-	Terminated due to concrete obstruction.
BH007	CP/RC	13.60	13.60	10.60-13.60	Advanced to required depth.
BH008	CP	6.50	6.50	0.30-6.50	Advanced to required depth.
BH009	CP	4.80	1.70	0.50-1.70	Terminated due to refusal
BH011	CP/RC	13.00	13.00	6.00-13.00	Advanced to required depth.
BH012	CP	0.35	-	-	Terminated due to concrete obstruction.
BH012A	CP	10.80	6.00	2.00-6.00	Advanced to required depth.
BH013	CP/RC	16.50	16.50	11.00-16.50	Advanced to required depth.
BH014	CP	10.50	-	-	Advanced to required depth.

Any relevant photographs are presented after the applicable Borehole Record
CP = Cable Percussion, RO = Rotary Openhole, RC = Rotary Coring, DS = Dynamic Sampling
All installations comprise 50mm diameter slotted standpipes

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Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG **Tel:** 0191 387 4700 **Fax:** 0191 387 4710
Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation		**Exploratory Hole No.** BH001
Client: University of Manchester	**Location:** Manchester E:384566.052 N:397646.557	
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 37.810 / **Start Date:** 26/10/2019	**Sheet:** 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
				37.71		0.10	MADE GROUND (Macadam).	
0.20	J1			37.41		0.40	MADE GROUND (Brown yellow sandy gravel. Sand is fine to coarse. Gravel is fine to coarse subangular ad includes sandstone, limestone and brick).	
0.20	ES2							
0.20-0.40	B3							
0.50	J4						MADE GROUND (Soft brown sandy gravelly clay with low cobble content with fragments of pottery, glass and wood. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone and brick. Cobbles are angular and include sandstone and brick).	
0.50	ES5							
0.50-1.00	B6							
1.00	J7							
1.00	ES8							
1.00-1.20	B9							
1.20-1.65	U10	(35)					at c.0.50m BGL ... slightly sandy slightly gravelly clay of intermediate plasticity.	
1.65	J11							
2.00	ES12						at c.2.00m BGL ... clay is of intermediate plasticity.	
2.00-2.45	B14							
2.00-2.45	SJ13	N8				(3.80)		
3.00	ES15						at c.3.00m BGL ... sandy slightly gravelly clay of low plasticity.	
3.00-3.45	B17	(10)						
3.00-3.45	SJ16	N10						
4.00	ES18			33.61		4.20		
4.00-4.45	B20							
4.00	SJ19	50/250mm		33.41		4.40	Soft black brown silty sandy gravelly CLAY with interbeds of silt and fragments of pottery and glass. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone and coal. (Engineer notes possible remanence of infilled river channel). at c.4.30m BGL ... clay is of intermediate plasticity.	
4.30	ES21							
4.30	J22							
5.00-5.45	B24							
5.00	SJ23	50/100mm				(1.60)	Very dense red clayey slightly gravelly SAND with clay pockets. Sand is fine to coarse. Gravel is fine to medium angular to subangular and includes sandstone. (Possible weathered sandstone).	
5.50	SJ25	50/125mm						
				31.81		6.00		
							Boring complete at 6.00m BGL - continued by rotary drilling.	

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
26/10/2019	0.00	0.00	200	
26/10/2019	1.20	1.00	200	Dry
27/10/2019	1.20	1.00	200	Dry
27/10/2019	3.84	3.84	200	
27/10/2019	6.00	5.80	150	Dry

Chiselling		Water Added
From - To	Duration (hh:mm)	From - To
4.40 - 5.50	2:30	

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 10.00-15.50m BGL.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

Print Date and Time: 16/04/2020 11:35:18

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Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH001
Client: University of Manchester	**Location:** Manchester E:384566.052 N:397646.557		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 37.810	**Start Date:** 26/10/2019	**Sheet:** 1 of 5

RUN DETAILS			Water	STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index		Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	
6.00 (102mm)	0 (0) 0	NR		31.81		6.00	6.00-8.90m ... no recovery.	(1) Red SANDSTONE.	
6.50 (102mm)	0 (0) 0						6.50m ... J26		
8.00 (102mm)	40 (33) 7					(2.90)			
9.50 (102mm)		NI 7		28.91		8.90	8.90-9.00m ... non-intact. 9.00-10.20m ... subhorizontal (10 degrees) closely spaced planar rough undulating smooth and rough open clean discontinuities.	Extremely weak red fine to coarse grained SANDSTONE distinctly weathered to destructured with inclusions of fine to medium subrounded quartz and quartzite.	
	60 (47) 30					(1.50)	9.50m ... J27		

Drilling Progress and Water Observations			
Date	Depth	Casing	Water Standing
29/10/2019	6.00	5.80	

Standard Penetration Test		
Depth	Type	Result
9.50	S	60/20mm

Flush		
From - To	Type	Returns (%)
6.00 - 6.50	Water	100
6.50 - 8.00	Water	100
8.00 - 9.50	Water	100
9.50 - 11.00	Water	100

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 10.00-15.50m BGL.

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **NW1588**

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH001
Client: University of Manchester	**Location:** Manchester E:384566.052 N:397646.557		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 37.810	**Start Date:** 26/10/2019	**Sheet:** 2 of 5

RUN DETAILS			Water	STRATA				
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index		Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	Instrument/ Backfill
(102mm)		NI		27.41		10.40	10.20-10.40m ... non-intact.	Extremely weak red fine to coarse grained SANDSTONE distinctly weathered to destructured with inclusions of fine to medium subrounded quartz and quartzite. *(continued)*	
		NR					10.40-11.30m ... no recovery.	(1) Red SANDSTONE.	
11.00						(0.90)			
	80 (67) 0			26.51		11.30			
(102mm)		11					11.30-12.30m ... subhorizontal (10 degrees) closely spaced planar rough undulating smooth rough open clean discontinuities.	Extremely weak red fine to coarse grained SANDSTONE distinctly weathered to destructured with inclusions of fine to medium quartz and quartzite.	
		NI					12.30-12.50m ... non-intact.		
12.50									
	87 (80) 18	NR					12.50m ... J28 12.50-12.70m ... no recovery.		
		NI					12.70-12.80m ... non-intact.		
		11					12.80-15.15m ... subhorizontal (10 degrees) closely spaced planar rough undulating smooth and rough open clean discontinuities.		
(102mm)						(4.20)			
14.00									

Drilling Progress and Water Observations

Date	Depth	Casing	Water Standing

Standard Penetration Test

Depth	Type	Result
12.50	S	27/10mm

Flush

From - To	Type	Returns (%)
11.00 - 12.50	Water	100
12.50 - 14.00	Water	100
14.00 - 15.50	Water	100

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 10.00-15.50m BGL.

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH001
Client: University of Manchester	**Location:** Manchester E:384566.052 N:397646.557		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 37.810	**Start Date:** 26/10/2019	**Sheet:** 3 of 5

RUN DETAILS			Water	STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index		Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	
(102mm)	90 (83) 9	NI NR		22.31		15.50	15.15-15.35m ... non-intact. 15.35-15.50m ... no recovery.	Extremely weak red fine to coarse grained SANDSTONE distinctly weathered to destructured with inclusions of fine to medium quartz and quartzite. *(continued)*	
							15.50m ... J29	*Complete at 15.50m BGL.*	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
29/10/2019	15.50	15.50	0.00	15.50	S	100/30mm				(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 50mm diameter slotted standpipe installed between 10.00-15.50m BGL.

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH001
Client: University of Manchester	**Location:** Manchester E:384566.052 N:397646.557		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 37.810	**Start Date:** 26/10/2019	**Sheet:** 4 of 5

Figure BH001.1
BH001 8.00-11.00m BGL



Figure BH001.2
BH001 11.00-12.50m BGL



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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH001
Client: University of Manchester	**Location:** Manchester E:384566.052 N:397646.557		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 37.810	**Start Date:** 26/10/2019	**Sheet:** 5 of 5

Figure BH001.3
BH001 12.50-14.00m BGL



Figure BH001.4
BH001 14.00-15.50m BGL



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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH002
Client: University of Manchester	**Location:** Manchester E:384655.294 N:397617.594		
Method (Equipment): Cable Percussion (Dando 2000)	**Ground Level (m):** 33.265	**Start Date:** 02/11/2019	**Sheet:** 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
				33.17		0.10	MADE GROUND (Soft brown sandy clay with many rootlets. Sand is fine to coarse).	
0.10	J1							
0.30	ES2						MADE GROUND (Medium dense brown yellow red black clayey very sandy gravel with cobbles noted. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, clinker, wood, glass and brick).	
0.50	B3							
1.00	ES4							
1.20	B5							
1.70-2.20	CB6	N24				(3.60)		
2.40	J7							
2.50	ES8							
2.70-3.20	CB9	50/239mm					at c.2.70m BGL ... very dense/possible obstruction.	
3.40	B10							
3.50	ES11			29.57		3.70		
3.70-4.00	B13						Very dense red clayey gravelly SAND. Sand is fine to coarse. (Possible weathered sandstone).	
3.70-4.00	SJ12	50/21mm		29.27		4.00		
4.00	S14	100/14mm					*Terminated at 4.00m BGL - due to refusal.*	

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
02/11/2019	0.00	0.00	200	
02/11/2019	4.00	4.00	200	Dry

Chiselling		Water Added
From - To	Duration (hh:mm)	From - To
3.70 - 4.00	1:00	1.20 - 4.00

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) Double installation: Two 50mm diameter slotted standpipe installed betweeen 0.50-3.00m and 3.20-1.00m BGL.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **NW1588**

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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH003
Client: University of Manchester	**Location:** Manchester E:384633.942 N:397602.655		
Method (Equipment): Cable Percussion (Dando 2000)	**Ground Level (m):** 33.095	**Start Date:** 02/11/2019	**Sheet:** 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
0.10	J1			32.80		0.30	MADE GROUND (Soft brown sandy clay with many rootlets. Sand is fine to coarse).	
0.30	ES2						MADE GROUND (Medium dense brown yellow red black sandy gravel with fragments of wood and glass. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, clinker and brick).	
0.50	B3							
1.00	ES4							
1.20	B5							
1.70-2.20	CB6	N29					at c.1.70m BGL ... clayey very gravelly sand with cobbles noted.	
						(4.10)		
2.40	J7							
2.50	ES8							
2.70-3.20	CB9	N15						
3.40	B10							
3.50	ES11							
3.70-4.20	CB12	N37					at c.3.70m BGL ... dense.	
				28.70		4.40		
4.40	J13						Very dense red clayey gravelly SAND. Sand is fine to coarse. Gravel is fine to medium angular and includes sandstone. (Possible weathered sandstone).	
4.50	ES14							
4.70-5.20	B16							
4.70-5.20	SJ15	51/182mm				(1.00)		
5.20	SJ17	50/29mm		27.70		5.40		
5.40	S18	100/22mm					*Terminated at 5.40m BGL - due to refusal.*	

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
02/11/2019	0.00	0.00	200	
02/11/2019	5.40	5.40	200	Dry

Chiselling		Water Added
From - To	Duration (hh:mm)	From - To
5.20 - 5.40	1:00	1.20 - 4.40

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation		**Exploratory Hole No.** BH004
Client: University of Manchester	**Location:** Manchester E:384554.516 N:397582.476	
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 34.223 / **Start Date:** 02/11/2019	**Sheet:** 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
				34.12		0.10	MADE GROUND (Macadam).	
				33.92		0.30	MADE GROUND (Brown yellow sandy gravel. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone).	
0.30	ES1							
0.30-0.65	B2							
0.70	J3						MADE GROUND (Medium dense to dense brown yellow black clayey sandy gravel with fragments of glass. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, brick, clinker and limestone).	
0.80	ES4							
0.80-1.20	B5							
1.40-1.90	SB6	N39					at c.1.40m BGL ... very clayey gravelly sand. Clay fines are of low plasticity.	
2.00-2.50	B8							
2.00-2.45	SJ7	N14						
2.30	ES9					(4.20)		
3.00	B11							
3.00-3.50	SJ10	N33						
3.30	ES12							
4.00-4.50	SB13	50/200mm					at c.4.00m BGL ... very dense/possible obstruction.	
4.30	ES14			29.72		4.50		
5.00-5.50	B16						MADE GROUND (Soft to firm brown yellow grey black sandy gravelly clay with bands of gravel and fragments of wood. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, clinker and brick).	
5.00	SJ15	50/150mm					at c.5.00m BGL ... cobbles with much sandy gravelly clay of low plasticity.	
5.30	ES17					(2.50)		
6.00-6.50	CB18	N43						
6.30	ES19							
				27.22		7.00		
7.00	J20						Very dense brown clayey very gravelly SAND with cobbles noted. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes sandstone. Cobbles are rounded and include sandstone.	
7.30	ES21					(1.00)		
7.50-7.80	CB22	50/150mm					at c.7.50m BGL ... laboratory notes tile, wood and brick fragments (possible fall in from above).	
				26.22		8.00		

Boring complete at 8.00m BGL - continued by rotary drilling.

Boring Progress and Water Observations					Chiselling		Water Added	General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Duration (hh:mm)	From - To	
02/11/2019	0.00	0.00	200		7.80 - 8.00	0:30	7.20 - 8.00	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 50mm diameter slotted standpipe installed between 11.00m and 14.00m BGL.
02/11/2019	8.00	7.90	200	7.48				

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH004
Client: University of Manchester	**Location:** Manchester E:384554.516 N:397582.476		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 34.223	**Start Date:** 02/11/2019	**Sheet:** 1 of 3

RUN DETAILS			Water	STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index		Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	
8.00 (102mm) 8.75	0 (0) 0	NR		26.22		8.00	8.00-10.00m ... no recovery.	(1) Red SANDSTONE with gravel inclusions.	
(102mm) 9.50	0 (0) 0					(2.00)	8.75m ... J24		
(102mm) 11.00	67 (0) 0			24.22		10.00	9.50m ... J25		
		NI					10.00-11.00m ... non-intact.	Extremely weak red fine to coarse grained SANDSTONE distinctly weathered to destructured.	
(102mm) 12.00	100 (100) 15	13					11.00m ... J26 11.00-12.50m ... subhorizontal (10 degrees) closely spaced planar rough undulating smooth and rough open clean discontinuities.		

Drilling Progress and Water Observations

Date	Depth	Casing	Water Standing
16/11/2019	8.00	7.90	

Standard Penetration Test

Depth	Type	Result
8.75	S	50/48mm
9.50	S	50/36mm
11.00	S	50/30mm

Flush

From - To	Type	Returns (%)
8.00 - 8.75	Water/Polymer	100
8.75 - 9.50	Water/Polymer	100
9.50 - 11.00	Water/Polymer	100
11.00 - 12.00	Water/Polymer	100
12.00 - 12.50	Water/Polymer	100

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 11.00m and 14.00m BGL.

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **NW1588**

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH004
Client: University of Manchester	**Location:** Manchester E:384554.516 N:397582.476		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 34.223	**Start Date:** 02/11/2019	**Sheet:** 2 of 3

RUN DETAILS			Water	STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index		Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	
(102mm) 12.50	100 (100) 80					(4.00)		Extremely weak red fine to coarse grained SANDSTONE distinctly weathered to destructured. *(continued)*	
(102mm)	73 (73) 17	NR					12.50-12.90m ... no recovery.		
		16					12.90-14.00m ... subhorizontal (10 degrees) closely spaced planar rough undulating smooth and rough open clean discontinuities.		
				20.22		14.00	14.00m ... J27	*Complete at 14.00m BGL.*	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
16/11/2019	14.00	14.00	0.00	14.00	S	50/25mm	12.50 - 14.00	Water/Polymer	100	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 50mm diameter slotted standpipe installed between 11.00m and 14.00m BGL.

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH004
Client: University of Manchester	**Location:** Manchester E:384554.516 N:397582.476		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 34.223	**Start Date:** 02/11/2019	**Sheet:** 3 of 3

Figure BH004.1
BH004 9.50-12.00m BGL



Figure BH004.2
BH004 12.00-13.50m BGL



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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH004A
Client: University of Manchester	**Location:** Manchester E:384553.588 N:397583.415		
Method (Equipment): Cable Percussion (Dando 2000)	**Ground Level (m):** 34.187	**Start Date:** 17/11/2019	**Sheet:** 1 of 1

SAMPLES & TESTS			Water	STRATA				
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
				34.09		0.10	MADE GROUND (Macadam).	
				33.89		0.30	MADE GROUND (Brown yellow sandy gravel. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone).	
						(3.70)	MADE GROUND (Brown yellow black clayey sandy gravel with fragments of glass. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, brick, clinker and limestone).	
				30.19		4.00	*Complete at 4.00m BGL.*	

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
17/11/2019	0.00	0.00	200	
17/11/2019	4.00	4.00	200	Dry

Chiselling		Water Added
From - To	Duration (hh:mm)	From - To

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) No samples taken. Advanced to install instrumentation.
(4) 50mm diameter slotted standpipe installed between 1.00m and 4.00m BGL.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Susnik	Contract No. NW1588

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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH005
Client: University of Manchester	**Location:** Manchester E:384655.497 N:397554.645		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 33.424	**Start Date:** 16/11/2019	**Sheet:** 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
0.10 0.20	J1 ES2			33.12		0.30	MADE GROUND (Grass over topsoil consisting of brown silty gravelly sand with rootlets. Sand is fine to medium. Gravel is fine to coarse subangular to angular and includes sandstone and limestone).	
0.50 0.80 1.00	J3 B4 ES5					(1.20)	MADE GROUND (Red brown very clayey very sandy gravel with cobbles noted. Sand is fine to coarse. Gravel is fine to coarse subangular to angular and includes sandstone, brick and limestone. Cobbles are angular and include brick).	
1.50 1.50-2.00	J6 CB7	50/97mm		31.92		1.50	Medium dense brown to light brown clayey very sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse subrounded to subangular and includes sandstone, quartz and siltstone. at c.1.50m BGL ... very dense/probable instruction.	
2.30 2.30 2.50	J8 ES9	N20				(1.60)		
3.10 3.20 3.30	J11 B12 SJ13	50/48mm		30.32 30.02		3.10 3.40	Extremely weak red brown SANDSTONE. (Recovered as sand and gravel. Sand is fine. Gravel is fine to medium subrounded). *Boring complete at 3.40m BGL - continued by rotary drilling.*	

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
16/11/2019	0.00	0.00	200	
16/11/2019	3.40	3.40	200	Dry

Chiselling		Water Added
From - To	Duration (hh:mm)	From - To
1.50 - 1.60	0:30	1.20 - 3.40
3.30 - 3.40	1:00	

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) Between 9.50-14.00m BGL driller notes sand washing into borehole. Advanced 150mm diameter casing to 7.30m BGL and continued with geobore.
(4) 50mm diameter slotted standpipe installed between 18.50m and 21.50m BGL.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D.S/N.W	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation		**Exploratory Hole No.** BH005
Client: University of Manchester	**Location:** Manchester E:384655.497 N:397554.645	
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 33.424 / **Start Date:** 16/11/2019	**Sheet:** 1 of 8

RUN DETAILS			Water	STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index		Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	
3.50		RO		30.02		3.40	3.40-3.50m ... rotary openhole drilling.	(1) Red brown SANDSTONE.	
4.50 (102mm)	0 (0) 0	NR					3.50-6.00m ... no recovery.		
5.00 (102mm)	0 (0) 0					(2.60)			
5.50 (102mm)	0 (0) 0								
6.50 (102mm)	50 (0) 0								
		NI		27.42		6.00	6.00-6.50m ... non-intact.	Extremely weak red brown fine grained SANDSTONE highly weathered. (Recovered as sand and gravel. Gravel is fine to coarse).	
				26.92		(0.50) 6.50			
7.00 (102mm)	40 (18) 0	NR					6.50-6.80m ... no recovery.	Extremely weak to weak red brown fine grained SANDSTONE moderately weathered to destructured. (Engineer notes some loss of strength within 20mm from apertures with some dark red and black surface staining).	
		NI		26.42		(0.50) 7.00	6.80-7.00m ... non-intact.		
(102mm)	0 (0) 0	NR					7.00-8.75m ... no recovery.	(1) Red SANDSTONE.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
24/11/2019	3.40	3.40	2.70	3.40	S	100/30mm	3.50 - 4.50	Water	50	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Between 9.50-14.00m BGL driller notes sand washing into borehole. Advanced 150mm diameter casing to 7.30m BGL and continued with geobore. (4) 50mm diameter slotted standpipe installed between 18.50m and 21.50m BGL.
							4.50 - 5.00	Water	50	
							5.00 - 5.50	Water	50	
							5.50 - 6.50	Water	50	
							6.50 - 7.00	Water	50	
							7.00 - 7.50	Water	50	

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D.S/N.W	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation		**Exploratory Hole No.** BH005
Client: University of Manchester	**Location:** Manchester E:384655.497 N:397554.645	
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 33.424 / **Start Date:** 16/11/2019	**Sheet:** 2 of 8

RUN DETAILS			Water	STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index		Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	
7.50								(1) Red SANDSTONE. *(continued)*	
(102mm)	0 (0) 0					(1.75)			
8.00									
(102mm)	25 (3) 0								
				24.67		8.75			
9.00		NI					8.75-9.00m ... non-intact.	Extremely weak to weak red brown fine grained SANDSTONE moderately weathered to destructured. (Engineer notes some loss of strength within 20mm from apertures with some dark red and black surface staining).	
(102mm)	80 (48) 0	NR					9.00-9.10m ... no recovery.		
		NI					9.10-9.50m ... non-intact.		
9.50									
(102mm)	83 (65) 43	NR					9.50-9.75m ... no recovery.		
		7					9.75-11.00m ... subhorizontal (5-30 degrees) closely to medium spaced planar to undulating smooth infilled (sand and gravel) discontinuities.		
						(3.75)			
11.00									
	80 (75) 37	NR					11.00-11.30m ... no recovery.		
		13					11.30-12.50m ... subhorizontal (5-30 degrees) closely		

Drilling Progress and Water Observations

Date	Depth	Casing	Water Standing
24/11/2019	9.50	9.50	6.45
25/11/2019	9.50	9.50	7.00

Standard Penetration Test

Depth	Type	Result

Flush

From - To	Type	Returns (%)
7.50 - 8.00	Water	50
8.00 - 9.00	Water	50
9.00 - 9.50	Water	50
9.50 - 11.00	Water	50
11.00 - 12.50	Water	50

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) Between 9.50-14.00m BGL driller notes sand washing into borehole. Advanced 150mm diameter casing to 7.30m BGL and continued with geobore.
(4) 50mm diameter slotted standpipe installed between 18.50m and 21.50m BGL.

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D.S/N.W	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation		**Exploratory Hole No.** BH005
Client: University of Manchester	**Location:** Manchester E:384655.497 N:397554.645	
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 33.424 / **Start Date:** 16/11/2019	**Sheet:** 3 of 8

RUN DETAILS				STRATA					
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	Instrument/ Backfill
(102mm) 12.50				20.92		12.50	to very closely spaced planar to undulating smooth infilled (sand) discontinuities.	Extremely weak to weak red brown fine grained SANDSTONE moderately weathered to destructured. (Engineer notes some loss of strength within 20mm from apertures with some dark red and black surface staining). *(continued)*	
(102mm)	37 (32) 0	NR		19.97		(0.95) 13.45	12.50-13.45m ... no recovery.	(1) Red SANDSTONE. (Driller describes as 'broken').	
14.00		12		19.42		(0.55) 14.00	13.45-14.00m ... subhorizontal (5-30 degrees) closely to very closely spaced planar to undulating smooth infilled (sand) discontinuities.	Extremely weak to weak red brown fine grained SANDSTONE moderately weathered to destructured. (Engineer notes some loss of strength within 20mm from apertures with some dark red and black surface staining).	
(102mm)	90 (87) 62	7					14.00-15.50m ... horizontal (0-5 degrees) closely spaced planar rough to smooth partly open clean discontinuities.	Weak to medium strong red brown coarse grained SANDSTONE partially weathered.	

Drilling Progress and Water Observations

Date	Depth	Casing	Water Standing
25/11/2019	14.00	14.00	8.10
29/11/2019	14.00	14.00	

Standard Penetration Test

Depth	Type	Result

Flush

From - To	Type	Returns (%)
12.50 - 14.00	Water	50
14.00 - 15.50	Water	100

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) Between 9.50-14.00m BGL driller notes sand washing into borehole. Advanced 150mm diameter casing to 7.30m BGL and continued with geobore.
(4) 50mm diameter slotted standpipe installed between 18.50m and 21.50m BGL.

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D.S/N.W	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation		**Exploratory Hole No.** BH005
Client: University of Manchester	**Location:** Manchester E:384655.497 N:397554.645	
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 33.424 / **Start Date:** 16/11/2019	**Sheet:** 4 of 8

RUN DETAILS			Water	STRATA				
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index		Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	Instrument/ Backfill
15.50								Weak to medium strong red brown coarse grained SANDSTONE partially weathered. *(continued)*	
	93 (73) 51	NI					15.50-15.80m ... non-intact.		
		9					15.80-18.50m ... horizontal (0-5 degrees) to subhorizontal (5-30 degrees) closely spaced tight to partly open clean discontinuities.		
(102mm)									
17.00									
	100 (100) 60					(7.50)			
(102mm)									
18.50									
	80 (50) 0	NI					18.50-19.00m ... non-intact.		
(102mm)									
19.00									
	100 (100) 60	8					19.00-21.50m ... horizontal (0-5 degrees) to subhorizontal (5-30 degrees) closely spaced tight to partly open clean discontinuities.		

Drilling Progress and Water Observations			
Date	Depth	Casing	Water Standing
29/11/2019	17.00	17.00	0.00
30/11/2019	17.00	17.00	4.65

Standard Penetration Test		
Depth	Type	Result
17.00	S	100/35mm

Flush		
From - To	Type	Returns (%)
15.50 - 17.00	Water	100
17.00 - 18.50	Water	50
18.50 - 19.00	Water	50
19.00 - 20.00	Water	50

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) Between 9.50-14.00m BGL driller notes sand washing into borehole. Advanced 150mm diameter casing to 7.30m BGL and continued with geobore.
(4) 50mm diameter slotted standpipe installed between 18.50m and 21.50m BGL.

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D.S/N.W	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH005
Client: University of Manchester	**Location:** Manchester E:384655.497 N:397554.645		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 33.424	**Start Date:** 16/11/2019	**Sheet:** 5 of 8

RUN DETAILS			Water	STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index		Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	
(102mm)								Weak to medium strong red brown coarse grained SANDSTONE partially weathered. *(continued)*	
20.00									
(102mm)	100 (93) 73			11.92		21.50			
								Complete at 21.50m BGL.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
30/11/2019	21.50	21.50	3.95				20.00 - 21.50	Water	50	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) Between 9.50-14.00m BGL driller notes sand washing into borehole. Advanced 150mm diameter casing to 7.30m BGL and continued with geobore. (4) 50mm diameter slotted standpipe installed between 18.50m and 21.50m BGL.

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D.S/N.W	Contract No. **NW1588**

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH005
Client: University of Manchester	**Location:** Manchester E:384655.497 N:397554.645		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 33.424	**Start Date:** 16/11/2019	**Sheet:** 6 of 8

Figure BH005.1
BH005 3.50-11.00m BGL.



Figure BH005.2
BH005 11.00-14.00m BGL.



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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH005
Client: University of Manchester	**Location:** Manchester E:384655.497 N:397554.645		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 33.424	**Start Date:** 16/11/2019	**Sheet:** 7 of 8

Figure BH005.3
BH005 14.00-17.00m BGL.



Figure BH005.4
BH005 17.00-20.00m BGL.



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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH005
Client: University of Manchester	**Location:** Manchester E:384655.497 N:397554.645		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 33.424	**Start Date:** 16/11/2019	**Sheet:** 8 of 8

Figure BH005.5
BH005 20.00-21.50m BGL.



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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH006
Client: University of Manchester	**Location:** Manchester E:384734.367 N:397611.677		
Method (Equipment): Cable Percussion (Dando 2000)	**Ground Level (m):** 33.967	**Start Date:** 03/11/2019	**Sheet:** 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
				33.87		0.10	MADE GROUND (Macadam).	
				33.64		0.33	MADE GROUND (Brown yellow sandy gravel. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone and limestone).	
0.35	J1							
0.40	ES2							
0.40-1.00	B3					(1.27)	MADE GROUND (Brown yellow black sandy gravel with fragments of glass. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, brick, clinker and limestone).	
1.20	ES4							
1.40-1.60	CB5	50/10mm		32.37		1.60	at c.1.60m BGL ... (1) Obstruction. *Terminated at 1.60m BGL - due to obstruction.*	

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
03/11/2019	0.00	0.00	200	
03/11/2019	1.60	1.60	200	Damp

Chiselling		Water Added
From - To	Duration (hh:mm)	From - To
1.60 - 1.60	0:30	

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) Relocated to BH006A.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH006A
Client: University of Manchester	**Location:** Manchester E:384728.887 N:397614.035		
Method (Equipment): Cable Percussion (Dando 2000)	**Ground Level (m):** 33.996	**Start Date:** 17/11/2019	**Sheet:** 1 of 1

SAMPLES & TESTS			Water	STRATA				
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
				33.98		0.02	MADE GROUND (Grey macadam).	
				33.94		0.06	MADE GROUND (Black macadam).	
				33.88		0.12	MADE GROUND (Light grey macadam).	
0.30	J1			33.50		(0.38) 0.50	MADE GROUND (Brown black sandy gravel with fragments of glass. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, clinker, brick, ash and limestone).	
0.40	ES2							
0.50	J3							
0.80	B4					(0.80)		
1.00	ES5			32.70		1.30	MADE GROUND (Red brown clayey sand and gravel with cobbles noted. Sand is fine to coarse. Gravel is fine to coarse subangular to angular and includes sandstone, brick and limestone. Cobbles are angular and includes brick). at c.1.30m BGL ... (1) Concrete. *Terminated at 1.30m BGL - due to concrete obstruction.*	

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
17/11/2019	0.00	0.00	200	
17/11/2019	1.30	1.30	200	Dry

Chiselling		Water Added
From - To	Duration (hh:mm)	From - To

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) Relocated from BH006.
(4) Relocated to BH006B.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Susnik	Contract No. NW1588

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Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH006B
Client: University of Manchester	**Location:** Manchester E:384713.826 N:397607.847		
Method (Equipment): Cable Percussion (Dando 2000)	**Ground Level (m):** 33.497	**Start Date:** 17/11/2019	**Sheet:** 1 of 1

SAMPLES & TESTS			Water	STRATA				
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
0.10	J1			33.47		0.03	MADE GROUND (Grey macadam).	
0.20	ES2			33.44		0.06	MADE GROUND (Black macadam).	
0.40	B3			33.38		0.12	MADE GROUND (Light grey macadam).	
0.60	ES4			33.20		0.30	MADE GROUND (Light grey sandy gravel. Sand is fine to coarse. Gravel is fine to coarse subangular to angular and includes limestone).	
						(0.40)	MADE GROUND (Red brown clayey very sandy gravel with cobbles noted. Sand is fine to coarse. Gravel is fine to coarse subangular to angular and includes sandstone, brick and limestone. Cobbles are angular and include brick). at c.0.70m BGL ... (1) Concrete.	
				32.80		0.70	*Terminated at 0.70m BGL - due to concrete obstruction.*	

Boring Progress and Water Observations					Chiselling		Water Added	General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Duration (hh:mm)	From - To	
17/11/2019	0.00	0.00	200					(1) Description derived from drillers daily report.
17/11/2019	0.70	0.60	200	Dry				(2) Inspection pit dug prior to drilling.
								(3) Relocated from BH006A.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Susnik	Contract No. NW1588

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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH007
Client: University of Manchester	**Location:** Manchester E:384765.207 N:397596.049		
Method (Equipment): K.R/P.D (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 34.684	**Start Date:** 08/11/2019	**Sheet:** 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
0.05	B1			34.58		0.10	MADE GROUND (Macadam).	
0.20	ES2			34.38		0.30	MADE GROUND (Concrete).	
0.30	J3						MADE GROUND (Brown yellow black clayey sandy gravel with cobbles noted and fragments of glass. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, brick and clinker).	
0.60	B4							
1.00	ES5					(1.90)		
1.20	J6							
1.50-2.00	CB7	N16					at c.1.50m BGL ... medium dense.	
				32.48		2.20		
2.20	J8						MADE GROUND (Medium dense yellow brown black clayey very sandy gravel with cobbles noted. Sand is fine to coarse. Gravel is fine to coarse subangular and includes ash, sandstone, brick and clinker. Cobbles are subangular and include brick and concrete. at c.2.50m BGL ... clay is of low plasticity. Metal fragments noted.	
2.30	ES9							
2.50-3.00	B11							
2.50-3.00	SJ10	N20						
3.20	B12							
3.30	ES13							
3.50-4.00	B15							
3.50	SJ14	N16						
4.20	J16					(4.20)		
4.30	ES17							
4.50-5.00	SJ18	N10					at c.4.50m BGL ... loose and medium dense.	
				28.28		6.40		
6.40	J19						Loose and medium dense red brown clayey very gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded and includes sandstone. (Possible Reworked River Bed).	
6.50-7.00	CB20	N10				(0.80)		
				27.48		7.20		
7.10	B21							
7.20	SJ22	50/61mm					Extremely weak red fine to coarse grained SANDSTONE distinctly weathered to destructured. (Recovered as sand).	
				27.18		7.50		
7.50	SJ23	100/39mm					*Boring complete at 7.50m BGL - continued by rotary drilling.*	

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
08/11/2019	0.00	0.00	200	
08/11/2019	1.20	0.00	200	Dry
09/11/2019	1.20	0.00	200	Dry
09/11/2019	7.50	7.50	200	Dry

Chiselling		Water Added
From - To	Duration (hh:mm)	From - To
4.30 - 4.40	1:00	1.20 - 7.50

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 10.60m and 13.60m BGL.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation		**Exploratory Hole No.** BH007
Client: University of Manchester	**Location:** Manchester E:384765.207 N:397596.049	
Method (Equipment): K.R/P.D (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 34.684 / **Start Date:** 08/11/2019	**Sheet:** 1 of 4

RUN DETAILS			Water	STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index		Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	
7.50	100 (67) 0	NI		27.18		7.50	7.50-7.70m ... non-intact.	Extremely weak red fine to coarse grained SANDSTONE distinctly weathered to destructured.	
(102mm)		23					7.70-8.10m ... subhorizontal (10 degrees) very closely spaced planar rough undulating smooth and rough open clean discontinuities.		
8.10	100 (80) 30	NI					8.10-8.20m ... non-intact.		
(102mm)		11					8.20-9.40m ... subhorizontal (10 degrees) closely spaced planar rough undulating smooth and rough open clean discontinuities.		
		NI					9.40-9.60m ... non-intact.		
9.60	60 (60) 13	NR					9.60-10.20m ... no recovery.		
(102mm)		7					10.20-11.10m ... subhorizontal (10 degrees) closely spaced planar rough undulating smooth and rough open clean discontinuities.		
						(6.10)			
11.10	0 (0) 0	NR					11.10m ... J24 11.10-12.10m ... no recovery.		

Drilling Progress and Water Observations			
Date	Depth	Casing	Water Standing
17/11/2019	7.50	7.50	

Standard Penetration Test		
Depth	Type	Result
11.10	S	50/30mm

Flush		
From - To	Type	Returns (%)
7.50 - 8.10	Water/Polymer	100
8.10 - 9.60	Water/Polymer	100
9.60 - 11.10	Water/Polymer	100
11.10 - 12.10	Water/Polymer	100

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 10.60m and 13.60m BGL.

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH007
Client: University of Manchester	**Location:** Manchester E:384765.207 N:397596.049		
Method (Equipment): K.R/P.D (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 34.684	**Start Date:** 08/11/2019	**Sheet:** 2 of 4

RUN DETAILS			Water	STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index		Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	
(102mm) 12.10								Extremely weak red fine to coarse grained SANDSTONE distinctly weathered to destructured. *(continued)*	
(102mm)	100 (67) 37	28					12.10-12.30m ... subhorizontal (10 degrees) very closely spaced planar rough undulating smooth and rough open clean discontinuities.		
		NI					12.30-12.80m ... non-intact.		
		8					12.80-13.60m ... subhorizontal (10 degrees) closely spaced planar rough undulating smooth and rough open clean discontinuities.		
				21.08		13.60			
							13.60m ... J25	*Complete at 13.60m BGL.*	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
17/11/2019	13.60	13.60	0.00	13.60	S	50/40mm	12.10 - 13.60	Water/Polymer	100	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 50mm diameter slotted standpipe installed between 10.60m and 13.60m BGL.

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH007
Client: University of Manchester	**Location:** Manchester E:384765.207 N:397596.049		
Method (Equipment): K.R/P.D (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 34.684	**Start Date:** 08/11/2019	**Sheet:** 3 of 4

Figure BH007.1
BH007 7.50-9.60m BGL



Figure BH007.2
BH007 9.60-12.10m BGL



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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH007
Client: University of Manchester	**Location:** Manchester E:384765.207 N:397596.049		
Method (Equipment): K.R/P.D (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 34.684	**Start Date:** 08/11/2019	**Sheet:** 4 of 4

Figure BH007.3
BH007 12.10-13.60m BGL



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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH008
Client: University of Manchester	**Location:** Manchester E:384766.896 N:397570.397		
Method (Equipment): Cable Percussion (Dando 2000)	**Ground Level (m):** 34.051	**Start Date:** 10/11/2019	**Sheet:** 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
				34.00		0.05	MADE GROUND (Macadam).	
						(0.45)	MADE GROUND (Concrete).	
0.40	J1			33.55		0.50		
0.50	ES2						MADE GROUND (Brown yellow black cobbles with much clayey sandy gravel with fragments of glass. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, brick and ash).	
0.60	B3					(0.70)		
0.80	ES4			32.85		1.20		
1.50-2.00	CB5	N16					MADE GROUND (Medium dense yellow brown clayey sandy gravel with cobbles noted and fragments of glass. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, brick and ash. Cobbles are subangular and include brick and concrete).	
2.10	J6							
2.20	ES7							
2.50-3.00	CB8	N16					at c.2.50m BGL ... clayey sand and gravel with cobbles noted.	
						(3.30)		
3.10	J9							
3.20	ES10							
3.50-4.00	CB11	N17						
4.10	J12							
4.20	ES13			29.55		4.50		
4.50-5.00	B15						MADE GROUND (Loose brown clayey very sandy gravel with cobbles noted. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone and brick).	
4.50	SJ14	N6						
5.10	B16							
5.20	ES17					(1.80)		
5.50	B19							
5.50-6.00	SJ18	N9						
6.10	J20							
6.20	SJ21	50/44mm		27.75		6.30		
				27.55		6.50	Extremely weak red fine to coarse grained SANDSTONE distinctly weathered to destructured. (Recocvered as sand).	
6.50	SJ22	100/52mm					*Complete at 6.50m BGL.*	

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
10/11/2019	0.00	0.00	200	
10/11/2019	6.50	6.50	200	Dry

Chiselling		Water Added
From - To	Duration (hh:mm)	From - To
2.30 - 2.50	0:30	1.20 - 6.50
6.20 - 6.50	0:30	

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 0.30m and 6.50m BGL.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH009
Client: University of Manchester	**Location:** Manchester E:384759.087 N:397550.391		
Method (Equipment): Cable Percussion (Dando 2000)	**Ground Level (m):** 34.203	**Start Date:** 09/11/2019	**Sheet:** 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
				34.10		0.10	MADE GROUND (Macadam).	
						(0.40)	MADE GROUND (Concrete).	
0.40	B1			33.70		0.50		
0.50	ES2						MADE GROUND (Brown yellow black clayey very sandy gravel with fragments of glass. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, brick and ash).	
0.80	J3							
1.00	B4					(1.20)		
1.20	ES5							
				32.50		1.70		
1.70-2.20	B7						MADE GROUND (Medium desne red sand with bands of gravel. Sand is fine to coarse. Gravel is fine to medium subangular and includes sandstone and brick).	
1.70-2.15	SJ6	N20						
2.50	J8							
2.60	ES9							
2.70-3.20	B11							
2.70-3.15	SJ10	N23				(2.90)		
3.50	J12							
3.70-4.20	B14						at c.3.70m BGL ... dense clayey gravelly sand.	
3.70-4.15	SJ13	N37						
4.50	B15			29.60		4.60		
4.60	SJ16	25/6mm		29.40		4.80	Extremely weak red fine to coarse grained SANDSTONE distinctly weathered to destructured. (Recovered as sand).	
4.80	SJ17	100/16mm					*Terminated at 4.80m BGL - due to refusal.*	

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
09/10/2019	0.00	0.00		
09/10/2019	2.50	2.50		Dry
10/10/2019	2.50	2.50		Dry
10/10/2019	4.80	4.60		Dry

Chiselling		Water Added
From - To	Duration (hh:mm)	From - To
1.20 - 1.50	1:00	1.20 - 2.50

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installer between 0.50-1.70m BGL.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH011
Client: University of Manchester	**Location:** Manchester E:384726.701 N:397513.893		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 34.051	**Start Date:** 09/11/2019	**Sheet:** 1 of 1

SAMPLES & TESTS			Water	STRATA				
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
				33.95		0.10	MADE GROUND (Concrete paving slab).	
0.20	J1					(0.40)	MADE GROUND (Concrete).	
0.30	ES2			33.55		0.50		
0.80	B3					(3.10)	MADE GROUND (Medium dense to dense brown yellow black clayey very sandy gravel with cobbles noted and fragments of glass. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, brick, ash and limestone).	
1.00	ES4							
1.20	J5							
1.70-2.20	CB6	N39						
2.50	J7							
2.60	ES8							
2.70-3.20	CB9	N23						
				30.45		3.60		
3.60	J10					(0.80)	MADE GROUND (Medium dense yellow brown black slightly gravelly sand. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, ash and brick).	
3.60	ES11							
3.70-4.20	B13							
3.70	SJ12	N17						
				29.65		4.40		
4.50	B14					(2.10)	Medium dense red very clayey slightly gravelly fine to coarse SAND. Gravel is fine to medium angular to subangular and includes sandstone. (Weathered Sandstone).	
4.60	ES15							
4.70-5.20	B17							
4.70-4.70	SJ16	N25						
5.30	ES18							
5.50	SJ19	50/11mm					from c.5.50m BGL ... very dense.	
6.20	SJ20	50/18mm						
				27.55		6.50		
6.50	SJ21	100/22mm					*Boring complete at 6.50m BGL - continued by rotary drilling.*	

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
09/10/2019	0.00	0.00	200	
09/10/2019	6.50	6.50	200	Dry

Chiselling		Water Added
From - To	Duration (hh:mm)	From - To
6.20 - 6.50	1:00	1.20 - 6.50

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 10.00m and 13.00m BGL.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D.P/D.S	Contract No. **NW1588**

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH011
Client: University of Manchester	**Location:** Manchester E:384726.701 N:397513.893		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 34.051	**Start Date:** 09/11/2019	**Sheet:** 1 of 3

RUN DETAILS				STRATA					
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	Instrument/ Backfill
6.50	0 (0) 0	NR		27.55		6.50	6.50-7.95m ... no recovery.	(1) Red brown SANDSTONE with gravel.	
(102mm)						(0.50)			
7.50				27.05		7.00		(1) Red brown SANDSTONE. (Driller describes as 'broken').	
	55 (18) 0					(0.95)			
(102mm)		NI		26.10		7.95	7.95-8.50m ... non-intact.	Extremely weak to very weak red brown fine grained SANDSTONE partially to distinctly weathered, in places destructured with some local dark red and black surface staining.	
8.50									
	88 (82) 42	NR					8.50-8.65m ... no recovery.		
		13					8.65-9.80m ... subhorizontal (5-30 degrees) very closely to closely spaced planar to undulating smooth open infilled (sand) discontinuities.		
(102mm)									
9.80									
	77 (74) 21	NR					9.80-10.15m ... no recovery.		
		10					10.15-11.30m ... subhorizontal (5-30 degrees) very closely to closely spaced planar to undulating smooth open infilled (sand) discontinuities.		
						(5.05)			

Drilling Progress and Water Observations			
Date	Depth	Casing	Water Standing
23/11/2019	6.50	6.50	4.75

Standard Penetration Test		
Depth	Type	Result

Flush		
From - To	Type	Returns (%)
6.50 - 7.50	Water	50
7.50 - 8.50	Water	0
8.50 - 9.80	Water	0
9.80 - 11.30	Water	0

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 10.00m and 13.00m BGL.

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D.P/D.S	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH011
Client: University of Manchester	**Location:** Manchester E:384726.701 N:397513.893		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 34.051	**Start Date:** 09/11/2019	**Sheet:** 2 of 3

RUN DETAILS			Water	STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index		Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	
(102mm)								Extremely weak to very weak red brown fine grained SANDSTONE partially to distinctly weathered, in places destructured with some local dark red and black surface staining. *(continued)*	
11.30									
	70 (55) 0	NR					11.30-11.60m ... no recovery.		
(102mm)		8					11.60-12.30m ... subhorizontal (5-30 degrees) very closely to closely spaced planar to undulating smooth open infilled (sand) discontinuities.		
							11.90-11.95m ... non-intact.		
12.30							12.20-12.23m ... non-intact.		
	86 (86) 47	NR					12.30-12.40m ... no recovery.		
(102mm)		5					12.40-13.00m ... subhorizontal (5-30 degrees) very closely to closely spaced planar to undulating smooth open infilled (sand) discontinuities.		
				21.05		13.00			
								Complete at 13.00m BGL.	

Drilling Progress and Water Observations			
Date	Depth	Casing	Water Standing
23/11/2019	13.00	13.00	10.10

Standard Penetration Test		
Depth	Type	Result

Flush		
From - To	Type	Returns (%)
11.30 - 12.30	Water	0
12.30 - 13.00	Water	0

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 10.00m and 13.00m BGL.

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D.P/D.S	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH011
Client: University of Manchester	**Location:** Manchester E:384726.701 N:397513.893		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 34.051	**Start Date:** 09/11/2019	**Sheet:** 3 of 3

Figure BH011.1
BH011 6.50-9.80m BGL.



Figure BH011.2
BH011 9.80-13.00m BGL.



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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH012
Client: University of Manchester	**Location:** Manchester E:384626.310 N:397652.656		
Method (Equipment): Cable Percussion (Dando 2000)	**Ground Level (m):** 38.151	**Start Date:** 26/10/2019	**Sheet:** 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
0.10 0.20	B1 ES2			38.10 37.80		0.05 0.35	MADE GROUND (Concrete paving slab). MADE GROUND (Brown slightly silty very sandy gravel. Sand is fine to coarse. Gravel is fine to medium subrounded and includes sandstone and brick). at c.0.35m BGL ... concrete obstruction. *Terminated at 0.35m BGL - due to concrete obstruction.*	

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
26/10/2019	0.00			
26/10/2019	0.35			Dry

Chiselling	
From - To	Duration (hh:mm)

Water Added
From - To

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) Relocated to BH012A.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: J. Myall	Contract No. **NW1588**

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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH012A
Client: University of Manchester	**Location:** Manchester E:384647.478 N:397660.412		
Method (Equipment): Cable Percussion (Dando 2000)	**Ground Level (m):** 38.269	**Start Date:** 26/10/2019	**Sheet:** 1 of 2

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
				38.22		0.05	MADE GROUND (Concrete paving slab).	
0.20	J1			37.97		0.30	MADE GROUND (Concrete).	
0.30	ES2			37.87		0.40	MADE GROUND (Granite and tar cobble sets).	
0.50	B3						MADE GROUND (Loose and medium dense dark brown slightly clayey very sandy gravel with cobbles noted and fragments of glass. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded and includes brick, sandstone and clinker. Cobbles are angular and include brick).	
0.60	J4						between c.1.10-1.20m BGL ... 125mm ceremic redundant land drain running 047 degrees.	
1.00	ES5							
1.50	B6							
1.70-2.20	B8						at c.1.70m BGL ... dense.	
1.70-2.15	SJ7	N10						
2.50	J9							
2.60	ES10							
2.70-3.20	B12							
2.70-3.15	SJ11	N12						
						(6.10)		
3.50	B13							
3.60	ES14							
3.70-4.20	B16						at c.3.70m BGL ... medium dense and dense.	
3.70-4.15	SJ15	N7						
4.60	ES17							
4.70-5.20	B19							
4.70-5.15	SJ18	N11						
6.00	ES20							
				31.77		6.50		
6.50-7.00	B22						MADE GROUND (Loose brown very clayey very sandy gravel. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded and includes brick, sandstone and clinker).	
6.50-6.95	SJ21	N10					at c.6.50m BGL ... clay is of low to intermediate plasticity.	
						(1.90)		
7.50	ES23							

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
26/10/2019	0.00	0.00	200	
26/10/2019	3.20	3.20	200	Dry
27/10/2019	3.20	3.20	200	Dry

Chiselling	
From - To	Duration (hh:mm)

Water Added
From - To
1.20 - 3.20
3.20 - 10.80

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 2.00m and 6.00m BGL.
(4) Relocated from BH012.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: J. Myall	Contract No. NW1588

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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH012A
Client: University of Manchester	**Location:** Manchester E:384647.478 N:397660.412		
Method (Equipment): Cable Percussion (Dando 2000)	**Ground Level (m):** 38.269	**Start Date:** 26/10/2019	**Sheet:** 2 of 2

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
8.00	J24			29.87		8.40		
8.50-8.95	U25	(39)					Medium dense brown occasionally grey very clayey slightly gravelly SAND. Sand is fine to medium. Gravel is fine subangular and includes sandstone. (Possible Made Ground).	
9.00	J26							
9.00	B28							
9.00-9.50	SJ27	N19				(2.00)		
9.80	ES29							
10.00	B30			27.87		10.40		
10.50	SJ31	50/0mm		27.47		(0.40) 10.80	Weak red fine grained SANDSTONE distinctly weathered. (Recovered as slightly gravelly sand. Sand is fine. Gravel is fine to medium angular and includes sandstone).	
10.80	SJ32	100/5mm					*Complete at 10.80m BGL.*	

Boring Progress and Water Observations					Chiselling		Water Added	General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Duration (hh:mm)	From - To	
27/10/2019	10.80	10.80	200	Dry	10.50 - 10.80	1:00		(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 50mm diameter slotted standpipe installed between 2.00m and 6.00m BGL. (4) Relocated from BH012.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: J. Myall	Contract No. **NW1588**

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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH013
Client: University of Manchester	**Location:** Manchester E:384368.382 N:397549.440		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 33.078	**Start Date:** 28/10/2019	**Sheet:** 1 of 2

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
				32.98		0.10	MADE GROUND (Macadam).	
0.20	J1			32.68		0.40	MADE GROUND (Brown yellow sandy gravel. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, limestone and brick).	
0.30	ES2							
0.80	B3						MADE GROUND (Medium dense brown yellow black clayey very sandy gravel and cobbles. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, limestone and brick. Cobbles are angular and include brick).	
1.00	ES4							
1.50	B5							
1.70-2.20	CB6	N34						
2.30	J7							
2.50	ES8							
2.70-3.20	CB9	N21				(4.90)		
3.30	B10							
3.50	ES11							
3.70-4.20	CB12	N30						
4.30	ES13							
4.70-5.20	CB14	N17						
				27.78		5.30		
5.50	ES15						Medium dense brown clayey very gravelly SAND with cobbles noted. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes sandstone. Cobbles are rounded and include sandstone.	
6.00-6.50	CB16	N20				(2.70)		
7.00	ES17							
7.20	J18							
7.50-8.00	CB19	N16						
				25.08		8.00		

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
28/10/2019	0.00	0.00	200	
28/10/2019	6.50	6.50	200	Dry
29/10/2019	6.50	6.50	200	Dry

Chiselling	
From - To	Duration (hh:mm)
1.20 - 1.70	1:00
8.00 - 8.40	1:00

Water Added
From - To
1.20 - 6.50
6.50 - 10.50

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 11.00m and 16.50m BGL.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH013
Client: University of Manchester	**Location:** Manchester E:384368.382 N:397549.440		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 33.078	**Start Date:** 28/10/2019	**Sheet:** 2 of 2

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
8.00	SJ20	50/9mm					Very dense red SAND. Sand is fine to coarse. (Weathered Sandstone).	
9.00	SJ21	50/14mm				(2.50)		
10.40	SJ22	100/12mm		22.58		10.50	*Boring complete at 10.50m BGL - continued by rotary drilling.*	

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
29/10/2019	10.50	10.50	200	Dry

Chiselling		Water Added
From - To	Duration (hh:mm)	From - To
10.40 - 10.50	1:00	

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 11.00m and 16.50m BGL.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. **NW1588**

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH013
Client: University of Manchester	**Location:** Manchester E:384368.382 N:397549.440		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 33.078	**Start Date:** 28/10/2019	**Sheet:** 1 of 4

RUN DETAILS				STRATA					
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	Instrument/ Backfill
10.50 (102mm)	93 (80) 37	NR NI 7		22.58		10.50	10.50-10.60m ... no recovery. 10.60-10.80m ... non-intact. 10.80-13.35m ... subhorizontal (10 degrees) closely spaced planar rough undulating smooth and rough open clean discontinuities.	Extremely weak to weak red fine to coarse grained SANDSTONE partially to distinctly weathered with inclusions of fine to medium subrounded and includes quartz and quartzite.	
12.00 (102mm)	90 (90) 40								
13.50 (102mm)	93 (93) 23	NR 7				(6.00)	13.35-13.50m ... no recovery. 13.50-14.90m ... subhorizontal (10 degrees) closely spaced planar rough undulating smooth and rough open clean discontinuities.		

Drilling Progress and Water Observations			
Date	Depth	Casing	Water Standing
30/10/2019	10.50	10.50	

Standard Penetration Test		
Depth	Type	Result
10.50	S	100/6mm
13.50	S	100/50mm

Flush		
From - To	Type	Returns (%)
10.50 - 12.00	Water	100
12.00 - 13.50	Water	100
13.50 - 15.00	Water	100

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 11.00m and 16.50m BGL.

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation		**Exploratory Hole No.** BH013
Client: University of Manchester	**Location:** Manchester E:384368.382 N:397549.440	
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 33.078 / **Start Date:** 28/10/2019	**Sheet:** 2 of 4

RUN DETAILS			Water	STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index		Reduced Level	Legend	Depth (Thickness)	Description: Discontinuity Detail	Description: Main	
15.00		NR					14.90-15.00m ... no recovery.	Extremely weak to weak red fine to coarse grained SANDSTONE partially to distinctly weathered with inclusions of fine to medium subrounded and includes quartz and quartzite. *(continued)*	
(102mm)	100 (100) 25	9		16.58		16.50	15.00-16.50m ... subhorizontal (10 degrees) closely spaced planar rough undulating smooth and rough open clean discontinuities.		
								Complete at 16.50m BGL.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
30/10/2019	16.50	16.50	0.00	16.50	S	100/25mm	15.00 - 16.50	Water	100	(1) Description derived from drillers daily report. (2) Inspection pit dug prior to drilling. (3) 50mm diameter slotted standpipe installed between 11.00m and 16.50m BGL.

All dimensions in metres Scale 1:25	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH013
Client: University of Manchester	**Location:** Manchester E:384368.382 N:397549.440		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 33.078	**Start Date:** 28/10/2019	**Sheet:** 3 of 4

Figure BH013.1
BH013 10.50-12.00m BGL



Figure BH013.2
BH013 12.00-13.50m BGL



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DRILLHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH013
Client: University of Manchester	**Location:** Manchester E:384368.382 N:397549.440		
Method (Equipment): Percussion/Coring (Dando 2000/Comacchio GEO 205)	**Ground Level (m):** 33.078	**Start Date:** 28/10/2019	**Sheet:** 4 of 4

Figure BH013.3
BH013 13.50-15.00m BGL



Figure BH013.4
BH013 15.00-16.50m BGL



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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH014
Client: University of Manchester	**Location:** Manchester E:384495.592 N:397565.295		
Method (Equipment): Cable Percussion (Dando 2000)	**Ground Level (m):** 35.705	**Start Date:** 28/10/2019	**Sheet:** 1 of 2

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
				35.41		0.30	MADE GROUND (Reinforced concrete with 10mm rebar).	
0.40	J1			35.11		0.60	MADE GROUND (Brown yellow sandy gravel. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, limestone and brick).	
0.40	ES2							
0.40-0.60	B3							
0.70	J4						MADE GROUND (Medium dense brown yellow clayey sandy gravel. Sand is fine to coarse. Gravel is fine to coarse subangular and includes sandstone, limestone and brick).	
0.70	ES5							
0.70-1.20	B6							
1.20-1.65	B8					(1.60)		
1.20-1.65	SJ7	N23						
2.00	ES9			33.51		2.20		
2.00-2.45	B11							
2.00-2.45	SJ10	N12					MADE GROUND (Medium dense brown black clayey very sandy gravel with bands of clay. Sand is fine to coarse. Gravel is fine to coarse subangular and includes clinker, brick and sandstone).	
2.50	J12							
3.00-3.45	B14							
3.00-3.45	SJ13	N14						
						(3.60)		
4.00	ES15							
4.00-4.45	B17							
4.00-4.45	SJ16	N17						
5.00	ES18						at c.5.00m BGL ... dense.	
5.00-5.45	B20							
5.00-5.45	SJ19	N37						
				29.91		5.80		
6.00	J21						Medium dense yellow brown orange clayey slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to medium subrounded and includes sandstone.	
6.00	ES22					(0.90)		
6.00-6.45	B24							
6.00-6.45	SJ23	N18						
				29.01		6.70		
7.00	J25					(0.70)	Brown orange silty SAND. Sand is fine to coarse.	
				28.31		7.40		
7.50-7.95	B27						Very dense brown sandy GRAVEL and COBBLES. Sand is fine to coarse. Gravel is fine to coarse subrounded and includes sandstone. Cobbles are rounded and include sandstone.	
7.50	SJ26	50/200mm						

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
28/10/2019	0.00	0.00	200	
28/10/2019	5.00	4.80	200	Dry
29/10/2019	5.00	4.80	200	Dry

Chiselling	
From - To	Duration (hh:mm)
7.70 - 8.10	1:00

Water Added
From - To
8.00 - 10.50

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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BOREHOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** BH014
Client: University of Manchester	**Location:** Manchester E:384495.592 N:397565.295		
Method (Equipment): Cable Percussion (Dando 2000)	**Ground Level (m):** 35.705	**Start Date:** 28/10/2019	**Sheet:** 2 of 2

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
8.50	J28					(2.00)	Very dense brown sandy GRAVEL and COBBLES. Sand is fine to coarse. Gravel is fine to coarse subrounded and includes sandstone. Cobbles are rounded and include sandstone. *(continued)*	
9.00-9.45	CB29	N46		26.31		9.40	at c.9.00m BGL ... dense.	
9.50-9.95	B31						Red brown SAND. Sand is fine to coarse. (Weathered Sandstone).	
9.50	SJ30	50/190mm				(1.10)		
10.00	J32							
10.00-10.45	B34							
10.00	SJ33	50/105mm		25.21		10.50		
							Complete at 10.50m BGL.	

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
29/10/2019	10.50	9.80	200	0.71

Chiselling		Water Added
From - To	Duration (hh:mm)	From - To
9.40 - 10.00	2:00	

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Portsmouth	Contract No. NW1588

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FIELD DATA ENCLOSURE 3

Dynamic Sample Hole Record

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DYNAMIC SAMPLE HOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** DS001
Client: University of Manchester	**Location:** Manchester E:384774.985 N:397520.083		
Method (Equipment): Rotary Coring (Comacchio GEO 205)	**Ground Level (m):** 34.217	**Start Date:** 30/11/2019	**Sheet:** 1 of 2

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
0.05	J1						MADE GROUND (Topsoil consisting of soft dark brown sandy slightly gravelly clay with many rootlets. Sand is fine to coarse. Gravel is fine subangular and includes clinker).	
0.10	ES2			33.917		0.30		
0.20-0.30	B3						MADE GROUND (Soft brown grey clayey very sandy gravel with cobbles noted and glass and metal fragments. Sand is fine to coarse. Gravel is fine to coarse angular to subangular and includes sandstone, concrete, brick and clinker. Cobbles are angular and include brick).	
0.40	J4					(0.90)		
0.60	ES5							
0.70-1.00	B6			33.017		1.20		
1.20	$U7_{(SS)}$						MADE GROUND (Black grey clayey slightly gravelly sand with pockets of sandy slightly gravelly clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded and includes mudstone, brick and sandstone. Cobbles are angular to subrounded and includes sandstone).	
1.50-1.80	$ES16_{(U7)}$					(1.20)		
2.20	$U9_{(SS)}$			31.817		2.40		
2.20	SJ8	N4					MADE GROUND (Firm black grey sandy slightly gravelly clay with cobbles noted. Gravel is fine to coarse angular to subrounded and includes sandstone, mudstone and brick. Cobbles are angular to rounded and include sandstone and brick).	
2.40-2.70	$ES17_{(U9)}$					(0.80)		
3.20	SJ10	N25		31.017		3.20	(1) MADE GROUND (Medium dense sand and gravel. Gravel includes brick).	
						(1.20)		
4.50	SJ11	N24		29.817		4.40	(1) MADE GROUND (Black silt with river ballast gravel). at c.4.50m BGL ... brown dark grey slightly silty slightly gravelly sand. Sand is fine to coarse. Gravel is fine to coarse subangular to sounrded and includes sandstone, mudstone and brick.	
						(4.50)		
7.00	C12	50/11mm					at c.7.00m BGL ... very dense/possible obstruction.	
7.50	U*13							

Boring Progress and Water Observations

Date	Depth	Casing	Casing Dia (mm)	Water Standing
30/11/2019	0.00	0.00	150	
30/11/2019	1.20	1.20	150	
01/12/2019	1.20	1.20	150	

Liner Sample Information

From - To	Internal Dia (mm)	Recovery (%)	Subsampled

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 2.00m and 4.00m BGL.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D.S/N.W	Contract No. NW1588

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DYNAMIC SAMPLE HOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** DS001
Client: University of Manchester	**Location:** Manchester E:384774.985 N:397520.083		
Method (Equipment): Rotary Coring (Comacchio GEO 205)	**Ground Level (m):** 34.217	**Start Date:** 30/11/2019	**Sheet:** 2 of 2

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
							(1) MADE GROUND (Black silt with river ballast gravel). *(continued)*	
8.60		50/11mm		25.317		8.90	at c.8.60m BGL ... very dense/possible obstruction.	
				24.917		(0.40) 9.30	(1) Red SANDSTONE.	
9.30	C15	50/47mm					*Complete at 9.30m BGL.*	

Boring Progress and Water Observations				
Date	Depth	Casing	Casing Dia (mm)	Water Standing
01/12/2019	9.30	7.50	150	

Liner Sample Information			
From - To	Internal Dia (mm)	Recovery (%)	Subsampled

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 2.00m and 4.00m BGL.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D.S/N.W	Contract No. **NW1588**

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DYNAMIC SAMPLE HOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** DS002
Client: University of Manchester	**Location:** Manchester E:384753.487 N:397492.025		
Method (Equipment): Rotary Coring (Comacchio GEO 205)	**Ground Level (m):** 34.087	**Start Date:** 01/12/2019	**Sheet:** 1 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
				33.787		0.30	MADE GROUND (Topsoil consisting of soft dark brown sandy slightly gravelly clay with many rootlets. Sand is fine to coarse. Gravel is fine subangular and includes clinker).	
0.30	ES1						MADE GROUND (Soft brown grey clayey very sandy gravel with pockets of clay and cobbles noted and fragments of glass and metal. Sand is fine to coarse. Gravel is fine to coarse angular to subangular and includes sandstone, concrete, brick and clinker. Cobbles are angular and include brick).	
0.40	B2					(0.90)		
0.80	ES3							
0.80	B4			32.887		1.20		
1.20	$U5_{(SS)}$						at c.0.40m BGL ... clay pockets of low plasticity.	
1.70-2.20	$ES13_{(U5)}$						MADE GROUND (Black grey clayey gravelly sand with cobbles noted and pockets of sandy slightly gravelly clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded and includes mudstone, brick and sandstone. Cobbles are angular to subrounded and include sandstone and brick).	
2.20	SJ6	50/68mm				(2.30)	at c.2.20m BGL ... very dense/possible obstruction.	
2.40-2.70	$ES14_{(U7)}$							
2.50	$U7_{(SS)}$							
				30.587		3.50		
3.50	SJ8	N47					MADE GROUND (Red grey brown sandy gravel. Sand is medium to coarse. Gravel is fine to coarse subangular to subrounded and includes brick, flint, chert, ash, sandstone and mudstone).	
						(0.90)		
				29.687		4.40		
4.40-5.40	C13			29.487		4.60	MADE GROUND (Red brick) (Recovered cobbles. Cobbles are subangular).	
							(1) MADE GROUND (Brick, concrete, ash, gravel, black silty fill).	
						(0.80)		
				28.687		5.40		
5.40-6.40	C14			28.487		5.60	MADE GROUND (Red brick) (Recovered as slightly sandy gravel and cobbles. Sand is fine to coarse. Gravel is coarse subangular. Cobbles are subangular).	
5.40	C9	50/27mm					at c.5.40m BGL ... very dense/possible obstruction.	
							(1) MADE GROUND (Brick, concrete, ash, gravel, black silty fill).	
6.40-7.40	C15						at c.6.40m BGL ... very dense/possible obstruction.	
6.40	C10	50/44mm				(2.50)		
7.40-8.40	C16						at c.7.40m BGL ... very dense/possible obstruction.	
7.40	C11	50/68mm						

Boring Progress and Water Observations

Date	Depth	Casing	Casing Dia (mm)	Water Standing
01/12/2019	0.00	0.00	150	

Liner Sample Information

From - To	Internal Dia (mm)	Recovery (%)	Subsampled
1.20 - 2.20	101	90	Yes
2.50 - 3.50	101	80	Yes

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 8.15m and 9.90m BGL.
(4) Between 1.20-2.50 and 2.50-4.40m BGL redrilled using openhole techniques.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D.S/N.W	Contract No. NW1588

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DYNAMIC SAMPLE HOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** DS002
Client: University of Manchester	**Location:** Manchester E:384753.487 N:397492.025		
Method (Equipment): Rotary Coring (Comacchio GEO 205)	**Ground Level (m):** 34.087	**Start Date:** 01/12/2019	**Sheet:** 2 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description	
				25.987		8.10		
8.40-9.90 8.40	C17 C12	14/10mm				(1.50)	Medium strong red brown fine to medium grained SANDSTONE unweathered locally destructured.	
				24.487		9.60		
				24.187		9.90	(1) Red brown SANDSTONE.	
							Complete at 9.90m BGL.	

Boring Progress and Water Observations

Date	Depth	Casing	Casing Dia (mm)	Water Standing
01/12/2019	9.90	9.90	146	7.40

Liner Sample Information

From - To	Internal Dia (mm)	Recovery (%)	Subsampled

General Remarks

(1) Description derived from drillers daily report.
(2) Inspection pit dug prior to drilling.
(3) 50mm diameter slotted standpipe installed between 8.15m and 9.90m BGL.
(4) Between 1.20-2.50 and 2.50-4.40m BGL redrilled using openhole techniques.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D.S/N.W	Contract No. NW1588

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DYNAMIC SAMPLE HOLE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** DS002
Client: University of Manchester	**Location:** Manchester E:384753.487 N:397492.025		
Method (Equipment): Rotary Coring (Comacchio GEO 205)	**Ground Level (m):** 34.087	**Start Date:** 01/12/2019	**Sheet:** 3 of 3

Figure DS002.1
DS002 - 4.40-9.60m BGL



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FIELD DATA ENCLOSURE 4

Concrete Core Hole Records

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CONCRETE CORE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** HC001
Client: University of Manchester	**Location:** Manchester E:384559.377 N:397621.484		
Method (Equipment): Concrete Coring (Xcalibre Vulcan)	**Ground Level (m):** 34.344	**Start Date:** 09/11/2019	**Sheet:** 1 of 2

RUN DETAILS		STRATA			
Depth & (Core Ø)	Recovery %	Reduced Level	Legend	Depth (Thickness)	Description
0.000 (80mm)	100	34.34		(0.190) 0.190	MADE GROUND (Strong orange red brick with moderately strong light grey mortar, well bonded. (Facing brick)).
		34.34		(1.810) 2.000	MADE GROUND (Moderately weak to moderately strong dark to light orange red brick with weak dark grey mortar, poorly bonded).
					Complete at 2.000m BGL.

Drilling Progress and Water Observations			Flush		Samples		PAK Marker		General Remarks
Date	Depth	Water Standing	Depth	Flush	Depth	Type & No.	Depth	Result	
09/11/2019	0.00				0.00-2.00	C1			(1) Description derived from drillers daily report. (2) Horizontal core.
09/11/2019	2.00	Dry							

All dimensions in metres Scale 1:13.75	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Susnik	Contract No. **NW1588**

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CONCRETE CORE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** HC001
Client: University of Manchester	**Location:** Manchester E:384559.377 N:397621.484		
Method (Equipment): Concrete Coring (Xcalibre Vulcan)	**Ground Level (m):** 34.344	**Start Date:** 09/11/2019	**Sheet:** 2 of 2

Figure HC001.1
HC001 0.00-2.00m BGL



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CONCRETE CORE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** HC002
Client: University of Manchester	**Location:** Manchester E:384590.548 N:397633.327		
Method (Equipment): Concrete Coring (Xcalibre Vulcan)	**Ground Level (m):** 34.307	**Start Date:** 03/11/2019	**Sheet:** 1 of 2

RUN DETAILS		STRATA			
Depth & (Core Ø)	Recovery %	Reduced Level	Legend	Depth (Thickness)	Description
0.000 (80mm)	100	34.31		(0.190) 0.190	MADE GROUND (Strong orange red brick with moderately strong light grey mortar, well bonded. (Facing Brick)).
		34.31		(1.810) 2.000	MADE GROUND (Moderately weak to medium strong dark to light orange red brick with weak dark grey mortar, poorly bonded).
					Complete at 2.000m BGL.

Drilling Progress and Water Observations			Flush		Samples		PAK Marker		General Remarks
Date	Depth	Water Standing	Depth	Flush	Depth	Type & No.	Depth	Result	
03/11/2019	0.00				0.00-2.00	C1			(1) Description derived from drillers daily report. (2) Horizontal core.
03/11/2019	2.00	Dry							

All dimensions in metres Scale 1:13.75	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Susnik	Contract No. NW1588

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CONCRETE CORE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** HC002
Client: University of Manchester	**Location:** Manchester E:384590.548 N:397633.327		
Method (Equipment): Concrete Coring (Xcalibre Vulcan)	**Ground Level (m):** 34.307	**Start Date:** 03/11/2019	**Sheet:** 2 of 2

Figure HC002.1
HC002 0.00-2.00m BGL



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CONCRETE CORE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** HC003
Client: University of Manchester	**Location:** Manchester E:384649.515 N:397655.474		
Method (Equipment): Concrete Coring (Xcalibre Vulcan)	**Ground Level (m):** 34.771	**Start Date:** 02/11/2019	**Sheet:** 1 of 2

RUN DETAILS		STRATA			
Depth & (Core Ø)	Recovery %	Reduced Level	Legend	Depth (Thickness)	Description
0.000 (80mm)	100	34.77		0.100	MADE GROUND (Strong orange red brick with moderately strong light grey mortar, well bonded. (Facing brick)).
		34.77		(0.230) 0.330	MADE GROUND (Medium strong to strong light red brick with medium strong light grey mortar, well bonded).
		34.77		(0.220) 0.550	MADE GROUND (Strong light grey concrete with 2-4% voids. 70-80% of aggregate is fine to coarse subrounded to angular basalt, dolomite and limestone).
		34.77		(1.450) 2.000	MADE GROUND (Moderately weak to medium strong dark to light orange red brick with weak dark grey mortar, poorly bonded).
					Complete at 2.000m BGL.

Drilling Progress and Water Observations			Flush		Samples		PAK Marker		General Remarks
Date	Depth	Water Standing	Depth	Flush	Depth	Type & No.	Depth	Result	
02/11/2019	0.00				0.00-2.00	C1			(1) Description derived from drillers daily report. (2) Horizontal core.
02/11/2019	2.00	Dry							

All dimensions in metres Scale 1:13.75	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Susnik	Contract No. **NW1588**

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CONCRETE CORE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** HC003
Client: University of Manchester	**Location:** Manchester E:384649.515 N:397655.474		
Method (Equipment): Concrete Coring (Xcalibre Vulcan)	**Ground Level (m):** 34.771	**Start Date:** 02/11/2019	**Sheet:** 2 of 2

Figure HC003.1
HC003 0.00-2.00m BGL



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Regional Office: Unit 20 Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL **Tel:** 01772 735 300 **Fax:** 01772 735 999

CONCRETE CORE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** HC004
Client: University of Manchester	**Location:** Manchester E:384620.234 N:397491.337		
Method (Equipment): Concrete Coring (Xcalibre Vulcan)	**Ground Level (m):** 31.630	**Start Date:** 10/11/2019	**Sheet:** 1 of 2

RUN DETAILS		STRATA			
Depth & (Core Ø)	Recovery %	Reduced Level	Legend	Depth (Thickness)	Description
0.000 (80mm)	91	31.63		(0.420) 0.420	MADE GROUND (Extremely strong light grey concrete with 5% voids. 85% of agregate is fine to coarse subrounded to angular basalt, dolomite and limestone). at c.0.05-0.10m BGL ... 5mm diameter reinforcement bars noted. at c.0.36-0.42m BGL ... 8-10mm diameter reinforcement bars noted.
		31.63		0.460	MADE GROUND (Hardcore/Gravel. Engineer notes coarse angular material behind concrete wall). *Terminated at 0.460m BGL - due to unsuitable material.*

Drilling Progress and Water Observations			Flush		Samples		PAK Marker		General Remarks
Date	Depth	Water Standing	Depth	Flush	Depth	Type & No.	Depth	Result	
10/11/2019	0.00				0.00-0.42	C1			(1) Description derived from drillers daily report. (2) Horizontal core.
10/11/2019	0.46	Dry							

All dimensions in metres Scale 1:12.5	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Susnik	Contract No. NW1588

Print Date and Time: 16/04/2020 11:48:00

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CONCRETE CORE RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** HC004
Client: University of Manchester	**Location:** Manchester E:384620.234 N:397491.337		
Method (Equipment): Concrete Coring (Xcalibre Vulcan)	**Ground Level (m):** 31.630	**Start Date:** 10/11/2019	**Sheet:** 2 of 2

Figure HC004.1
HC004 0.00-0.46m BGL



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FIELD DATA ENCLOSURE 5

Trial Pit Records

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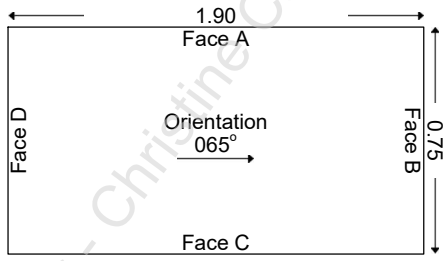
TRIAL PIT RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** TP001
Client: University of Manchester	**Location:** Manchester E:384615.418 N:397543.899		
Method (Equipment): Machine Excavated (TB240)	**Ground Level (m):** 33.208	**Start Date:** 28/10/2019	**Sheet:** 1 of 4

SAMPLES & TESTS			Water	STRATA			
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description
				32.91		0.30	MADE GROUND (Grass over topsoil consisting of dark brown gravelly sand with medium cobble and boulder content. Sand is fine to medium. Gravel is fine to coarse and includes sandstone, quartz and brick. Cobbles and boulders are subangular and includes sandstone).
0.25	B1						
0.25	J2						
0.25	ES3					(1.10)	
0.80	B4						MADE GROUND (Brown clayey very gravelly sandy with medium cobble and boulder content. Sand is fine to coarse. Gravel is fine to coarse subrounded to angular and includes sandstone, concrete, coal, clinker and brick. Cobbles are subrounded to angular and includes sandstone and brick. Boulders are angular and include sandstone).
0.80	J5						
0.80	ES6			31.81		1.40	
1.50	B7						Light brown clayey very gravelly SAND with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular and includes sandstone and quartz.
1.50	J8						
1.50	ES9					(1.20)	between c.1.40-2.60m BGL ... occasional pockets of brown sandy silt.
				30.61		2.60	
2.50	B10						*Terminated at 2.60m BGL - due to side stability.*
2.50	J11						

PLAN



GROUNDWATER
No groundwater inflow observed.

STABILITY
Pit sides moderately unstable throughout excavation.

ADDITIONAL INFORMATION

Sketch Diagram:	No Sketch Taken	
Photographs:	Yes	See additional sheets.

GENERAL REMARKS
(1) Soakaway test attempted between 1.40-2.60m BGL but unable to fill pit due to infiltration rate. Engineer notes flow rate of 33 litres per minute.

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Susnik	Contract No. NW1588

Print Date and Time: 16/04/2020 11:48:28

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TRIAL PIT RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** TP001
Client: University of Manchester	**Location:** Manchester E:384615.418 N:397543.899		
Method (Equipment): Machine Excavated (TB240)	**Ground Level (m):** 33.208	**Start Date:** 28/10/2019	**Sheet:** 2 of 4

Figure TP001.1
TP001 Before investigation works



Figure TP001.2
TP001



ID Manchester - Brantwood - 01454 246.72 - 28/10/2019 2:14:30 PM

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TRIAL PIT RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** TP001
Client: University of Manchester	**Location:** Manchester E:384615.418 N:397543.899		
Method (Equipment): Machine Excavated (TB240)	**Ground Level (m):** 33.208	**Start Date:** 28/10/2019	**Sheet:** 3 of 4

Figure TP001.3
TP001



Figure TP001.4
TP001 Spoil



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TRIAL PIT RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** TP001
Client: University of Manchester	**Location:** Manchester E:384615.418 N:397543.899		
Method (Equipment): Machine Excavated (TB240)	**Ground Level (m):** 33.208	**Start Date:** 28/10/2019	**Sheet:** 4 of 4

Figure TP001.5
TP001 Reinstatement



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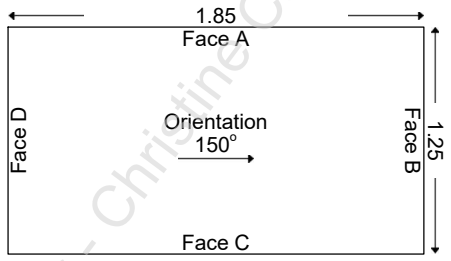
TRIAL PIT RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** TP002
Client: University of Manchester	**Location:** Manchester E:384628.470 N:397622.871		
Method (Equipment): Machine Excavated (TB240)	**Ground Level (m):** 32.851	**Start Date:** 29/10/2019	**Sheet:** 1 of 4

SAMPLES & TESTS			Water	STRATA			
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description
				32.80		0.05	MADE GROUND (Concrete flag slabs).
				32.55		0.30	MADE GROUND (Concrete).
				32.45		0.40	MADE GROUND (Brown grey gravel. Gravel is coarse subangular to angular and includes limestone (sub-base)).
0.40	B1						
0.40	J2						
0.40	ES3					(0.65)	
				31.80		1.05	MADE GROUND (Grey clayey very gravelly sand with medium cobble content and glass bottles. Sand is fine to coarse. Gravel is fine to coarse subrounded to angular and includes sandstone, quartz, coal, brick, concrete and clinker. Cobbles are subangular to angular and includes sandstone and brick).
1.00	B4						
1.00	J5						
1.00	ES6					(0.75)	
1.50	B7						
1.50	J8			31.05		1.80	MADE GROUND (Red brown gravelly sand with low cobble content. Sand is fine to medium. Gravel s fine to coarse rounded to subangular and includes sandstone and quartz).
1.50	ES9						
						(1.00)	MADE GROUND (Grey brown clayey very gravelly sand with medium cobble content and glass bottles. Sand is fine to coarse. Gravel is fine to coarse subrounded to angular and includes sandstone, quartz, coal, brick and clinker. Cobbles are subangular to angular and includes sandstone, masonary and brick).
2.50	B10						
2.50	J11						
2.50	ES12			30.05		2.80	
							Complete at 2.80m BGL.

PLAN



GROUNDWATER
No groundwater inflow observed.

STABILITY
Pit sides unstable throughout excavation.

ADDITIONAL INFORMATION

Sketch Diagram:	No Sketch Taken	
Photographs:	Yes	See additional sheets.

GENERAL REMARKS

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Susnik	Contract No. **NW1588**

Print Date and Time: 16/04/2020 11:48:38

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TRIAL PIT RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** TP002
Client: University of Manchester	**Location:** Manchester E:384628.470 N:397622.871		
Method (Equipment): Machine Excavated (TB240)	**Ground Level (m):** 32.851	**Start Date:** 29/10/2019	**Sheet:** 2 of 4

Figure TP002.1
TP002 Before investigation works



Figure TP002.2
TP002



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TRIAL PIT RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** TP002
Client: University of Manchester	**Location:** Manchester E:384628.470 N:397622.871		
Method (Equipment): Machine Excavated (TB240)	**Ground Level (m):** 32.851	**Start Date:** 29/10/2019	**Sheet:** 3 of 4

Figure TP002.3
TP002



Figure TP002.4
TP002



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TRIAL PIT RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** TP002
Client: University of Manchester	**Location:** Manchester E:384628.470 N:397622.871		
Method (Equipment): Machine Excavated (TB240)	**Ground Level (m):** 32.851	**Start Date:** 29/10/2019	**Sheet:** 4 of 4

Figure TP002.5
TP002 Spoil



Figure TP002.6
TP002 Reinstatement



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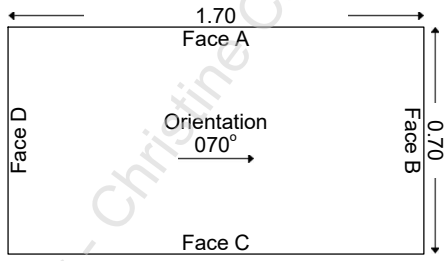
TRIAL PIT RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** TP003
Client: University of Manchester	**Location:** Manchester E:384773.569 N:397508.869		
Method (Equipment): Machine Excavated (TB240)	**Ground Level (m):** 34.238	**Start Date:** 28/10/2019	**Sheet:** 1 of 3

SAMPLES & TESTS			Water	STRATA			
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	Description
				33.99		0.25	MADE GROUND (Grass over topsoil consisting of dark black brown slightly silty sand with some rootlets. Sand is medium.
0.20	B1						
0.20	J2			33.74		0.50	MADE GROUND (Brown grey very gravelly sand with medium cobble content. Sand is fine to medium. Gravel is fine to coarse subangular and includes sandstone, concrete and brick. Cobbles are angular and includes brick).
0.20	ES3						
0.40	B4						
0.40	J5						
0.40	ES6						
1.00	B7						
1.00	J8						
1.00	ES9					(2.50)	MADE GROUND (Orange clayey gravelly sand with medium cobble and low boulder content and fragments of plastic, ceramic and iron. Sand is fine to medium. Gravel is fine to coarse rounded to subangular and includes sandstone, brick, quartz and coal. Cobbles are rounded to angular and includes sandstone and brick. Boulders are subrounded to angular and include sandstone).
2.00	B10						
2.00	J11						
				31.24		3.00	
3.00	B12						*Complete at 3.00m BGL.*
3.00	J13						

PLAN



GROUNDWATER
No groundwater inflow observed.

STABILITY
Pit sides relatively stable throughout excavation.

ADDITIONAL INFORMATION

Sketch Diagram:	No Sketch Taken	
Photographs:	Yes	See additional sheets.

GENERAL REMARKS

All dimensions in metres Scale 1:50	For explanation of symbols and abbreviations see Key Sheets	Checked by: K.W.	Logged by: D. Susnik	Contract No. NW1588

Print Date and Time: 16/04/2020 11:48:52

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TRIAL PIT RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** TP003
Client: University of Manchester	**Location:** Manchester E:384773.569 N:397508.869		
Method (Equipment): Machine Excavated (TB240)	**Ground Level (m):** 34.238	**Start Date:** 28/10/2019	**Sheet:** 2 of 3

Figure TP003.1
TP003



Figure TP003.2
TP003



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TRIAL PIT RECORD

Status:- FINAL

Project: ID Manchester Preliminary Ground Investigation			**Exploratory Hole No.** TP003
Client: University of Manchester	**Location:** Manchester E:384773.569 N:397508.869		
Method (Equipment): Machine Excavated (TB240)	**Ground Level (m):** 34.238	**Start Date:** 28/10/2019	**Sheet:** 3 of 3

Figure TP003.3
TP003 Spoil



Figure TP003.4
TP003 Reinstatement



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FIELD DATA ENCLOSURE 6

Groundwater Monitoring Results

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Regional Office: Unit 30 Business Development Centre, Lowry Street, Ashington, NE63 8EL Tel: 01670 [illegible] Fax: [illegible]

GROUNDWATER MONITORING RESULTS

Monitoring Point	Date and Time	Depth and Type of Well	Ground Level (mAOD)	Water Depth (mBGL)	Reduced Water Level (mAOD)	Remarks
BH001	22/11/2019 12:30	15.50m 50mm SP	37.81	9.47	28.34	
BH001	03/12/2019 07:15	15.50m 50mm SP	37.81	9.53	28.28	
BH001	16/01/2020 15:30	15.50m 50mm SP	37.81	9.50	28.31	
BH001	06/02/2020 12:04	15.50m 50mm SP	37.81	9.77	28.04	
BH001	20/02/2020 15:40	15.50m 50mm SP	37.81	9.75	28.06	
BH001	06/03/2020 09:55	15.50m 50mm SP	37.81	9.80	28.01	
BH002	22/11/2019 13:25	3.00m 50mm SP	33.27	Wet at Tip		
BH002	03/12/2019 07:25	3.00m 50mm SP	33.27	Wet at Tip		
BH002	17/01/2020 10:15	3.00m 50mm SP	33.27	Dry		
BH002	06/02/2020 12:19	3.00m 50mm SP	33.27	Dry		
BH002	20/02/2020 15:55	3.00m 50mm SP	33.27	Dry		
BH002	06/03/2020 10:12	3.00m 50mm SP	33.27	Wet at Tip		
BH002	22/11/2019 13:25	4.00m 50mm SP	33.27	Dry		
BH002	03/12/2019 07:25	4.00m 50mm SP	33.27	Dry		
BH002	17/01/2020 10:15	4.00m 50mm SP	33.27	Dry		
BH002	06/02/2020 12:17	4.00m 50mm SP	33.27	Dry		
BH002	20/02/2020 15:55	4.00m 50mm SP	33.27	Dry		
BH002	06/03/2020 10:10	4.00m 50mm SP	33.27	Wet at Tip		
BH004	22/11/2019 12:20	14.90m 50mm SP	34.22	5.96	28.24	
BH004	06/12/2019 07:05	14.90m 50mm SP	34.22	6.01	28.21	

SP=Standpipe SPT = Standpipe Piezometer

Contract Title :-
ID Manchester Preliminary Ground Investigation

Client :-
University of Manchester

Certificate No. :-
GWMR/NW1583/1

Date of Issue :-
06/03/2020

Checked By :-

Approved By :-
LC

AE-H Contract No. :-
NW1583

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Regional Office: [illegible] Tel: 01772 255 202 Fax: 01772 [illegible]

GROUNDWATER MONITORING RESULTS

Monitoring Point	Date and Time	Depth and Type of Well	Ground Level (mAOD)	Water Depth (mBGL)	Reduced Water Level (mAOD)	Remarks
BH004	17/01/2020 09:00	14.00m 50mm SP	34.22	6.06	28.16	
BH004	05/02/2020 13:00	14.00m 50mm SP	34.22	6.15	28.07	
BH004	20/02/2020 15:34	14.00m 50mm SP	34.22	6.20	28.02	
BH004	03/03/2020 09:45	14.00m 50mm SP	34.22	6.20	28.02	
BH034A	22/11/2019 13:20	4.00m 50mm SP	34.19	Wet at Tip		
BH034A	03/12/2019 07:10	4.00m 50mm SP	34.19	Wet at Tip		
BH034A	17/01/2020 16:20	4.00m 50mm SP	34.19	Dry		
BH034A	05/02/2020 15:30	4.00m 50mm SP	34.19	Dry		
BH034A	20/02/2020 15:30	4.00m 50mm SP	34.19	Wet at Tip		
BH034A	03/03/2020 09:45	4.00m 50mm SP	34.19	Wet at Tip		
BH005	17/01/2020 13:30	21.50m 50mm SP	33.42	5.60	27.82	
BH005	05/02/2020 12:32	21.50m 50mm SP	33.42	5.27	28.15	
BH005	20/02/2020 16:10	21.50m 50mm SP	33.42	5.30	28.12	
BH005	03/03/2020 10:20	21.50m 50mm SP	33.42	5.25	28.17	
BH007	22/11/2019 13:35	13.60m 50mm SP	34.58	6.02	28.56	
BH007	03/12/2019 07:30	13.60m 50mm SP	34.68	3.00	31.68	
BH007	17/01/2020 11:20	13.60m 50mm SP	34.68	6.07	28.61	
BH007	05/02/2020 17:45	13.60m 50mm SP	34.68	6.27	28.41	
BH007	20/02/2020 15:20	13.60m 50mm SP	34.68	6.20	28.48	
BH007	03/03/2020 10:00	13.60m 50mm SP	34.68	6.10	28.58	

SP = Standpipe - SPIE = Standpipe Piezometer

Contract Title :- ID Manchester Preliminary Ground Investigation

Client :- University of Manchester

Certificate No. :- GWMR/NW1588/2

Date of Issue :- 05/03/2020

Checked By :-

Approved By :-

AEG Contract No. :- NW1588

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GROUNDWATER MONITORING RESULTS

Monitoring Point	Date and Time	Depth and Type of Well	Ground Level (mAOD)	Water Depth (mBGL)	Reduced Water Level (mAOD)	Remarks
BH008	22/11/2019 13:40	6.50m 50mm SP	34.05	5.32	28.73	
BH008	03/12/2019 07:40	6.50m 50mm SP	34.05	5.28	28.76	
BH008	17/02/2020 11:50	6.50m 50mm SP	34.05	Wet at Tip		
BH008	05/02/2020 13:20	6.50m 50mm SP	34.05	5.51	28.54	
BH008	20/02/2020 16:24	6.50m 50mm SP	34.05	5.50	28.55	
BH008	06/03/2020 10:40	6.50m 50mm SP	34.05	5.50	28.55	
BH008	22/11/2019 13:45	1.70m 50mm SP	34.20	Dry		
BH009	03/12/2019 07:45	1.70m 50mm SP	34.20	Dry		
BH009	17/02/2020 12:10	1.70m 50mm SP	34.20	Dry		
BH009	06/03/2020 10:41	1.70m 50mm SP	34.20	Dry		
BH009	20/02/2020 16:30	1.70m 50mm SP	34.20	Dry		
BH009	06/03/2020 10:50	1.70m 50mm SP	34.20	Wet at Tip		
BH011	03/12/2019 07:50	13.00m 50mm SP	34.05	5.56	28.49	
BH011	17/02/2020 12:40	13.00m 50mm SP	34.05	5.40	28.63	
BH011	05/02/2020 14:50	13.00m 50mm SP	34.05	5.65	28.40	
BH011	20/02/2020 17:05	13.00m 50mm SP	34.05	5.70	28.35	
BH011	06/03/2020 11:15	13.00m 50mm SP	34.05	5.60	28.45	
BH012A	22/11/2019 13:05	6.00m 50mm SP	38.27	5.99	32.28	
BH012A	03/12/2019 07:20	6.00m 50mm SP	38.27	5.98	32.29	
BH012A	17/02/2020 10:30	6.00m 50mm SP	38.27	Wet at Tip		

SP= Slotted uPVC + Standpipe Filter Material

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NW/1588

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Head Office: Unit 19 Cobb Industrial Estate, Tarran Way, Cheadle, Stoke-on-Trent, ST10 1RS Tel: 01538 487400 Fax: 01538 487401
Regional Office: Unit 20 Bennett Development Centre, Newton Road, Rhuddlan, LL18 5SB Tel: 01745 590 845 Fax: 01745 730 995

GROUNDWATER MONITORING RESULTS

Monitoring Point	Date and Time	Depth and Type of Well	Ground Level (mAOD)	Water Depth (mBGL)	Reduced Water Level (mAOD)	Remarks
BH012A	06/02/2020 13:03	6.00m 50mm SP	38.27	5.98	32.29	
BH012A	20/02/2020 15:50	6.00m 50mm SP	38.27	Well at Tip		
BH012A	06/03/2020 10:05	6.00m 50mm SP	38.27	Well at Tip		
BH013	22/11/2019 13:15	16.50m 50mm SP	33.08	5.30	27.78	
BH013	05/12/2019 09:55	16.50m 50mm SP	33.08	5.33	27.75	
BH013	15/01/2020 15:30	16.50m 50mm SP	33.08	5.30	27.78	
BH013	05/02/2020 15:18	16.50m 50mm SP	33.08	5.40	27.68	
BH013	20/02/2020 15:15	16.50m 50mm SP	33.08	5.40	27.68	
BH013	06/03/2020 09:30	16.50m 50mm SP	33.08	5.30	27.78	
DS001	03/12/2019 08:05	4.00m 50mm SP	34.22	2.60	31.62	
DS001	17/01/2020 12:20	4.00m 50mm SP	34.22	Well at Tip		
DS001	05/02/2020 14:06	4.00m 50mm SP	34.22	3.17	31.05	
DS001	20/02/2020 16:40	4.00m 50mm SP	34.22	3.05	31.17	
DS001	06/03/2020 11:00	4.00m 50mm SP	34.22	3.00	31.22	
DS002	03/12/2019 08:30	9.90m 50mm SP	34.09	5.32	28.77	
DS002	17/01/2020 12:30	9.90m 50mm SP	34.09	5.70	28.39	
DS002	05/02/2020 14:30	9.90m 50mm SP	34.09	5.61	28.48	
DS002	20/02/2020 16:50	9.90m 50mm SP	34.09	5.48	28.61	
DS002	06/03/2020 11:05	9.90m 50mm SP	34.09	5.40	28.69	

SP = Slip Slips - SPIE = Standpipe Piezometer

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FIELD DATA ENCLOSURE 7

Gas Monitoring Results

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ID Manchester - Chantelle Campbell - Burnwood Section - 6/8/2020 2:14:30 PM - 81.154.246.72

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Head Office: Unit 10 Clayhill Industrial Estate, Clayhill, Neston, Cheshire, CH64 3RQ Tel: 0151 336 4000 Fax: 0151 336 4040
Regional Office: Unit 26 Fortress Close, Sandtoft Centre, Belton, Doncaster, DN9 1PP Tel: 01724 720 330 Fax: 01724 720 880

GAS MONITORING RESULTS

Monitoring Point	Date and Time	Weather Condition	Temperature °C	Instrument and Method	Ground Level (mAOD)	Water Depth (m BGL)	Rest Water Level (mAOD)	Flow Rate (l/hr)	Diff Pressure (mbar)	ATM Pressure (mbar)	Methane % v/v (P)	Methane % v/v (S)	Methane % LEL (P)	Methane % LEL (S)	Carbon Dioxide % v/v (P)	Carbon Dioxide % v/v (S)	Oxygen % v/v (D)	Oxygen % v/v (S)	Hydrogen Sulphide (ppm)	Flammable Monoxide (ppm)	Remarks
BH001	18/01/2020 16:56	Rain	10	15.00m 50mm SP	37.81	9.30	28.51	0.0	0.05	997	<0.1	<0.1	<2.0	<2.0	0.2	0.2	20.4	20.4	1	<1.0	
BH001	05/02/2020 13:04	Sunny	5	15.50m 50mm SP	37.81	9.75	28.06	0.0	0.06	1031	<0.1	<0.1	<2.0	<2.0	0.1	0.1	20.5	20.5	<1.0	<1.0	
BH001	20/02/2020 15:40	Fair	4	15.50m 50mm SP	37.81	9.75	28.06	0.0	0.07	1001	<0.1	<0.1	<2.0	<2.0	0.2	0.2	20.4	20.4	<1.0	<1.0	
BH001	05/03/2020 09:53	Sunny	6	15.50m 50mm SP	37.81	9.80	28.01	0.0	0.06	1001	<0.1	<0.1	<2.0	<2.0	0.3	0.1	20.2	20.5	<1.0	<1.0	
BH002	17/01/2020 10:15	Rain	9	3.00m 50mm SP	33.27	Dry		0.0	-0.05	1000	<0.1	<0.1	<2.0	<2.0	0.1	0.1	20.7	20.7	<1.0	<1.0	
BH002	05/02/2020 12:10	Sunny	5	3.00m 50mm SP	33.27	Dry		0.0	0.04	1030	<0.1	<0.1	<2.0	<2.0	0.2	0.2	20.1	20.1	<1.0	<1.0	
BH002	20/02/2020 15:05	Fair	4	3.00m 50mm SP	33.27	Dry		0.0	-0.05	1001	<0.1	<0.1	<2.0	<2.0	0.2	0.1	20.3	20.3	<1.0	<1.0	
BH002	05/03/2020 10:12	Sunny	6	3.00m 50mm SP	33.27	Wet at Tip		0.0	-0.04	1001	<0.1	<0.1	<2.0	<2.0	0.3	0.3	20.3	20.4	<1.0	<1.0	
BH002	17/01/2020 10:16	Rain	9	4.00m 50mm SP	33.27	Dry		0.0	-0.03	1000	<0.1	<0.1	<2.0	<2.0	0.0	0.0	20.9	20.9	<1.0	<1.0	
BH002	05/02/2020 12:17	Sunny	6	4.00m 50mm SP	33.27	Dry		0.0	-0.02	1031	<0.1	<0.1	<2.0	<2.0	0.2	0.2	20.0	20.0	<1.0	1.0	
BH002	20/02/2020 15:56	Fair	4	4.00m 50mm SP	33.27	Dry		0.0	-0.02	1001	<0.1	<0.1	<2.0	<2.0	0.4	0.4	20.0	20.1	<1.0	<1.0	

See attached Calibration Certificate for Model No. and any other details. SP = Standpipe - SPIC = Standpipe Piezometer. (P) = Peak - (S) = Steady - (D) = Decline.

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Head Office: Unit 25 & 26, Old Industrial Estate, Tattershall, Lincolnshire, LN4 4LR Tel: 01526 348250 Fax: 01526 348251
Regional Office: Unit 23 Business Development Centre, Telford Way, Blackburn, BB1 5SL Tel: 01254 246 172 Fax: 01254 246 172

GAS MONITORING RESULTS

Monitoring Point	Date and Time of Reading	Weather Conditions	Temperature (°C)	Depth and Type of Well	Ground Level (mAOD)	Water Depth (mBGL)	Reduced Water Level (mAOD)	Flow Rate (l/hr)	Diff Pressure (mbar)	ATM Pressure Range (mbar)	Methane % v/v (P)	Methane % v/v (SS)	Methane % LEL (P)	Methane % LEL (SS)	Carbon Dioxide % v/v (P)	Carbon Dioxide % v/v (SS)	Oxygen % v/v (P)	Oxygen % v/v (SS)	Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	Remarks
BH002	06/02/2020 12:10	Sunny	6	4.00m 50mm SP	33.27	Wet at Tip		0.0	-0.04	1001	<0.1	<0.1	<2.0	<2.0	0.2	0.1	20.8	20.2	<1.0	<1.0	
BH004	17/01/2020 09:00	Rain	6	14.30m 50mm SP	34.22	6.00	28.16	0.0	0.05	1003	<0.1	<0.1	<2.0	<2.0	0.3	0.3	20.4	20.4	-	<1.0	
BH004	06/02/2020 13:05	Sunny	8	14.30m 50mm SP	34.22	6.15	28.07	0.0	0.10	1030	<0.1	<0.1	<2.0	<2.0	0.2	0.2	20.3	20.3	1.0	<1.0	
BH004	20/02/2020 15:34	Fair	4	14.30m 50mm SP	34.22	6.20	28.02	0.0	0.05	1001	<0.1	<0.1	<2.0	<2.0	0.1	0.1	20.6	20.6	<1.0	<1.0	
BH004	06/02/2020 09:45	Sunny	6	14.30m 50mm SP	34.22	6.20	28.02	0.0	0.07	1001	<0.1	<0.1	<2.0	<2.0	0.2	0.1	20.5	20.5	<1.0	<1.0	
BH004A	17/01/2020 10:20	Rain	6	4.00m 50mm SP	34.18	Dry		0.0	0.02	999	<0.1	<0.1	<2.0	<2.0	1.3	1.3	19.6	19.6	-	<1.0	
BH004A	06/02/2020 15:30	Sunny	7	4.00m 50mm SP	34.18	Dry		0.0	0.02	1029	<0.1	<0.1	<2.0	<2.0	0.7	0.4	20.1	20.1	<1.0	<1.0	
BH004A	20/02/2020 15:50	Fair	4	4.00m 50mm SP	34.18	Wet at Tip		0.0	0.04	1001	<0.1	<0.1	<2.0	<2.0	0.5	0.2	20.3	20.3	<1.0	<1.0	
BH004A	06/02/2020 09:45	Sunny	6	4.00m 50mm SP	34.18	Wet at Tip		0.0	0.05	1001	<0.1	<0.1	<2.0	<2.0	0.6	0.7	20.1	20.0	<1.0	<1.0	
BH005	17/01/2020 09:30	Rain	6	21.50m 50mm SP	33.42	5.50	27.82	0.0	-0.01	1002	<0.1	<0.1	<2.0	<2.0	0.3	0.3	20.4	20.4	<1.0	<1.0	
BH005	06/02/2020 13:22	Sunny	6	21.50m 50mm SP	33.42	5.27	28.15	0.0	-0.07	1030	<0.1	<0.1	<2.0	<2.0	0.3	0.3	20.6	20.5	<1.0	<1.0	

See attached Calibration Certificate for Model No and any other details. SP = Standpipe - SHE = Standpipe Piezometer. (P) = Peak - (SS) = Steady - (D) = Dwelling.

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