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PHASE 2 GROUND INVESTIGATION REPORT

PROPOSED COMMERCIAL DEVELOPMENT

SATELLITE INDUSTRIAL PARK

NEACHELLS LANE

WOLVERHAMPTON

WV11 3QG

Project No: 22-003

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The information and/or advice contained in this Phase 2: Ground Investigation Report is based solely on, and is limited to, the boundaries of the site, the immediate area around the site, and the historical use(s) unless otherwise stated. This 'Report' has been prepared in order to collate information relating to the physical, environmental and industrial setting of the site, and to highlight, where possible, the likely problems that might be encountered when considering the future development of this site for the proposed end use. All comments, opinions, diagrams, cross sections and/or sketches contained within the report, and/or any configuration of the findings is conjectural and given for guidance only and confirmation of the anticipated ground conditions should be considered before development proceeds. Agreement for the use or copying of this report by any Third Party must be obtained in writing from Arc Environmental Limited (ARC). If a change in the proposed land use is envisaged, then a reassessment of the site should be carried out.

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1.0 Introduction

August 2022

As requested by Adept Consulting Structural and Civil Engineers, and in conjunction with the Phase 1 Desk Top Study & Coal Mining Risk Assessment (Ref. 22-003 June 2022), Phase 2: Ground Investigation works have been carried out around and within an existing derelict industrial unit within Satellite Industrial Park, Wolverhampton, where proposals have been made to demolish an existing unit and construct industrial units (warehouses).

The intrusive investigation works comprised 8 no. windowless sampling boreholes (BH1 – BH8) incorporating the installation of combined ground gas / groundwater monitoring installations (BH1, BH2 & BH7) and 2 no. open hole rotary boreholes (RBH1 & RBH2), the positions of which can be seen on the Borehole Location Plan, a copy of which can be seen in Appendix II. It should be noted that this plan should be used for orientating purposes only, as the positions shown are approximate, and the plans are not to a standard scale.

2.0 Site Details

Table 2.1

N = north, S = south, E = east, W = west

Site Name & Address:	Satellite Industrial Park, Wolverhampton, WV11 3QG.
OS Grid Reference:	394610, 299610 – representative for the centre of the site.
Description of Location:	The site is located within an industrial setting, situated south off Wednesfield Way, c.3km to the northeast of Wolverhampton, c.5km northwest of Walsall and c.9km north of Dudley.
Site Boundaries:	N = Manufacturing unit, with Wednesfield Way beyond, E = Neachells Lane, with industrial units beyond, S = Engineering works, with industrial units beyond, W = Logistics unit, Satellite Ind Park and vehicle industrial units beyond.

3.0 Scope of Works

Table 3.1

Project type:	Commercial.
Site Location plan:	See Appendix I.
Layout plans (existing):	See Appendix I.
Layout plans (proposed):	See Appendix I.
Laboratory Testing:	Geotechnical & Ground Contamination.
Reporting:	Factual & Interpretative including Level 1 Risk Assessment. Works carried out in accordance with British Standards

The information contained in this report is limited to the areas of the site, as indicated on the Existing and Proposed Site Layout Plans shown in Appendix I, and to those areas accessible during the ground investigation. The depths of strata on the record sheets are recorded from current ground levels. No topographical survey was requested or undertaken. When considering the full scope of the development any features and / or issues not specifically mentioned in this report cannot be assumed to have been covered.

4.0 Investigation Rationale

This ground investigation has been designed to provide information on the general ground and groundwater conditions around the proposed development areas and potential areas of geotechnical concern. The rationale behind the location of each exploratory hole is summarised in Table 4.1 below.

Table 4.1

Potential issue	Exploratory hole
Geotechnical considerations around area of proposed development	BH1 – BH8
Investigation of shallow coal workings within the Fire Clay coal seam	RBH1 & RBH2
Shallow groundwater and ground gas monitoring	BH1, BH2 & BH7
Assessment of natural drift deposits for use of sustainable infiltration drainage	BH1 & BH2
General site wide contamination assessment	BH1 – BH8

4.0 Investigation Rationale (Cont'd)

4.1 Contamination Related Sampling & Site Protocols: -

All works associated with this ground contamination assessment and investigations have generally been completed in accordance with BS10175:2011 + A2:2017: British Standard Code of Practice for the Investigation of Potentially Contaminated Sites (2011) & Environment Agency (EA) Land Contamination Risk Management (LCRM), October 2020.

4.1.1 Ground Contamination Sampling: -

Samples were recovered by a representative of ARC Environmental Ltd. during the intrusive investigation works. All samples were stored at approximately 2°C - 8°C using cool boxes and ice packs prior to delivery to a UKAS/MCERTS accredited laboratory. Sampling was carried out in accordance with 'Technical Policy Statement 63: UKAS Policy on Deviating Samples'.

4.1.2 Avoiding Cross-Contamination between Sample Locations: -

To avoid possible cross-contamination of materials between soil horizons in the boreholes, drill casing was used to seal off the made ground. In addition, disposable plastic liners were used to collect samples from the windowless sampling boreholes carried out.

5.0 Ground Conditions

For an accurate description of the ground conditions encountered at each investigation position, reference should be made to the Borehole Record Sheets in Appendix II. It should be noted that there is always the possibility of variation in the ground conditions around and between the investigation locations.

5.1 Soil Profile: -

A summary of the soil profile for this site can be seen in Table 5.1 below.

Table 5.1

BGL = Below ground level.

Type of Strata	Depths Recorded (BGL)	Description & General Comments
MADE GROUND:	From 0.00m up to c.0.20m to c.1.70m	Comprised initial site surfacing of either concrete, asphalt or grass overlying gravelly soil. Underlying the initial site surfacing, black, dark brown, orange brown and reddish-brown sand with occasional fragments of brick and soft dark brown very sandy clay was noted. A thin band of sandy ash was noted within BH8.
DRIFT GEOLOGY: (Glacial Till)	From c.0.40m to c.1.70m up to c.2.20m to at least c.6.00m	Recorded in BH4 – BH8 only, comprised soft, firm and stiff (medium and high strength) reddish brown sandy gravelly CLAY. Occasional thin bands of gravelly SAND were noted within BH6 only.
SOLID GEOLOGY: (Lower Coal Measures / Unnamed Igneous Intrusion)	From c.0.20m to c.3.70m up to At least c.27.00m	Comprised very weak becoming weak orange, brown light brown weathered SANDSTONE and very weak becoming moderately strong dark grey weathered MUDSTONE, recorded to depths of between c.15.50m to c.16.80m, underlain by hard grey DOLERITE.

The solid deposits were not encountered within BH7 & BH8 with these boreholes terminated within the natural drift deposits.

There was no visual and / or olfactory evidence of significant ground contamination (i.e. fuel-derived contaminants, asbestos, etc.) present at any of the exploratory positions undertaken across the site. However, a band of ash was recorded within BH8 only.

5.0 Ground Conditions (Cont'd)

5.2 Coal Mining Risk Assessment: -

When considering the geological setting and the Phase 1: Desk Top Study & Coal Mining Risk Assessment previously completed for this site, the site was considered to be at risk from potential shallow mine workings within the Fire Clay coal seam which is recorded to subcrop below the western portion of the site. The Fire Clay seam is recorded to be between c.0.45m to c.2.74m. Consequently, confirmatory boreholes / investigation works were recommended to confirm the ground conditions and also the condition, thickness and depth of the Fire Clay coal.

Therefore, 2 no. open hole rotary boreholes were carried out across the site to assess the risk, the boreholes recorded sandstone interbedded with mudstone, recorded to depths of between c.15.50m to c.16.80m bcdl, underlain by hard grey dolerite, recorded to a depth of at least c.27m bcdl. No evidence of intact coal, shallow mine workings, broken ground/voiding was noted below the site with full flush maintained.

When considering the above, the proposed development is not considered to be at risk from future surface instability arising from unrecorded coal workings no further work and / or structural precautions are deemed necessary with this regard.

5.3 Groundwater: -

A slight ingress of water was noted within BH8 only at a depth of c.4.00m. This is likely to be representative of pockets of trapped surface infiltration.

Combined ground gas & groundwater monitoring wells were installed within BH1, BH2 & BH7 to carry out a subsequent programme of gas and groundwater monitoring. The results are discussed further in Section 6.3.

6.0 Insitu Testing

6.1 Insitu Standard Penetration Tests: -

Standard penetration tests (SPT's) were carried out with the use of a normal split spoon sampler on the made ground and natural deposits encountered within the boreholes to determine the relative strength of the materials tested. The results are shown as 'N' values on the graphic borehole record sheets, adjacent to the appropriate sample level. A summary of the test results can be seen in Table 6.1 below.

Table 6.1

* = Using N₆₀ values after Clayton 1995

Type of Strata	Range of SPT 'N' Values	Result details
MADE GROUND	5	Very loose and medium dense deposits
SANDY CLAY	6	Soft deposits
SANDSTONE	18 to 30 And blows of 70 & 75 for limited penetration	Very weak & weak deposits*
MUDSTONE	8 And blows of 75 for limited penetration	Very weak deposits*

6.2 Insitu Hand Shear Vane Tests: -

Insitu hand vane tests were carried out using an insitu hand vane tester on the natural clays encountered within the boreholes. The insitu hand vane tester takes direct readings of shear strength. Three vane sizes allow for the direct determination of undrained shear strength of extremely low to high strength clays.

The peak vane value is determined by a calibrated scale ring built into the head assembly. The cross handle/dial is used both to push the vane to the desired test depth and apply the shearing torque.

6.0 Insitu Testing (Cont'd)

6.2 Insitu Hand Shear Vane Tests (Cont'd): -

The results are summarised in Table 6.2 below and can also be found adjacent to the appropriate sample level, on the graphic borehole record sheets in Appendix II.

Table 6.2

<u>Type of Strata</u>	<u>Range of Shear Strength Values (kN/m²)</u>	<u>Result Details</u>
SANDY SILTY CLAY	40N/m ² to 110kN/m ²	Medium & high strength deposits

6.3 Insitu Gas & Groundwater Monitoring: -

When considering the historic landfills recorded within a plausible distance to the site as highlighted within the Phase 1 Desk Top Study previously carried out, soil gas & water monitoring standpipes were installed within BH1, BH2 & BH7 primarily to check for the possible presence of hazardous ground gas migration, as well as to monitor insitu groundwater levels.

A standard 50mm diameter HDPE standpipe, with gravel and/or geo-wrap surround, bentonite seal, gas valve cap and security cover, was installed to depths of between c.0.83m and c.5.00m below current ground levels, and the soil gas and water levels were allowed to reach equilibrium, prior to the first monitoring visit. Monitoring was undertaken using a GFM 430 series soil gas analyser, with integral flow meter, and a Geotechnical Instruments electronic dip-meter.

In accordance with CIRIA Report C665, November 2007, the current NHBC Document; Guidance on evaluation of development proposals on site where methane and carbon dioxide are present, Report Edition No. 04, March 2007 and BS8485:2015+A1:2019 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings, it is felt that an adequate risk assessment can be undertaken based on the following limiting factors:

- The Commercial development has been considered as **low sensitivity** (Table 5.5 – Typical/Idealised frequency and period of monitoring, after Wilson et al, 2005).
- The risk associated with the generation potential of a source is considered as **low**, (assessment based on the environmental setting) as well as observations noted during the fieldworks.
- Monitoring over a **minimum of two months** with **six recorded** readings (Table 5.5 – Typical /idealised frequency and period of monitoring after Wilson et al, 2005).
- **Negligible** flow rates have been recorded (Table 8.5 – Modified Wilson & Card classification).
- A targeted and phased program of gas monitoring has been completed obtaining gas monitoring readings during varying atmospheric conditions, which covers the ‘worst case’ scenario for ground gas emissions to occur, particularly during rapid falls in atmospheric pressure (i.e. from c.1020mb and c.1010mb).

Monitoring of the weather conditions and predicated atmospheric pressures (Met Office Surface Pressure Charts) are carried out up to 72 hours in advance of proposed monitoring visits, in order that a reasonable period of data is obtained to determine atmospheric trends, and to target the ‘worst case’ scenario.

A summary of the results for the 6 no. visits undertaken, compared with the ‘inert’ background gas levels are presented in Table 6.3 on the following page with a copy of the monitoring certificate attached in Appendix III.

6.0 Insitu Testing (Cont'd)

6.3 Insitu Gas & Groundwater Monitoring (Cont'd): -

Table 6.3

Position	Date	Atmospheric Pressure (mbar)	Water (m bgl)	CH ₄ (%v/v)	LEL (%v/v)	CO ₂ (%v/v)	O ₂ (%v/v)	Flow Rate (l/hr)
Background		~	~	0	0	0	21.0	0
BH1	09/06/2022	998 (Rising 1005-1016)	Dry	0.0	0.0	2.3	17.8	<0.1
BH2			Dry	0.0	0.0	0.9	19.4	<0.1
BH7			Dry	0.0	0.0	0.7	18.5	<0.1
BH1	23/06/2022	991-992 (Falling 1010-1002)	Dry	0.0	0.0	2.2	18.5	<0.1
BH2			Dry	0.0	0.0	2.4	17.9	<0.1
BH7			2.98	0.0	0.0	0.8	19.4	<0.1
BH1	07/07/2022	1015 (Steady 1030-1032)	Dry	0.0	0.0	2.0	18.1	<0.1
BH2			Dry	0.0	0.0	0.9	19.2	<0.1
BH7			2.96	0.0	0.0	0.6	20.1	<0.1
BH1	27/07/2022	1003 Falling (1022-1010)	Dry	0.0	0.0	2.2	18.4	<0.1
BH2			Dry	0.0	0.0	1.1	19.2	<0.1
BH7			2.02	0.0	0.0	2.9	13.4	<0.1
BH1	04/08/2022	1010 Rising (1016-1028)	Dry	0.0	0.0	2.1	18.2	<0.1
BH2			Dry	0.0	0.0	1.3	18.9	<0.1
BH7			2.58	0.0	0.0	0.4	19.4	<0.1
BH1	11/08/2022	1006 Falling (1020-1003)	Dry	0.0	0.0	2.2	18.3	<0.1
BH2			Dry	0.0	0.0	0.8	19.8	<0.1
BH7			3.03	0.0	0.0	1.0	18.1	<0.1

Atmospheric trend taken from www.weatheronline.com for Birmingham Airport

From the results undertaken, no concentrations of Methane (CH₄) were recorded within any of the boreholes. However, detectable levels of Carbon Dioxide (CO₂) were recorded within the boreholes, up to a maximum level of 2.9% v/v, with associated slightly depleted oxygen (O₂) concentrations (minimum 13.4% v/v). In addition, negligible flow rates of <0.1l/hr have been recorded during the monitoring visit completed to date.

In addition, when considering the site is underlain by the middle coal measures, monitoring for Carbon Monoxide (CO) and Hydrogen Sulphide (H₂S) has also been undertaken. From the results of the monitoring visits completed to date, no levels of CO or H₂S have been recorded.

Based upon the results recorded, in accordance with CIRIA Report C665, the risk to the site from ground gases has been assessed by converting the results in Table 6.3 to gas screening values (GSV's), calculated by multiplying the typical maximum gas concentrations with the recorded maximum positive flow rates (after Wilson & Card).

As no levels of CH₄ have been recorded, the gas screening value (GSV) for CO₂ only has been calculated, using the maximum recorded value of 2.9% v/v, with a maximum flow rate of <0.1l/hr. The GSV can be calculated as follows:

$$\text{Carbon Dioxide GSV} = 0.029 (2.9\%) \times 0.1 = 0.0029 \text{ l/hr}$$

When considering these results, in accordance with CIRIA C665, in accordance with CIRIA C665, the GSV for CO₂ falls below the lower target concentration of 0.07l/hr and equates to a Characteristic Situation 1 (CS1) site classification, resulting in no gas protective measures being required for the proposed development.

When considering the results of the groundwater monitoring, standing levels were recorded at a depth of between c.2.02m and c.3.03m within BH7 only during the monitoring visits undertaken. These levels are likely to be attributable to 'perched' water collecting within the standpipe which will be effectively acting as a conduit for trapped surface infiltration.

6.0 Insitu Testing (Cont'd)

6.3 Insitu Gas & Groundwater Monitoring (Cont'd): -

As can be seen from the results of the water monitoring undertaken and from the observations noted during the fieldworks, significant shallow water ingress should not be experienced during any future construction related excavations. However, it would be prudent to allow for the introduction of suitable groundwater control measures, to take care of any localised ingresses of groundwater which may occur during the construction period, especially during the wetter periods of the year.

6.4 Variable Head (Falling) Permeability Tests: -

Variable head (falling) permeability tests were carried out within BH1 & BH2 to determine the coefficient of permeability (k) for the soils present below the site and to assess the potential for utilising soakaways. At the test locations the water fully drained away within c.3 mins. Therefore, the natural deposits around these locations are likely to be suitable for use as soakaways. However, fully soakaway testing in accordance with BRE365 may be required.

7.0 Laboratory Testing

All geotechnical testing was carried out in accordance with BS1377-1:2016 unless otherwise stated, at a UKAS accredited laboratory. Ground contamination screening was undertaken by a suitably experienced and qualified laboratory (UKAS and MCERTS accredited, unless otherwise stated).

7.1 Determination of pH & SO₄: -

Representative samples (9 no.) of the made ground and natural deposits recovered during the investigation, were tested in order to determine their acidic (pH) and soluble sulphate (SO₄) levels. The results are shown in Table 7.1 below and are also contained within the Chemtest Analytical Report (Ref no. 22-21361-1), a copy of which can be seen in Appendix IV.

Table 7.1

ACEC = Aggressive Chemical Environment for Concrete site classification

Position	Depth (m)	Strata	pH	SO₄(mg/l)	Design SO₄ Class	ACEC Class
BH1	0.40-0.60	Natural Strata	9.2	16	DS-1	AC-1
BH2	0.30-0.50	Made Ground	8.8	49	DS-1	AC-1
BH4	0.17-0.30	Made Ground	8.3	97	DS-1	AC-1
BH6	0.17-0.40	Made Ground	7.1	260	DS-1	AC-1
BH6	0.70-1.00	Natural Strata	8.1	48	DS-1	AC-1
BH7	0.10-0.50	Made Ground	8.5	67	DS-1	AC-1
BH7	0.90-1.30	Made Ground	8.5	18	DS-1	AC-1
BH8	0.25-0.50	Made Ground	9.0	49	DS-1	AC-1
BH8	0.80-1.00	Made Ground	8.7	24	DS-1	AC-1

From these results the pH values for the samples of soil tested range from 7.1 to 9.2 and the amount of soluble sulphate present ranges from 16mg/l to 260mg/l. Therefore, in accordance with BRE Special Digest 1: 2005, the site should be given a classification of Class DS-1. When considering the nature of the materials tested and assuming mobile groundwater, the assessment of the Aggressive Chemical Environment for Concrete (ACEC), is AC-1.

7.2 Determination of Liquid & Plastic Limits: -

Representative samples (4 no.) of the natural clay deposits recovered from the proposed development area were tested to determine their liquid and plastic limits, so that these materials could be classified. The results are summarised in Table 7.2 on the following page and are also contained in the PSL Analytical Report (Ref no.: PSL22/3945), a copy of which is contained in Appendix IV.

7.0 Laboratory Testing (Cont'd)

7.2 Determination of Liquid & Plastic Limits (Cont'd): -

Table 7.2

M/C = Moisture Content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Position	Depth(m)	M/C (%)	LL	PL	PI	Class	% Passing 425µm Sieve
BH4	0.63-0.80	14	33	15	18	CL	95
BH5	0.80-1.00	12	30	15	15	CL	92
BH7	2.40-2.60	15	34	15	19	CL	96
BH8	1.60-1.80	18	32	15	17	CL	97

From these results the samples tested are inorganic in nature, and when plotted on the plasticity chart, fall within the low plasticity range, and from the resulting plasticity indices, are of a low volume change potential, when taking into account the amount passing the 425µm sieve.

Therefore, it can be seen that the natural clays tested may undergo significant changes in volume, if large changes in their natural moisture content were to occur due to seasonal variations or the like and if new foundations were to be based within these materials, they would need to be taken down to a minimum depth of c.0.75m below finished ground levels.

However, an increase in founding depth may be required to reach competent strata and also if the proposed development is within close proximity to existing or envisaged vegetation. An increase in the minimum foundation depth may also be required, even if trees are to be removed. Reference should be made to BS5837: 2012, Trees in Relation to Design, Demolition and Construction'.

7.3 Contamination Screening/Screening Strategy: -

Representative samples of the made ground recovered from across the proposed development area were passed onto Chemtest Ltd of Newmarket, so that soil contamination screening could be carried out. The samples were screened using a standard generic contamination suite (based on the historical CLEA SGV listed analytes with additions) which is used to assess typical made ground (disturbed natural strata mixed with anthropogenic debris) of an unknown source.

Although no significant evidence of any fuel /oil type contamination, etc., was noted within the exploratory positions carried out, a thin band of ash was noted within BH8. Therefore, for completeness representative samples were tested for Speciated PAH (Polycyclic Aromatic Hydrocarbons) and Speciated TPH (Total Petroleum Hydrocarbons). In addition, although no visual evidence of asbestos containing materials (ACM's) were noted, representative samples were also screened for asbestos.

The catalogue of testing results can be found in the Chemtest Analytical Report (Ref no. 22-21361-1), attached in Appendix IV, and the total analysis carried out is summarised below.

- 5 no. samples screened using a Generic Soils Suite - (suite comprises; Arsenic, Cadmium, Chromium (Total), Copper, Lead, Mercury, Nickel, Selenium, Zinc & Cyanide)
- 5 no. samples screened for Speciated PAH's – based on the current USEPA 16 PAH's
- 5 no. samples screened for Speciated Total Petroleum Hydrocarbons (full Aliphatic & Aromatic split)
- 5 no. samples screened for BTEX (Benzene, Toluene, Ethylbenzene, m & p-Xylene & o-Xylene)
- 5 no. samples screened for the presence of asbestos (presence)

The results have been used to carry out a Level 1: Quantitative Human Health Risk Assessment for the ground contamination present and are discussed and in further detail in Section 8.0 on the following pages.

8.0 Ground Contamination Risk Assessment

8.1 Methodology: -

Following completion of the contamination screening undertaken on various samples from this site, a Level 1 generic quantitative ground contamination risk assessment has been undertaken, generally in accordance with Environment Agency (EA) Land Contamination Risk Management (LCRM), October 2020. This quantitative ground contamination risk assessment uses the current UK practice for assessing the risks from land contamination, which is based on the established *source-pathway-receptor* pollutant linkage methodology and 'suitable for use' approach (Part IIA, EPA 1990 - inserted through Section 57 EA 1995).

Based on the Revised Conceptual Site Model (CSM) for this site (described further in Section 8.2), a site specific screening strategy for the site has been developed (see Section 7.3) and risks from potential contaminants have been assessed for human health. The results of the risk assessment can be found in Section 8.3.

8.2 Revised Conceptual Site Model (CSM): -

Based on the results of the intrusive investigation works, a Conceptual Site Model (CSM) has been developed for this site. Table 8.1 below summarises the various contaminant *sources*, plausible migration *pathways* and potentially sensitive *receptors* identified for this site, assuming no remediation, additional protection measures and/or removal of the *sources* contamination takes place.

Table 8.1

* = Not included in the Human Health & Controlled Waters Risk assessment

Sources (S)		Pathways (P)		Receptors (R)	
S1	Made ground comprising disturbed natural strata with anthropogenic debris.	P1	Ingestion & Dermal Contact.	R1	Human health (End users and construction workers).
		P2	Air-inhalation of vapours and direct contact with dust		
S2	Possible on-site / off-site sources of hazardous ground gases (made ground, nearby historical infilled land and mine gas associated with possible shallow coal workings – No elevated levels recorded.	P3	Plant uptake and attached soils.	R2	Controlled Waters: Groundwater within the underlying solid geology (Identified as a Secondary A - Aquifer & Secondary B - Aquifer) and within the superficial geology (Secondary Undifferentiated).
		P4	Migration through existing services.		
		P5	Direct contact with building materials.	R3	Building materials & protection of water supply pipes*.
		P6	Surface runoff & Infiltration.	R4	Adjacent sites.
				R5	Flora and fauna*.

8.2.1 Sources: -

The site is covered by a layer of made ground (up to c.1.70m thick) which represents a potential source of ground contamination for this site. The majority of the made ground contains some anthropogenic debris mixed with disturbed natural strata, and these materials have been assessed using a standard generic soil suite, with the site considered as a single averaging area for these analytes.

There was no significant visual, olfactory or analytical evidence of significant heavy or gross contamination, such as waste oils, fuels, ash, etc. However, the potential for hydrocarbon-based contamination (PAH's & TPH's) for this site have also been assessed. In addition, although no visual evidence of asbestos (fibres or fragments) was noted, the potential for asbestos has also been assessed.

8.0 Ground Contamination Risk Assessment (Cont'd)

8.2 Revised Conceptual Site Model (CSM) (Cont'd): -

8.2.2 Pathways: -

When considering the proposed end use, and without considering treatment, removal or protection measures, there are some potential plausible pathways available for direct contact, dermal contact, ingestion, inhalation, wind (dust / particulate), volatilization, and vertical and lateral transportation below the site, where there is no hard cover or vapour barriers present.

Within the CLEA Risk Assessment Model for Human Health, there are 3 exposure mediums considered for on site receptors, comprising ingestion of soil containing contaminants, inhalation of contaminated dust/vapours and dermal contact, with up to 10 no. exposure pathways considered, as shown below.

- 1. *Ingestion of soil and indoor dust* 2. *Consumption of homegrown produce and attached soil* 3. *Dermal contact (indoor)* 4. *Dermal contact (outdoor)* 5. *Inhalation of dust (indoor)* 6. *Inhalation of dust (outdoor)* 7. *Inhalation of vapour (indoor)* 8. *Inhalation of vapour (outdoor)* 9. *Oral background intake* 10. *Inhalation background intake.*

Where the future site has hard cover and below new structures, a number of these pathways may not be available. In addition, when considering the potential pathways for leachate migration, where either hard cover and/or future surface water drainage systems are present, the potential effects of surface infiltration or contaminated surface water runoff will be greatly reduced. Similarly, when considering the construction work force, exposure pathways through direct contact, ingestion and dust inhalation will be available during part of the construction process, and therefore adequate PPE should be provided to protect the work force during this period

8.2.3 Receptors: -

Within the CLEA Risk Assessment Model for Human Health, the potential receptors are assessed initially on site end use, followed by a delineation of age category (i.e. child or adult), with default settings for *Residential*, *Allotment* and *Public Open Space (Park)* end uses based on a child aged 0 to 6 years, *Public Open Space (Residential)* based on a child aged 3 to 9 and *Commercial* end uses based upon a working exposure period of up to 49 years (i.e. 16 to 65).

Key generic assumptions for *Residential* and *Public Open Space (Residential)* are based upon a typical residential property, consisting of a two-storey small, terraced house, with private garden, and a *Commercial* end use based upon a typical commercial or light industrial property, consisting of a three-storey office building (pre-1970). No buildings are anticipated for *Allotment* or *Public Open Space (Park)* end uses. Within the CLEA Risk Assessment Model for Human Health there are 6 no. generic end use categories presently in use, as follows;

- 1) *Residential - with home grown produce,*
- 2) *Residential - without home grown produce,*
- 3) *Allotments,*
- 4) *Commercial*
- 5) *Public Open Space – Residential,*
- 6) *Public Open Space - Park*

Therefore, for this Level 1 Risk Assessment, the best fit end use category for this site has been taken as:

- 4) *Commercial*

When considering the environmental setting with no Source Protection Zones (SPZ's) within 1km of the site and closest groundwater abstraction being c.238m to the south-west for industrial use (non-evaporative cooling), no testing has been carried out with regards to Controlled Waters Risk Assessment.

8.0 Ground Contamination Risk Assessment (Cont'd)

8.3 Level 1 Risk Assessment (Human Health): -

8.3.1 Generic Screening: -

The generic soil screening results have been assessed by comparing the maximum values recorded for each analyte to the critical concentration values chosen for this site. The results of the analysis and risk assessment have been summarised in Table 8.2 below and have identified the following:

Table 8.2

Analyte	Critical Conc. (C _C) mg/kg	No. of Samples Screened	Max. Conc. (C _M) recorded mg/kg	Does C _M exceed C _C	No. of Samples > C _C
Arsenic	640 ⁽¹⁾	5	43	NO	0
Cadmium	190 ⁽¹⁾	5	20	NO	0
Chromium III	8600 ⁽¹⁾	5	20	NO	0
Chromium VI	33 ⁽¹⁾	5	<0.50*	NO	0
Copper	68000 ⁽¹⁾	5	110	NO	0
Lead	2330 ⁽²⁾	5	80	NO	0
Mercury	1100 ⁽¹⁾	5	0.08	NO	0
Nickel	980 ⁽¹⁾	5	62	NO	0
Selenium	12000 ⁽¹⁾	5	0.91	NO	0
Zinc	730000 ⁽¹⁾	5	430	NO	0
Cyanide	34 ⁽³⁾	5	<0.50*	NO	0

⁽¹⁾ = LQM CIEH Suitable 4 Use Levels (S4UL Nov 2014 (Revised August 2015)) – (Commercial), ⁽²⁾ = C4SL Values (Commercial), ⁽³⁾ = ATRISK^{SOIL} SSV. * = Site Value (C_M) less than analytical detection limit

- None of the maximum concentration (C_M) values for any of the analytes screened for exceed the critical concentration (C_C) values for this site.
- When considering these results, the made ground below the site does not represent a potential risk to the end users with regards to generic metals, and therefore no treatment, removal, protection measures and / or further detailed quantitative risk assessment will be required.

8.3.2 Hydrocarbon Screening: -

Although no visual, olfactory or analytical evidence of significant heavy or gross contamination, such as waste oils, fuels, ash, etc. was noted, a thin band of ash was recorded at the location of BH8. Therefore, representative samples of the made ground were recovered and screened for Speciated PAH's & Speciated TPHs. A summary of the results for the Level 1 Risk Assessment based on the results of the soil concentrations for the end users can be seen in Tables 8.3 and 8.4 below and on the following page and have identified the following:

Table 8.3 (Speciated PAH's)

Analyte	Critical Conc. (C _C) mg/kg	No. of samples tested	Max. Conc. (C _M) (mg/kg)	Has C _M exceeded C _C	No. of Samples > C _C
Acenaphthene	97000 ⁽¹⁾	5	<0.10*	NO	0
Acenaphthylene	97000 ⁽¹⁾	5	<0.10*	NO	0
Anthracene	540000 ⁽¹⁾	5	<0.10*	NO	0
Benzo(a)anthracene	170 ⁽¹⁾	5	0.75	NO	0
Benzo(a)pyrene	35 ⁽¹⁾	5	1.10	NO	0
Benzo(b)fluoranthene	44 ⁽¹⁾	5	1.40	NO	0
Benzo(ghi)perylene	4000 ⁽¹⁾	5	0.75	NO	0
Benzo(k)fluoranthene	1200 ⁽¹⁾	5	0.48	NO	0
Chrysene	350 ⁽¹⁾	5	0.65	NO	0

⁽¹⁾ = LQM/CIEH S4UL's – Commercial (2.5% SOM). * = Site Value (C_M) less than analytical detection limit.

8.0 Ground Contamination Risk Assessment (Cont'd)

8.3 Level 1 Risk Assessment (Human Health) (Cont'd): -

8.3.2 Hydrocarbon Screening (Cont'd): -

Table 8.3 (Speciated PAH's) (Cont'd)

Analyte	Critical Conc. (C _C) mg/kg	No. of samples tested	Max. Conc. (C _M) (mg/kg)	Has C _M exceeded C _C	No. of Samples > C _C
Dibenz(ah)anthracene	3.6 ⁽¹⁾	5	0.17	NO	0
Fluoranthene	23000 ⁽¹⁾	5	1.10	NO	0
Fluorene	68000 ⁽¹⁾	5	<0.10*	NO	0
Indeno(123cd)pyrene	510 ⁽¹⁾	5	0.80	NO	0
Naphthalene	460 ⁽¹⁾	5	<0.10*	NO	0
Phenanthrene	22000 ⁽¹⁾	5	0.49	NO	0
Pyrene	54000 ⁽¹⁾	5	1.10	NO	0

⁽¹⁾ = IQM/CIEH S4UL's – Commercial (2.5% SOM). * = Site Value (C_M) less than analytical detection limit.

Table 8.4 (Speciated TPH's & BTEX)

Analyte	Critical Conc. (C _C) mg/kg	No. of samples tested	Max. Conc. (C _M) (mg/kg)	Has C _M exceeded C _C	No. of Samples > C _C
Benzene	47 ⁽¹⁾	5	<1.0*	NO	0
Toluene	110000 ⁽¹⁾	5	<1.0*	NO	0
Ethylbenzene	13000 ⁽¹⁾	5	<1.0*	NO	0
m & p-Xylene	14000 ⁽¹⁾	5	<1.0*	NO	0
o-Xylene	15000 ⁽¹⁾	5	<1.0*	NO	0
VPH Aliphatic (>C5-C6)	5900 ⁽¹⁾	5	<1.0*	NO	0
VPH Aliphatic (>C6-C8)	17000 ⁽¹⁾	5	<1.0*	NO	0
VPH Aliphatic (>C8-C10)	4800 ⁽¹⁾	5	<1.0*	NO	0
EPH Aliphatic (>C10-C12)	23000 ⁽¹⁾	5	<1.0*	NO	0
EPH Aliphatic (>C12-C16)	82000 ⁽¹⁾	5	<1.0*	NO	0
EPH Aliphatic (>C16-C35)	1700000 ⁽¹⁾	5	<1.0*	NO	0
EPH Aliphatic (>C35-C44)	1700000 ⁽¹⁾	5	<1.0*	NO	0
VPH Aromatic (>EC5-EC7)	46000 ⁽¹⁾	5	<1.0*	NO	0
VPH Aromatic (>EC7-EC8)	110000 ⁽¹⁾	5	<1.0*	NO	0
VPH Aromatic (>EC8-EC10)	8100 ⁽¹⁾	5	<1.0*	NO	0
EPH Aromatic (>EC10-EC12)	28000 ⁽¹⁾	5	<1.0*	NO	0
EPH Aromatic (>EC12-EC16)	37000 ⁽¹⁾	5	<1.0*	NO	0
EPH Aromatic (>EC16-EC21)	28000 ⁽¹⁾	5	<1.0*	NO	0
EPH Aromatic (>EC21-EC35)	28000 ⁽¹⁾	5	<1.0*	NO	0
EPH Aromatic (>EC35-EC44)	28000 ⁽¹⁾	5	<1.0*	NO	0

⁽¹⁾ = IQM/CIEH S4UL's – Commercial (2.5% SOM). * = Site Value (C_M) less than analytical detection limit

- None of the C_M values for any of the analytes screened for exceed the C_C values for this site.
- When considering these results, the made ground below the site does not represent a potential risk to the end users with regards to hydrocarbons, and therefore no treatment, removal, protection measures and / or further detailed quantitative risk assessment will be required.

8.3.3 Asbestos fibres: -

Representative samples of the made ground recovered from below the proposed development area have been screened for Asbestos, to determine whether any unidentified asbestos was present within these materials. The results are summarised in Table 8.5 on the following page and have identified the following:

8.0 Ground Contamination Risk Assessment (Cont'd)

8.3 Level 1 Risk Assessment (Human Health) (Cont'd): -

8.3.3 Asbestos fibres (Cont'd): -

Table 8.5

NAD = No Asbestos Detected.

Position	Depth (m)	Chrysotile (white)	Amosite (brown)	Crocidolite (blue)	Anthophyllite	Actinolite	Tremolite
BH2	0.30-0.50	NAD	NAD	NAD	NAD	NAD	NAD
BH4	0.17-0.30	NAD	NAD	NAD	NAD	NAD	NAD
BH6	0.17-0.40	NAD	NAD	NAD	NAD	NAD	NAD
BH7	0.10-0.50	NAD	NAD	NAD	NAD	NAD	NAD
BH8	0.25-0.50	NAD	NAD	NAD	NAD	NAD	NAD

- No asbestos fibres have been detected and therefore the made ground below the proposed development area is not felt to represent a risk with regards to asbestos.

9.0 Conclusions & Recommendations

9.1 Ground Conditions: -

From the information gained during these intrusive ground investigation works, made ground was recorded to depths of between c.0.20m to c.1.70m below current ground level (bcgl) generally comprising initial site surfacing of either concrete, asphalt or grass overlying gravelly soil. Underlying the initial site surfacing, black, dark brown, orange brown and reddish-brown sand with occasional fragments of brick and soft dark brown very sandy clay was noted. A thin band of sandy ash was noted within BH8.

The underlying natural drift deposits recorded in BH4 – BH8 only generally comprised soft, firm and stiff (medium and high strength) reddish brown sandy gravelly clay, recorded to depths of between c.2.20m to at least c.6.00m bcgl. Occasional thin bands of gravelly sand were noted within BH6 only.

The underlying solid geological deposits comprised very weak becoming weak orange, brown light brown weathered sandstone and very weak becoming weak dark grey weathered mudstone, recorded to depths of between c.15.50m to c.16.80m, underlain by hard grey dolerite, recorded to a depth of at least c.27.00m bcgl.

From the rotary boreholes carried out, no evidence of shallow mine workings, broken ground/voiding was noted below the site with full flush maintained. Therefore, it is felt that no further exploratory works or structural precautions are necessary for new foundations in this regard.

9.2 Groundwater: -

A slight ingress of water was noted within BH8 only at a depth of c.4.00m. From the results of the groundwater monitoring, standing water levels were recorded at depths of between c.2.02m & c.3.03m within BH7 only during the monitoring visits undertaken.

As a result, significant shallow water ingress is unlikely to occur during any future construction related excavations. However, it would be prudent to allow for the introduction of suitable groundwater control measures, to take care of any localised ingresses of groundwater which may occur during the construction period, especially during the wetter periods of the year

9.0 Conclusions & Recommendations (Cont'd)

9.3 Foundation Options: -

No definitive proposed development plans have been provided however, when considering the ground conditions recorded and indicative proposed layout, at this stage it is felt that strip or pad foundations may be suitable for the proposed development with foundations taken down through the made ground and based within the firm & stiff clays and / or weathered sandstone/ mudstone deposits, designed to a maximum allowable bearing pressure of 120kN/m² is available. Upon provision of proposed development plans, the foundation options will need to be revised.

From the rotary boreholes carried out, the site is not considered to be at risk from shallow coal mining activities and not structural precautions / further assessment will be required.

When considering the results of the pH and soluble sulphate testing, it can be seen that future foundations and buried concrete should be constructed utilising a concrete design class of DS-1 and ACEC class of AC-1. Recourse to the relevant utility suppliers should be made for their advice / comments regarding any service material precautions necessary.

9.4 Gas Protection Measures: -

From the results of the gas monitoring undertaken, detectable levels of Carbon Dioxide (CO₂) have been recorded, up to a maximum level of 2.9% v/v, whilst slightly depleted oxygen (O₂) concentrations (minimum 13.4 v/v) have also been recorded. Flow rates of <0.1l/hr have been recorded during the monitoring visits completed.

When considering these results in accordance with CIRIA Report C665, the resulting GSV for this site would be 0.0029l/hr. Therefore, this result would suggest the site should be given a Characteristic Situation 1 classification, resulting in no gas protective measures being required for the proposed development.

9.5 Ground Contamination: -

From the results of the contamination screening carried out, the made ground recorded below the site does not represent a significant risk to the end users and can therefore remain on site within soft landscaped areas with no further assessment required.

When considering the risks to the construction workforce, standard PPE should prove adequate protection against the levels of potential contaminants recorded during these investigation works. Similarly, the results can also be used by the Main Contractor / Project Coordinator, when devising an adequate Site Health & Safety Plan, in accordance with current CDM Regulations. For further guidance reference should be made to the Health and Safety Executive (HSE) document EH40/2005 Workplace exposure limits

9.6 Classification of Waste: -

The made ground materials encountered on this site, and which may have to be discarded as a waste to landfill, have been assessed using Technical Guidance WM3 'Guidance on the classification and assessment of Waste', in conjunction with the on-line waste classification software tool HazWasteOnlineTM.

Each sample has been assessed separately in order to determine whether all the made ground can be considered as a single waste stream or whether different areas of the made ground represent separate waste streams. From the visual and olfactory assessment, made ground on this site is can be most likely considered as a single waste stream.

9.0 Conclusions & Recommendations (Cont'd)

9.6 Classification of Waste (Cont'd): -

Based on the physical (visual and olfactory) inspection of all samples, the made ground has been initially assessed as either 17 05 03 (waste soil and stones containing hazardous substances) or 17 05 04 (waste soil and stones other than those mentioned in 17 05 03) from the WM3 List of Waste (LoW). In order to determine which waste code applies to each sample, the results of the laboratory testing have been assessed using the HazWasteOnline™ software, and the full Waste Classification Report can be found in Appendix V.

The results of this assessment have identified that the samples of made ground analysed can be classified as Non-Hazardous (waste code 17 05 04).

It should be noted that this Waste Classification Report is only applicable to those made ground materials (excluding any relic foundations, sub-surface structures, etc.) which have been sampled and screened as part of the assessment. If materials, other than those covered by this report, are to be discarded from site as a waste to landfill or there is a significant increase in the volume of materials to be discarded, then these additional materials will also need to be assessed using Technical Guidance WM3: Guidance on the Classification and Assessment of Waste.

9.7 General Comments: -

When considering the potential for a sustainable urban drainage (SUDs) to be incorporated into the proposed development, the natural solid geological deposits around the locations of BH1 & BH2, may be suitable for this site. However, full soakaway testing in accordance with BRE365 may be required to confirm this.

With regard to asbestos in soil, where we have sampled and tested for asbestos this is discussed in the report. There is always the possibility, along with other contamination, that undiscovered asbestos exists between sample locations and the possibility of unknown asbestos exists on all sites, particularly brownfield sites where previous buildings have been demolished.

For future site works, adequate lateral trench support will be required for excavations, in order to prevent trench wall collapse or over excavations, as well as to create a safe working. Any excavations on this site should remain open for as short a period as possible, since some of these materials may be susceptible to deterioration, if left open to the natural elements for any significant period of time.

It is also recommended for any new developments, adequate surface drainage should be designed and installed by a competent contractor, in order to prevent surface water 'ponding' or collection, during and post construction, particularly where the existing surface drainage system is disrupted or damaged. In addition, for deeper excavations, drainage, service runs or the like that may pass close to or beneath any proposed new foundations, these should be undertaken with care and completed prior to the preparation of any new foundations, so as not to allow any loose or granular material to move or 'flow', thus causing settlement to occur to any new foundations based at a higher level.

The site is not located within an area that requires radon protective measures within proposed new developments.

An "observational technique" can be applied to the design and construction of this site, and where ground conditions seem to vary from that indicated from the conceptual ground model derived from works to date, then advice from a suitably qualified Engineering Geologist/Geotechnical Engineer should be sought.

END OF REPORT

APPENDIX I

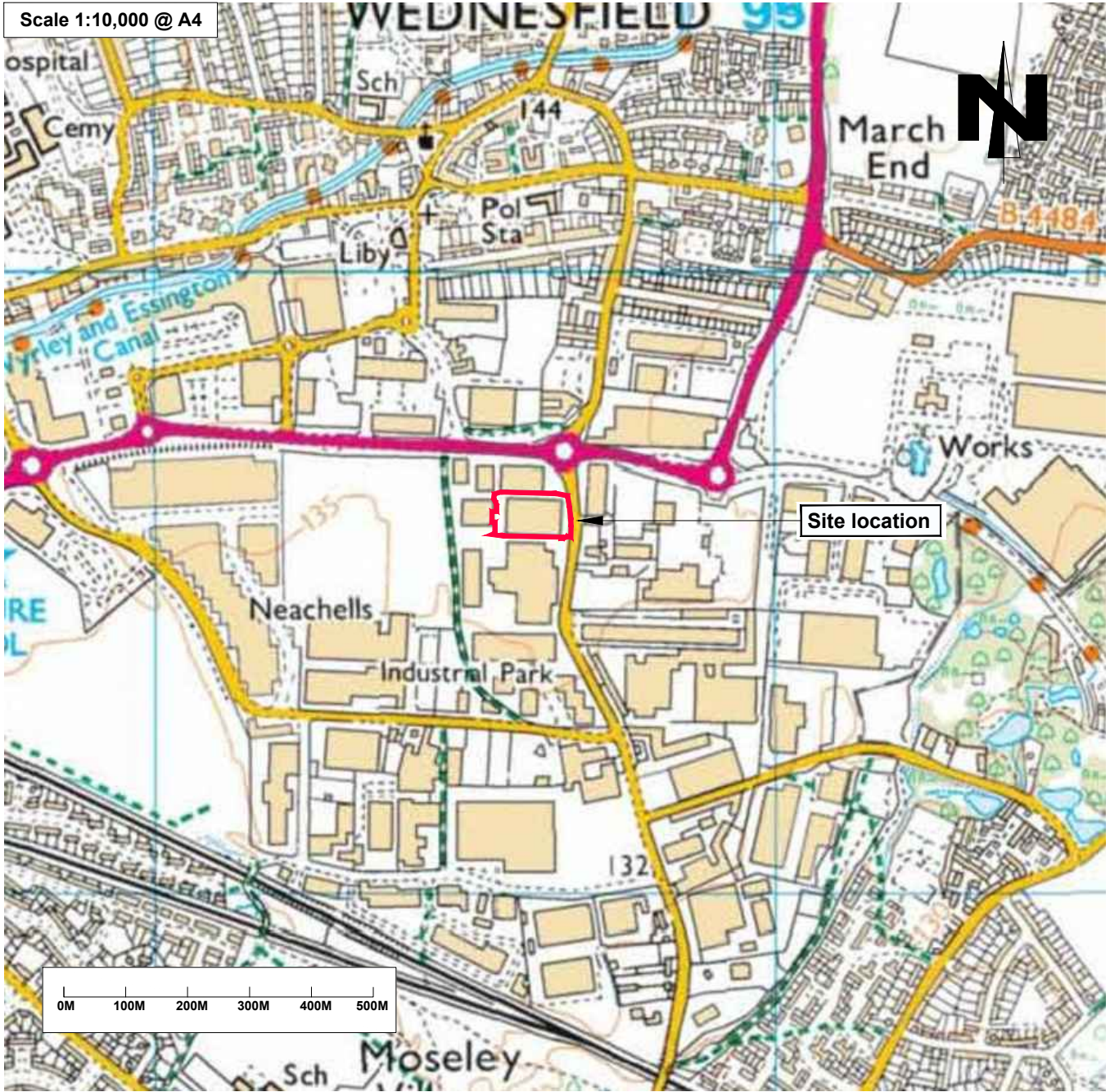
Location Plan

Aerial Photograph

Existing Layout Plan

Proposed Development Layout Plan

Scale 1:10,000 @ A4



Client:

ADEPT CSCE

Project Title:
Proposed Warehouse Development
Satellite Industrial Park, Neachells Lane
Wolverhampton, WV11 3QG

Drawing Title:
Location Plan

Job Reference:
22-003

Drawing Number:
-

Revision:
-

Drawn by:
P.D

Date:
05.07.22

Scale at A4:
As Shown

Checked by:
N.L

Approved by:
N.L

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rev.	date	amendments	drawn	chckd

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LEGEND

	APPROXIMATE SITE BOUNDARY
--	---------------------------

rev.	date	amendments	drawn	chkd

Client:
ADEPT CSCE

Project Title:
 Proposed Warehouse Development
 Satellite Industrial Park, Neachells Lane
 Wolverhampton, WV11 3QG

Drawing Title:
 Aerial Photograph


Scale at A3: NTS @ A3	Date: 05.07.22	Drawn by: P.D	Approved by: N.L
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Job Ref: 22-003	Drg no: -	Rev: -
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LEGEND	
	APPROXIMATE SITE BOUNDARY

rev.	date	amendments	drawn	chckd

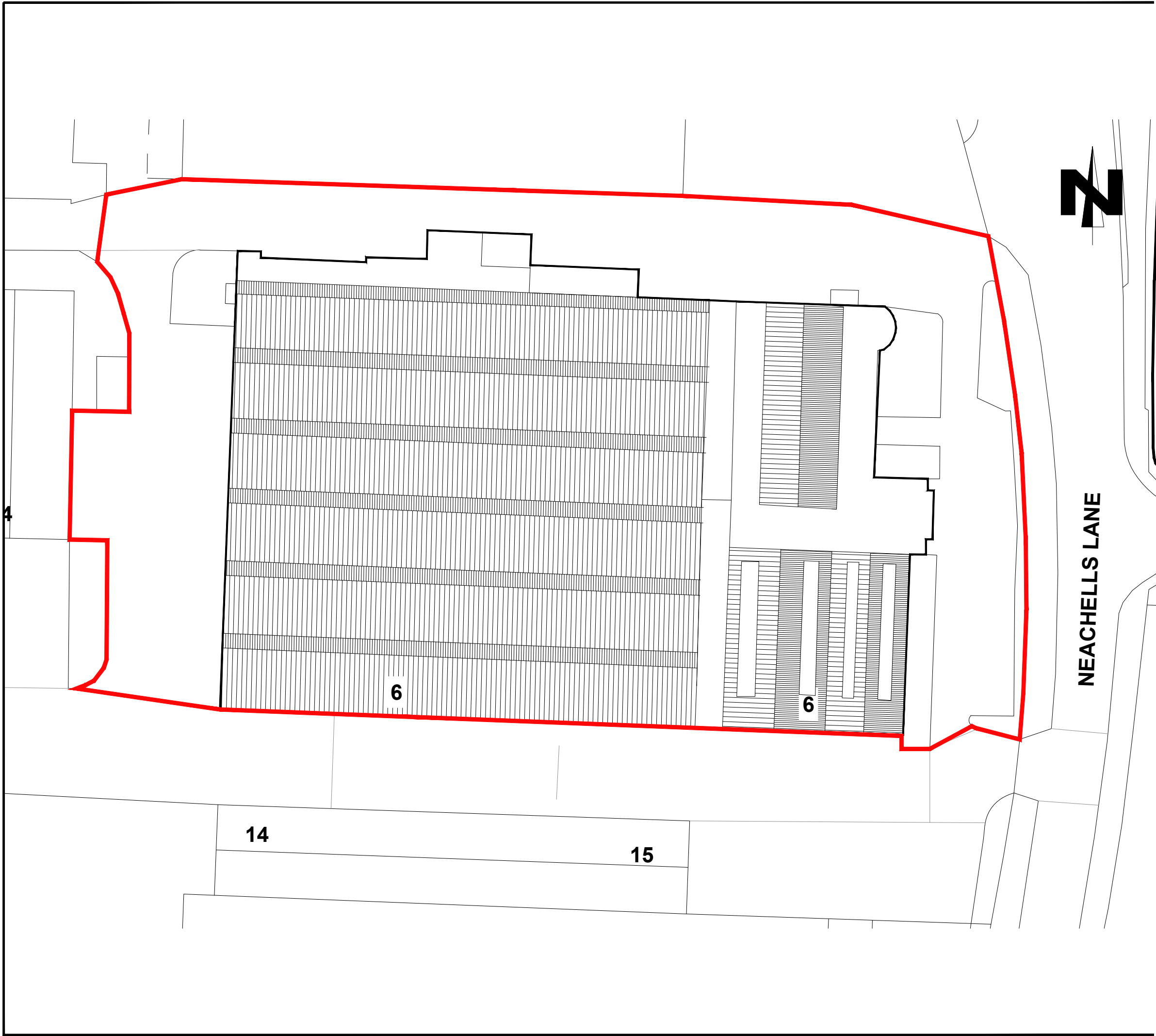
Client: **ADEPT CSCE**

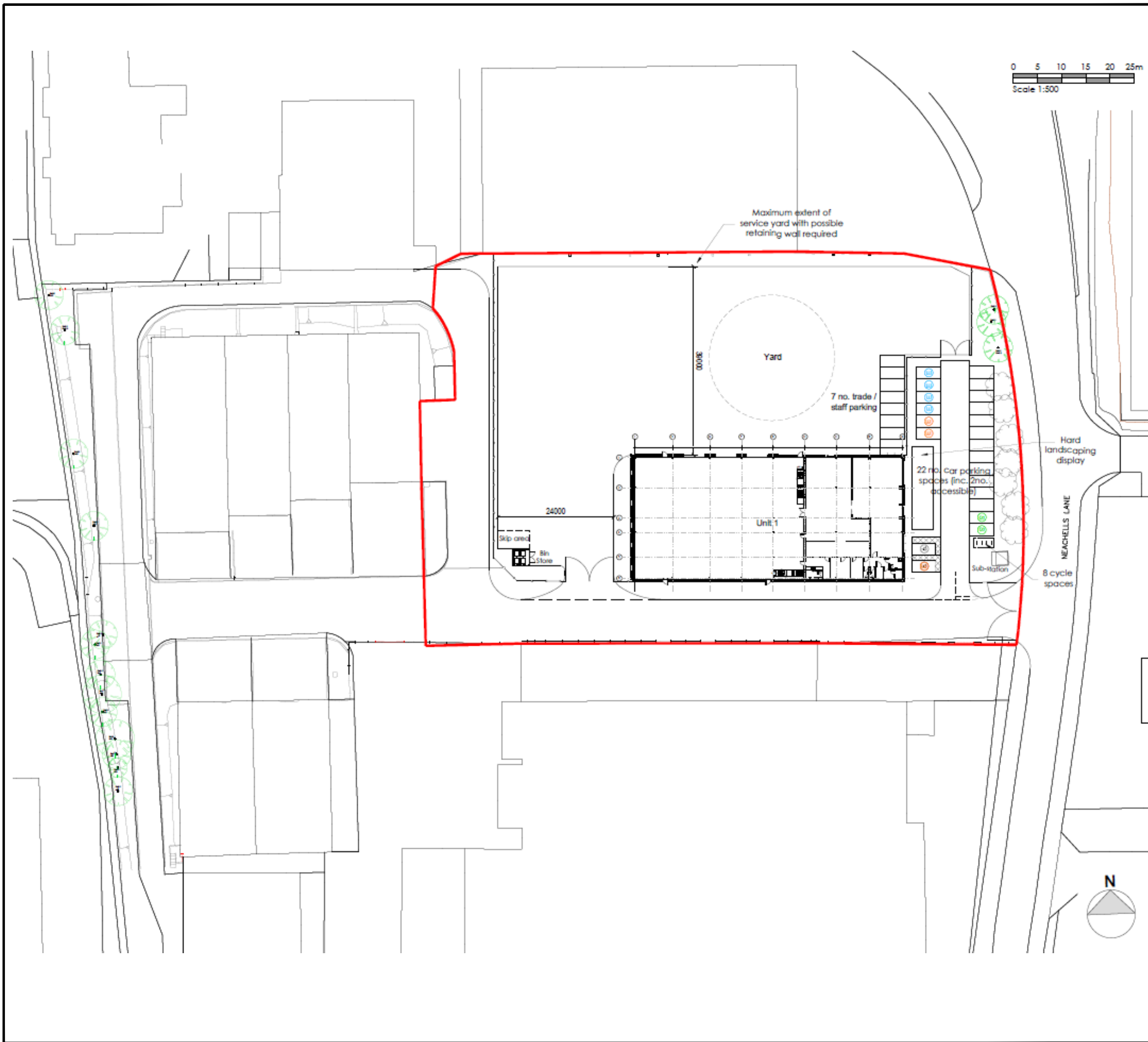
Project Title:
 Proposed Warehouse Development
 Satellite Industrial Park, Neachells Lane
 Wolverhampton, WV11 3QG

Drawing Title:
 Existing Site Layout Plan

Scale at A3: NTS @ A3	Date: 05.07.22	Drawn by: P.D	Approved by: N.L
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Job Ref: 22-003	Drg no: -	Rev: -
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	APPROXIMATE SITE BOUNDARY

rev.	date	amendments	drawn	chckd

Client: **ADEPT CSCE**

Project Title:
 Proposed Warehouse Development
 Satellite Industrial Park, Neachells Lane
 Wolverhampton, WV11 3QG

Drawing Title:
 Proposed Development Layout Plan

Scale at A3: NTS @ A3	Date: 05.07.22	Drawn by: P.D	Approved by: N.L
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Job Ref: 22-003	Drg no: -	Rev: -
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APPENDIX II

Borehole Location Plan

Borehole record Sheets



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LEGEND	
	Approximate Site Boundary
	Windowless Sampling / Rotary Borehole

rev.	date	amendments	drawn	chckd

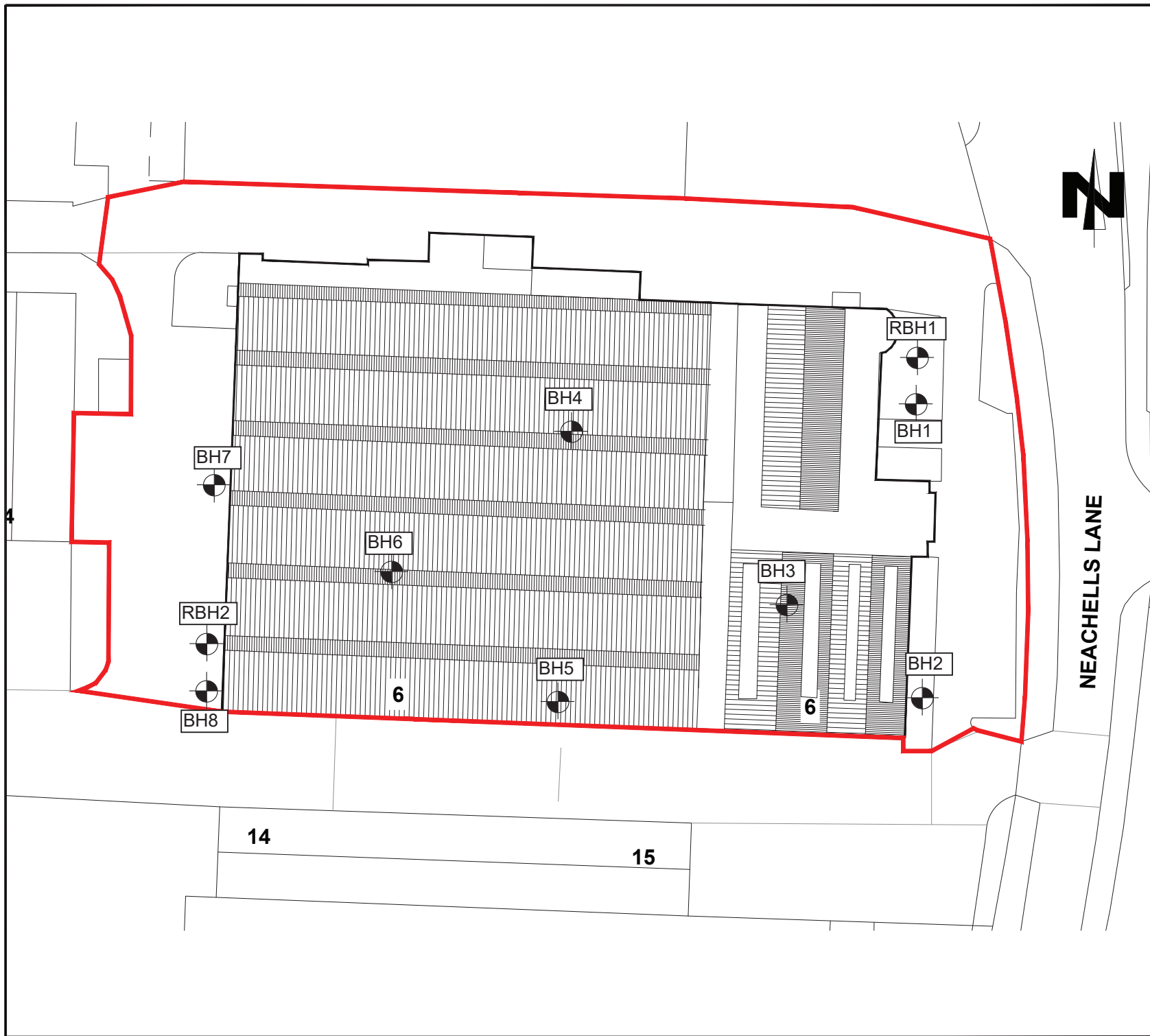
Client: **ADEPT CSCE**

Project Title:
Proposed Warehouse Development
Satellite Industrial Park, Neachells Lane
Wolverhampton, WV11 3QG

Drawing Title:
Borehole Location Plan

Scale at A3: NTS @ A3 | Date: 05.07.22 | Drawn by: P.D | Approved by: N.L

Job Ref: 22-003 | Drg no: - | Rev: -





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 Telephone: 01913786380

BOREHOLE LOG

Project Satellite Park, Wolverhampton				BOREHOLE No BH1	
Job No 22-003	Date 25-05-22	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Ltd				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.00-0.20	J			XXXXXX	0.20	Grass overlying dark brown sandy gravelly SOIL (MADE GROUND)			
0.40-0.60	B			.....	(0.80)	Medium brown clayey SANDSTONE (RESIDUAL SOIL)		
1.00-1.45	SPT	N=18		.....	1.00	Very weak becoming weak orange brown weathered SANDSTONE (LOWER COAL MEASURES)		
1.40-1.70	B			.....	(0.74)			
1.70-1.74	SPT	75 Blows			1.74	Borehole terminated due to refusal of sampling equipment			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											WATER: Borehole dry.

All dimensions in metres Scale 1:43.75	Client ADEPT Consulting Engineers	Method/ Plant Used Windowless Sampling	Logged By DO
-------------------------------------------	------------------------------------------	--------------------------------------------------	------------------------

AGS3 UK BH 22-003 BH LOGS.GPJ AGS3-ALL.GDT 20/7/22



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 Durham, DH7 8PN
 Telephone: 01913786380

BOREHOLE LOG

Project Satellite Park, Wolverhampton				BOREHOLE No BH2	
Job No 22-003	Date 25-05-22	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Ltd				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.00-0.30	J	75 Blows		[Cross-hatch]	0.30	Grass overlying dark brown sandy gravelly SOIL (MADE GROUND)		[Black bar]	
0.30-0.50	J			[Cross-hatch]	0.50	Black sand with fragments of brick (MADE GROUND)		[Black bar]	
0.50-0.80	B				[Dotted]	(0.33) 0.83	Weak orange brown weathered SANDSTONE (LOWER COAL MEASURES)		[Patterned bar]
0.80-0.83	SPT						Borehole terminated due to refusal of sampling equipment		

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											WATER: Borehole dry.

All dimensions in metres Scale 1:43.75	Client ADEPT Consulting Engineers	Method/ Plant Used Windowless Sampling	Logged By DO
-------------------------------------------	------------------------------------------	--------------------------------------------------	------------------------

AGS3 UK BH 22-003 BH LOGS.GPJ AGS3-ALL.GDT 20/7/22



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BOREHOLE LOG

Project Satellite Park, Wolverhampton				BOREHOLE No BH3	
Job No 22-003	Date 25-05-22	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Ltd				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.15-0.40	J	75 Blows		XXXXXX	0.15	Concrete, no membrane or reinforcement visible (MADE GROUND)			
0.40-1.00	B			.....	0.40	Medium brown sandy gravel (MADE GROUND)		
1.00-1.27	SPT				(0.87)	Weak orange brown weathered SANDSTONE (LOWER COAL MEASURES)			
					1.27	Borehole terminated due to refusal of sampling equipment			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											WATER: Borehole dry.

All dimensions in metres Scale 1:43.75	Client ADEPT Consulting Engineers	Method/ Plant Used Windowless Sampling	Logged By DO
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AGS3 UK BH 22-003 BH LOGS.GPJ AGS3-ALL.GDT 20/7/22



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 St Johns Road, Meadowfield
 Durham, DH7 8PN
 Telephone: 01913786380

BOREHOLE LOG

Project Satellite Park, Wolverhampton				BOREHOLE No BH4	
Job No 22-003	Date 25-05-22	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Ltd				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.17-0.30	J			[Cross-hatch pattern]	0.17	Concrete, no membrane or reinforcement visible (MADE GROUND)			
0.30-0.50	J			[Cross-hatch pattern]	0.30	Black sand with fragments of brick and sandstone (MADE GROUND)			
0.60-0.80	B			[Stippled pattern]	0.50	Orange brown mottled dark brown sand (MADE GROUND)			
1.00	V	104kN/m ²		[Stippled pattern]	(3.00)	Stiff (high strength) medium reddish brown sandy gravelly CLAY with occasional sand lenses. Gravel is fine to coarse mudstone and sandstone (GLACIAL TILL)			
1.40-1.60	B			[Stippled pattern]					
1.50	V	96kN/m ²		[Stippled pattern]					
2.00	V	84kN/m ²		[Stippled pattern]					
2.60-2.80	B			[Stippled pattern]		Becoming firm (medium strength) below c.3.00m.			
3.00	V	60kN/m ²		[Stippled pattern]					
3.30-3.50	B			[Horizontal lines pattern]	3.50	Very weak dark grey highly weathered MUDSTONE (LOWER COAL MEASURES)			
3.80-4.00	B			[Horizontal lines pattern]	(0.80)				
4.00-4.45	SPT	N=30		[Horizontal lines pattern]	4.30	Weak orange brown weathered SANDSTONE (LOWER COAL MEASURES)			
4.30-4.60	B			[Dotted pattern]	(0.35)				
4.60-4.65	SPT	75 Blows		[Dotted pattern]	4.65	Borehole terminated due to refusal of sampling equipment			

AGS3 UK BH 22-003 BH LOGS.GPJ AGS3 ALL.GDT 20/7/22

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											WATER: Borehole dry.

All dimensions in metres Scale 1:43.75	Client ADEPT Consulting Engineers	Method/ Plant Used Windowless Sampling	Logged By DO
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BOREHOLE LOG

Project Satellite Park, Wolverhampton				BOREHOLE No BH5	
Job No 22-003	Date 26-05-22	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Ltd				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.15-0.30	J			[Cross-hatch pattern]	0.15	Concrete, no membrane or reinforcement visible (MADE GROUND)			
0.30-0.50	J			[Cross-hatch pattern]	0.30	Black sand with fragments of brick and sandstone (MADE GROUND)			
				[Cross-hatch pattern]	0.50	Reddish brown mottled dark brown sand (MADE GROUND)			
0.80-1.00	B			[Stippled pattern]	(1.70)	Stiff (high strength) medium reddish brown sandy gravelly CLAY with occasional sand lenses. Gravel is fine to coarse mudstone and sandstone (GLACIAL TILL)		[Stippled pattern]	
1.00	V	98kN/m ²		[Stippled pattern]					
1.50	V	40kN/m ²		[Stippled pattern]		Becoming firm (medium strength) below c.1.50m.			
1.60-1.80	B			[Stippled pattern]					
2.00	V	34kN/m ²		[Stippled pattern]	2.20				
2.60-3.00	B			[Dotted pattern]	(1.07)	Weak light brown weathered SANDSTONE (LOWER COAL MEASURES)		[Dotted pattern]	
3.00-3.27	SPT	70 Blows		[Dotted pattern]	3.27				
							Borehole terminated due to refusal of sampling equipment		

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											WATER: Borehole dry.

All dimensions in metres Scale 1:43.75	Client ADEPT Consulting Engineers	Method/ Plant Used Windowless Sampling	Logged By DO
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AGS3 UK BH 22-003 BH LOGS.GPJ AGS3 ALL.GDT 20/7/22



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BOREHOLE LOG

Project Satellite Park, Wolverhampton				BOREHOLE No BH6	
Job No 22-003	Date 26-05-22	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Ltd				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.17-0.40	J		↓	XXXXXX	0.17	Concrete, no membrane or reinforcement visible (MADE GROUND)	|	|	
				XXXXXX	0.40	Black sand with fragments of brick and sandstone (MADE GROUND)			
				XXXXXX	0.70	Loose light brown gravelly SAND (GLACIAL TILL)			
0.70-1.00	B		↓	|	(3.00)	Stiff (high strength) medium reddish brown sandy gravelly CLAY with occasional sand lenses. Gravel is fine to coarse mudstone and sandstone (GLACIAL TILL)	|	|	
1.00	V	100kN/m ²							
1.40-1.60	B								
1.50	V	98kN/m ²							
2.00	V	98kN/m ²							
2.60-2.80	B								
3.00	V	110kN/m ²							
3.50-3.70	B								
3.70-4.00	B								
4.00-4.45	SPT	N=8							
4.50-4.80	B			(1.05)	Very weak becoming moderately strong dark grey weathered MUDSTONE (LOWER COAL MEASAURES)				
4.80-5.05	SPT	75 Blows	|	5.05	Borehole terminated due to refusal of sampling equipment				

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											WATER: Borehole dry.

All dimensions in metres Scale 1:43.75	Client ADEPT Consulting Engineers	Method/ Plant Used Windowless Sampling	Logged By DO
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AGS3 UK BH 22-003 BH LOGS.GPJ AGS3 ALL.GDT 20/7/22



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BOREHOLE LOG

Project Satellite Park, Wolverhampton				BOREHOLE No BH7	
Job No 22-003	Date 26-05-22	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Ltd				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill	
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION			
0.10-0.50	J	N=5			0.10	Concrete, no membrane or reinforcement visible (MADE GROUND)				
0.50-0.90	J				(0.40)	Black sand with fragments of brick, concrete and sandstone (MADE GROUND)				
0.90-1.30	B				1.20	Very soft dark brown / black occasionally reddish brown very sandy gravelly clay (MADE GROUND)				
1.00-1.45	SPT	N=6			1.70	Soft reddish brown very sandy CLAY (GLACIAL TILL)				
1.30-1.50	J				(0.50)	Firm locally stiff (medium and high strength) reddish brown sandy gravelly CLAY. Gravel is fine to coarse mudstone and sandstone (GLACIAL TILL)				
1.70-2.00	B				2.20					
2.00-2.45	SPT	54kN/m ²			3.00					
2.40-2.60	B								98kN/m ²	(3.80)
3.00	V									
3.60-3.80	B	68kN/m ²	6.00							
4.00	V									
4.40-4.60	B									
4.70-5.00	B	48kN/m ²								
5.00	V									
5.60-5.80	B									
6.00	V									

AGS3 UK BH 22-003 BH LOGS.GPJ AGS3 ALL.GDT 20/7/22

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											WATER: Borehole dry.

All dimensions in metres Scale 1:43.75	Client ADEPT Consulting Engineers	Method/ Plant Used Windowless Sampling	Logged By DO
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BOREHOLE LOG

Project Satellite Park, Wolverhampton				BOREHOLE No BH8	
Job No 22-003	Date 26-05-22	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Ltd				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill	
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION			
0.25-0.50	J				0.15	Asphalt (MADE GROUND)				
					0.25	Concrete, no membrane or reinforcement visible (MADE GROUND)				
					0.50	Black sandy ash (MADE GROUND)				
0.80-1.00	J	N=6			(0.80)	Soft dark brown very sandy clay (MADE GROUND).				
1.00-1.30	B				1.30	Stiff (high strength) reddish brown sandy gravelly CLAY (GLACIAL TILL)				
1.00-1.45	SPT									
1.60-1.80	B	100kN/m ²			(2.70)					
2.00-2.60	B						4.00		Firm (medium strength) reddish brown very sandy silty CLAY (GLACIAL TILL)	
2.00	V									
3.00	V	78kN/m ²			(1.00)					
3.60-3.80	B			5.00						
4.00	V	68kN/m ²								
4.40-4.60	B	46kN/m ²								
5.00	V									

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											WATER: Ingress of water c.4.00m.

All dimensions in metres Scale 1:43.75	Client ADEPT Consulting Engineers	Method/ Plant Used Windowless Sampling	Logged By DO
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AGS3 LUK BH 22-003 BH LOGS.GPJ AGS3 ALL.GDT 20/7/22



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DRILLHOLE LOG

Project Satellite Park, Wolverhampton				DRILLHOLE No RBH1	
Job No 22-003	Date 28-07-22	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Ltd				Sheet 1	

RUN DETAILS			STRATA					Geology	Instrument/ Backfill
Depth	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thickness)	DESCRIPTION			
						Discontinuities	Detail	Main	
				[Symbol]	0.10				
				[Symbol]	(1.40)				
				[Symbol]	1.50				
				[Symbol]	(14.00)				

Drilling Progress and Water Observations							Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing	Core Dia mm	Strike	Water Standing	From	To	Type	Returns	
							0	27.00	Water	100%	All descriptions based on drillers interpretations of cuttings brought to surface and drilling rates maintained.

All dimensions in metres Scale 1:93.75	Client ADEPT Consulting Engineers	Method/ Plant Used Open Hole rotary	Logged By DMc
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DRILLHOLE LOG

Project Satellite Park, Wolverhampton				DRILLHOLE No RBH1	
Job No 22-003	Date 28-07-22	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Ltd				Sheet 2	

RUN DETAILS			STRATA					Geology	Instrument/ Backfill
Depth	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thickness)	DESCRIPTION			
						Discontinuities	Detail	Main	
					15.50				
					(11.50)				
					27.00				

Drilling Progress and Water Observations							Rotary Flush				GENERAL REMARKS All descriptions based on drillers interpretations of cuttings brought to surface and drilling rates maintained.
Date	Time	Depth	Casing	Core Dia mm	Strike	Water Standing	From	To	Type	Returns	

All dimensions in metres Scale 1:93.75	Client ADEPT Consulting Engineers	Method/ Plant Used Open Hole rotary	Logged By DMc
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AGS3 UK DH 22-003 BH LOGS.GPJ AGS3_ALL.GDT 20/7/22



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DRILLHOLE LOG

Project Satellite Park, Wolverhampton				DRILLHOLE No RBH2	
Job No 22-003	Date 29-07-22	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Ltd				Sheet 1	

RUN DETAILS			STRATA					Geology	Instrument/ Backfill
Depth	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION			
						Discontinuities	Detail	Main	
				(0.20)				Concrete (MADE GROUND)	
				(0.40)				Brick rubble. Drillers description (MAD GROUND)	
				(5.60)				Brown sandy gravelly CLAY. Drillers description (GLACIAL TILL)	
				(6.00)					
				(3.00)				light brown sandstone gravel. Possible completely weathered SANDSTONE. Drillers description (LOWE COAL MEASURES)	
				(9.00)					
				(7.80)				Dark grey interbedded SHALE & MUDSTONE. Drillers description (LOWE COAL MEASURES)	

Drilling Progress and Water Observations							Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing	Core Dia mm	Strike	Water Standing	From	To	Type	Returns	
							0	27.00	Water	100%	All descriptions based on drillers interpretations of cuttings brought to surface and drilling rates maintained.

All dimensions in metres Scale 1:93.75	Client ADEPT Consulting Engineers	Method/ Plant Used Open Hole rotary	Logged By DMc
-------------------------------------------	------------------------------------------	-----------------------------------------------	----------------------

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DRILLHOLE LOG

Project Satellite Park, Wolverhampton				DRILLHOLE No RBH2	
Job No 22-003	Date 29-07-22	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Ltd				Sheet 2	

RUN DETAILS			STRATA						Geology	Instrument/ Backfill	
Depth	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thickness)	DESCRIPTION					
						Discontinuities	Detail	Main			
					16.80				Dark grey interbedded SHALE & MUDSTONE. Drillers description (LOWE COAL MEASURES) (continued)		
					(10.20)				Hard grey dolerite. Drillers description(UNNAMED IGNEOUS INTRUSION)		
					27.00						

Drilling Progress and Water Observations							Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing	Core Dia mm	Strike	Water Standing	From	To	Type	Returns	
											All descriptions based on drillers interpretations of cuttings brought to surface and drilling rates maintained.

All dimensions in metres Scale 1:93.75	Client ADEPT Consulting Engineers	Method/ Plant Used Open Hole rotary	Logged By DMc
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AGS3 UK DH 22-003 BH LOGS.GPJ AGS3_ALL.GDT 20/7/22

APPENDIX III

Gas Monitoring Certificate

Arc Environmental Ground Gas & Groundwater Monitoring Certificate



Site: Satellite Park, Wolverhampton
Ref: 22-003

Visit	Date	Time	Equipment	Weather	Initials	Comments	Borehole	Gas Flow (l/hr)	Atmospheric Pressure (mb)	Trend	Methane (% v/v)		Methane (% LEL)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Hydrocarbons (GFM 435 only)		Other Gases (PPM)			Depth to Water (m bgl)
											Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Hex %	PID Cf	PID (Isobutylene)	H ₂ S	CO	
1	09/06/2022	13:43	GFM430	OVERCAST	TMCL		1	<0.1	998	Rising (1005-1016)		0.0		0.0		2.3		17.8				0.0	0.0	DRY
							2	<0.1	998	Rising (1005-1016)		0.0		0.0		0.9		19.4				0.0	0.0	DRY
							7	<0.1	998	Rising (1005-1016)		0.0		0.0		0.7		18.5				0.0	0.0	DRY
2	23/06/2022	15:23	GFM430	SUNNY	TMCL		1	<0.1	992	Falling (1010-1002)		0.0		0.0		2.2		18.5				0.0	0.0	DRY
							2	<0.1	991	Falling (1010-1002)		0.0		0.0		2.4		17.9				0.0	0.0	DRY
							7	<0.1	991	Falling (1010-1002)		0.0		0.0		0.8		19.4				0.0	0.0	2.98
3	07/07/2022	17:30	GFM430	SUNNY	TMCL		1	<0.1	1015	Steady (1030-1032)		0.0		0.0		2.0		18.1				0.0	0.0	DRY
							2	<0.1	1015	Steady (1030-1032)		0.0		0.0		0.9		19.2				0.0	0.0	DRY
							7	<0.1	1015	Steady (1030-1032)		0.0		0.0		0.6		20.1				0.0	0.0	2.96
4	27/07/2022	13:45	GFM430	SUNNY	TMCL		1	<0.1	1003	Falling (1022-1010)		0.0		0.0		2.2		18.4				0.0	0.0	DRY
							2	<0.1	1003	Falling (1022-1010)		0.0		0.0		1.1		19.1				0.0	0.0	DRY
							7	<0.1	1003	Falling (1022-1010)		0.0		0.0		2.9		13.4				0.0	0.0	2.02
5	04/08/2022	11:56	GFM430	SUNNY	TMCL		1	<0.1	1010	Rising (1016-1028)		0.0		0.0		2.1		18.2				0	0	DRY
							2	<0.1	1010	Rising (1016-1028)		0.0		0.0		1.3		18.9				0	0	DRY
							7	<0.1	1010	Rising (1016-1028)		0.0		0.0		0.4		19.4				0	0	2.58
6	11/08/2022	10:58	GFM430	SUNNY	TMCL		1	<0.1	1006	Falling (1020-1003)		0.0		0.0		2.2		18.3				0	0	DRY
							2	<0.1	1006	Falling (1020-1003)		0.0		0.0		0.8		19.8				0	0	DRY
							7	<0.1	1006	Falling (1020-1003)		0.0		0.0		1.0		18.1				0	0	3.03

Notes:
 Detection limits - Methane = 0.0%, Carbon Dioxide = 0.0%, LEL = 0.0%, Oxygen = 0.0%, Flow = 0.1l/hr
 Monitoring order is from **Left to Right** across table
 Monitoring should be for **Not Less** than 3 minutes. However, if high concentrations of gasses initially recorded, monitoring should be for up to 10 minutes
 N/A = Not applicable = Off the scale

Cf = PID compensation Factor (1-10) - Must be used to multiply the PID reading to give an accurate measure of the total hydrocarbons in the borehole when methane is present
 Hex = Hexane (Valid and in range up to 2.000%) - Recorded when abnormally high methane is present.
 PID = Photo Ionisation Detector (Calibrated to Isobutylene)

APPENDIX IV

Laboratory Testing Results (Geotechnical & Ground Contamination)



LABORATORY REPORT



4043

Contract Number: PSL22/3945

Report Date: 01 July 2022
Client's Reference: 22-003
Client Name: Arc Environmental
Solum House
Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham
DH7 8PN

For the attention of: Darren McGrath

Contract Title: Satelite Park, Wolverhampton
Date Received: 8/6/2022
Date Commenced: 8/6/2022
Date Completed: 01/07/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

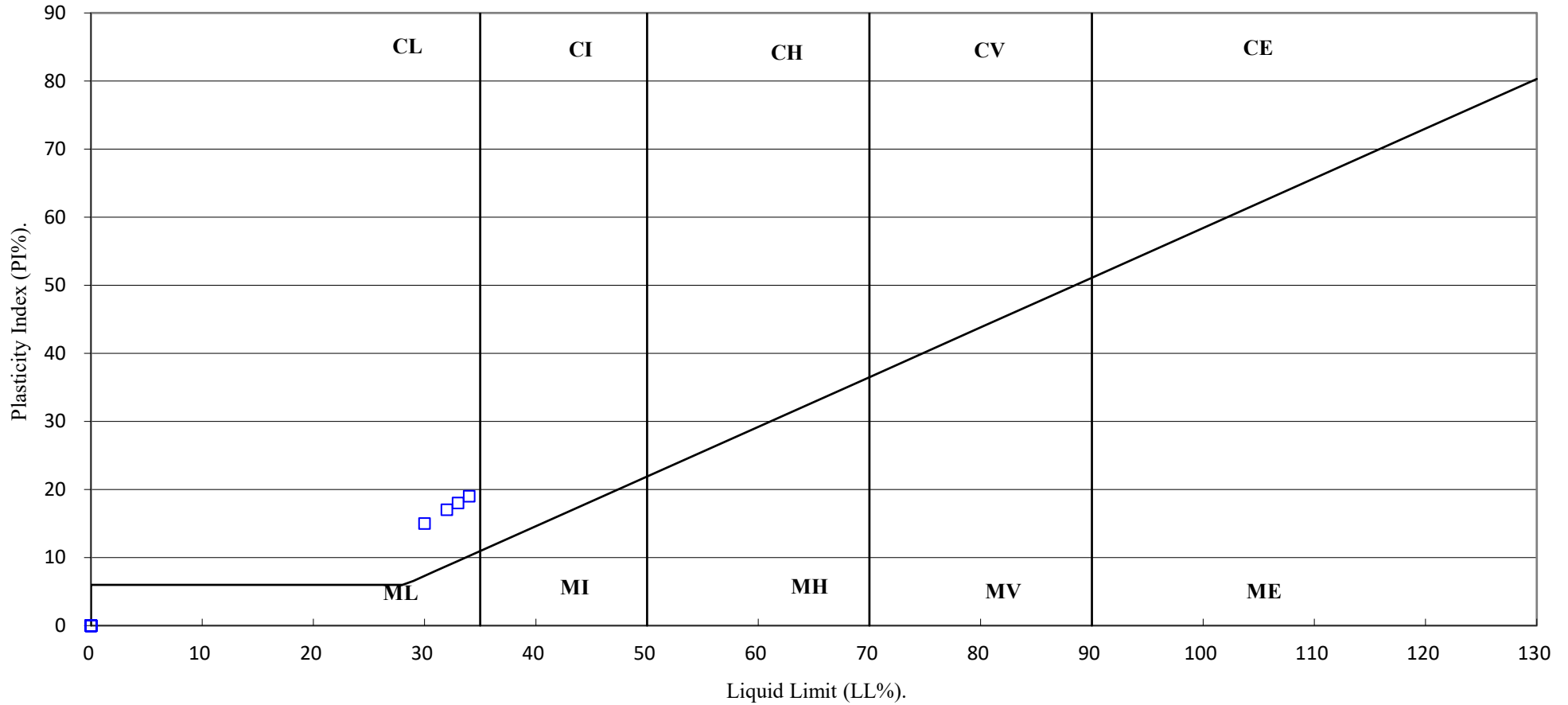
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Page 1 of

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



4043

PSL
Professional Soils Laboratory

Satellite Park, Wolverhampton

Contract No:

PSL22/3945

Client Ref:

22-003



Final Report

Report No.: 22-21361-1
Initial Date of Issue: 15-Jun-2022
Client: Arc Environmental Ltd
Client Address: Solum House
Unit 1 Elliott Court
St Johns Road
Meadowfield
Durham
DH7 8PN
Contact(s): Darren McGrath
Project: 22-003 Satellie Park, Wolverhampton
Quotation No.: Q22-26892 **Date Received:** 09-Jun-2022
Order No.: 22-003 **Date Instructed:** 09-Jun-2022
No. of Samples: 9
Turnaround (Wkdays): 5 **Results Due:** 15-Jun-2022
Date Approved: 15-Jun-2022

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: 22-003 Satellie Park, Wolverhampton

Client: Arc Environmental Ltd		Chemtest Job No.:										
Quotation No.: Q22-26892		Chemtest Sample ID.:										
Order No.: 22-003		Client Sample Ref.:										
		Sample Type:										
		Top Depth (m):										
		Bottom Depth (m):										
		Date Sampled:										
		Asbestos Lab:										
Determinand	Accred.	SOP	Units	LOD	22-21361	22-21361	22-21361	22-21361	22-21361	22-21361	22-21361	22-21361
Moisture	N	2030	%	0.020	16	11	34	15	11	22	13	16
Arsenic	U	2455	mg/kg	0.5		8.0	8.7	6.3		6.9		43
Cadmium	U	2455	mg/kg	0.10		1.0	0.99	0.18		0.43		1.4
Chromium	U	2455	mg/kg	0.5		16	5.4	7.6		6.4		20
Chromium (Trivalent)	N	2490	mg/kg	1.0		16	5.4	7.6		6.4		20
Chromium (Hexavalent)	N	2490	mg/kg	0.50		< 0.50	< 0.50	< 0.50		< 0.50		< 0.50
Copper	U	2455	mg/kg	0.50		76	33	24		37		110
Mercury	U	2455	mg/kg	0.05		0.08	< 0.05	0.09		< 0.05		0.05
Nickel	U	2455	mg/kg	0.50		18	27	7.5		27		62
Lead	U	2455	mg/kg	0.50		80	29	31		18		70
Selenium	U	2455	mg/kg	0.25		0.58	0.79	0.51		0.84		0.91
Zinc	U	2455	mg/kg	0.50		310	220	54		190		430
pH	U	2010		4.0	9.2	8.8	8.3	7.1	8.1	8.5	8.5	9.0
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.016	0.049	0.097	0.26	0.048	0.067	0.018	0.049
Cyanide (Free)	U	2300	mg/kg	0.50		< 0.50	< 0.50	< 0.50		< 0.50		< 0.50
Total Organic Carbon	U	2625	%	0.20		2.5	20	2.5		12		5.5
Acenaphthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10		< 0.10
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10		< 0.10
Anthracene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10		< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10		0.75	< 0.10	< 0.10		< 0.10		0.31
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10		0.75	< 0.10	< 0.10		< 0.10		0.24
Benzo[a]pyrene	U	2800	mg/kg	0.10		1.1	< 0.10	< 0.10		< 0.10		0.44
Benzo[b]fluoranthene	U	2800	mg/kg	0.10		1.4	< 0.10	< 0.10		< 0.10		0.61
Benzo[k]fluoranthene	U	2800	mg/kg	0.10		0.48	< 0.10	< 0.10		< 0.10		0.21
Chrysene	U	2800	mg/kg	0.10		0.65	< 0.10	< 0.10		< 0.10		0.42
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		0.17	< 0.10	< 0.10		< 0.10		0.11
Fluoranthene	U	2800	mg/kg	0.10		1.1	0.23	0.21		0.14		0.61
Fluorene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10		< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10		0.80	< 0.10	< 0.10		< 0.10		0.35
Naphthalene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10		< 0.10
Phenanthrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10		0.49
Pyrene	U	2800	mg/kg	0.10		1.1	0.15	0.19		0.14		0.70
Total Of 16 PAH's	N	2800	mg/kg	2.0		8.3	< 2.0	< 2.0		< 2.0		4.5
Benzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0		< 1.0
Toluene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0		< 1.0
Ethylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0		< 1.0
m & p-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0		< 1.0
o-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0		< 1.0

Results - Soil

Project: 22-003 Satellie Park, Wolverhampton

Client: Arc Environmental Ltd		Chemtest Job No.:									
Quotation No.: Q22-26892		Chemtest Sample ID.:									
Order No.: 22-003		Client Sample Ref.:									
		Sample Type:									
		Top Depth (m):									
		Bottom Depth (m):									
		Date Sampled:									
		Asbestos Lab:									
Determinand	Accred.	SOP	Units	LOD	22-21361	22-21361	22-21361	22-21361	22-21361	22-21361	22-21361
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0	< 5.0	< 5.0		< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0	< 5.0	< 5.0		< 5.0	< 5.0
ACM Type	U	2192		N/A		-	-	-		-	-
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		< 10	< 10	< 10		< 10	< 10
Asbestos Identification	U	2192		N/A		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected

Results - Soil

Project: 22-003 Satellie Park, Wolverhampton

Client: Arc Environmental Ltd	Chemtest Job No.:				22-21361
Quotation No.: Q22-26892	Chemtest Sample ID.:				1444498
Order No.: 22-003	Client Sample Ref.:				BH8
	Sample Type:				SOIL
	Top Depth (m):				0.80
	Bottom Depth (m):				1.00
	Date Sampled:				31-May-2022
	Asbestos Lab:				
Determinand	Accred.	SOP	Units	LOD	
Moisture	N	2030	%	0.020	15
Arsenic	U	2455	mg/kg	0.5	
Cadmium	U	2455	mg/kg	0.10	
Chromium	U	2455	mg/kg	0.5	
Chromium (Trivalent)	N	2490	mg/kg	1.0	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	
Copper	U	2455	mg/kg	0.50	
Mercury	U	2455	mg/kg	0.05	
Nickel	U	2455	mg/kg	0.50	
Lead	U	2455	mg/kg	0.50	
Selenium	U	2455	mg/kg	0.25	
Zinc	U	2455	mg/kg	0.50	
pH	U	2010		4.0	8.7
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.024
Cyanide (Free)	U	2300	mg/kg	0.50	
Total Organic Carbon	U	2625	%	0.20	
Acenaphthene	U	2800	mg/kg	0.10	
Acenaphthylene	N	2800	mg/kg	0.10	
Anthracene	U	2800	mg/kg	0.10	
Benzo[a]anthracene	U	2800	mg/kg	0.10	
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	
Benzo[a]pyrene	U	2800	mg/kg	0.10	
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	
Chrysene	U	2800	mg/kg	0.10	
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	
Fluoranthene	U	2800	mg/kg	0.10	
Fluorene	U	2800	mg/kg	0.10	
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	
Naphthalene	U	2800	mg/kg	0.10	
Phenanthrene	U	2800	mg/kg	0.10	
Pyrene	U	2800	mg/kg	0.10	
Total Of 16 PAH's	N	2800	mg/kg	2.0	
Benzene	U	2760	µg/kg	1.0	
Toluene	U	2760	µg/kg	1.0	
Ethylbenzene	U	2760	µg/kg	1.0	
m & p-Xylene	U	2760	µg/kg	1.0	
o-Xylene	U	2760	µg/kg	1.0	

Results - Soil

Project: 22-003 Satellie Park, Wolverhampton

Client: Arc Environmental Ltd	Chemtest Job No.: 22-21361			
Quotation No.: Q22-26892	Chemtest Sample ID.: 1444498			
Order No.: 22-003	Client Sample Ref.:		BH8	
	Sample Type:		SOIL	
	Top Depth (m):		0.80	
	Bottom Depth (m):		1.00	
	Date Sampled:		31-May-2022	
	Asbestos Lab:			
Determinand	Accred.	SOP	Units	LOD
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0
ACM Type	U	2192		N/A
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0
Asbestos Identification	U	2192		N/A

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

APPENDIX IV

Waste Classification Report (HazWasteOnline™)



Waste Classification Report

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

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



WG8WD-USS4Y-WD00Z

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

Job name

22-003

Description/Comments

Classification of MG for potential off site disposal

Project

22-003

Site

Satellite Industrial Park, Wolverhampton

Classified by

Name: **John Ditchburn**
 Date: **19 Jul 2022 09:37 GMT**
 Telephone: **0191 378 6380**

Company: **Arc Environmental Ltd**
Solum House, Unit 1, Elliott Court, St.
Johns Road
Meadowfield
DH7 8PN

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

HazWasteOnline™ Certification: **CERTIFIED**

Course **Date**
 Hazardous Waste Classification 03 Dec 2020

Next 3 year Refresher due by Dec 2023

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	-BH2-31/05/2022-0.30	0.30-0.50	Non Hazardous		2
2	-BH4-31/05/2022-0.17	0.17-0.30	Non Hazardous		5
3	-BH6-31/05/2022-0.17	0.17-0.40	Non Hazardous		8
4	-BH7-31/05/2022-0.10	0.10-0.50	Non Hazardous		11
5	-BH8-31/05/2022-0.25	0.25-0.50	Non Hazardous		14

Related documents

#	Name	Description
1	HWOL_22-21361-20220615 144953.hwol	Eurofins Chemtest .hwol file used to populate the Job
2	Arc 2021 with acid alkali reserve	waste stream template used to create this Job

Report

Created by: John Ditchburn

Created date: 19 Jul 2022 09:37 GMT

Appendices

Appendix	Page
Appendix A: Classifier defined and non GB MCL determinands	17
Appendix B: Rationale for selection of metal species	18
Appendix C: Version	19

Classification of sample: -BH2-31/05/2022-0.30

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

Sample details

Sample name:	LoW Code:
-BH2-31/05/2022-0.30	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.30-0.50 m	
Moisture content:	
11%	
(wet weight correction)	

Hazard properties

None identified

Determinands

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

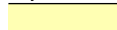



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				8 mg/kg	1.32	9.401 mg/kg	0.00094 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				1 mg/kg	1.142	1.017 mg/kg	0.000102 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				16 mg/kg	1.462	20.813 mg/kg	0.00208 %	✓	
		215-160-9	1308-38-9							
4	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
5	copper { dicopper oxide; copper (I) oxide }				76 mg/kg	1.126	76.155 mg/kg	0.00762 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead chromate }			1	80 mg/kg	1.56	111.059 mg/kg	0.00712 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
7	mercury { mercury dichloride }				0.08 mg/kg	1.353	0.0964 mg/kg	0.00000964 %	✓	
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel chromate }				18 mg/kg	2.976	47.68 mg/kg	0.00477 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
9	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.58 mg/kg	1.405	0.725 mg/kg	0.0000725 %	✓	
	034-002-00-8									
10	zinc { zinc sulphate }				310 mg/kg	2.469	681.279 mg/kg	0.0681 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
11	pH				8.8 pH		8.8 pH	8.8 pH		
			PH							
12	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									
13	acenaphthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9							
14	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	anthracene	204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	benzo[a]anthracene	200-280-6	56-55-3		0.75 mg/kg		0.668 mg/kg	0.0000668 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	200-028-5	50-32-8		1.1 mg/kg		0.979 mg/kg	0.0000979 %	✓	
18	benzo[b]fluoranthene	205-911-9	205-99-2		1.4 mg/kg		1.246 mg/kg	0.000125 %	✓	
19	benzo[ghi]perylene	205-883-8	191-24-2		0.75 mg/kg		0.668 mg/kg	0.0000668 %	✓	
20	benzo[k]fluoranthene	205-916-6	207-08-9		0.48 mg/kg		0.427 mg/kg	0.0000427 %	✓	
21	chrysene	205-923-4	218-01-9		0.65 mg/kg		0.579 mg/kg	0.0000579 %	✓	
22	dibenz[a,h]anthracene	200-181-8	53-70-3		0.17 mg/kg		0.151 mg/kg	0.0000151 %	✓	
23	fluoranthene	205-912-4	206-44-0		1.1 mg/kg		0.979 mg/kg	0.0000979 %	✓	
24	fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.8 mg/kg		0.712 mg/kg	0.0000712 %	✓	
26	naphthalene	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene	201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	pyrene	204-927-3	129-00-0		1.1 mg/kg		0.979 mg/kg	0.0000979 %	✓	
29	benzene	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
30	toluene	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
31	ethylbenzene	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
32	xylene	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
33	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
34	confirm TPH has NOT arisen from diesel or petrol				<input checked="" type="checkbox"/>					
35	asbestos	-----	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
Total:								0.0938 %		



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

Classification of sample: -BH4-31/05/2022-0.17

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

Sample details

Sample name:	LoW Code:	
-BH4-31/05/2022-0.17	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.17-0.30 m		
Moisture content:		
34%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 34% Wet Weight Moisture Correction applied (MC)





#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				8.7	mg/kg	1.32	7.581	mg/kg	0.000758 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				0.99	mg/kg	1.142	0.746	mg/kg	0.0000746 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				5.4	mg/kg	1.462	5.209	mg/kg	0.000521 %	✓	
		215-160-9	1308-38-9									
4	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
5	copper { dicopper oxide; copper (I) oxide }				33	mg/kg	1.126	24.522	mg/kg	0.00245 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead chromate }			1	29	mg/kg	1.56	29.855	mg/kg	0.00191 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
7	mercury { mercury dichloride }				<0.05	mg/kg	1.353	<0.0677	mg/kg	<0.00000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel chromate }				27	mg/kg	2.976	53.037	mg/kg	0.0053 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
9	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.79	mg/kg	1.405	0.733	mg/kg	0.0000733 %	✓	
	034-002-00-8											
10	zinc { zinc sulphate }				220	mg/kg	2.469	358.542	mg/kg	0.0359 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]									
11	pH				8.3	pH		8.3	pH	8.3 pH		
12	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											
13	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9									
14	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	anthracene	204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	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
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
19	benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
21	chrysene	601-048-00-0	205-923-4	218-01-9	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	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
23	fluoranthene	205-912-4	206-44-0		0.23 mg/kg		0.152 mg/kg	0.0000152 %	✓	
24	fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene	201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	pyrene	204-927-3	129-00-0		0.15 mg/kg		0.099 mg/kg	0.0000099 %	✓	
29	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
30	toluene	601-021-00-3	203-625-9	108-88-3	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
31	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
32	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
33	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
34	confirm TPH has NOT arisen from diesel or petrol				<input checked="" type="checkbox"/>					
35	asbestos	650-013-00-6	-----	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5	<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
Total:								0.0493 %		



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

Classification of sample: -BH6-31/05/2022-0.17

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

Sample details

Sample name:	LoW Code:
-BH6-31/05/2022-0.17	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.17-0.40 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
15%	
(wet weight correction)	

Hazard properties

None identified

Determinands

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

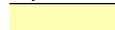



#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				6.3	mg/kg	1.32	7.07	mg/kg	0.000707 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				0.18	mg/kg	1.142	0.175	mg/kg	0.0000175 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				7.6	mg/kg	1.462	9.442	mg/kg	0.000944 %	✓	
		215-160-9	1308-38-9									
4	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
5	copper { dicopper oxide; copper (I) oxide }				24	mg/kg	1.126	22.968	mg/kg	0.0023 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead chromate }			1	31	mg/kg	1.56	41.101	mg/kg	0.00264 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
7	mercury { mercury dichloride }				0.09	mg/kg	1.353	0.104	mg/kg	0.0000104 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel chromate }				7.5	mg/kg	2.976	18.974	mg/kg	0.0019 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
9	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.51	mg/kg	1.405	0.609	mg/kg	0.0000609 %	✓	
	034-002-00-8											
10	zinc { zinc sulphate }				54	mg/kg	2.469	113.341	mg/kg	0.0113 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]									
11	pH				7.1	pH		7.1	pH	7.1 pH		
			PH									
12	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											
13	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9									
14	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	anthracene	204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	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
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
19	benzo[ghi]perylene		205-883-8	191-24-2	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
21	chrysene	601-048-00-0	205-923-4	218-01-9	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	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
23	fluoranthene		205-912-4	206-44-0	0.21 mg/kg		0.179 mg/kg	0.0000179 %	✓	
24	fluorene		201-695-5	86-73-7	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	indeno[123-cd]pyrene		205-893-2	193-39-5	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	pyrene		204-927-3	129-00-0	0.19 mg/kg		0.161 mg/kg	0.0000161 %	✓	
29	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
30	toluene	601-021-00-3	203-625-9	108-88-3	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
31	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
32	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
33	TPH (C6 to C40) petroleum group			TPH	<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
34	confirm TPH has NOT arisen from diesel or petrol				<input checked="" type="checkbox"/>					
35	asbestos	650-013-00-6	-----	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5	<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
Total:								0.0223 %		



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

Classification of sample: -BH7-31/05/2022-0.10

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

Sample details

Sample name:	LoW Code:	
-BH7-31/05/2022-0.10	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.10-0.50 m		
Moisture content:		
22%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 22% Wet Weight Moisture Correction applied (MC)





#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				6.9	mg/kg	1.32	7.106	mg/kg	0.000711 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				0.43	mg/kg	1.142	0.383	mg/kg	0.0000383 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				6.4	mg/kg	1.462	7.296	mg/kg	0.00073 %	✓	
		215-160-9	1308-38-9									
4	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
5	copper { dicopper oxide; copper (I) oxide }				37	mg/kg	1.126	32.493	mg/kg	0.00325 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead chromate }			1	18	mg/kg	1.56	21.9	mg/kg	0.0014 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
7	mercury { mercury dichloride }				<0.05	mg/kg	1.353	<0.0677	mg/kg	<0.00000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel chromate }				27	mg/kg	2.976	62.68	mg/kg	0.00627 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
9	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.84	mg/kg	1.405	0.921	mg/kg	0.0000921 %	✓	
	034-002-00-8											
10	zinc { zinc sulphate }				190	mg/kg	2.469	365.95	mg/kg	0.0366 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]									
11	pH				8.5	pH		8.5	pH	8.5 pH		
12	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											
13	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9									
14	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	anthracene	204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	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
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
19	benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
21	chrysene	601-048-00-0	205-923-4	218-01-9	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	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
23	fluoranthene	205-912-4	206-44-0		0.14 mg/kg		0.109 mg/kg	0.0000109 %	✓	
24	fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene	201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	pyrene	204-927-3	129-00-0		0.14 mg/kg		0.109 mg/kg	0.0000109 %	✓	
29	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
30	toluene	601-021-00-3	203-625-9	108-88-3	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
31	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
32	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
33	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
34	confirm TPH has NOT arisen from diesel or petrol				<input checked="" type="checkbox"/>					
35	asbestos	650-013-00-6	-----	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5	<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
Total:								0.0514 %		



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

Classification of sample: -BH8-31/05/2022-0.25

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

Sample details

Sample name:	LoW Code:	
-BH8-31/05/2022-0.25	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.25-0.50 m		
Moisture content:		
16%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 16% Wet Weight Moisture Correction applied (MC)

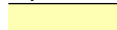



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				43 mg/kg	1.32	47.69 mg/kg	0.00477 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				1.4 mg/kg	1.142	1.343 mg/kg	0.000134 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				20 mg/kg	1.462	24.554 mg/kg	0.00246 %	✓	
		215-160-9	1308-38-9							
4	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
5	copper { dicopper oxide; copper (I) oxide }				110 mg/kg	1.126	104.032 mg/kg	0.0104 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead chromate }			1	70 mg/kg	1.56	91.717 mg/kg	0.00588 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
7	mercury { mercury dichloride }				0.05 mg/kg	1.353	0.0568 mg/kg	0.00000568 %	✓	
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel chromate }				62 mg/kg	2.976	155.004 mg/kg	0.0155 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
9	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.91 mg/kg	1.405	1.074 mg/kg	0.000107 %	✓	
	034-002-00-8									
10	zinc { zinc sulphate }				430 mg/kg	2.469	891.91 mg/kg	0.0892 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
11	pH				9 pH		9 pH	9pH		
			PH							
12	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									
13	acenaphthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9							
14	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	anthracene	204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	benzo[a]anthracene	200-280-6	56-55-3		0.31 mg/kg		0.26 mg/kg	0.000026 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	200-028-5	50-32-8		0.44 mg/kg		0.37 mg/kg	0.000037 %	✓	
18	benzo[b]fluoranthene	205-911-9	205-99-2		0.61 mg/kg		0.512 mg/kg	0.0000512 %	✓	
19	benzo[ghi]perylene	205-883-8	191-24-2		0.24 mg/kg		0.202 mg/kg	0.0000202 %	✓	
20	benzo[k]fluoranthene	205-916-6	207-08-9		0.21 mg/kg		0.176 mg/kg	0.0000176 %	✓	
21	chrysene	205-923-4	218-01-9		0.42 mg/kg		0.353 mg/kg	0.0000353 %	✓	
22	dibenz[a,h]anthracene	200-181-8	53-70-3		0.11 mg/kg		0.0924 mg/kg	0.00000924 %	✓	
23	fluoranthene	205-912-4	206-44-0		0.61 mg/kg		0.512 mg/kg	0.0000512 %	✓	
24	fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.35 mg/kg		0.294 mg/kg	0.0000294 %	✓	
26	naphthalene	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene	201-581-5	85-01-8		0.49 mg/kg		0.412 mg/kg	0.0000412 %	✓	
28	pyrene	204-927-3	129-00-0		0.7 mg/kg		0.588 mg/kg	0.0000588 %	✓	
29	benzene	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
30	toluene	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
31	ethylbenzene	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
32	xylene	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
33	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
34	confirm TPH has NOT arisen from diesel or petrol				<input checked="" type="checkbox"/>					
35	asbestos	-----	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
Total:								0.131 %		



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

Appendix A: Classifier defined and non GB MCL determinands

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

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• pH (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

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

GB MCL index number: 006-007-00-5

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

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

Reason for additional Hazards Statement(s):

20 Nov 2021 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

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

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

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

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

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

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

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

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 23 Jul 2015

Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

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

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

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

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

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

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Carc. 2; H351

▪ **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

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

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

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

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

▪ **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

▪ **confirm TPH has NOT arisen from diesel or petrol**

Description/Comments: Chapter 3, section 4b requires a positive confirmation for benzo[a]pyrene to be used as a marker in evaluating Carc. 1B; H350 (HP 7) and Muta. 1B; H340 (HP 11)
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

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

cadmium {cadmium oxide}

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

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

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

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

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments (edit as required)

copper {dicopper oxide; copper (I) oxide}

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

lead {lead chromate}

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

mercury {mercury dichloride}

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

nickel {nickel chromate}

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



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

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil. (edit as required)

zinc {zinc sulphate}

No Chromium VI present

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

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

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.2.GB - Oct 2021**
HazWasteOnline Classification Engine Version: 2022.192.5237.9831 (11 Jul 2022)
HazWasteOnline Database: 2022.192.5237.9831 (11 Jul 2022)

This classification utilises the following guidance and legislation:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020

GB MCL List - version 1.1 of 09 June 2021