

By Email

Our ref: 24-011.01L

Adil Abbas
Alan Wood & Partners
18 Howley Park Business Village
Pullan Way
Morley
Leeds
LS27 0BZ

26th March 2024

Dear Adil,

Re: Marydale Secure Children's Home, St. Helens

1.0 Introduction: -

As requested by Alan Wood & Partners, ground investigation works have been carried out at Marydale Secure Children's Home, Blackbrook Rd, St. Helens, WA11 9RJ, where proposals have been made to install a new mezzanine inside the existing sports hall and also construct new classrooms within the existing secure compound. The purpose of this investigation was to provide information on the general ground conditions across the proposed development area and try and determine the foundation details to the sports hall building and boundary wall. The following documents are attached with this report:

- Exploratory Hole Location Plan
- Borehole Record Sheets (BH1 to BH3)
- Trial Pit Record Sheets (TP1 to TP6)
- Foundation Record Sheet (TP1, TP2, TP4 & TP6)
- Laboratory Results
- HazWasteOnline™ Waste Classification Report

The intrusive investigation works undertaken by Arc Environmental Ltd. (Arc) comprised the sinking of 3 no. windowless sampling boreholes (BH1 to BH3) and manual excavation of 6 no. trial pits (TP1 to TP6), the positions of which can be seen on the Exploratory Hole Location Plan attached. This plan should be used for orientating purposes only, as the positions shown are approximate and the plan is not to a standard scale.

2.0 Ground Conditions: -

2.1 Sports Hall Interior (BH1 to BH3): -

Within the sports hall (BH1 to BH3), made ground was recorded beneath the existing resin / concrete floor slab to depths of between c.1.10m to c.1.30m below current floor levels (bcfl). The made ground comprised brown and grey sandy, locally very clayey / silty gravel of sandstone with some concrete fragments.

Underlying the made ground, the natural drift deposits were recorded to depths of up to c.6.36m bcgl. Within BH1 and BH2, intermixed bands of firm to stiff, locally soft, reddish brown sandy silty clay and soft to very stiff brown / reddish orangish brown clayey silt were recorded. In BH3, no silt was encountered, with firm to very stiff reddish brown sandy gravelly clay recorded to a depth of c.4.44m bcgl.



Arc Environmental Ltd
Solum House
Unit 1 Elliott Court
St Johns Road
Meadowfield
Durham
DH7 8PN

Re: Marydale Secure Children's Home, St. Helens (Cont'd)

2.0 Ground Conditions (Cont'd): -

2.1 Sports Hall Interior (BH1 to BH3) (Cont'd): -

No visual and olfactory evidence of significant sources of ground contamination (fuels, oils / asbestos, etc.) were recorded during the intrusive investigation.

2.2 Sports Hall Exterior – (TP1 and TP2): -

Within TP1, made ground comprising brown gravelly sandy soil with frequent sandstone cobbles was noted to c.0.25m bcgl, underlain by light brown and dark brown sandy gravel of sandstone with frequent sandstone cobbles to c.1.00m bcgl.

Within TP2, asphalt was recorded to c.0.30m bcgl, underlain by made ground comprising light brown and brownish grey gravel of sandstone with frequent sandstone cobbles to c.0.70m bcgl. A thin layer of greyish brown gravelly sand with some ash fragments was recorded from c.0.70m to c.0.76m bcgl, underlain by greyish brown clayey sandy gravel of sandstone to c.0.88m bcgl.

No visual and olfactory evidence of significant sources of ground contamination (fuels, oils / asbestos, etc.) were recorded during the intrusive investigation.

2.3 Secure Compound Areas: -

2.3.1 TP3 & TP4: -

Within TP3, made ground comprising dark brown gravelly clayey soil was recorded to a depth of c.0.30m bcgl, underlain by reddish brown and grey sandy gravel of sandstone with frequent brick and concrete fragments to a depth of c.1.00m bcgl.

Within TP4, made ground comprising dark brown gravelly clayey soil was recorded to a depth of c.0.20m bcgl, underlain by reddish brown clayey sandy gravel of sandstone with frequent brick fragments to c.0.40m bcgl. The trial pit was terminated at c.0.40m bcgl on a concrete obstruction. A drill probe was undertaken through the concrete to c.0.90m bcgl, indicating a concrete thickness of c.0.50m.

No visual and olfactory evidence of significant sources of ground contamination (fuels, oils / asbestos, etc.) were recorded during the intrusive investigation.

2.3.2 TP5 & TP6: -

Within TP5, made ground comprising dark brown gravelly clayey soil with occasional brick fragments was recorded to c.0.40m bcgl, underlain by dark brown and reddish brownish greyish orange mottled clayey sandy gravel of sandstone, with occasional sandstone cobbles to c.0.50m bcgl. Natural strata was encountered at c.0.50m bcgl, comprising firm (medium strength) reddish brown / orange, locally mottled grey / black silty sandy clay to at least c.1.00m bcgl.

Within TP6, made ground comprising dark brown gravelly clayey soil was recorded to c.0.20m bcgl, underlain by brown slightly clayey sandy gravel of sandstone to c.0.70m bcgl. Beneath the clayey sandy gravel, brown very clayey / silty sandy gravel of sandstone with occasional brick fragments and sandstone cobbles was recorded to c.1.10m bcgl.

No visual and olfactory evidence of significant sources of ground contamination (fuels, oils / asbestos, etc.) were recorded during the intrusive investigation.

Re: Marydale Secure Children's Home, St. Helens (Cont'd)

3.0 Existing Foundations: -

In total, 4 no. manually excavated foundation pits were carried out around the existing sports hall building (TP1 & TP2) and secure masonry walls (TP4 & TP6) to try and determine the foundation type, thickness, and the underlying strata. Details are contained in the Foundation Records Sheet attached and a summary of the foundation details can be seen below.

- TP1 – The existing steel column of the sports hall building was based on an 'upper' concrete pad / upstand? with a surface c.0.05m above current ground level, which projected c.0.51m from the face of the brickwall (NW direction) and c.0.33m from the centre line of the steel column (SW direction) and was recorded to be c.0.25m thick. This 'upper' concrete pad / upstand? appeared to be based directly upon a 'lower' secondary concrete pad which projected c.0.72m from the face of the brickwall (NW direction) and c.0.38m from the centre line of the steel column (SW direction) and was recorded to be c.0.80m thick. The foundation was based within a clayey sandy gravel of sandstone at an overall depth of c.1.00m bcgl.
- TP2 – The existing steel column of the sports hall building was based on an 'upper' concrete pad / upstand? (visible at surface) which projected c.0.33m from the face of the existing brickwall (NE direction) and c.0.33m from the centre line of the steel column (NW) and was recorded to be c.0.25m thick. The 'upper' concrete pad / upstand? appeared to be based directly upon a 'lower' secondary concrete pad which projected c.0.33m from the face of the existing brickwall (NE direction) and c.0.43m from the centre line of the steel column (NW direction) and was recorded to be c.0.61m thick. The foundation was based within a clayey sandy gravel of sandstone at an overall depth of c.0.86m bcgl.
- TP4 – The existing secure masonry wall extended to a depth of c.0.40m bcgl, where it was based on a concrete footing / slab(?) which projected at least c.1.20m from the face of the existing wall. Probe drilling of the concrete indicated it to be c.0.50m thick (i.e. base of concrete estimated to be at c.0.90m bcgl). Due to the thickness of the concrete and projection from the existing wall the final extents / dimensions of the concrete foundation / slab were not proven.
- TP6 – The existing secure masonry wall extended to a depth of c.0.30m bcgl, where it was based on a concrete footing, which initially projected c.0.60m from the face of the wall and was noted to be c.0.72m thick. A secondary small step / projection of c.0.05m was recorded at c.0.70m bcgl (i.e., c.0.40m below the top of the concrete footing). The foundation was based within a clayey sandy gravel at a depth of c.1.02m bcgl.

4.0 Groundwater and Stability: -

Water ingress was only recorded within BH1, BH2 and TP6 at depths of c.1.10m, c.1.20m and c.0.30m bcgl respectively within the made ground. Standing water levels were of between 1.20m and c.1.30m bcgl were recorded within the boreholes following a brief monitoring period. It is considered that the water ingress / standing levels recorded are most likely to be representative of trapped perched water within the made ground and / or initial drift deposits rather than part of a shallow continuous water table below the site.

Nonetheless, shallow water ingresses may occur within shallow construction related excavations, and it would be prudent to allow for the introduction of groundwater control measures (i.e. sump pumping equipment), to take care of any ingresses of groundwater which may occur during the construction period, especially during the wetter periods of the year.

For any 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 environment. Excavations should remain open for as short a period as possible, since some of these materials may be susceptible to deterioration, if left open for any significant period.

Re: Marydale Secure Children's Home, St. Helens (Cont'd)

5.0 Insitu Testing: -

5.1 Insitu Hand Shear Vane Tests: -

Insitu hand vane tests were carried out using an insitu hand vane tester on the natural fine soils encountered below the site.

The insitu hand shear 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.

The results are summarised in Table 1 below and can also be found adjacent to the appropriate sample level, on the graphic borehole record sheets attached.

Table 1

Type of Strata	Shear Strength Values (kN/m²)	Result Details
Natural Drift Deposits (Fine Soils):	28 to >120	Low, medium and high strength deposits.

5.2 Insitu Standard Penetration Tests: -

Standard penetration tests (SPTs) were carried out with the use of a normal split spoon sampler on the natural drift deposits encountered within the boreholes to determine the relative density / strength of the materials tested. The result is shown as an 'N' value on the borehole record sheets, adjacent to the appropriate sample level. A summary of the test result can be seen in Table 2 below.

Table 2

Type of Strata	Range of SPT 'N' Values	Result details
Drift Deposits (Fine Soils):	7 to 29 and 63 to 75 blows for limited penetration	Indicative of soft, firm, stiff and very stiff deposits.

6.0 Laboratory Testing: -

All geotechnical testing was carried out in accordance with BS1377:1990: Parts 1 – 9 by Professional Soils Laboratory (PSL) of Doncaster (UKAS accredited). The concrete classification and ground contamination testing was undertaken by Chemtech Environmental of Stanley, Co. Durham (UKAS & MCERTS accredited).

6.1 Determination of pH & SO₄: -

Representative samples of the made ground and natural drift deposits encountered below the site were tested to determine their acidic (pH) and soluble sulphate (SO₄) levels. The results are shown in Table 3 below and are also contained in the Chemtech Environmental Analytical Report (Ref. 130833), a copy of which is attached.

Table 3

Location	Depth (m)	Strata	pH	SO₄(mg/l)	Design SO₄ Class	ACEC Class
TP2	0.70	MG	9.2	30	DS-1	AC-1
TP4	0.30	MG	9.0	178	DS-1	AC-1
TP5	0.30	MG	8.4	30	DS-1	AC-1
TP6	0.90	MG	8.9	66	DS-1	AC-1
BH1	1.60	NS	8.2	36	DS-1	AC-1

MG = Made Ground, NS = Natural Strata

T: 0191 378 6380

E: admin@arc-environmental.com

W: www.arc-environmental.com

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Re: Marydale Secure Children's Home, St. Helens (Cont'd)

6.0 Laboratory Testing (Cont'd): -

6.1 Determination of pH & SO₄ (Cont'd): -

From these results, the samples tested range in pH from 8.2 to 9.2 and the amount of Soluble Sulphate present is between 30mg/l and 178mg/l. Therefore, in accordance with BRE Special Digest 1: 2005, the site can be given a classification of Class DS-1. When considering the pH values of the materials tested, and assuming potentially mobile groundwater, the assessment of the Aggressive Chemical Environment for Concrete (ACEC) for the site is AC-1.

6.2 Determination of Particle Size Distribution: -

A sample of the coarse soils from TP06 was tested in order to determine particle size distribution (PSD) so that these materials can be classified. The results of the test are represented both numerically and graphically in the PSL Report (Ref. PSL24/1428), a copy of which is attached and also summarised in Table 4 below.

Table 4

Position	Depth (m)	Clay / Silt Fraction	Sand Fraction	Gravel Fraction	Cobble Fraction	Grading Characteristics	Brief Soil Description
TP06	0.90	47	32	21	0	~	Very sandy very gravelly SILT / CLAY.

6.3 Determination of Liquid & Plastic Limits: -

Representative samples of the natural drift deposits were tested to determine their moisture contents and liquid and plastic limits, so these materials might be classified. The results can be seen in Table 5 below and are also contained in the PSL Report (Ref. PSL24/1428), a copy of which is attached.

Table 5

Position	Depth (m)	M/C (%)	LL	PL	PI	Class	% Passing 425µm Sieve
BH1	1.20	25	34	17	17	CL	99
BH2	1.40	18	35	17	18	CI	95
BH3	1.40	19	44	20	24	CI	98

M/C = Moisture Content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index, CL = Clay Low Plasticity, CI = Clay Intermediate Plasticity

From these results, the samples tested are inorganic in nature, and when plotted on the plasticity chart, fall within the low and intermediate plasticity ranges, and from the resulting plasticity indices, have a low and moderate volume change potential when considering the amount passing the 425µm sieve.

Consequently, some of these materials 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. If new foundations were to be based within these materials, they would need to be taken down to a minimum depth of 0.90m below finished ground levels.

An increase in founding depth may be required to reach competent strata and if the proposed development is within proximity to existing or envisaged vegetation. An increase in the minimum foundation depth may also be required, even if trees are to be removed to avoid the effects of volume change. Reference should be made to BS5837: 2012, 'Trees in Relation to Design, Demolition and Construction' along with the NHBC Standards, 'Building near trees'.

Re: Marydale Secure Children's Home, St. Helens (Cont'd)

6.0 Insitu Testing (Cont'd): -

6.4 Determination of Unconfined Compressive Strength: -

An unconfined compressive strength test (cylinder strength) was carried out on the concrete core recovered from the existing floor slab within the sports hall (BH1), and the result of which can be seen in the PSL Report (Ref. PSL24/1428) a copy of which is attached.

From the result the concrete core returned an unconfined compressive strength of value of 46.1MPa (N/mm²). When considering the compressive strength result of the concrete core, this have been reported as cylinder strength and although there is no current documentation that allows direct conversion of the result to cubic strength, with the Concrete Society Technical Report 11 (TR11) 'Concrete core testing for strength' withdrawn, research indicates relatively vague correlations between cylinder and cubic strengths (i.e., for normal weight aggregates the concrete cylinder strength is c.80% of the corresponding cube strength and for lightweight aggregates it is about 90%). Therefore, assuming normal weight aggregates, the equivalent cubic strength of the concrete core recovered be 58MPa (N/mm²).

6.5 Contamination Screening & Waste Classification: -

Representative samples (3 no.) of the made ground materials recovered from below the site were passed onto Chemtech Environmental of Stanley, Co. Durham (UKAS & MCERTS accredited laboratory), so that soil contamination screening could be carried out in order to assess these materials for off-site disposal.

All of 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 made ground and natural materials (disturbed natural strata mixed with anthropogenic debris). The catalogue of testing results can be found in the Chemtech Analytical Report (Ref. 130833), attached, and the total analysis carried out is summarised below.

- 3 no. soil samples screened for a generic (metals and non-organics) soil suite including Arsenic, Cadmium, Chromium (III & VI), Copper, Lead, Mercury, Nickel, Selenium, Zinc, Cyanide and Total Organic Carbon (TOC).
- 3 no. soil samples screened for Speciated Polycyclic Aromatic Hydrocarbons (PAH's).
- 3 no. soil samples screened for Speciated Total Petroleum Hydrocarbons (based on full Aliphatic / Aromatic Split & BTEX).
- 3 no. samples screened for the presence of asbestos.

The results of the laboratory testing undertaken on the made ground soils encountered beneath this site, 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 HazWasteOnline™.

Based on the physical (visual and olfactory) inspection of the samples of made ground recovered have been 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). Each sample has been assessed separately to determine whether all the made ground can be considered as a single waste stream or whether the different sources of the made ground represent separate waste streams. The results are summarised in Table 6 on the following page and the full Waste Classification Report also attached.

Re: Marydale Secure Children's Home, St. Helens (Cont'd)

6.0 Laboratory Testing (Cont'd): -

6.5 Contamination Screening & Waste Classification (Cont'd): -

Table 6

<u>Position</u>	<u>Depth (m)</u>	<u>WM3 Waste Classification</u>	<u>Waste Code</u>
TP2	0.70	Hazardous	17 05 03
TP4	0.30	Non-Hazardous	17 05 04
BH3	0.30	Non-Hazardous	17 05 04

The sample tested from TP2 has been classified as Hazardous waste due to the concentration of total TPH recorded. The sample has been subject to an additional WAC test, to confirm it would be suitable for disposal to a licensed Hazardous landfill facility, if deemed necessary. Once these additional results have been received, they will be forwarded as an addendum letter to this report.

At this stage, the material from TP2 (containing ash fragments) and any other similar material encountered below the site should be considered Hazardous and should be kept separate from other spoil to avoid any possible cross contamination until further assessment can be carried out.

The remaining made ground samples tested from TP4 and BH3 are classified as Non-Hazardous waste. Furthermore, these materials returned TOC values below 3%, and therefore these soils could possibly meet the waste criteria for Inert Waste disposal subject to additional confirmatory WAC testing; however, at this stage, it is recommended that the requirement of any such testing should be assessed once the type / nature and volume of the soils which are required to be discarded is known.

It should be noted that the report is only applicable to the soils 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, then these additional materials will also need to be assessed using Technical Guidance WM3: Guidance on the classification and assessment of Waste. Where possible, removal of materials from site as a 'waste' should be kept to a minimum and ideally excavated materials should all be reused on site where possible.

7.0 Foundation Options: -

When considering the foundation options available for the mezzanine within the existing sports hall, it is felt strip and pad foundations should be acceptable with foundations taken down through the made ground and based 'wholly' within the natural firm clay deposits at a minimum depth of c.0.90m below finished ground levels, designed using a maximum allowable bearing pressure not exceeding 70kN/m² to ensure normal and differential settlements remain within serviceable limits. This could result in foundation to depths of up to c.1.30m below existing floor levels.

When considering any proposed new foundations within the secure compound areas, then it is recommended that the information obtained from the trial pits within these areas should be forwarded on to an experienced structural engineer for their comment / advice. It may be the case that additional intrusive works, (i.e. boreholes) will required to provide further information on the ground conditions and determine a suitable founding stratum within these areas.

From the results of the pH and soluble sulphate testing, future foundations and buried concrete should be constructed utilising a concrete design class of DS-1 and ACEC class of AC-1.

Re: Marydale Secure Children's Home, St. Helens (Cont'd)

8.0 General Comments: -

No account of possible hazardous ground gas production / migration, or the presence of any natural geo-hazards, current or historical mining, quarrying and / or mineral resource extraction below this site has been taken. It is recommended that the relevant authorities dealing with these issues, (i.e. Coal Authority, Local Authority etc.), are contacted for any information, and any comments they make should be considered.

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, there were previous features that were infilled (old hollows, pits, etc.) or where significant quantities of materials such as demolition and brick rubble exist.

For future site works, adequate lateral trench support will be required for excavations, to prevent trench wall collapse or over excavations, as well as to create a safe working environment, and 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. It is also recommended for any new development, adequate surface drainage should be designed and installed by a competent contractor to prevent surface water 'ponding' or collection, during and post construction, particularly where the existing surface drainage system is disrupted or damaged.

When considering the new extensions, advice from a suitably experienced / structural engineer should be sought in order to ensure any proposed new foundations to do not overstress and /or undermine any existing foundations.

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.

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 Engineer should be sought.

Adequate lateral trench support will be required for excavations (i.e. drainage / services or the like), in order to prevent trench wall collapse or over excavation, as well as to create a safe working environment and 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.

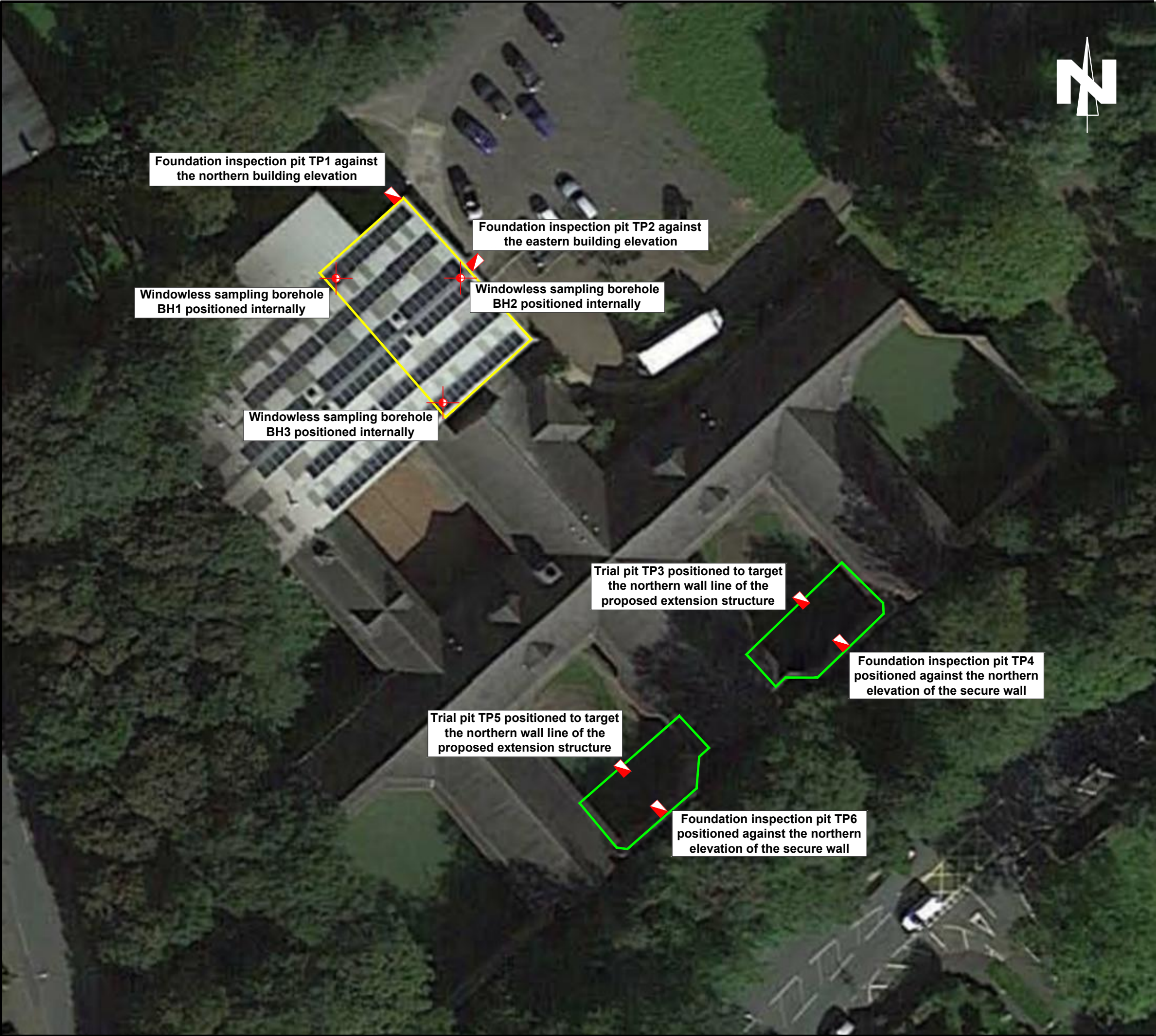
We trust the information we have provided to you is to your satisfaction and if you require any further information or clarification, please do not hesitate to contact us.

Yours sincerely,



.....
For and on behalf of Arc Environmental Ltd.
Phil Brown
Technical Director

Exploratory Hole Location Plan



ARC ENVIRONMENTAL LTD

Solum House
Unit 1 Elliott Court
St. John's Road
Meadowfield
Durham, DH7 8PN
Tel: (0191) 378 6380
e-mail: admin@arc-environmental.com
web: www.arc-environmental.com

The contractor shall check all dimensions on site before commencement of any works. No dimensions to be scaled off this drawing.
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LEGEND	
	PROPOSED NEW FIRST FLOOR STRUCTURE
	PROPOSED NEW CLASSROOMS

rev.	date	amendments	drawn	chckd	

Client:
ALAN WOOD & PARTNERS

Project Title:
Marydale Secure Children's Home
Blackbrook Road
Saint Helens, WA11 9RJ

Drawing Title:
Exploratory Hole Location Plan

Scale at A3:	Date:	Drawn by:	Approved by:
NTS @ A3	23.02.24	P.D	J.H

Job Ref:	Drg no:	Rev:
24-011	—	—

Borehole Record Sheets

**BOREHOLE LOG**

Project Marydale Secure Children's Home				BOREHOLE No BH1	
Job No 24-011	Date 16-02-24 16-02-24	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Limited				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0,05	B					0,30	Epoxy resin flooring over CONCRETE.		
0,60	J/D					(0,80)	Brown and grey sandy fine to coarse sub-angular gravel of sandstone with frequent concrete fragments. Wet. (MADE GROUND)		
1,10-1,55	SPT V	N=15 42kN/m ²				1,10	Firm (medium strength) reddish brown grey mottled sandy CLAY. Wet. (GLACIAL TILL)		
1,10	B					(0,80)			
1,20									
1,60	B					1,90	Firm locally soft brown grey mottled sandy veryclayey SILT. Wet. (GLACIAL TILL)		
2,00-2,45	SPT	N=8				(0,60)			
2,40	B					2,50	Stiff (high strength) dark reddish brown sandy silty CLAY. (GLACIAL TILL)		
3,00-3,45	SPT V	N=19 80kN/m ²				(2,00)			
3,00									
3,50	B								
3,50	V	86kN/m ²							
4,20	B					4,50	Very stiff reddish orangish brown clayey sandy very clayey SILT. (GLACIAL TILL)		
4,50	V	84kN/m ²				(0,86)			
4,70	B								
5,00-5,36	SPT	75 Blows				5,36	End of borehole		

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 at c.1.10m. Standing level recorded at c.1.10m.
All dimensions in metres Scale 1:40.625			Client Alan Wood & Partners			Method/ Plant Used Windowless Sampling			Logged By JH		



BOREHOLE LOG

Project Marydale Secure Children's Home				BOREHOLE No BH2	
Job No 24-011	Date 16-02-24 16-02-24	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Limited				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0,30	J/D					0,30	Epoxy resin flooring over CONCRETE.		
1,20-1,65	SPT	N=16	↓			(1,00)	Brown and grey sandy fine to coarse sub-angular gravel of sandstone with frequent concrete fragments. (MADE GROUND)		
1,40	B		↓			1,30	Firm (medium strength) locally soft (low strength) slightly gravelly CLAY. Gravel comprises fine to medium sub-angular sandstone. (GLACIAL TILL)		
2,00-2,45	SPT	N=7							
2,00	V	28kN/m ²					Becomes stiff (high strength) from c.4.00m.		
2,50	B					(2,90)			
3,00-3,45	SPT	N=19							
3,00	V	60kN/m ²							
3,30	B								
3,50	B								
4,00-4,45	SPT	N=29				4,20			
4,00	V	88kN/m ²							
4,50	B					(1,00)	Stiff reddish orangish brown very clayey SILT. (GLACIAL TILL)		
5,00-5,45	SPT	N=18				5,20			
5,50	B					(1,16)	Stiff becoming very stiff (high strength) reddish brown gravelly CLAY. Gravel comprises fine to medium sub-angular mudstone. (GLACIAL TILL)		
6,00-6,36	SPT	63							
6,00	V	90kN/m ²				6,36			
							End of borehole.		

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Water ingress at c.1.3m. Standing level recorded at c.1.30m.

All dimensions in metres Scale 1:40.625	Client Alan Wood & Partners	Method/ Plant Used Windowless Sampling	Logged By JH
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**BOREHOLE LOG**

Project Marydale Secure Children's Home				BOREHOLE No BH3	
Job No 24-011	Date 16-02-24 16-02-24	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Limited				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0,30	J/D		↓			0,30	Epoxy resin flooring over CONCRETE.		
1,20-1,65	SPT V	N=15 72kN/m ²				(1,00)	Brown and grey very silty / clayey sandy fine to coarse sub-angular gravel of sandstone with frequent concrete fragments. Wet. (MADE GROUND)		
1,30						1,30			
1,40	B					(0,70)	Firm (medium strength) reddish brown grey orange mottled sandy CLAY. (GLACIAL TILL)		
2,00-2,45	SPT V	N=8 60kN/m ²				2,00	Firm (medium strength) reddish dark brown sandy gravelly CLAY. Gravel comprises fine to coarse sub-angular mudstone. (GLACIAL TILL)		
2,50	B					(1,20)	Becomes stiff (high strength) from c.3.00m.		
3,00-3,45	SPT V	N=20 86kN/m ²				3,20	Stiff becoming very stiff (high strength) reddish dark brown sandy gravelly CLAY. Gravel comprises fine to medium sub-angular mudstone and sandstone. (GLACIAL TILL)		
3,50	B					(1,24)			
4,00-4,44	SPT V	70 Blows >120kN/m ²				4,44			
4,00							End of borehole		

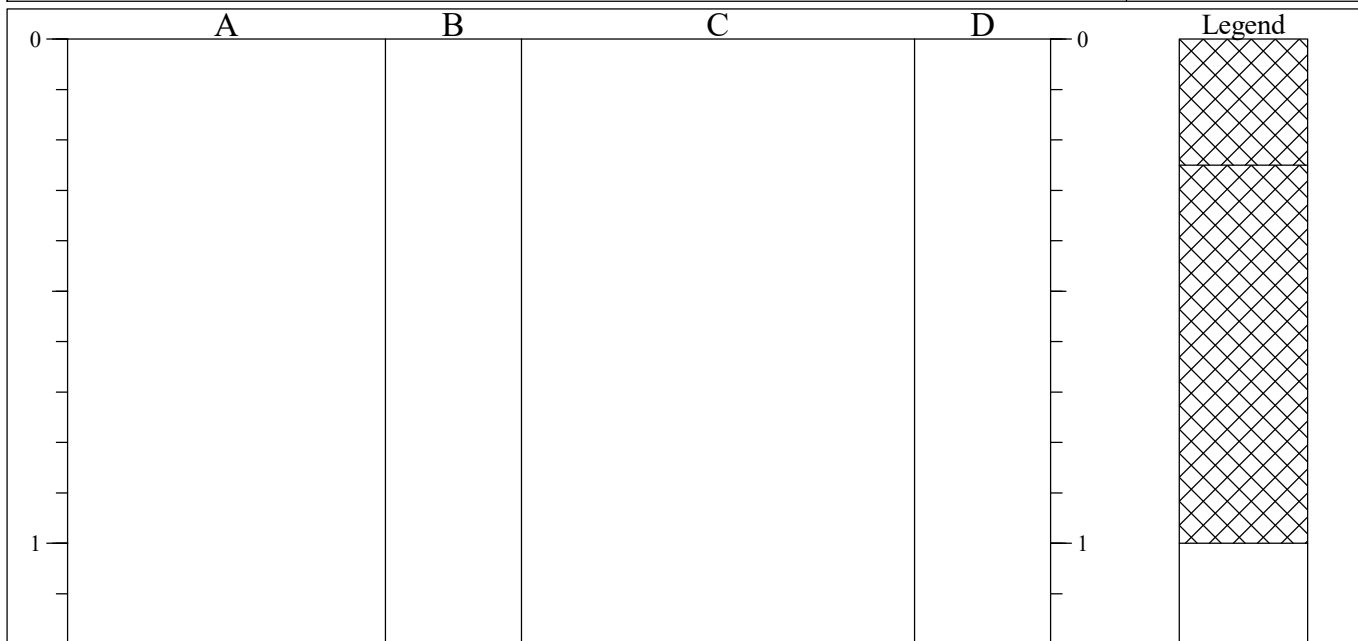
Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											No actual water ingress noted. Standing level noted at c.1.30m.
All dimensions in metres Scale 1:40.625			Client Alan Wood & Partners			Method/ Plant Used Windowless Sampling			Logged By JH		

Trial Pit Record Sheets

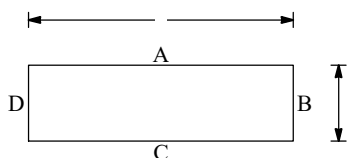


TRIAL PIT LOG

Project Marydale Secure Children's Home				TRIAL PIT No TP1
Job No 24-011	Date 15-02-24 15-02-24	Ground Level (m)	Co-Ordinates ()	
Contractor Arc Environmental Limited				Sheet 1 of 1



STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests	
0,00-0,25		Brown gravelly sandy soil. Gravel comprises fine to coarse sub-angular sandstone. Frequent sandstone cobbles. (MADE GROUND)				
0,25-1,00		Light brown and dark brown sandy fine to coarse sub-angular gravel of sandstone. Frequent sandstone cobbles. (MADE GROUND)				
1,00		End of trial pit.	0,80	B		

Shoring/Support:
Stability:GENERAL
REMARKS

Trial pit remained dry and stable during exploratory period.

All dimensions in metres
Scale 1:15

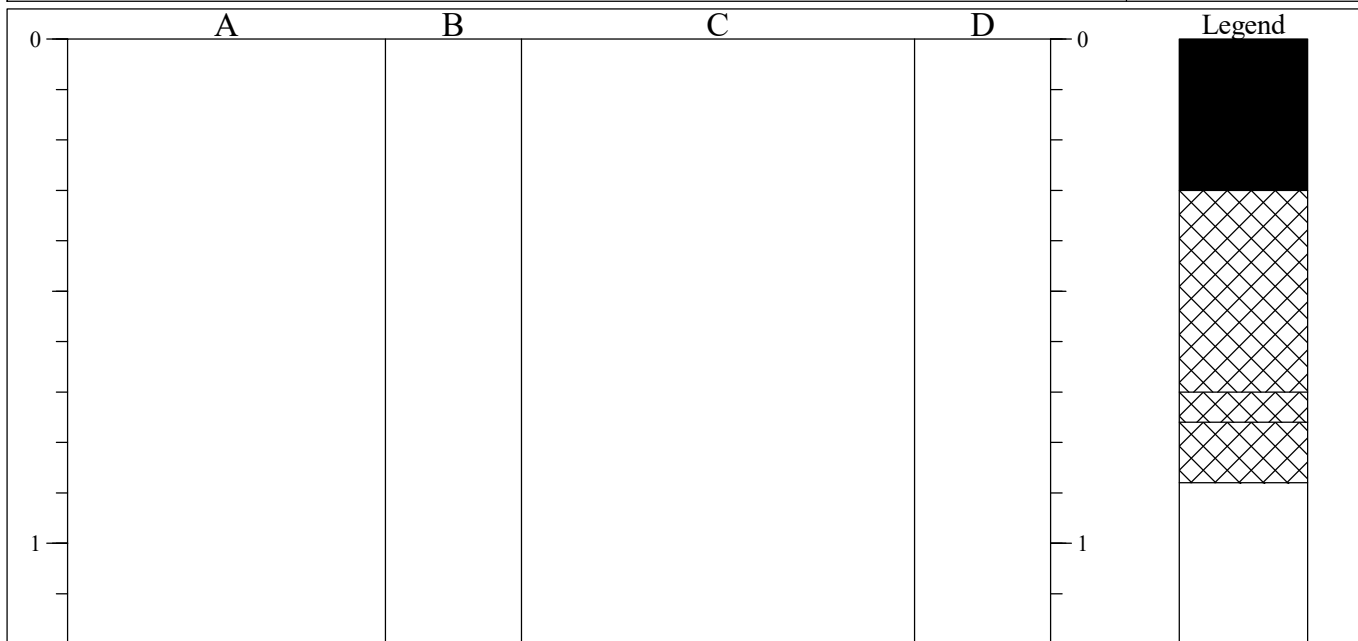
Client Alan Wood & Partners

Method/
Plant Used Manual ExcavationLogged By
JH



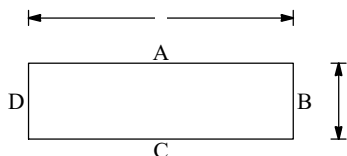
TRIAL PIT LOG

Project Marydale Secure Children's Home				TRIAL PIT No TP2
Job No 24-011	Date 16-02-24 16-02-24	Ground Level (m)	Co-Ordinates ()	
Contractor Arc Environmental Limited				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0,00-0,30		ASPHALT.			
0,30-0,70		Light brown and brown grey coarse sub-angular to sub-rounded gravel of sandstone. Frequent sandstone cobbles. (MADE GROUND)			
0,70-0,76		Grey brown gravelly sand. Gravel comprises fine to coarse sub-angular sandstone with some ash fragments. (MADE GROUND)	0,70	J/D	
0,76-0,88		Grey brown clayey sandy fine to coarse sub-angular gravel of sandstone. (MADE GROUND)	0,80	B	
0,88		End of trial pit.			

Shoring/Support:
Stability:



GENERAL
REMARKS

Trial pit remained dry and stable during exploratory period.

All dimensions in metres
Scale 1:15

Client Alan Wood & Partners

Method/
Plant Used Manual Excavation

Logged By
JH

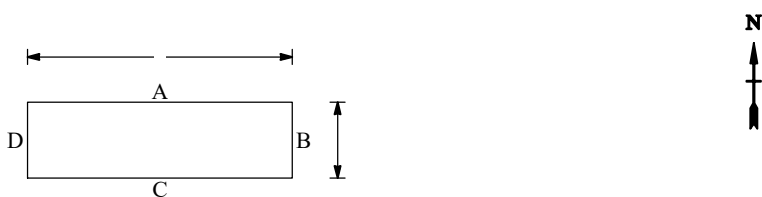


TRIAL PIT LOG

Project Marydale Secure Children's Home				TRIAL PIT No TP3
Job No 24-011	Date 15-02-24 15-02-24	Ground Level (m)	Co-Ordinates ()	
Contractor Arc Environmental Limited				Sheet 1 of 1

0	A	B	C	D	0	Legend
1					1	

STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0,00-0,30		Dark brown gravelly clayey soil. Gravel comprises fine to coarse sub-angular to sub-rounded sandstone with occasional brick fragments. (MADE GROUND)			
0,30-1,00		Reddish brown and grey sandy fine to coarse sub-angular gravel of sandstone with some brick and concrete fragments. (MADE GROUND)			
1,00		End of trial pit.	0,90	J/D	

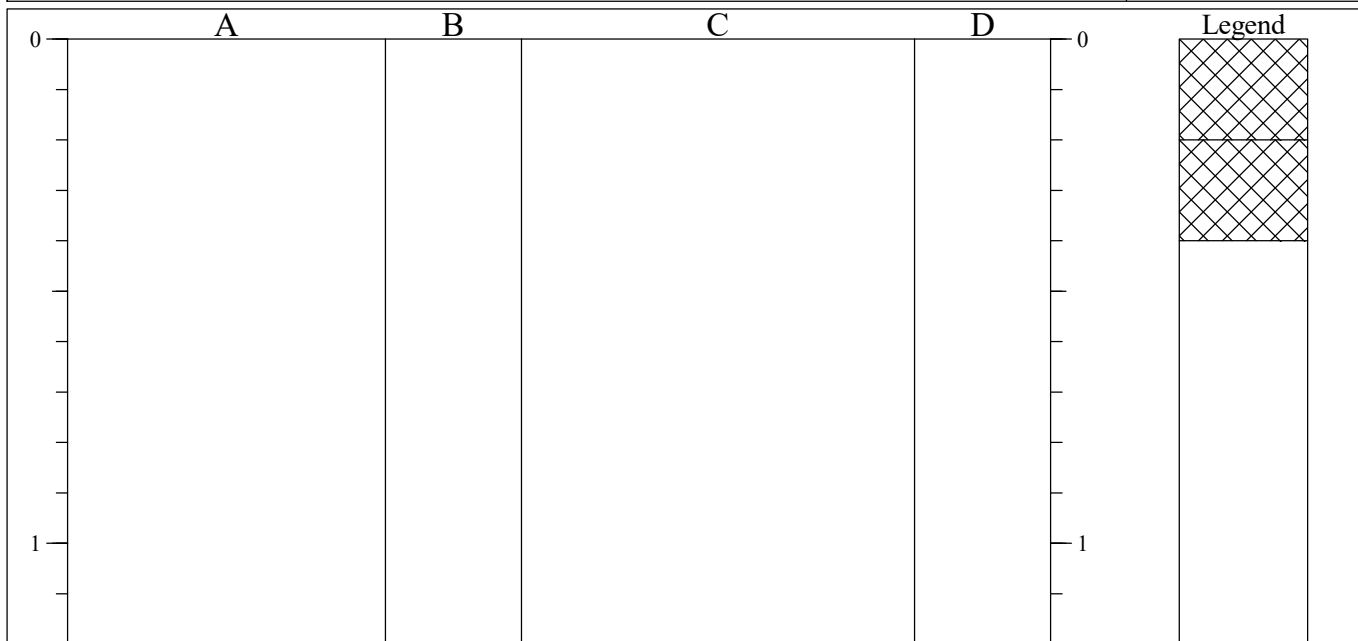
Shoring/Support: Stability:		GENERAL REMARKS
		Trial pit remained dry and stable during exploratory period.

All dimensions in metres Scale 1:15	Client Alan Wood & Partners	Method/ Plant Used Manual Excavation	Logged By JH
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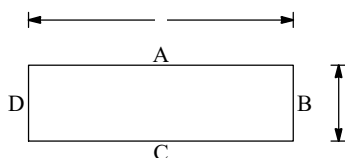


TRIAL PIT LOG

Project Marydale Secure Children's Home				TRIAL PIT No TP4
Job No 24-011	Date 15-02-24 15-02-24	Ground Level (m)	Co-Ordinates ()	
Contractor Arc Environmental Limited				Sheet 1 of 1



STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests	
0,00-0,20		Dark brown gravelly clayey soil. Gravel comprises fine to coarse sub-angular to sub-rounded sandstone. (MADE GROUND)	0,30	J/D		
0,20-0,40		Reddish brown very clayey sandy fine to coarse sub-angular gravel of sandstone with some brick fragments. (MADE GROUND)				
0,40		Trial pit terminated due to encountering concrete slab. c.0.40-0.90m: Probe drilling undertaken with concrete noted as c.0.50m thick.				

Shoring/Support:
Stability:GENERAL
REMARKS

Trial pit remained dry and stable during exploratory period.

All dimensions in metres
Scale 1:15

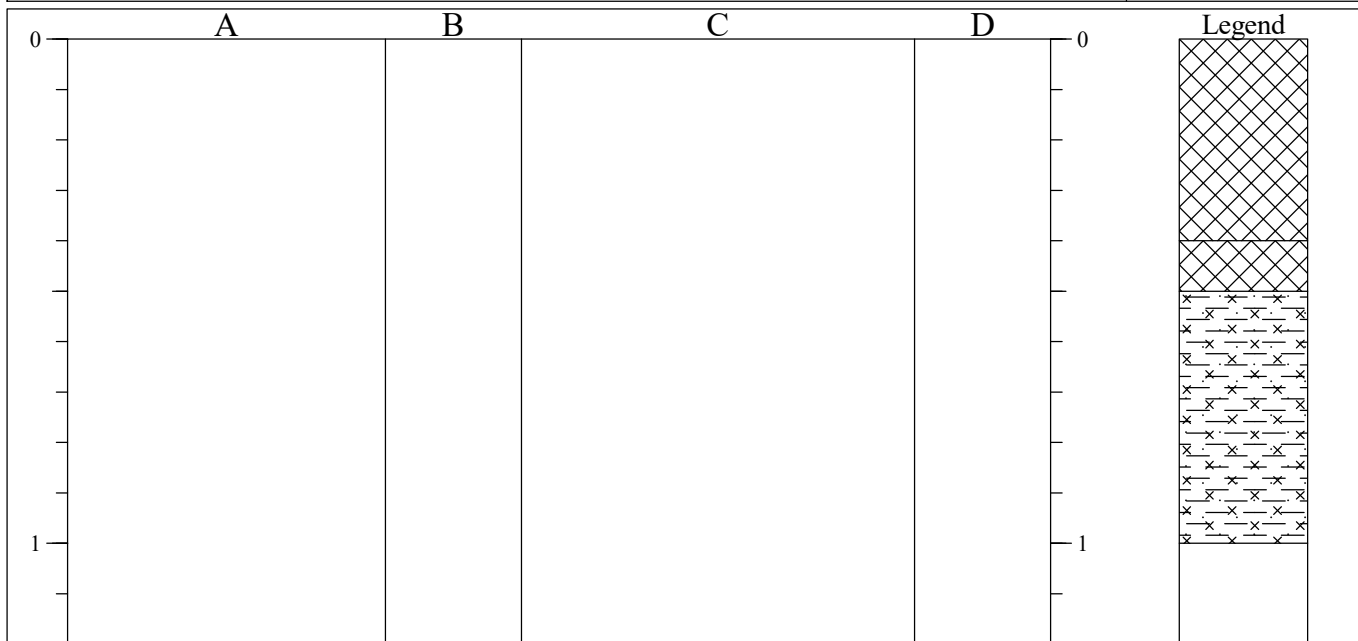
Client Alan Wood & Partners

Method/
Plant Used Manual ExcavationLogged By
JH

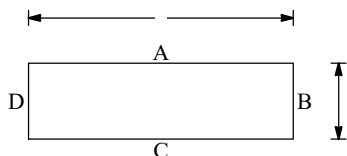


TRIAL PIT LOG

Project Marydale Secure Children's Home				TRIAL PIT No TP5
Job No 24-011	Date 16-02-24 16-02-24	Ground Level (m)	Co-Ordinates ()	
Contractor Arc Environmental Limited				Sheet 1 of 1



STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests	
0,00-0,40		Dark brown gravelly clayey soil. Gravel comprises fine to coarse sub-angular to sub-rounded sandstone. (MADE GROUND)			60kN/m ²	
0,40-0,50		Dark brown and reddish brown grey orange mottled very clayey sandy fine to coarse sub-angular gravel of sandstone. Occasional sandstone cobbles. (MADE GROUND)	0,30	J/D		
0,50-1,00		Firm (medium strength) reddish brown / orange locally mottled black / grey silty sandy clay (GLACIAL TILL)	0,40	B		
			0,50	V	52kN/m ²	
			0,90	B		
1,00		End of trial pit.	1,00	V		

Shoring/Support:
Stability:GENERAL
REMARKS

Trial pit remained dry and stable during exploratory period.

All dimensions in metres
Scale 1:15

Client Alan Wood & Partners

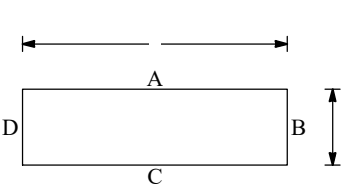
Method/
Plant Used Manual ExcavationLogged By
JH

**TRIAL PIT LOG**

Project Marydale Secure Children's Home				TRIAL PIT No TP6
Job No 24-011	Date 15-02-24 15-02-24	Ground Level (m)	Co-Ordinates ()	
Contractor Arc Environmental Limited				Sheet 1 of 1

0	A	B	C	D	0	Legend
1					1	

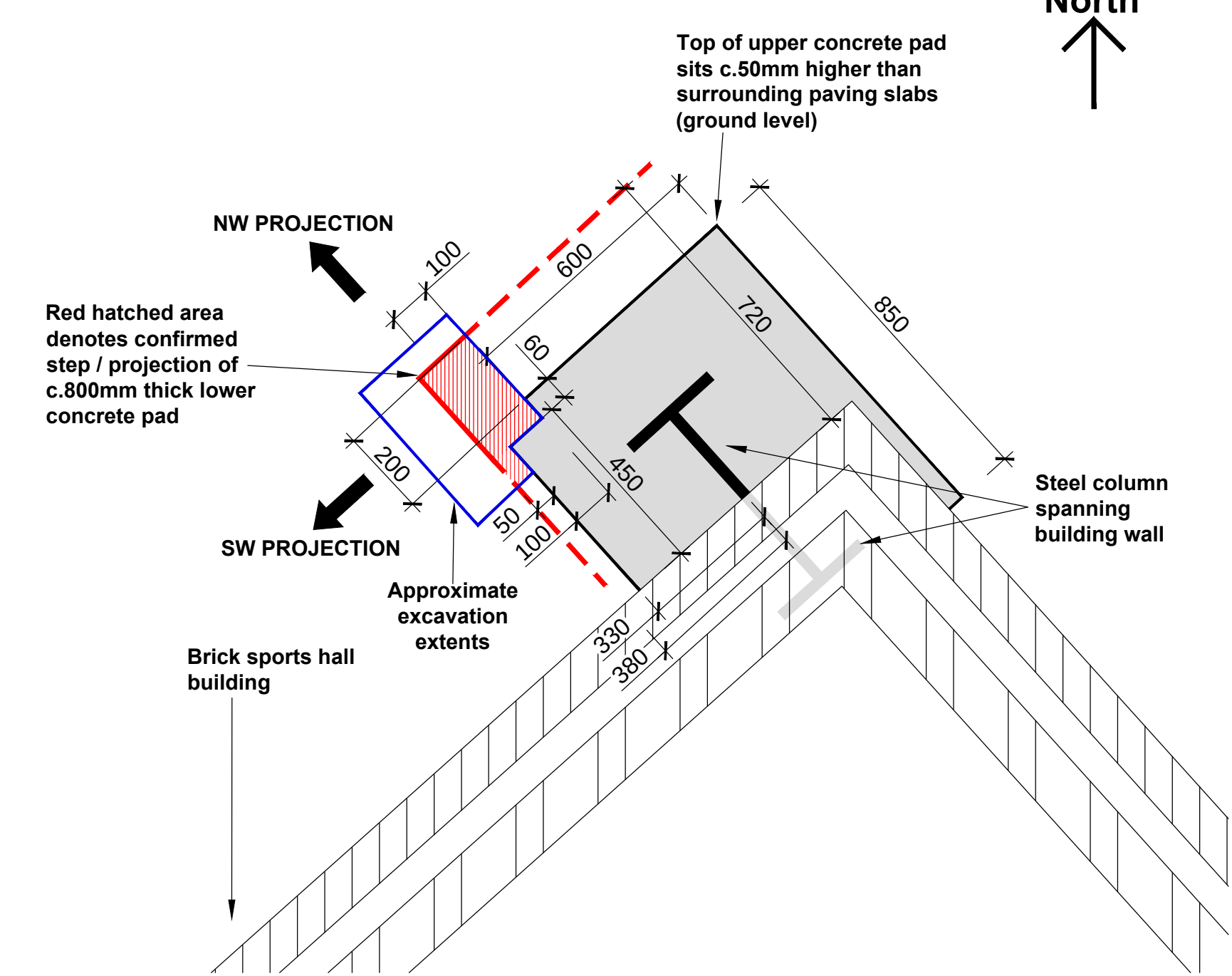
STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0,00-0,20		Dark brown gravelly clayey soil. Gravel comprises fine to coarse sub-angular to sub-rounded sandstone. (MADE GROUND)			
0,20-0,70		Brown slightly clayey sandy fine to coarse sub-angular to rounded gravel of sandstone. Frequent brick fragments and sandstone cobbles. Wet. (MADE GROUND)			
0,70-1,10		Brown very clayey / silty sandy fine to coarse sub-angular to sub-rounded gravel of sandstone with occasional brick fragments and sandstone cobbles. (MADE GROUND)	0,90 0,90	B J/D	
1,10		End of trial pit.			

Shoring/Support: Stability:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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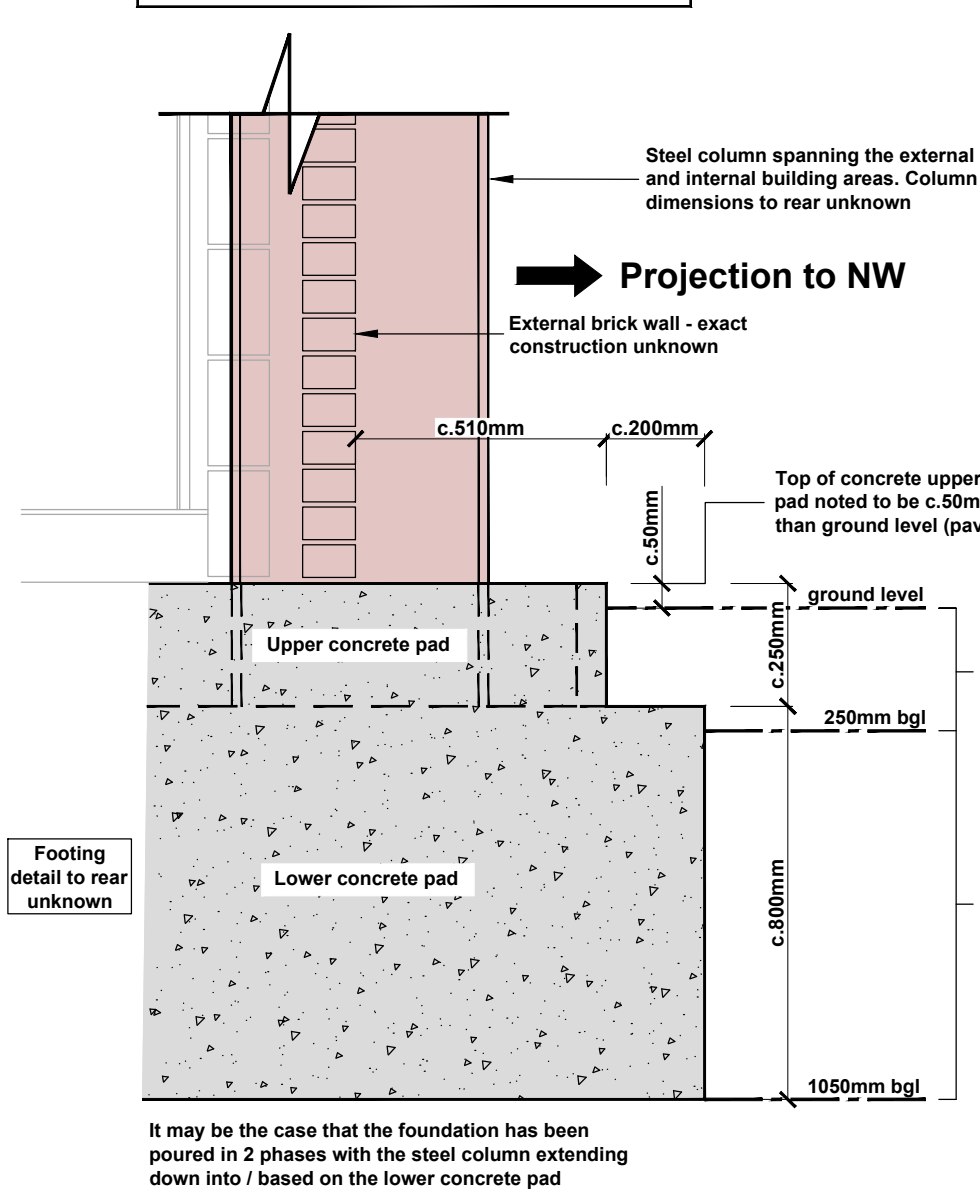
All dimensions in metres Scale 1:15	Client Alan Wood & Partners	Method/ Plant Used Manual Excavation	Logged By JH
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Foundation Record Sheet

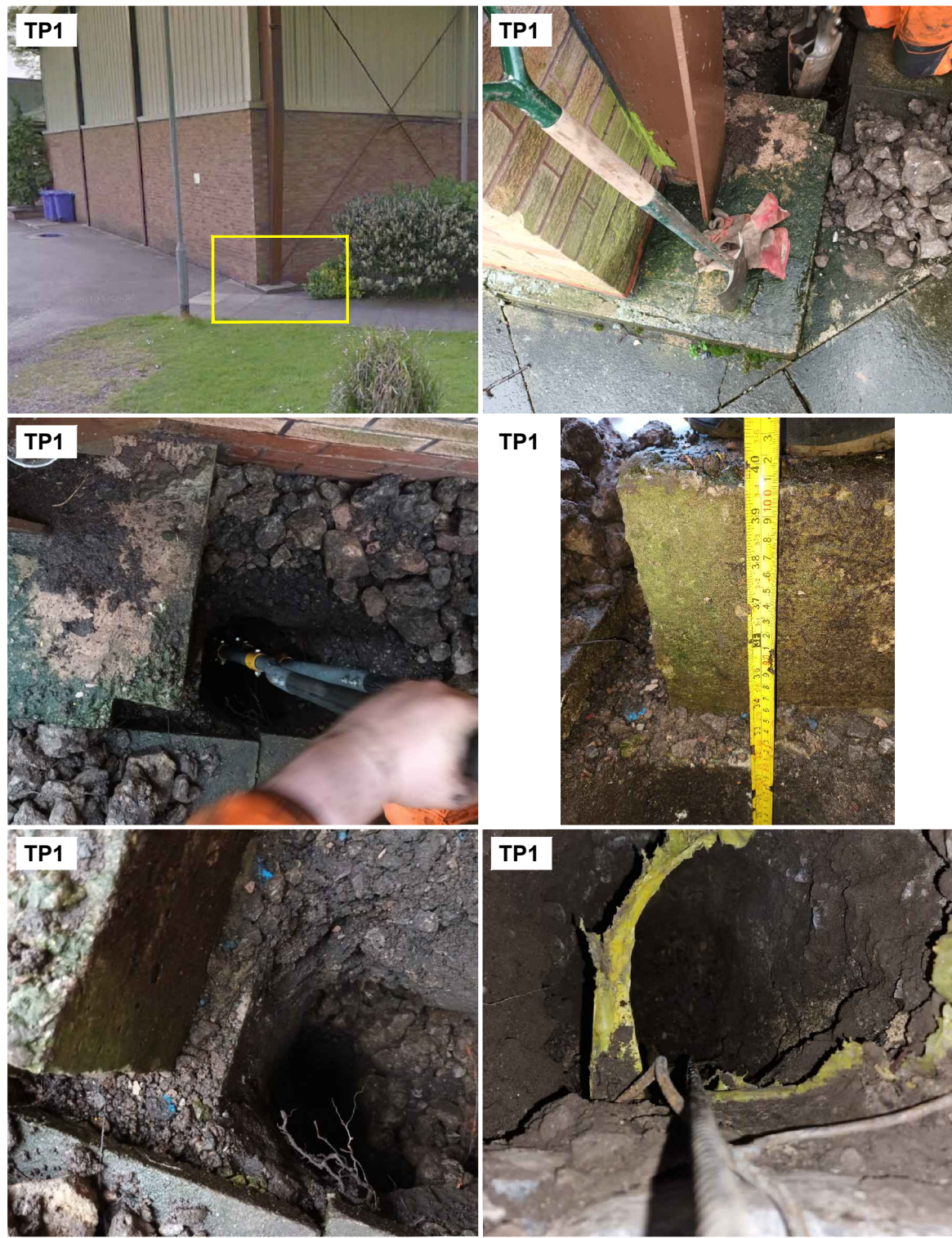
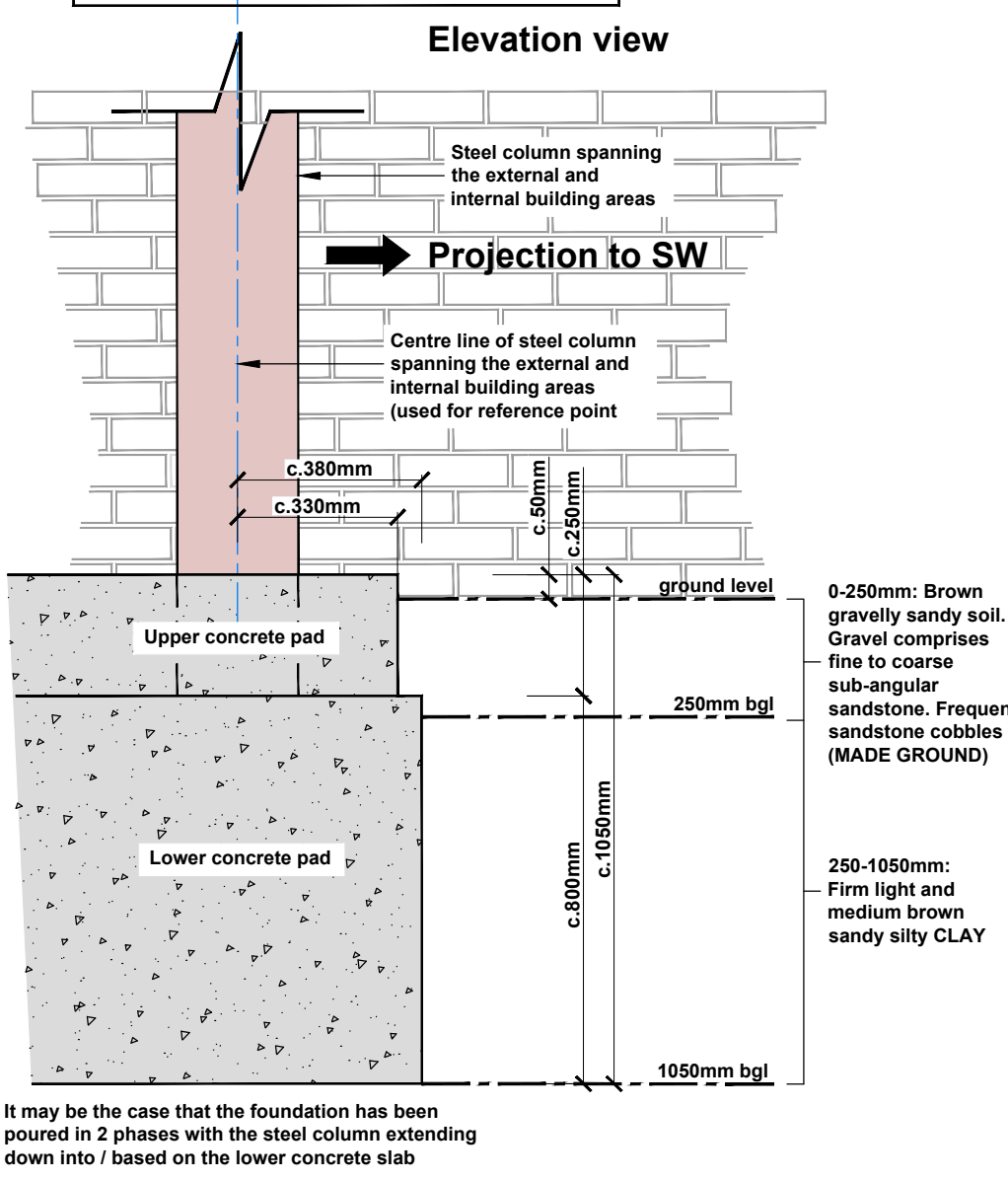
Foundation inspection pit TP1 - PLAN VIEW



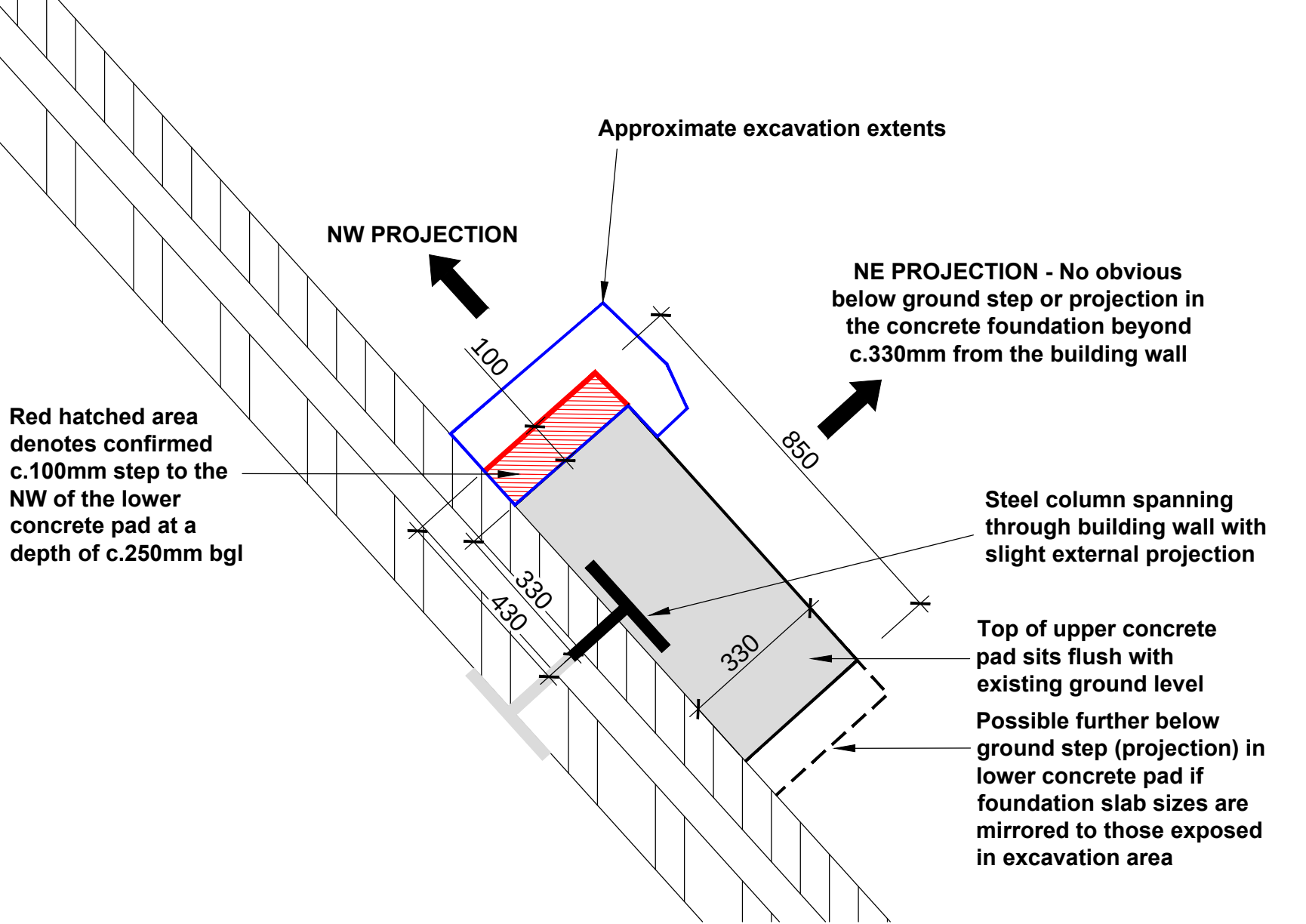
Foundation inspection pit TP1 - CROSS SECTION



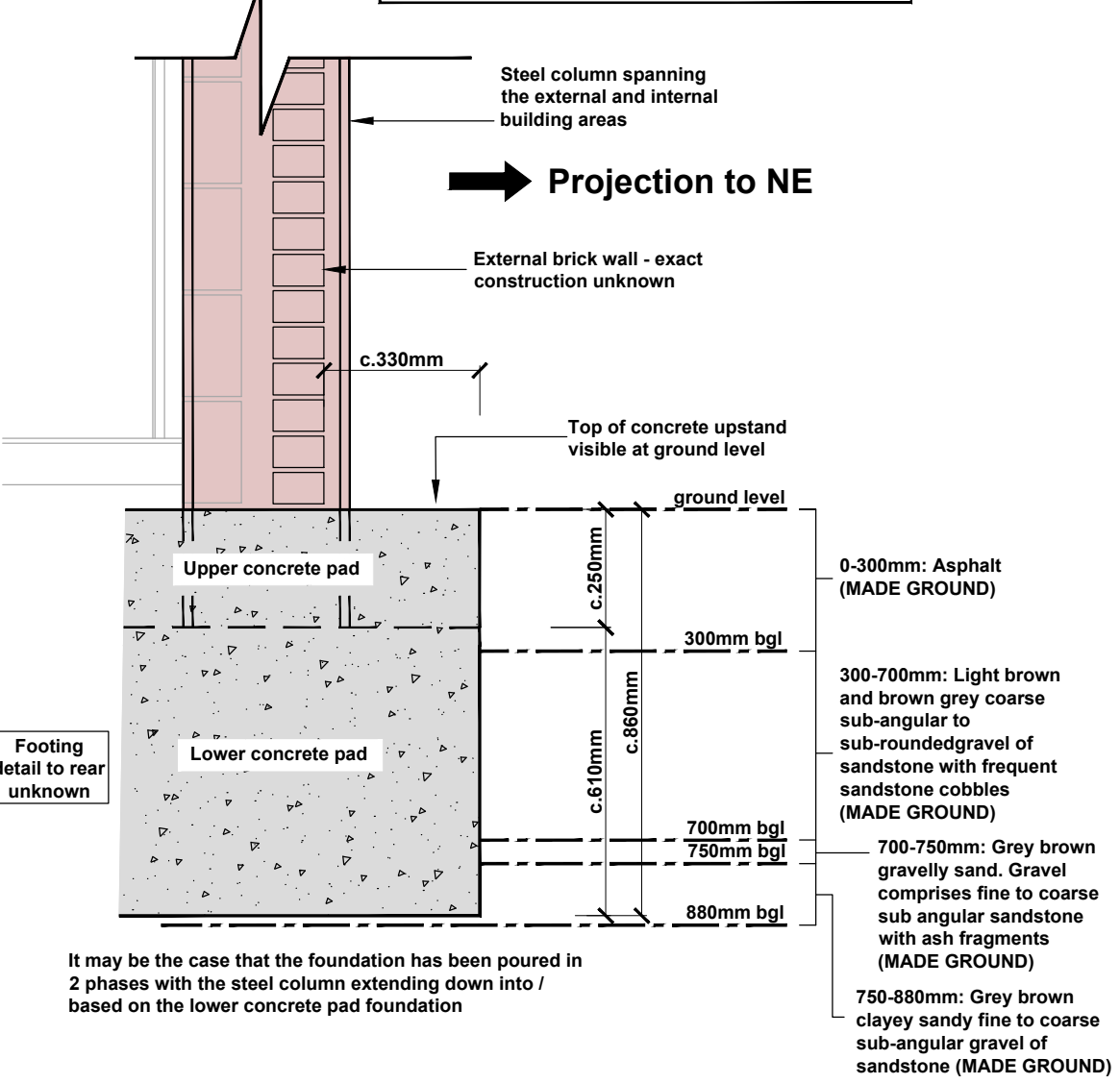
Foundation inspection pit TP2 - CROSS SECTION



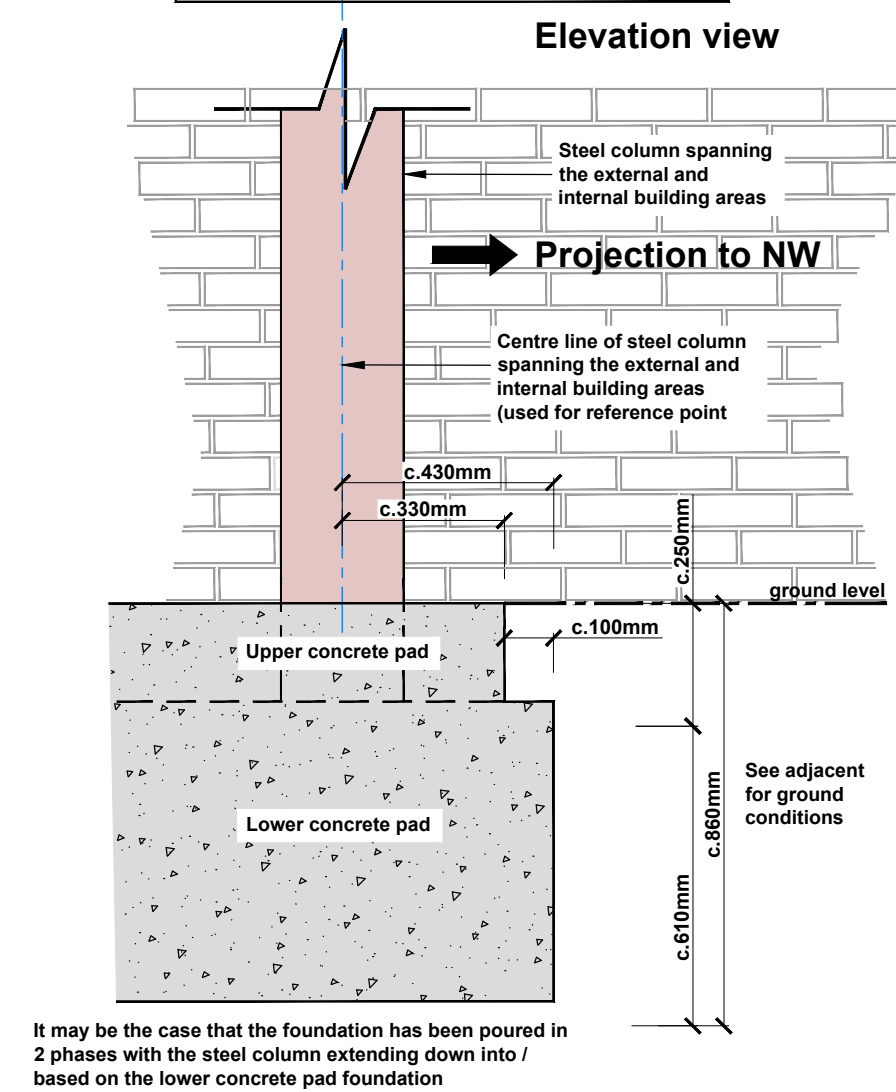
Foundation inspection pit TP2 - PLAN VIEW



Foundation inspection pit TP2 - CROSS SECTION

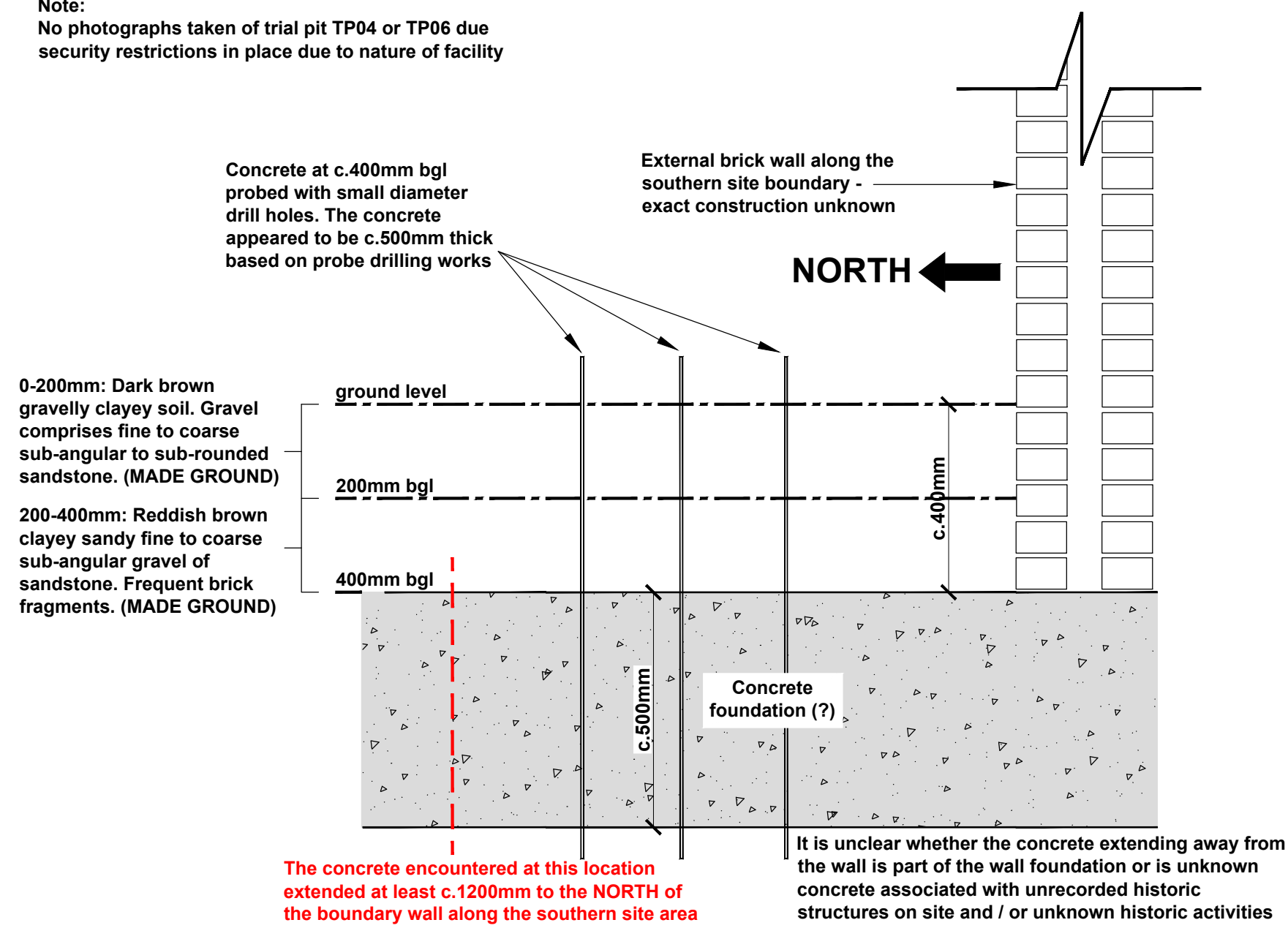


Foundation inspection pit TP2 - CROSS SECTION



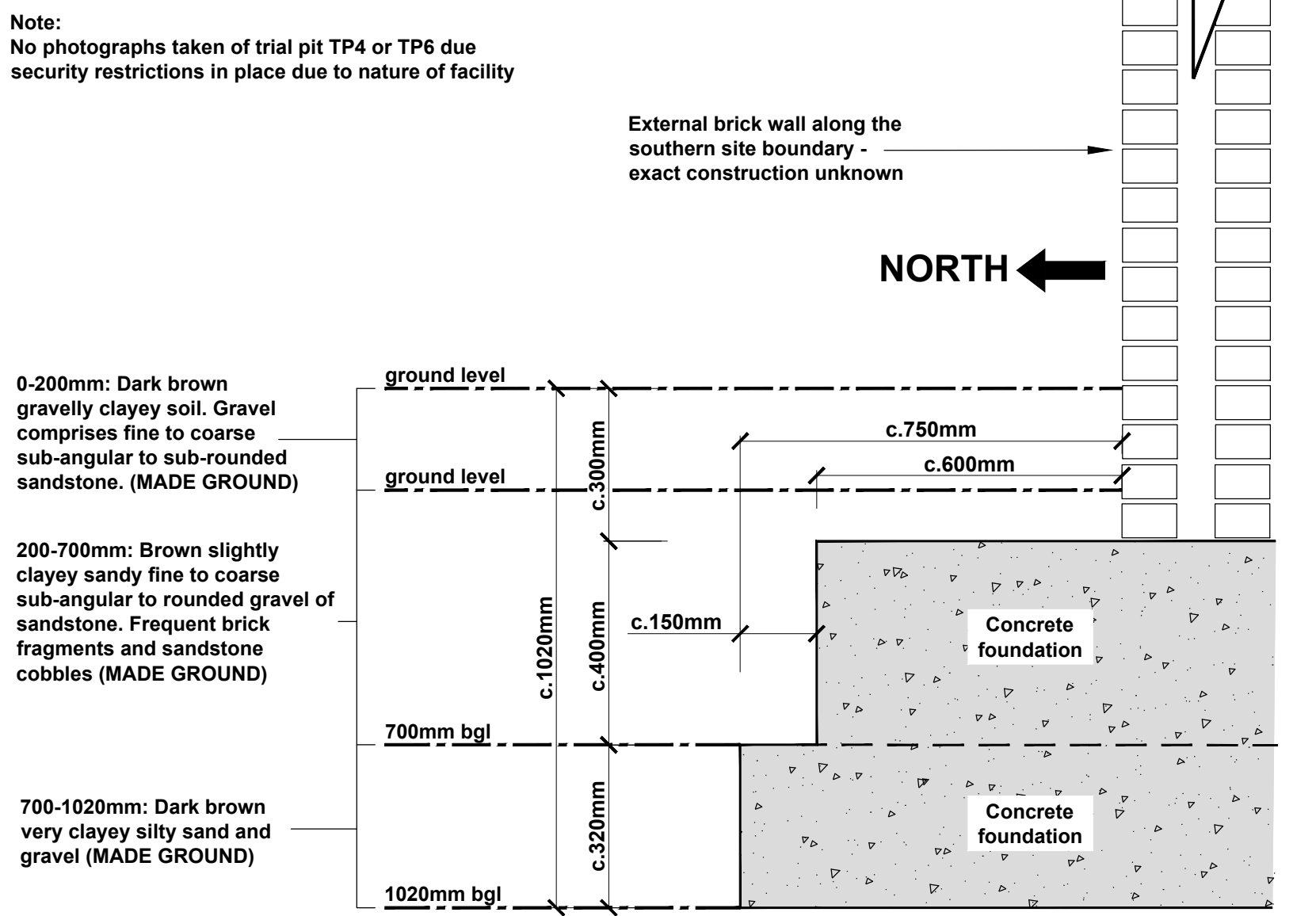
Foundation inspection pit TP4 - CROSS SECTION

Note:
No photographs taken of trial pit TP04 or TP06 due to security restrictions in place due to nature of facility



Foundation inspection pit TP6 - CROSS SECTION

Note:
No photographs taken of trial pit TP4 or TP6 due to security restrictions in place due to nature of facility



ARC ENVIRONMENTAL LTD

Solum House
Unit 1 Elliott Court
St. John's Road
Meadowfield
Durham, DH7 8PN
Tel: (0191) 378 6380
e-mail: admin@arc-environmental.com
web: www.arc-environmental.com

The contractor shall check all dimensions on site prior to commencement of works. No dimensions to be scaled off this drawing.
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rev.	date	amendments	drawn	checked

Client:
ALAN WOOD & PARTNERS

Project Title:
Marydale Secure Children's Home
Blackbrook Road
Saint Helens, WA11 9RJ

Drawing Title:
Foundation Detail Record Sheet

Scale: at A1: As Shown | Date: 25.03.24 | Drawn by: P.D. | Approved by: D.M.

Job Ref: 24-011 | Drg no: — | Rev: —

Laboratory Results



ANALYTICAL TEST REPORT

Contract no: 130833

Contract name: Marydale Secure Childrens Home

Client reference: 24-011

Clients name: ARC Environmental

Clients address: Solum House, Unit 1 Elliott Court
St Johns Road
Meadowfield
DH7 8PN

Samples received: 23 February 2024

Analysis started: 23 February 2024

Analysis completed: 05 March 2024

Report issued: 06 March 2024

Key

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

Approved by:

Samantha Rogerson
Reporting Manager

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

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

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
130833-1	TP2	0.70	Sand with Gravel	-	-	7.7
130833-2	TP4	0.30	Sand with Gravel	-	-	14.1
130833-3	BH3	0.30	Loamy Clay with Gravel	-	-	18.7
130833-4	TP6	0.90	Clay	-	-	17.4
130833-5	BH1	1.60	Clay	-	-	15.7

Chemtech Environmental Limited

SOILS

Lab number			130833-1	130833-2	130833-3	130833-4	130833-5
Sample id			TP2	TP4	BH3	TP6	BH1
Depth (m)			0.70	0.30	0.30	0.90	1.60
Date sampled			15/02/2024	15/02/2024	15/02/2024	15/02/2024	16/02/2024
Test	Method	Units					
Moisture Content	CE001	% w/w	7.7	14.1	18.7	-	-
Arsenic (total)	CE264 ^M	mg/kg As	4.3	9.2	12	-	-
Cadmium (total)	CE264 ^M	mg/kg Cd	<1.6	<1.6	<1.6	-	-
Chromium (total)	CE264 ^U	mg/kg Cr	21	53	42	-	-
Chromium (III)	CE208	mg/kg CrIII	21	53	42	-	-
Chromium (VI)	CE263	mg/kg CrVI	<0.04	<0.04	<0.04	-	-
Copper (total)	CE264 ^M	mg/kg Cu	12	32	56	-	-
Lead (total)	CE264 ^U	mg/kg Pb	26	67	94	-	-
Mercury (total)	CE264 ^U	mg/kg Hg	<0.7	<0.7	<0.7	-	-
Nickel (total)	CE264 ^M	mg/kg Ni	11	26	23	-	-
Selenium (total)	CE264	mg/kg Se	<3	<3	<3	-	-
Zinc (total)	CE264 ^M	mg/kg Zn	62	66	104	-	-
pH	CE004 ^M	units	9.2	9.0	8.4	8.9	8.2
Sulphate (2:1 water soluble)	CE061 ^U	mg/l SO ₄	30	178	30	66	36
Cyanide (free)	CE077	mg/kg CN	<1	<1	<1	-	-
Total Organic Carbon (TOC)	CE197	% w/w C	2.2	1.5	2.3	-	-
PAH							
Naphthalene	CE087 ^M	mg/kg	0.04	0.13	0.05	-	-
Acenaphthylene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02	-	-
Acenaphthene	CE087 ^M	mg/kg	<0.02	0.17	0.12	-	-
Fluorene	CE087 ^U	mg/kg	<0.02	0.08	0.12	-	-
Phenanthrene	CE087 ^M	mg/kg	0.15	0.74	2.52	-	-
Anthracene	CE087 ^U	mg/kg	0.05	0.13	0.68	-	-
Fluoranthene	CE087 ^M	mg/kg	0.66	1.08	4.91	-	-
Pyrene	CE087 ^M	mg/kg	0.89	1.04	4.13	-	-
Benzo(a)anthracene	CE087 ^U	mg/kg	0.63	0.52	2.05	-	-
Chrysene	CE087 ^M	mg/kg	0.62	0.60	2.14	-	-
Benzo(b)fluoranthene	CE087 ^M	mg/kg	1.67	0.60	1.97	-	-
Benzo(k)fluoranthene	CE087 ^M	mg/kg	0.55	0.24	0.83	-	-
Benzo(a)pyrene	CE087 ^U	mg/kg	1.65	0.50	1.77	-	-
Indeno(123cd)pyrene	CE087 ^M	mg/kg	1.65	0.41	1.10	-	-
Dibenz(ah)anthracene	CE087 ^M	mg/kg	0.35	0.08	0.26	-	-
Benzo(ghi)perylene	CE087 ^M	mg/kg	1.94	0.42	1.06	-	-
PAH (total of USEPA 16)	CE087	mg/kg	10.9	6.73	23.7	-	-

Chemtech Environmental Limited

SOILS

Lab number			130833-1	130833-2	130833-3	130833-4	130833-5
Sample id			TP2	TP4	BH3	TP6	BH1
Depth (m)			0.70	0.30	0.30	0.90	1.60
Date sampled			15/02/2024	15/02/2024	15/02/2024	15/02/2024	16/02/2024
Test	Method	Units					
BTEX & TPH							
Benzene	\$	mg/kg	<0.001	<0.001	<0.001	-	-
Toluene	\$	mg/kg	<0.001	<0.001	<0.001	-	-
Ethylbenzene	\$	mg/kg	<0.001	<0.001	<0.001	-	-
m & p-Xylene	\$	mg/kg	<0.001	<0.001	<0.001	-	-
o-Xylene	\$	mg/kg	<0.001	<0.001	<0.001	-	-
VPH Aliphatic (>C5-C6)	\$	mg/kg	<0.05	<0.05	<0.05	-	-
VPH Aliphatic (>C6-C8)	\$	mg/kg	<0.05	<0.05	<0.05	-	-
VPH Aliphatic (>C8-C10)	\$	mg/kg	<0.05	<0.05	<0.05	-	-
EPH Aliphatic (>C10-C12)	CE250	mg/kg	38	4	2	-	-
EPH Aliphatic (>C12-C16)	CE250	mg/kg	16	1	1	-	-
EPH Aliphatic (>C16-C35)	CE250	mg/kg	532	8	6	-	-
EPH Aliphatic (>C35-C44)	CE250	mg/kg	100	1	<1	-	-
VPH Aromatic (>EC5-EC7)	\$	mg/kg	<0.05	<0.05	<0.05	-	-
VPH Aromatic (>EC7-EC8)	\$	mg/kg	<0.05	<0.05	<0.05	-	-
VPH Aromatic (>EC8-EC10)	\$	mg/kg	<0.05	<0.05	<0.05	-	-
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	31.25	1.42	1.45	-	-
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	62.87	3.33	3.06	-	-
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	82.58	6.59	6.29	-	-
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	1993.30	44.32	38.03	-	-
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	570.26	14.52	9.91	-	-
Subcontracted analysis							
Asbestos (qualitative)	\$	-	NAD	NAD	NAD	-	-

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE001	Moisture Content	Gravimetry	As received		0.1	% w/w
CE264	Arsenic (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.8	mg/kg As
CE264	Cadmium (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.6	mg/kg Cd
CE264	Chromium (total)	Aqua Regia Extraction, ICPOES	Dry	U	2	mg/kg Cr
CE208	Chromium (III)	Calculation: Cr (total) - Cr (VI)	Dry		1	mg/kg CrIII
CE263	Chromium (VI)	Discrete Analyser	Dry		0.04	mg/kg CrVI
CE264	Copper (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.6	mg/kg Cu
CE264	Lead (total)	Aqua Regia Extraction, ICPOES	Dry	U	3	mg/kg Pb
CE264	Mercury (total)	Aqua Regia Extraction, ICPOES	Dry	U	0.7	mg/kg Hg
CE264	Nickel (total)	Aqua Regia Extraction, ICPOES	Dry	M	2.1	mg/kg Ni
CE264	Selenium (total)	Aqua Regia Extraction, ICPOES	Dry	U	3	mg/kg Se
CE264	Zinc (total)	Aqua Regia Extraction, ICPOES	Dry	M	4	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO ₄
CE077	Cyanide (free)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
\$	Benzene	Headspace GC-FID	As received	U	0.001	mg/kg
\$	Toluene	Headspace GC-FID	As received	U	0.001	mg/kg
\$	Ethylbenzene	Headspace GC-FID	As received	U	0.001	mg/kg
\$	m & p-Xylene	Headspace GC-FID	As received	U	0.001	mg/kg
\$	o-Xylene	Headspace GC-FID	As received	U	0.001	mg/kg
\$	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.05	mg/kg
\$	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.05	mg/kg
\$	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.05	mg/kg
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		15	mg/kg

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		10	mg/kg
\$	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.05	mg/kg
\$	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.05	mg/kg
\$	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.05	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments

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

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

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

Key

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

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
130833-1	TP2	0.70	N	
130833-2	TP4	0.30	N	
130833-3	BH3	0.30	N	
130833-4	TP6	0.90	N	
130833-5	BH1	1.60	N	

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

BTEX compounds are identified by retention time only and may include interference from co-eluting compounds.

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

Analytical results are inclusive of stones, where applicable.



LABORATORY REPORT



Contract Number: PSL24/1428

Report Date: 06 March 2024
Client's Reference: 24-011
Client Name: Arc Environmental
Solum House
Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham
DH7 8PN

For the attention of: Phil Brown/Jeremy Ha

Contract Title: Marydale Secure Children's Home

Date Received: 26/2/2024
Date Commenced: 26/2/2024
Date Completed: 6/3/2024

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
(Managing Director)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager) (Senior Technical Coordinator)

S Eyre

T Watkins
(Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: 01302 768098
Email: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

Marydale Secure Children's Home

Contract No:

PSL24/1428

Client Ref:

24-011

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

*** : Liquid Limit and Plastic Limit Wet Sieved.**



Marydale Secure Children's Home

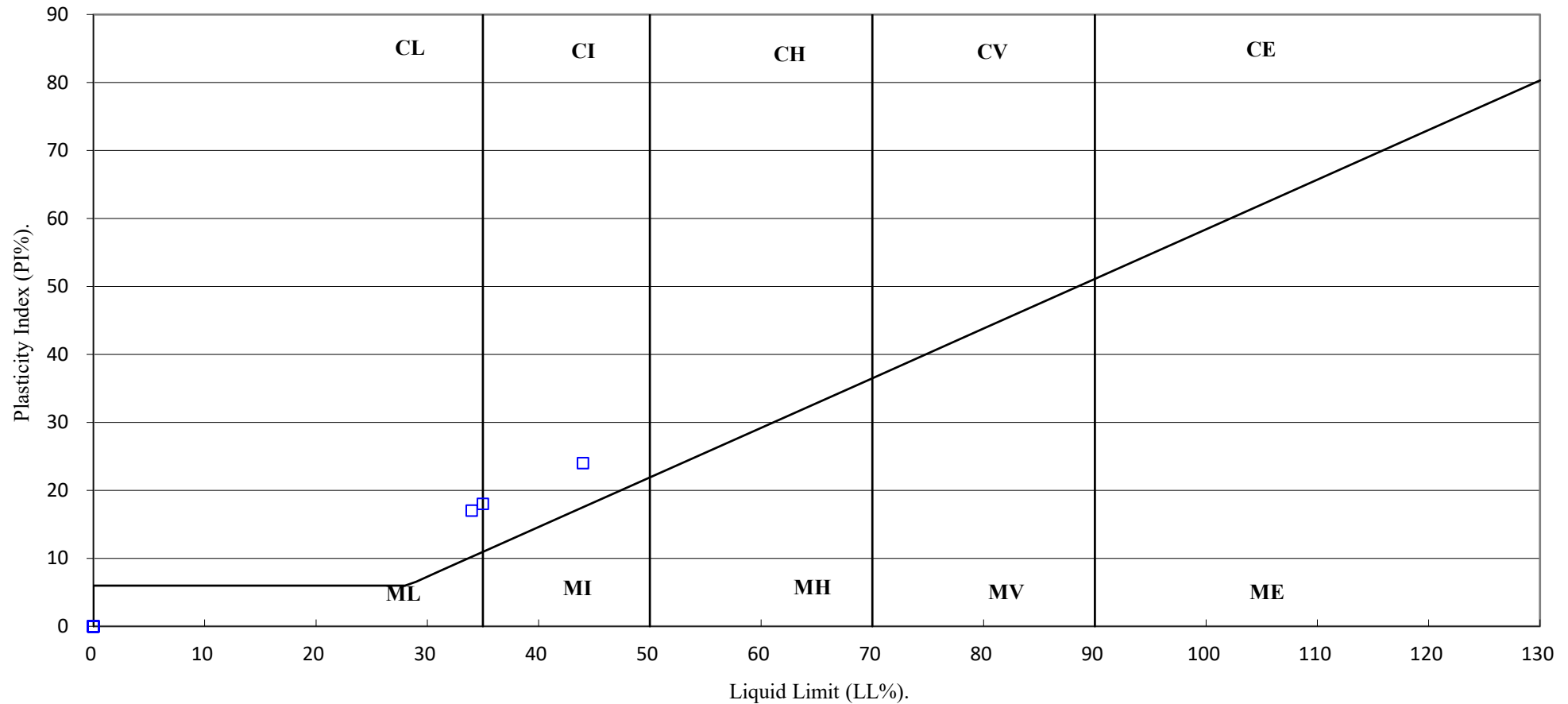
Contract No:

PSL24/1428

Client Ref:

24-011

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



Marydale Secure Children's Home

Contract No:

PSL24/1428

Client Ref:

24-011

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

TP6

Top Depth (m):

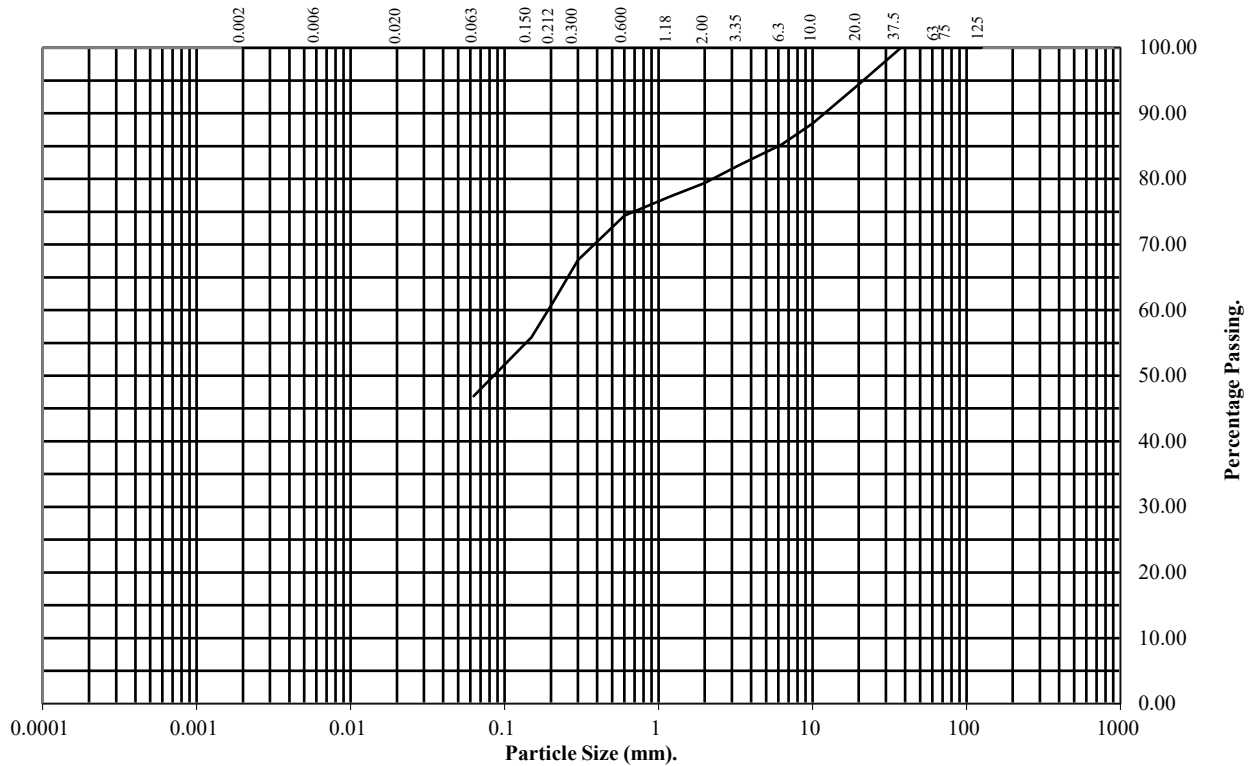
0.90

Sample Number:

Base Depth(m):

Sample Type:

B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	88
6.3	85
3.35	82
2	79
1.18	77
0.6	74
0.3	68
0.212	62
0.15	56
0.063	47

Soil Fraction	Total Percentage
Cobbles	0
Gravel	21
Sand	32
Silt/Clay	47

Remarks:

See Summary of Soil Descriptions



Marydale Secure Children's Home

Contract No:
PSL24/1428
Client Ref:
24-011

Determination of Unconfined Compressive Strength.

BS EN-12504-1:2009

[illegible]

Marydale Secure Children's Home

Contract No:

PSL24/1428

Client Ref:

24-011

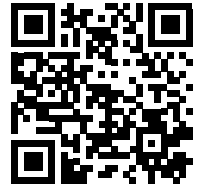
Waste Classification Report



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:

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



FB3HG-FEEVX-4I6DE

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

Job name

Marydale Secure Childrens School, St. Helens

Description/Comments

Classification of excavated made ground materials which may be discarded from site as a waste to landfill. Classification based on chemical screening within the Arc Environmental Ltd. Ground Investigation Report, Ref. 24-011.01L, March 2024.

Project

24-011

Site

Marydale Secure Childrens School, St. Helens

Classified by

Name:
Mark Berriman
Date:
28 Mar 2024 10:17 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:

Course
Hazardous Waste Classification
3 year Refresher overdue

Date
08 Jun 2017

Purpose of classification

2 - Material Characterisation

Address of the waste

Marydale Secure Childrens School, Blackbrook Road, St. Helens

Post Code WA11 9RJ

SIC for the process giving rise to the waste

41201 Construction of commercial buildings

Description of industry/producer giving rise to the waste

Internal new mezzanine floor construction and new classrooms.

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

Waste created through the excavation of made ground for new foundations and services

Description of the waste

Made ground clayey/silty sandy sandstone gravel with fragmented concrete, brick and some ash.



Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	TP2	0.70	Hazardous	HP 3(i), HP 7, HP 11	3
2	TP4	0.30	Non Hazardous		6
3	BH3	0.30	Non Hazardous		9

Related documents

#	Name	Description
1	Arc 2021	waste stream template used to create this Job

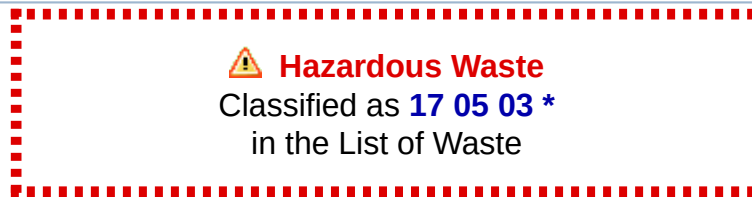
Report

Created by: Mark Berriman

Created date: 28 Mar 2024 10:17 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	11
Appendix B: Rationale for selection of metal species	12
Appendix C: Version	13

Classification of sample: TP2



Sample details

Sample name:	LoW Code:	
TP2	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 03 * (Soil and stones containing hazardous substances)
0.70 m		
Moisture content:		
7.7%		
(wet weight correction)		

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.316%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.316%)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.316%)

Determinands

Moisture content: 7.7% 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 }				4.3 mg/kg	1.32	5.24 mg/kg	0.000524 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				<1.6 mg/kg	1.142	<1.828 mg/kg	<0.000183 %		<LOD
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				20.9 mg/kg	1.462	28.194 mg/kg	0.00282 %	✓	
		215-160-9	1308-38-9							



#	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									
4	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.04	mg/kg	1.923	<0.0769	mg/kg	<0.00000769 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
5	copper { dicopper oxide; copper (I) oxide }				12.3	mg/kg	1.126	12.782	mg/kg	0.00128 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead chromate }			1	25.9	mg/kg	1.56	37.288	mg/kg	0.00239 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
7	mercury { mercury dichloride }				<0.7	mg/kg	1.353	<0.947	mg/kg	<0.0000947 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel chromate }				10.6	mg/kg	2.976	29.119	mg/kg	0.00291 %	✓	
	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 }				<3	mg/kg	1.405	<4.215	mg/kg	<0.000422 %		<LOD
	034-002-00-8											
10	zinc { zinc chromate }				61.8	mg/kg	2.774	158.241	mg/kg	0.0158 %	✓	
	024-007-00-3	236-878-9	13530-65-9									
11	pH		PH		9.2	pH		9.2	pH	9.2 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 }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5											
13	acenaphthene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		201-469-6	83-32-9									
14	acenaphthylene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		205-917-1	208-96-8									
15	anthracene				0.05	mg/kg		0.0462	mg/kg	0.00000462 %	✓	
		204-371-1	120-12-7									
16	benzo[a]anthracene				0.63	mg/kg		0.581	mg/kg	0.0000581 %	✓	
	601-033-00-9	200-280-6	56-55-3									
17	benzo[a]pyrene; benzo[def]chrysene				1.65	mg/kg		1.523	mg/kg	0.000152 %	✓	
	601-032-00-3	200-028-5	50-32-8									
18	benzo[b]fluoranthene				1.67	mg/kg		1.541	mg/kg	0.000154 %	✓	
	601-034-00-4	205-911-9	205-99-2									
19	benzo[ghi]perylene				1.94	mg/kg		1.791	mg/kg	0.000179 %	✓	
		205-883-8	191-24-2									
20	benzo[k]fluoranthene				0.55	mg/kg		0.508	mg/kg	0.0000508 %	✓	
	601-036-00-5	205-916-6	207-08-9									
21	chrysene				0.62	mg/kg		0.572	mg/kg	0.0000572 %	✓	
	601-048-00-0	205-923-4	218-01-9									
22	dibenz[a,h]anthracene				0.35	mg/kg		0.323	mg/kg	0.0000323 %	✓	
	601-041-00-2	200-181-8	53-70-3									
23	fluoranthene				0.66	mg/kg		0.609	mg/kg	0.0000609 %	✓	
		205-912-4	206-44-0									
24	fluorene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		201-695-5	86-73-7									
25	indeno[123-cd]pyrene				1.65	mg/kg		1.523	mg/kg	0.000152 %	✓	
		205-893-2	193-39-5									
26	naphthalene				0.04	mg/kg		0.0369	mg/kg	0.00000369 %	✓	
	601-052-00-2	202-049-5	91-20-3									
27	phenanthrene				0.15	mg/kg		0.138	mg/kg	0.0000138 %	✓	
		201-581-5	85-01-8									
28	pyrene				0.89	mg/kg		0.821	mg/kg	0.0000821 %	✓	
		204-927-3	129-00-0									
29	benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	601-020-00-8	200-753-7	71-43-2									
30	toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3									



#	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							
31	ethylbenzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
32	xylene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
33	TPH (C6 to C40) petroleum group				3426 mg/kg		3162.198 mg/kg	0.316 %	✓	
			TPH							
34	confirm TPH has NOT arisen from diesel or petrol				☒					
35	asbestos				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
	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							
Total:								0.345 %		

Key

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

Classification of sample: TP4

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

Sample details

Sample name:	LoW Code:
TP4	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 m	
Moisture content:	
14.1%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 14.1% 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 }				9.2 mg/kg	1.32	10.434 mg/kg	0.00104 %	✓		
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium oxide }				<1.6 mg/kg	1.142	<1.828 mg/kg	<0.000183 %			<LOD
	048-002-00-0	215-146-2	1306-19-0								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				53 mg/kg	1.462	66.54 mg/kg	0.00665 %	✓		
		215-160-9	1308-38-9								
4	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.04 mg/kg	1.923	<0.0769 mg/kg	<0.00000769 %			<LOD
	024-001-00-0	215-607-8	1333-82-0								
5	copper { dicopper oxide; copper (I) oxide }				31.9 mg/kg	1.126	30.852 mg/kg	0.00309 %	✓		
	029-002-00-X	215-270-7	1317-39-1								
6	lead { lead chromate }			1	66.7 mg/kg	1.56	89.37 mg/kg	0.00573 %	✓		
	082-004-00-2	231-846-0	7758-97-6								
7	mercury { mercury dichloride }				<0.7 mg/kg	1.353	<0.947 mg/kg	<0.0000947 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
8	nickel { nickel chromate }				26.4 mg/kg	2.976	67.495 mg/kg	0.00675 %	✓		
	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 }				<3 mg/kg	1.405	<4.215 mg/kg	<0.000422 %			<LOD
	034-002-00-8										
10	zinc { zinc chromate }				66 mg/kg	2.774	157.277 mg/kg	0.0157 %	✓		
	024-007-00-3	236-878-9	13530-65-9								
11	pH		PH		9 pH		9 pH	9pH			
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 }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
13	acenaphthene				0.17 mg/kg		0.146 mg/kg	0.0000146 %	✓		
		201-469-6	83-32-9								
14	acenaphthylene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<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		0.13 mg/kg		0.112 mg/kg	0.0000112 %	✓	
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.52 mg/kg		0.447 mg/kg	0.0000447 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.5 mg/kg		0.43 mg/kg	0.000043 %	✓	
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.6 mg/kg		0.515 mg/kg	0.0000515 %	✓	
19	benzo[ghi]perylene		205-883-8	191-24-2	0.42 mg/kg		0.361 mg/kg	0.0000361 %	✓	
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.24 mg/kg		0.206 mg/kg	0.0000206 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	0.6 mg/kg		0.515 mg/kg	0.0000515 %	✓	
22	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.08 mg/kg		0.0687 mg/kg	0.00000687 %	✓	
23	fluoranthene		205-912-4	206-44-0	1.08 mg/kg		0.928 mg/kg	0.0000928 %	✓	
24	fluorene		201-695-5	86-73-7	0.08 mg/kg		0.0687 mg/kg	0.00000687 %	✓	
25	indeno[123-cd]pyrene		205-893-2	193-39-5	0.41 mg/kg		0.352 mg/kg	0.0000352 %	✓	
26	naphthalene	601-052-00-2	202-049-5	91-20-3	0.13 mg/kg		0.112 mg/kg	0.0000112 %	✓	
27	phenanthrene		201-581-5	85-01-8	0.74 mg/kg		0.636 mg/kg	0.0000636 %	✓	
28	pyrene		204-927-3	129-00-0	1.04 mg/kg		0.893 mg/kg	0.0000893 %	✓	
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]	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
33	TPH (C6 to C40) petroleum group			TPH	85 mg/kg		73.015 mg/kg	0.0073 %	✓	
34	confirm TPH has NOT arisen from diesel or petrol				☒					
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:								0.0488 %		

Key

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



Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because No liquid phase: too low to be flammable

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0073%)

Classification of sample: BH3

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

Sample details

Sample name:	LoW Code:
BH3	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.30 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18.7%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18.7% 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 }				11.7 mg/kg	1.32	12.559 mg/kg	0.00126 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				<1.6 mg/kg	1.142	<1.828 mg/kg	<0.000183 %		<LOD
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				42 mg/kg	1.462	49.906 mg/kg	0.00499 %	✓	
		215-160-9	1308-38-9							
4	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.04 mg/kg	1.923	<0.0769 mg/kg	<0.00000769 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
5	copper { dicopper oxide; copper (I) oxide }				55.5 mg/kg	1.126	50.802 mg/kg	0.00508 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead chromate }			1	94.3 mg/kg	1.56	119.585 mg/kg	0.00767 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
7	mercury { mercury dichloride }				<0.7 mg/kg	1.353	<0.947 mg/kg	<0.0000947 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel chromate }				23.4 mg/kg	2.976	56.621 mg/kg	0.00566 %	✓	
	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 }				<3 mg/kg	1.405	<4.215 mg/kg	<0.000422 %		<LOD
	034-002-00-8									
10	zinc { zinc chromate }				104 mg/kg	2.774	234.56 mg/kg	0.0235 %	✓	
	024-007-00-3	236-878-9	13530-65-9							
11	pH				8.4 pH		8.4 pH	8.4 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 }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
	006-007-00-5									
13	acenaphthene				0.12 mg/kg		0.0976 mg/kg	0.00000976 %	✓	
		201-469-6	83-32-9							
14	acenaphthylene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<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		0.68 mg/kg		0.553 mg/kg	0.0000553 %	✓	
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	2.05 mg/kg		1.667 mg/kg	0.000167 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	1.77 mg/kg		1.439 mg/kg	0.000144 %	✓	
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	1.97 mg/kg		1.602 mg/kg	0.00016 %	✓	
19	benzo[ghi]perylene	205-883-8	191-24-2		1.06 mg/kg		0.862 mg/kg	0.0000862 %	✓	
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.83 mg/kg		0.675 mg/kg	0.0000675 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	2.14 mg/kg		1.74 mg/kg	0.000174 %	✓	
22	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.26 mg/kg		0.211 mg/kg	0.0000211 %	✓	
23	fluoranthene	205-912-4	206-44-0		4.91 mg/kg		3.992 mg/kg	0.000399 %	✓	
24	fluorene	201-695-5	86-73-7		0.12 mg/kg		0.0976 mg/kg	0.00000976 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		1.1 mg/kg		0.894 mg/kg	0.0000894 %	✓	
26	naphthalene	601-052-00-2	202-049-5	91-20-3	0.05 mg/kg		0.0407 mg/kg	0.00000407 %	✓	
27	phenanthrene	201-581-5	85-01-8		2.52 mg/kg		2.049 mg/kg	0.000205 %	✓	
28	pyrene	204-927-3	129-00-0		4.13 mg/kg		3.358 mg/kg	0.000336 %	✓	
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]	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
33	TPH (C6 to C40) petroleum group		TPH		<15 mg/kg		<15 mg/kg	<0.0015 %		<LOD
34	confirm TPH has NOT arisen from diesel or petrol				☑					
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:								0.0534 %		

Key

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

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) Worst case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

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

mercury {mercury dichloride}

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

nickel {nickel chromate}

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



selenium {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 chromate}

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

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

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

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.2.GB - Oct 2021**

HazWasteOnline Classification Engine Version: 2024.80.5988.11077 (20 Mar 2024)

HazWasteOnline Database: 2024.80.5988.11077 (20 Mar 2024)

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

GB MCL List v2.0 - version 2.0 of 20th October 2023

GB MCL List v4.0 - version 4.0 of 2nd March 2024