

VINCI CONSTRUCTION

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Nicola Priestley
Senior Design Manager

27 November 2023

Subject: Validation to discharge condition 5, Huddersfield Infirmary
Our ref: L-22375-2.4.2-23-880-AFJ

Dear Nicola,

IDOM Merebrook Ltd (IDOM) have been commissioned by VINCI Constructiution UK Ltd (VINCI) to write a letter to address the following comment from Kirkless Council regarding Condition 5 (Validation Report):

“Condition 5 (Validation Report)

A Topsoil Testing and Waste Assessment by IDOM Ltd. dated 6th January 2022 (ref: L-22375-2.4.2-22-9-RL) has been received in support of discharging Condition 5. The document details the retrieval of topsoil samples that were then sent for chemical analysis. Sampling of the made ground within the machine excavated trial pits identified asbestos in two locations (MTP103 and MTP104). The asbestos was identified as loose fibres of chrysotile in each instance (<0.001% w/w and 0.002% w/w respectively). The letter also details that a nominal volume of topsoil has been imported to site for use within raised beds. The approximate volume of this is 200m³. Three samples were taken prior to importation and compared to the screening analysis.

We have read the letter provided. However, we require confirmation regarding the volume of imported material. In addition, there is scant information in relation to the location of MTP103 and MTP104. We note that the report reads, ‘a plan showing the completed investigation locations has also been appended to this letter,’ however this does appear to be the case. What proposals are there to deal with the asbestos identified? Thirdly, it is unclear what remedial efforts have been done. Has clean cover been applied to the site as per the agreed strategy? This should be reported in accordance with best practice guidance. Lastly, it is unclear if and where clean cover has been applied as per the agreed strategy. Therefore, we do not accept the information as we require clarification on these points before we can finalise our recommendations. “

This letter report provides comment and supporting evidence to allow the planning condition to be discharged. The following documents have been used to inform this letter report:

- Mott MacDonald, Huddersfield Royal Infirmary: Remediation Strategy Technical Note, Ref: 100102983, Dated 04/10/2021
- IDOM, Topsoil testing and waste assessment letter report, Report ref: L-22375-2.4.2-22-9-RL, Dated: 06 January 2022

IDOM Intrusive Investigations

Initial delineation

IDOM letter report (ref: L-22375-2.4.2-22-9-RL) discussed the 4 No. trial pits were completed to delineate the materials where soils classified as hazardous waste were identified during a previous investigation (borehole MMBH101). This delineation was for waste disposal purposes only as the remediation strategy technical note recommends that all soils were suitable for reuse under hardstanding. Nevertheless, asbestos was encountered in two samples MTP103 and MTP104 at <0.001% w/w and 0.002% w/w, asbestos had not been encountered within the initial phase 2 site investigation. Further testing was recommended to delineate the hazardous hotspot as additional exceedances of the hazardous waste threshold within MTP103 were encountered.

Further Delineation

IDOM returned to site on 22 January 2022 and completed additional sampling to further delineate the hazardous waste soils. This consisted of 5 No. trial pits (MTP201 – 205) being excavated around the original delineation hotspot. Of the 5 No. samples taken a further 3 No. samples were classified as hazardous waste. The trial pit location plan have been appended to this letter.

A total of 5 soil samples were submitted to the laboratory for chemical analysis, The laboratory chemical analysis certificates are appended to this letter. The results of the analysis are summarised in Table 1.

An initial screening exercise has been undertaken whereby contaminant concentrations recorded in soils have been assessed against Suitable for Use Levels (S4ULs) published in 2015 by LQM/CIEH . These precautionary screening levels are designed to be representative of minimal risk to human health in a number of land use scenarios. In this report S4ULs have been selected for the commercial land use scenario which is considered appropriate for the likely form of occupancy and an adult receptor. Screening levels for organic contaminants have been applied assuming a soil organic matter of 1 %. For lead the DEFRA Category 4 Screening Level has been used as this is based on updated toxicological data and a low risk to human health.

An additional set of phytotoxin screening levels have been adopted from 'The Code of Agricultural Practice for the Protection of Soil' Ministry of Agriculture, Fisheries and Food (MAFF), 1993, which are protective of healthy plant growth.

Table 1: Summary of chemical analysis results.

CONTAMINANT	No of Tests	MAX (mg.kg ⁻¹)	MEAN (mg.kg ⁻¹)	SCREENING LEVEL (SL) (mg.kg ⁻¹)	No > SL*
HUMAN HEALTH RISK ASSESSMENT					
Asbestos in soil	5	<0.001	<0.001	Detected	3
pH	5	11.2	10.6	5 – 9	5
Arsenic	5	13.0	8.7	640	0
Cadmium	5	0.6	0.4	190	0
Chromium (total)	5	270.0	151.2	8600	0
Hexavalent Chromium	5	4.0	4.0	33	0
Lead	5	53.0	39.8	2300	0
Mercury	5	0.3	0.3	1100	0
Nickel	5	27.0	22.2	980	0

Selenium	5	1.0	1.0	12000	0
TPH Aliphatic >EC ₅ - EC ₆	5	0.001	0.001	5900	0
TPH Aliphatic >EC ₆ - EC ₈	5	0.001	0.001	17000	0
TPH Aliphatic >EC ₈ - EC ₁₀	5	0.001	0.001	4800	0
TPH Aliphatic >EC ₁₀ - EC ₁₂	5	2.40	1.28	23000	0
TPH Aliphatic >EC ₁₂ - EC ₁₆	5	20.00	14.60	82000	0
TPH Aliphatic >EC ₁₆ - EC ₂₁	5	49.00	34.20	1700000	0
TPH Aliphatic >EC ₂₁ - EC ₃₅	5	530.00	336.00	1700000	0
TPH Aromatic >EC ₅ - EC ₇	5	0.001	0.001	46000	0
TPH Aromatic >EC ₇ - EC ₈	5	0.001	0.001	110000	0
TPH Aromatic >EC ₈ - EC ₁₀	5	0.001	0.001	8100	0
TPH Aromatic >EC ₁₀ - EC ₁₂	5	4.80	3.50	28000	0
TPH Aromatic >EC ₁₂ - EC ₁₆	5	43.00	29.00	37000	0
TPH Aromatic >EC ₁₆ - EC ₂₁	5	230.00	144.40	28000	0
TPH Aromatic >EC ₂₁ - EC ₃₅	5	1000.00	620.00	28000	0
Benzene	0	0.000	-	47	0
Toluene	0	0.000	-	110000	0
Ethylbenzene	0	0.000	-	13000	0
Xylene	0	0.000	-	14000	0
Naphthalene	5	0.95	0.23	460	0
Acenaphthylene	5	2.00	0.88	97000	0
Acenaphthene	5	3.50	1.93	97000	0
Fluorene	5	2.80	1.57	68000	0
Phenanthrene	5	28.00	16.24	22000	0
Anthracene	5	8.20	5.00	540000	0
Fluoranthene	5	49.00	28.66	23000	0
Pyrene	5	43.00	27.04	54000	0
Benzo(a)anthracene	5	23.00	13.70	170	0
Chrysene	5	18.00	10.92	350	0
Benzo(b)fluoranthene	5	19.00	12.56	44	0
Benzo(k)fluoranthene	5	11.00	5.18	1200	0
Benzo(a)pyrene	5	18.00	11.38	35	0
Indeno(1,2,3-c,d)pyrene	5	8.30	5.06	510	0
Dibenzo(a,h)anthracene	5	2.70	1.68	3.6	0
Benzo(g,h,i)perylene	5	9.00	5.56	4000	0
Phenol	5	1.0	1.0	690	0
PHYTOTOXICITY RISK ASSESSMENT					
Copper	5	45.0	34.0	200	0
Nickel	5	27.0	22.2	110	0
Zinc	5	92.0	73.2	300	0

Asbestos was present in samples MTP201, MTP203 and MTP205, all at <0.001% w/w as chrysotile loose fibres.

Elevated pH was observed at MTP201 to MTP205 Concrete fragments were present within the made ground at this location and it is likely that the elevated alkalinity relates to alkaline concrete within the sample.

Across both delineation investigations asbestos fibres were detected within five made ground soil samples located within the central area of the site these are indicated in Table 2 below:

Table 2: Asbestos results summary

Sample Location	Depth Below Ground Level	Asbestos Type	Asbestos Containing Material Type	Recorded Concentration (%)
MTP103	0.50	Chrysotile	Loose Fibres	<0.001
MTP104	0.50	Chrysotile	Loose Fibrous	0.002
MTP201	0.45	Chrysotile	Loose Fibres	< 0.001
MTP203	0.40	Chrysotile	Loose Fibres	< 0.001
MTP205	0.50	Chrysotile	Loose Fibres	< 0.001

To note: asbestos was not identified within the existing topsoil.

The trace/low concentrations of loose asbestos fibres are likely associated with the demolition of the 20 century industrial units previously present on the site.

Trace to low level asbestos as loose fibres has been detected in a total of 5 no. samples from both investigations. These materials are considered for their potential to act as a source for a number of pollutant linkages. The potential impacts of contamination sources have been considered with respect to the users of the development. A qualitative assessment of risk is thus considered in the first instance with respect to the site in its current condition.

Overall trace to very low levels of dispersed asbestos have been detected in made ground. The development scenario where affected soil could become disturbed leading to airborne fibres and exposure to future users is considered to be very limited. Most of the site area is covered with buildings and hardstanding's. A low risk could exist in proposed landscaped areas but this would likely be limited to grounds maintenance activities involving soil excavation, which following creation the landscaped spaces are infrequent and covering small areas.

Remediation works and validation.

The remediation requirements set out in the MM technical note are as follows:

"To break any potentially active contaminant linkages, the following actions will be undertaken. Additional testing of soils in the area of the soft-landscaping will be undertaken to identify the suitability of the existing soils. A total of five samples will be collected from the existing topsoil that is proposed to be retained on the site (equating to a sampling rate of 1 sample at 30m intervals of landscaping), and sent to an MECRTS/UKAS accredited laboratory for analysis. Samples will be collected in accordance with BS101753 and BS 59304 to ensure sufficient quality to inform the requirement for remediation to be undertaken"

Based upon the assessment criteria, a soil can be classified as acceptable for re-use on the site where the criteria for individual chemicals are not exceeded. In this situation, the soils may all remain in the soft-landscaping area of the proposed development. No further action is required other than recording and presenting this in the validation report at the end of the project.

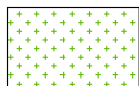
The drawing HG0052-IBI-ED-XX-PL-L-700001 (appended) sets out the intended source of topsoil on site. There are five topsoil scenarios as set out below.



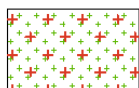
Proposed shrub planting. Please refer to planting plant HG0052-IBI-ED-XX-PL-L-700003 and soft landscape details drawing HG0052-IBI-ED-XX-DT-L-700003 for further details.
To NBS Clause Q31/405



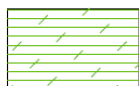
Proposed hedge planting. Please refer to planting plant HG0052-IBI-ED-XX-PL-L-700003 and soft landscape details drawing HG0052-IBI-ED-XX-DT-L-700003 for further details.
To NBS Clause Q31/407



Existing grass retained, regraded and made good as required



Existing grass with new bulb planting. Please refer to planting plant HG0052-IBI-ED-XX-PL-L-700003 and soft landscape details drawing HG0052-IBI-ED-XX-DT-L-700003 for further details.
To NBS Clause Q31/445



Proposed grass seeding
To NBS Clause Q30/311A

Three scenarios show existing topsoil is to be retained on site. These areas have been subject to the testing required within the MM report.

IDOM undertook chemical analysis on 5 no topsoil samples as per the approved remediation method statement, these were undertaken within locations stipulated by the MM report. This testing is documented within the Letter report L-22375-2.4.2-22-9-RL and no exceedances above the adopted screening levels were identified.

IDOM are therefore satisfied that as set out in the RMS the topsoil Insitu along the southern and western boundary of the development satisfies the criteria as per the MM report and is acceptable to remain Insitu is suitable for use (the exploratory location plan is appended to the letter L-22375-2.4.2-22-9-RL attached to this report).

Clean cover system

Although the presence of asbestos is deemed a low risk, soft landscaping parcels designed within the development received clean imported topsoil. IDOM have been provided with soft landscape details HG0052-IBI-ED-XX-DT-L-700003 (1) which sets out the required thickness for each growing medium. It is considered that the placement of an imported topsoil clean cover system will break the source to receptor pathway for exposure to asbestos.

Depth checks have been undertaken within six randomly selected public open space areas to evidence the imported clean topsoil has been placed in accordance with the landscape development plan. Photographs and a plan highlighting the depth checks are appended to this letter.

Import tickets have been supplied by the Vinchi evidencing 166 tonnes of imported topsoil (80 m³).

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IDOM

Volume of imported material

The volume of topsoil material import to site has been confirmed by VINCI as 80 m³ utilised within the soft landscape parcels identified on the attached development plan.

Conclusion

The investigations carried out in January 2022 along with the information provided by VINCI confirms that the site was remediated in accordance with the Mott MacDonald technical note.



Lucy Hayes

Geo-Environmental Engineer

APPENDED

- Drawing showing delineation location plan
- Drawing showing Topsoil testing locations
- Soil chemical analysis for samples MTP201 – 205
- Depth Check location plan and photographs

Project:	Huddersfield Royal Infirmary New Accident & Emergency Department		
Our reference:	100102983	Your reference:	2021/62/92488/W
Prepared by:	S Blackman BSc, MSc, C.WEM Principal Contaminated Land Consultant	Date:	15/12/21
Approved by:	Yasmeen Harrison Associate	Checked by:	D Giordanelli BSc, MSc, CEnv, MIEnvSc, SiLC Associate
Subject:	Huddersfield Royal Infirmary: Remediation Strategy Technical Note		

1 Introduction

A planning application (reference 2021/62/92488/W) was submitted to Kirklees Council for the redevelopment of Huddersfield Royal Infirmary, involving the construction of a new Accident and Emergency department (A&E) with associated vehicular access, car and cycle parking spaces, plant and landscaping.

1.1 The proposed development

The proposed new A&E comprises a single storey building and plant room located on the site of the existing nurses' accommodation. In order to construct the building, it is proposed to demolish the accommodation and excavate the top 0.3m to 1m of Made Ground to expose the underlying natural clay soils. From this level additional ground of varying depths will be excavated to expose underlying rock which will then be mass filled with concrete, with engineering fill to the underside of the new ground slab.

In areas of car parking, excavations will be shallower (approximately 0.2m depth), exposing the existing sub-base and then reinstating with new macadam surface. A thin strip of the existing planted area along the southern and western boundaries will be retained. Additional planted area in the south east of the new building will be constructed in tree pits.

1.2 Summary of previous risk assessments

A desk study¹ for the site was conducted by Mott MacDonald which identified potentially contaminative uses on and adjacent to the site which could impact the development and the environment. Intrusive investigation with associated geo-environmental sampling was recommended.

Following investigation works, undertaken 9-12 November 2020, a quantitative risk assessment report² was prepared by Mott MacDonald. This following the procedures in Land Contamination Risk Management (LCRM, Environment Agency 2021), including an update to the conceptual site model (CSM) and a generic

¹ Mott MacDonald (2020) Geo-Environmental and Geotechnical Desk Study, reference:416955|001|P01.

² Mott MacDonald (2021) Land contamination - generic quantitative risk assessment, reference HG0052-MMD-ED-XX-RP-C-000001 P02.

quantitative risk assessment (GQRA) undertaken for the site based on sample data collected during the intrusive investigation. The report concluded:

- Ground conditions were as anticipated based on the published geological maps; comprising the Carboniferous Soft Bed Flags. A thin cover of Made Ground was recorded across the site which typically extended to between 0.2m and 1.1m depth although reached 1.7m at its maximum thickness.
- Of 18 soil samples analysed, only one soil sample (MMBH101 at 0.5m) recorded organic contaminants above the commercial screening value (6.6mg/kg of dibenz-a-h-anthracene in comparison with a GAC of 3.6mg/kg). Dibenz-a-h-anthracene is not regarded as volatile (ie would only pose a risk through ingestion, dermal contact and dust inhalation) and the location was under the proposed building. No other organic contaminants were recorded against either screening value. No inorganic contaminants were found to be elevated above the chosen generic screening values. On the basis that potential contact with soils on the finished development would be limited to contact with the proposed soft landscaping at the southern and western boundaries of the site, it was concluded that risks to human health were low.
- For groundwater, whilst some exceedances of the respective screening values were identified, the concentrations of inorganic contaminants recorded may be regarded as low, and, with the possible exception of mercury, are likely to represent natural background conditions in the aquifer rather than indicating sources of contamination beneath the site. No organic contamination was recorded in groundwater. It was concluded that that risk to groundwater is low.
- Monitored ground gas levels were generally very low and no significant flow rates were recorded. Significant land gas sources are also absent at the site. No specific precautions were judged to be required in respect of ground gas ingress into the proposed building.
- Waste soil materials would predominantly be classified as non-hazardous, with one hotspot being classified as hazardous due to high TPH concentration which resulted in hazard properties (HP) 3(i) (flammability), HP7 (carcinogenic) and HP11 (mutagenic) being applied.

Overall risks to all receptors were considered to be low to very low. With the exception of some additional topsoil testing along the retained soft landscaping boundaries, no further ground investigation was considered to be necessary given the desk study information, the ground conditions encountered during the recent GI, and the nature of the proposed development. No remediation was proposed.

1.3 Regulatory review and comment

Comments from the Environmental Health Team at Kirklees Council were submitted to the Planning Team in response to a consultation request on the information submitted supporting the application. In summary, the Environmental Health Team concluded: *“the contaminated land reports provide are considered satisfactory. We now expect a remediation report to be provided, that must include details of the additional sampling for the existing shallow topsoil, the clean cover proposals for the soft-landscaping area and the imported soil assessment criteria. Contaminated land conditions are therefore necessary.”*

Based on this recommendation, three conditions were placed on the application:

- *Condition 3: Submission of Remediation Strategy -*
Prior to development commencing, a Remediation Strategy by a suitably competent person shall be submitted to, and approved in writing by, the Local Planning Authority. The Remediation Strategy shall include a timetable for the implementation and completion of the approved remediation measures.
- *Condition 4: Implementation of the Remediation Strategy -*
Remediation of the site shall be carried out and completed in accordance with the Remediation Strategy approved pursuant to Condition 3. In the event that remediation is unable to proceed in accordance with the approved Remediation Strategy or contamination not previously considered in either the Preliminary Risk Assessment or the Phase II Intrusive Site Investigation Report is identified or encountered on site, all groundworks in the affected area (except for site investigation works) shall cease immediately and the Local Planning Authority shall be notified in writing within 2 working days. Works shall not recommence until proposed revisions to the Remediation Strategy have been submitted to and approved in writing by

the Local Planning Authority. Remediation of the site shall thereafter be carried out in accordance with the approved revised Remediation Strategy.

- **Condition 5: Submission of a Validation Report**

Following completion of any measures identified in the approved Remediation Strategy or any approved revised Remediation Strategy a Validation Report shall be submitted to the Local Planning Authority. No part of the site shall be brought into use until such time as the remediation measures have been completed for the site in accordance with the approved Remediation Strategy or the approved revised Remediation Strategy and a Validation Report in respect of those remediation measures has been approved in writing by the Local Planning Authority. Where validation has been submitted and approved in stages for different areas of the whole site, a Final Validation Summary Report shall be submitted to and approved in writing by the Local Planning Authority.

1.4 Aim of this note

This note aims to satisfy the requirements of condition 3 to submit a remediation strategy, in order to allow the pre-commencement condition for the development to be lifted.

2 Remediation proposals

2.1 Scope of remediation

Based on the GQRA, risks to human health from ground gas and risks to groundwater were considered to be very low and low respectively. Consequently, no further groundwater testing is considered to be needed, and no further ground gas monitoring or protection measures are required for the buildings. Remediation proposals are limited to ensuring there is not a viable contaminant linkage from any contamination in the soils of the soft-landscaping areas to future site users. A remediation options appraisal in accordance with LCRM is therefore not required.

2.2 Undertaking the remediation

To break any potentially active contaminant linkages, the following actions will be undertaken.

Additional testing of soils in the area of the soft-landscaping will be undertaken to identify the suitability of the existing soils. A total of five samples will be collected from the existing topsoil that is proposed to be retained on the site (equating to a sampling rate of 1 sample at 30m intervals of landscaping), and sent to an MECRTS/UKAS accredited laboratory for analysis. Samples will be collected in accordance with BS10175³ and BS 5930⁴ to ensure sufficient quality to inform the requirement for remediation to be undertaken. Proposed sample locations are shown on the plan in Appendix A.

Samples will be tested for the following solid suites of contaminants (based on the potential contaminants of concern highlighted by the desk study and detectable results of the previous sample analysis): common heavy metals and semi-metals, sulphate, hexavalent chromium, polycyclic aromatic hydrocarbons (PAH), total petroleum hydrocarbons (TPH), speciated phenols, pH, fraction of organic carbon, asbestos screen and identification.

The results of the sample analysis will be compared to current generic assessment criteria (GAC) for a commercial/industrial land use⁵ and a soil organic matter (SOM) content of 2.5% (based on average SOM

³ BS10175:2011+A2:2017 "Investigation of potentially contaminated sites: Code of practice"

⁴ BS 5930:2015 "Code of practice for site investigations"

⁵ There are no published generic assessment criteria directly applicable to a hospital land use scenario. Commercial/light industrial land use are the closest in terms of building design and amount of soft landscaped amenity space. This assumes the critical receptor is a full-time adult employee. The modelling assumptions in the derivation of the generic assessment criteria acknowledge that young children and adults are likely to be present together. However, in many workplaces children are permitted and where they are regular visitors (such as shops or leisure facilities), both duration and frequency of exposure are likely to be much lower compared to a full time employee. GAC for commercial land use scenario are considered suitably protective and will therefore be used to screen the results of the soils chemical analysis.

content identified during previous site sampling, with consideration that this is a conservative value for topsoil which is likely to contain more organic matter). The adopted guideline values are the LQM/ClEH Suitable for Use Levels (S4ULs) for Human Health Risk Assessment. Where S4ULs are not available, DEFRA Category 4 Screening Levels (C4SLs) or CL:AIRE guidance values will be used. These limiting criteria are summarised in Table 2-1.

Table 2-1: Soil contamination limiting criteria for human health

Parameter	Limiting criteria (mg/kg)	Parameter	Limiting criteria (mg/kg)
Inorganic parameters			
pH	6-9	Sulphate as SO ₄	N/A
Fraction of organic carbon	N/A	Asbestos	None detected
Heavy metals and semi-metals			
Arsenic	640	Lead	2,300
Barium	22,000	Mercury	33
Beryllium	12	Molybdenum	18,000
Boron	240,000	Nickel	980
Cadmium	190	Selenium	12,000
Chromium III	8,600	Vanadium	9,000
Chromium VI	33	Zinc	730,000
Copper	68,000		
TPH			
Aliphatic >C5-C6	5,900	Aromatic >C5-C7	46,000
Aliphatic >C6-C8	17,000	Aromatic >C7-C8	110,000
Aliphatic >C8-C10	4,800	Aromatic >C8-C10	8,100
Aliphatic >C10-C12	23,000	Aromatic >C10-C12	28,000
Aliphatic >C12-C16	82,000	Aromatic >C12-C16	37,000
Aliphatic >C16-C35	1,700,000	Aromatic >C16-C21	28,000
		Aromatic >C21-C35	28,000
Naphthalene	460	Benzo[a]anthracene	170
Acenaphthylene	97,000	Chrysene	350
Acenaphthene	97,000	Benzo[b]fluoranthene	44
Fluorene	68,000	Benzo[k]fluoranthene	1,200
Phenanthrene	22,000	Benzo[a]pyrene	35
Anthracene	540,000	Indeno(1,2,3-c,d)Pyrene	510
Fluoranthene	23,000	Dibenz(a,h)anthracene	3.6
Pyrene	54,000	Benzo[g,h,i]perylene	4,000
Phenols			
Phenol	690	2,4-Dimethylphenol	24,000
Chlorophenols	4000	Total Cresols	180,000
Pentachlorophenol	400		

Based upon the assessment criteria, a soil can be classified as acceptable for re-use on the site where the criteria for individual chemicals are not exceeded. In this situation, the soils may all remain in the soft-landscaping area of the proposed development. No further action is required other than recording and presenting this in the validation report at the end of the project.

Where any of the criteria are exceeded, the soils may be regarded as unsuitable and should either be removed from site or should be isolated beneath a cover of suitable soils. The uppermost 300mm should be

removed and replaced with suitable soils. It is noted that the boundary comprises existing mature vegetation and the advice of a horticulturalist or arboriculturist should be sought with respect to root protection.

It is noted that the light industrial commercial screening values given in Table 2-1 allow for some relatively high levels of certain hydrocarbons and phytotoxic metals which may not be suitable for plant growth. Any topsoil for planting should also comply with BS3882⁶ and the notes below relating to visual and olfactory evidence of contamination.

Phytotoxic elements copper, nickel and zinc from BS3882 are provided in Table 2-2.

Table 2-2: Maximum phytotoxic metals from BS3882

Element	Soil pH <6	Soil pH 6 to 7	Soil pH >7
Zinc	<200	<200	<300
Copper	<100	<135	<200
Nickel	<60	<75	<110

Notes: all value in mg/kg

The topsoil should also be present in sufficient thickness (300mm) to maintain the planting.

Any material which exhibits gross visual evidence of contamination (e.g. visible evidence of hydrocarbons such as free product, is tarry, oily fibrous or odorous) is also considered unacceptable, specifically:

- Asbestos and material presenting unacceptable asbestos risk (risks to be determined by others);
- Material exhibiting evidence of non-aqueous phase hydrocarbons and VOCs;
- Coal tar materials (including road pavement blacktop materials);
- Material exhibiting evidence of sewage contamination;
- Material exhibiting visual and olfactory evidence of contamination;
- Material containing sharps;
- Refuse, putrescible, and biodegradable materials including timber, plastic, glass, and metal.

Any soils removed from the site should be taken to an appropriate disposal or treatment site as agreed with the waste contractor, under chain of custody procedures.

Any topsoil being imported to the site (in the contingency case of existing topsoil being unsuitable to remain) must be chemically tested to demonstrate suitability for use at a frequency of one test per 250m³, subject to a minimum of three, for each material from a distinct source⁷. These soils must not exceed the limiting values presented in Table 2-1 and Table 2-2.

The 'Standard for Excavated Material' produced and to be adhered to by the construction contractors, Vinci Construction UK, is available in Appendix B.

The works will be implemented following the approval of all pre-commencement planning conditions, when the groundworks begin at the site.

2.3 Unexpected contamination

The following information detailed protocols regarding what must be done if potentially contaminated or hazardous materials are identified during construction activities.

An unexpected find could include the following:

⁶ BS3882:2015 "Specification for topsoil"

⁷ Yorkshire and Lincolnshire Pollution Advisory Group (2021) Verification Requirements for Cover Systems: Technical Guidance for Developers, Landowners and Consultants v4.1

- Discoloured or hydrocarbon impacted soils
- Olfactory evidence of contamination
- Buried wastes
- Underground obstructions
- Buried containers / drums
- Asbestos

If potentially contaminated or hazardous materials are encountered:

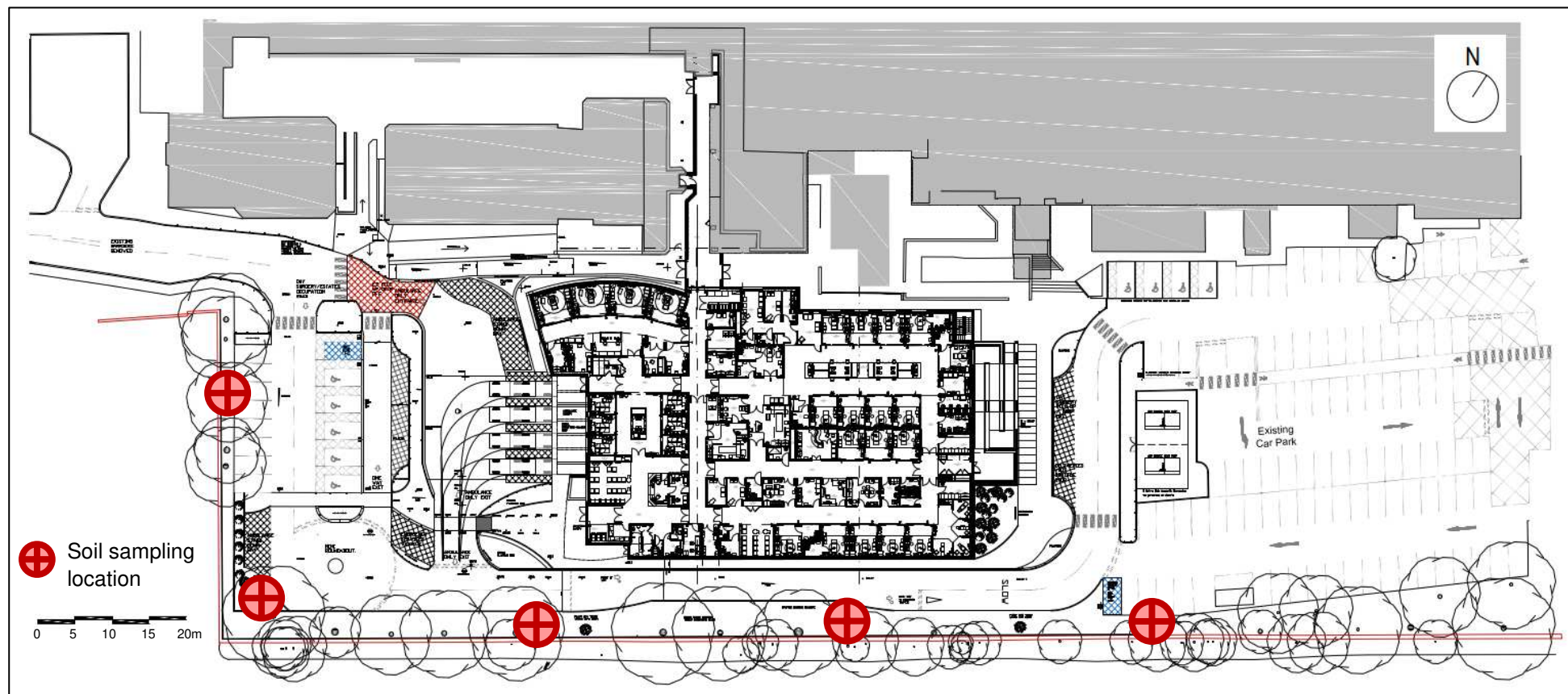
- Cease and make safe all excavations in this location and report observations to the Site Manager.
- The Site Manager is to notify the Engineer.
- Under guidance of the Engineer take representative samples of the suspect materials and forward to a suitably accredited laboratory for analysis.
- Await Engineers instructions with respect to re-commencement of the works and/or removal of suspect material to a suitably licensed disposal facility.
- Kirklees Council Environmental Protection Team and if relevant the Environment Agency are to be kept fully informed of any site such occurrences.

2.4 Validating the completion of the work

Following completion of the works detailed within this note, a validation note will be prepared to confirm that the works were completed in line with the approved strategy, and that no contamination not previously considered was identified or encountered on site.

If any soils were imported to the site, the note will also summarise the nature and volume of this material, with evidence of its compliance with the criteria in Table 2-1. Additionally, it will contain a summary of the nature, volumes, transfer notes and destination of any waste removed from site.

Appendix A – Sampling plan



Appendix B – Standard for Excavated Material

Revision Information

2. Annual Review – Layout changed

3. Reformatted to align with other standards and to reflect “Guide to HSEQ Management on Site”.

1. Purpose

The Managing Director of VINCI Construction UK, Building Division mandates this standard and all associated procedures and guidance for use across the division.

The purpose of this Standard is to identify VINCI Construction UK, Building Divisions key requirements for the effective management of excavated materials, soils and demolition materials.

2. Scope

This Standard applies to all work under the control of VINCI Construction UK, Building Division.

3. Principles/Definitions

Excavated Materials:

‘refers to waste consisting of mainly rock and earth excavated during construction.’

‘which are contaminated and/or not naturally occurring, which we have no defined use for are classified as waste.’

The Waste Framework Directive excludes certain materials including:

‘uncontaminated soil and other naturally occurring material excavated during construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated. This applies whether the use is immediate or whether the material is stored temporarily before use.’

Demolition Waste:

‘arises from activities such as total or partial demolition of buildings and civil infrastructure, road planning and maintenance. It accounts for approximately 25% - 30% of all waste generated and consists of numerous materials, including concrete, bricks, gypsum, wood, glass, metals, plastic, solvents, asbestos and excavated soil, many of which can be recycled.’

4. Our Approach

We take a risk-based approach, with all excavated material risks detailed in the Environmental Assessment and Risk Register (EARR) for the project and task-specific Risk Assessments and Method Statements (RAMS).

5. Mandatory Requirements

The Senior Site Representative (SSR) is responsible for

Appointing an Environmental and Waste Champion who will be named in the Project Execution Plan (PEP) and Environmental Management Plan (EMP - where required on a project).

Ensuring that, before work is started on site, sampling, chemical analyses at a UKAS accredited laboratory, risk assessment (in the EARR) and Hazardous Property Assessment (HPA) is carried out on any excavated material (unless it has previously been confirmed as free from contamination) to identify and

characterise contamination and suitability for reuse, determine the classification of waste (inert, hazardous or non-hazardous) and the LoW Code. This process will classify the waste and determine the most appropriate way to manage it, either through reuse, disposal, storage, or treatment. Note that constraints on the maximum time and amount of material allowed apply to some options.

5.1. Reuse of excavated material on site

Where possible, and if allowable under the risk assessment, the project should look to re-use excavated materials on site.

5.1.1. Naturally Occurring Materials

If the excavated material is “uncontaminated natural soil” and does not need to be treated (e.g. crushed) before re-use it can be re-used on site without the need for additional permits/paperwork. However, demonstration of ‘certainty of use’ is needed (for example with a statement on the design drawings).

If the uncontaminated excavated material needs to be treated (e.g. crushed) before use, a [T5 Waste Exemption](#)* from the Environment Agency is required before re-using the material.

5.1.2. Made ground, previously used aggregates (including demolition material), contaminated or hazardous materials

A Materials Management Plan should be completed (in accordance with “Route A” of the CL:AIRE [Definition of Waste: Code of Practice](#)) OR a [U1 Exemption](#) (from the Environment Agency) should be obtained before re-using the material.

If treatment of this material is required a [T5 Waste Exemption](#)* (from the Environment Agency) or a [T7 Waste Exemption](#)** (from the local authority) should be obtained (depending on what is being treating) before re-using the material.

5.2. Removing excavated material from site

5.2.1. Removing excavated material from site as non-waste

If material cannot be re-used on site, the project should look to send the material off site as ‘non-waste’. This means sending the material to another site/location to be re-used. A Materials Management Plan (in accordance with “Route A or Route B” of the CL:AIRE [Definition of Waste: Code of Practice](#) as applicable) should be produced or the waste should be managed under the [Quality Protocol](#).

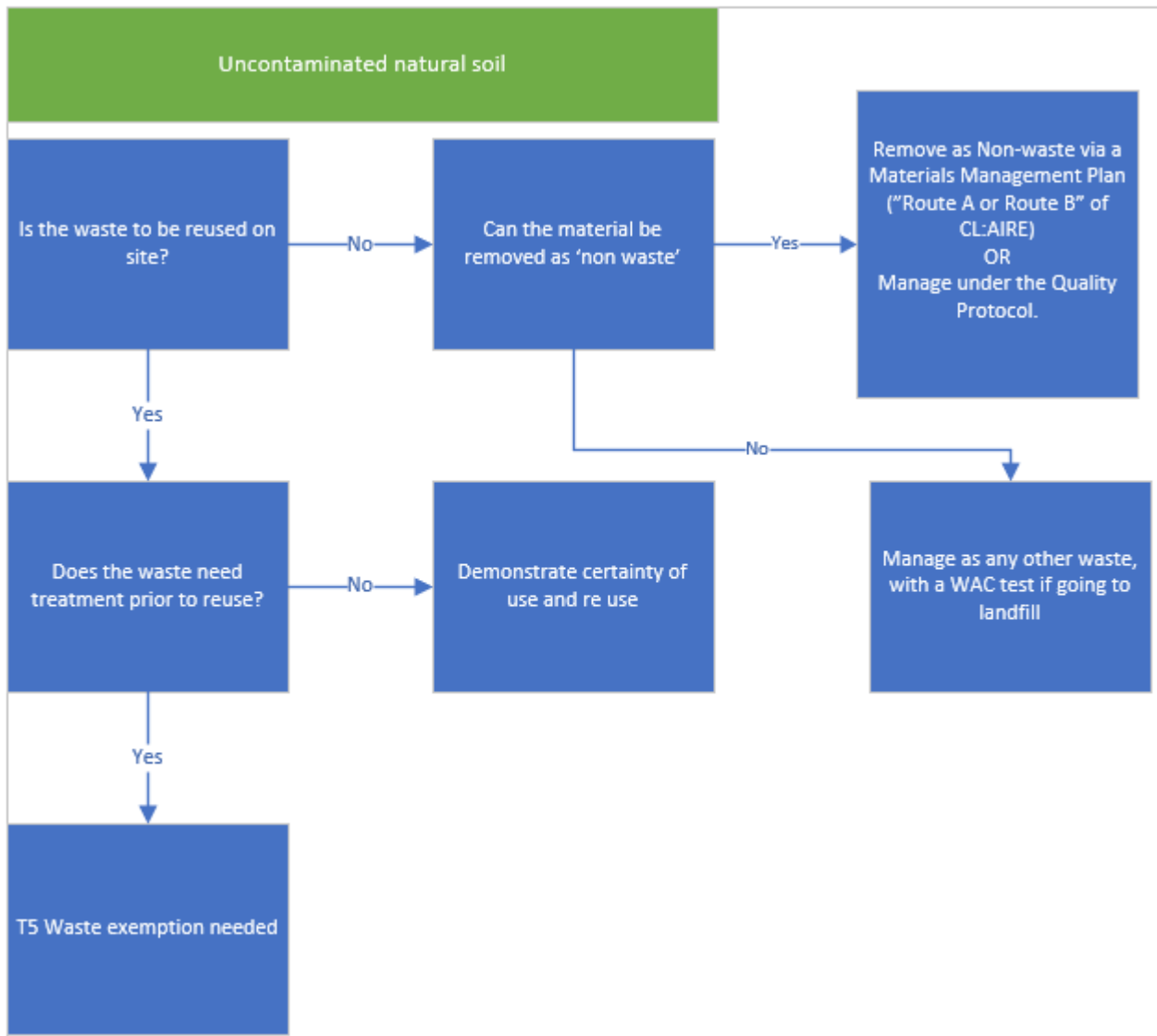
5.2.2. Removing material from site as waste

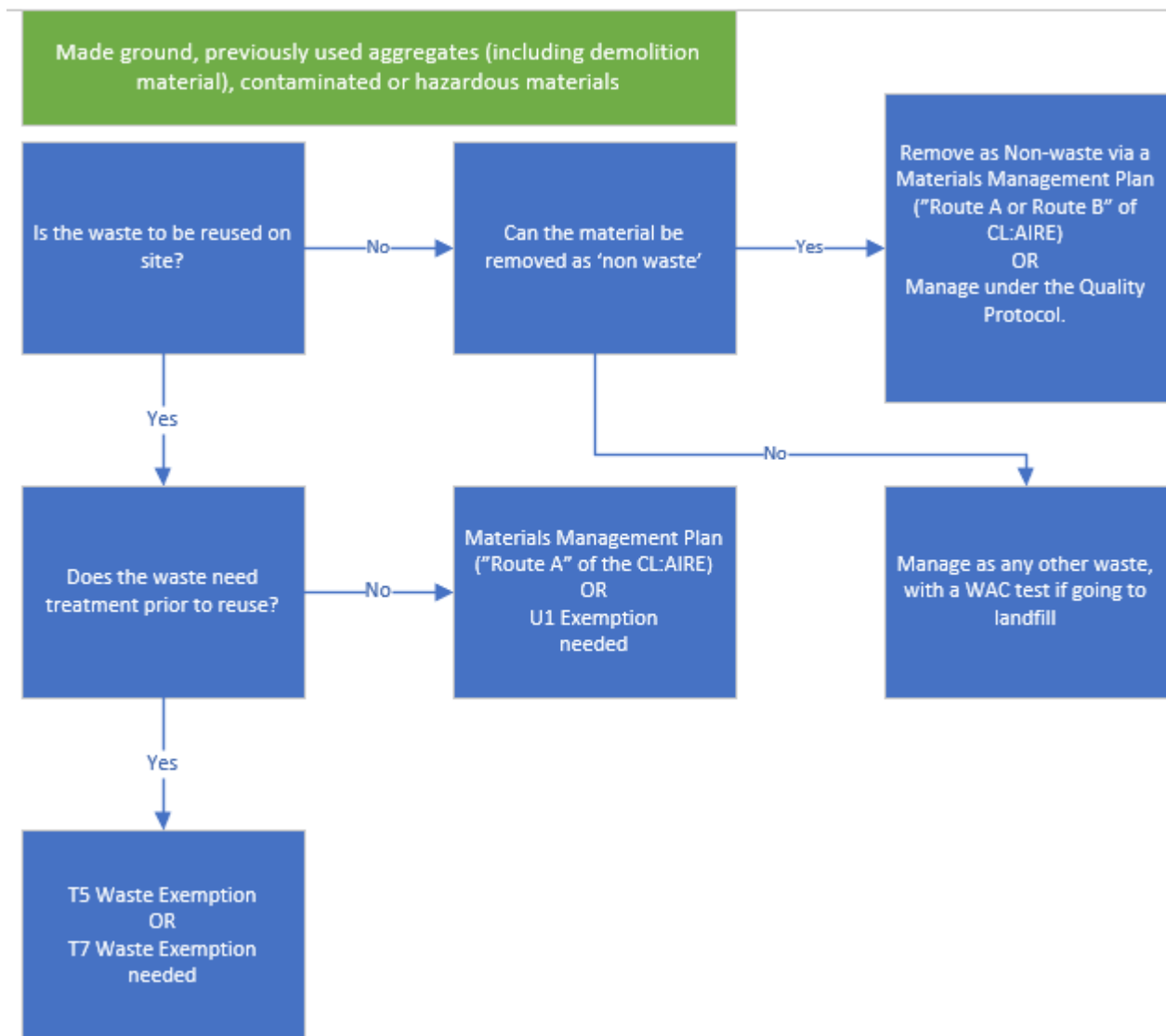
Excavated material that is removed from site as waste, should be managed in the same manner as any other waste (refer to DES 3). If landfill disposal is required then a Waste Acceptance Criteria (WAC) test should be completed, which identifies if a material will be accepted at hazardous or inert landfills.

*The T5 Waste Exemption gives you the ability to “temporarily treat waste on a small scale to produce aggregate or soil at a particular location, such as a construction or demolition site”.

**The T7 Waste Exemption allows the “treatment of waste bricks, tiles and concrete by crushing, grinding or reducing in size”.

5.3. Summary Flow Charts





6. References

6.1. External

U1: www.gov.uk/guidance/waste-exemptions-using-waste Waste exemption: U1 use of waste in construction

T5: <https://www.gov.uk/guidance/waste-exemption-t5-screening-and-blending-waste>

T7: <https://www.gov.uk/government/collections/waste-exemptions-treating-waste>

CL:AIRE: www.claire.co.uk/projects-and-initiatives/dow-cop CL:AIRE Definition of Waste Code of Practice

Quality Protocol:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/296499/LIT_8709_c60600.pdf

6.2. Internal

Environmental Management Plan (EMP)	VB-ENV-PL-0001-0001
Environmental Assessment & Risk Register (EARR)	VB-ENV-FR-0001-0002
Ecology Mitigation Guidance Note	VB-ENV-GN-0005-0002
Task Briefing Sheet	VC-HAS-FR-0009-0006
IMS Incidence Response and Reporting	VB-IMS-ST-XXXX-0004
Project Execution Plan	VB-PMG-PL-XXXX-0007
Environmental Management Plan	VB-ENV-PL-0001-0001
CL:AIRE – Definition of Waste Guidance Note	VB-ENV-GN-0002-0001

VINCI CONSTRUCTION UK LIMITED

Astral House
Imperial Way
Watford
WD24 4WW
United Kingdom

Mr. Eddie Parker
Senior Construction Manager

06 January 2022

Subject: Topsoil testing and waste assessment
Our ref: L-22375-2.4.2-22-9-RL

Dr Mr Parker,

IDOM Merebrook Ltd (IDOM) have been commissioned by VINCI Construction UK limited (VINCI) to provide Geo-Environmental services on the site known as Huddersfield Royal Infirmary, Huddersfield. IDOM was asked to complete a site investigation for the following purposes:

1. To collect representative samples of topsoil for analysis in accordance with the specification produced by Mott MacDonald (*Huddersfield Royal Infirmary: Remediation Strategy Technical Note, Ref: 100102983, Dated 04/10/2021*); and,
2. To complete trial pits for the purpose of delineating a hotspot of potentially hazardous waste, should the material be required to be removed from site.

INVESTIGATION

An IDOM engineer attended site on 10th December 2021 to undertake the site investigation, which comprised the following:

- 5 no. hand excavated inspection pits to a maximum depth of 0.2 m below ground level (bgl) for the purpose of topsoil sample collection; and,
- 4 no. machine excavated trial pits to a maximum depth of 0.75 m bgl to collect samples for waste analysis.

Representative samples were collected by the IDOM engineer and submitted to a UKAS/MCERTS accredited laboratory for testing. All samples were tested for a broad range of possible contaminants as specified within the Mott MacDonald documentation, with one sample of made ground being analysed against a Waste Acceptance Criteria specification. Full testing results have been appended to this letter.

A plan showing the completed investigation locations has also been appended to this letter. It should be noted that topsoil testing locations had previously been specified by Mott MacDonald within the Remediation Strategy Technical Note, however some locations did not have sufficient topsoil for sampling. A suitable alternative location was chosen by the IDOM engineer.

Stratigraphic logs for the machine excavated trial pits and representative photographs of the excavations have been appended to this letter.

TOPSOIL ANALYSIS

A total of 5 no. topsoil samples were submitted to the laboratory for analysis, with full testing results being appended to this letter (reported with Prefixes "MB"). Samples were compared to screening levels specified by Mott MacDonald in the Remediation Strategy. A summary of the testing results can be seen in table 1 below, with full test results appended to this letter.

Table 1: Summary of topsoil testing against adopted screening levels.

CONTAMINANT	No of Tests	MAX (mg.kg ⁻¹)	MEAN (mg.kg ⁻¹)	SCREENING LEVEL (SL) (mg.kg ⁻¹)	No > SL*
HUMAN HEALTH RISK ASSESSMENT					
Asbestos in soil	5	NAD	NAD	Detected	0
pH	5	7.9	7.1	6 – 9	0
Arsenic	5	45.0	25.0	640	0
Barium	5	170	136	22000	0
Beryllium	5	2.6	1.37	12	0
Boron	5	0.6	0.425	240000	0
Cadmium	5	1.0	1.0	190	0
Chromium (total)	5	48.0	31.8	8600	0
Hexavalent Chromium	5	< 4.0	< 4.0	33	0
Lead	5	270.0	147.8	2300	0
Mercury	5	0.4	0.4	33	0
Molybdenum	5	4.5	2.7	18000	0
Nickel	5	27.0	21.4	980	0
Selenium	5	< 1.0	<1.0	12000	0
Vanadium	5	61	39.4	9000	0
TPH Aliphatic >EC ₅ - EC ₆	5	0.000	-	5900	0
TPH Aliphatic >EC ₆ - EC ₈	5	0.000	-	17000	0
TPH Aliphatic >EC ₈ - EC ₁₀	5	0.000	-	4800	0
TPH Aliphatic >EC ₁₀ - EC ₁₂	5	0.00	-	23000	0
TPH Aliphatic >EC ₁₂ - EC ₁₆	5	23.00	23.00	82000	0
TPH Aliphatic >EC ₁₆ - EC ₃₅	5	224.00	224.00	1700000	0
TPH Aromatic >EC ₅ - EC ₇	5	0.000	-	46000	0
TPH Aromatic >EC ₇ - EC ₈	5	0.000	-	111000	0
TPH Aromatic >EC ₈ - EC ₁₀	5	0.000	-	8100	0
TPH Aromatic >EC ₁₀ - EC ₁₂	5	16.00	16.00	28000	0
TPH Aromatic >EC ₁₂ - EC ₁₆	5	57.00	23.37	37000	0
TPH Aromatic >EC ₁₆ - EC ₂₁	5	270.00	98.33	28000	0

TPH Aromatic >EC ₂₁ - EC ₃₅	5	530.00	148.25	28000	0
Benzene	5	< 1.0	< 1.0	90	0
Toluene	5	< 1.0	< 1.0	180000	0
Ethylbenzene	5	< 1.0	< 1.0	27000	0
Xylene	5	< 1.0	< 1.0	30000	0
Naphthalene	5	8.30	4.37	460	0
Acenaphthylene	5	0.89	0.89	97000	0
Acenaphthene	5	8.90	4.79	97000	0
Fluorene	5	7.00	3.72	68000	0
Phenanthrene	5	59.00	13.27	22000	0
Anthracene	5	13.00	7.05	540000	0
Fluoranthene	5	57.00	13.62	23000	0
Pyrene	5	51.00	12.16	54000	0
Benzo(a)anthracene	5	30.00	7.14	170	0
Chrysene	5	24.00	5.77	350	0
Benzo(b)fluoranthene	5	31.00	7.34	44	0
Benzo(k)fluoranthene	5	9.10	2.26	1200	0
Benzo(a)pyrene	5	24.00	5.69	35	0
Indeno(1,2,3-c,d)pyrene	5	11.00	2.67	510	0
Dibenzo(a,h)anthracene	5	3.60	2.00	3.6	0
Benzo(g,h,i)perylene	5	13.00	3.14	4000	0
Phenol	5	1.0	1.0	1300	0
Chlorophenols	5	<2.1	<2.1	4000	0
Pentachlorophenol	5	<0.1	<0.1	400	0
2,4-Dimethylphenol	5	<0.3	<0.3	2400	0
Total Cresols	5	<0.3	<0.3	180000	0
PHYTOTOXICITY RISK ASSESSMENT					
Copper	5	100.0	62.0	(For pH 6-7) <135 (For pH >7) <200	0
Nickel	5	27.0	21.4	For pH 6-7) <75 (For pH >7) <110	0
Zinc	5	210.0	136.0	For pH 6-7) <200 (For pH >7) <300	0

No exceedances above the adopted screening levels were identified within the samples.

WASTE ANALYSIS

A previous intrusive investigation completed by others identified an area of made ground which, if it was required to be removed from site as a waste, would be classified as Hazardous.

IDOM completed 4 no. trial pits on a 5m² grid centred on the previous investigation location. Stratigraphic logs and representative pictures of these pits have been appended to this letter. Samples collected where subject to the following analysis:

- 4 no. samples of made ground were tested for a broad suite of contaminants and asbestos;
- 3 no. samples from underlying natural materials were tested for a broad suite of contaminants and asbestos; and,
- 1 no. sample of made ground was tested to ascertain the Waste Acceptance Criteria.

Test results were characterised for their waste potential using HazWasteOnline™. The classification report has been appended to this letter, with the results summarised in Table 2 below.

Table 2: Summary of waste classification

Location Reference	Sample Depth (m bgl)	Stratum	Waste Classification	WAC classification
MTP101	0.4	Made Ground	Hazardous	
MTP102	0.4	Made Ground	Non- Hazardous	
MTP102	0.65	Natural	Non- Hazardous	
MTP103	0.3	Made Ground	Hazardous	Suitable for stable non-reactive hazardous waste landfill
MTP103	0.5	Natural	Non- Hazardous	
MTP104	0.45	Made Ground	Non- Hazardous	
MTP104	0.7	Natural	Non- Hazardous	

The waste characterisation has found variable classifications within the made ground with both hazardous and non-hazardous material being identified. As some of the samples of made ground returned a classification of hazardous waste, effective delineation of a hazardous hotspot was not possible at this time. Further investigation is recommended to attempt to establish the bounds of the hazardous materials should they be required to be removed from site as waste.

In accordance with the 2004 Landfill directive, clean naturally occurring materials free from staining or odours could be classified as inert material without further testing.

ASBESTOS

Sampling of the made ground within the machine excavated trial pits identified asbestos in two locations. Full test results have been appended to this letter and a summary of the findings can be seen in table 3 below:

Table 3: Summary of asbestos identified

Sample location	Sample Depth	Asbestos Containing Material Type	PLM Result	Total % asbestos in sample (% w/w)
MTP103	0.3	Loose Fibres	Chrysotile	< 0.001
MTP104	0.45	Loose Fibres	Chrysotile	0.002

Identification of asbestos fibres at this concentration within the made ground does not impact the analysis of the materials presented earlier within this letter, however, has been highlighted for information purposes.

The presence of asbestos within the made ground should be considered in relation to possible health and safety implications, and limitations of the materials reuse within a clean cover system.

IMPORTED TOPSOIL

A nominal volume of topsoil has been imported to site for use within raised beds. The approximate volume of this is 200 m³.

The site is known as Freeland Horticulture Ltd C/O Breedon Quarries, Woodhouse Lane, Hatfield, Doncaster, DN7 6AY. Three representative samples were subject to a broad suite of chemical analysis which included hydrocarbons, heavy metals, PAH's and asbestos prior to importation.

Table 4: Summary of topsoil testing against adopted screening levels.

CONTAMINANT	No of Tests	MAX (mg.kg ⁻¹)	MEAN (mg.kg ⁻¹)	SCREENING LEVEL (SL) (mg.kg ⁻¹)	No > SL*
HUMAN HEALTH RISK ASSESSMENT					
Asbestos in soil	3	NAD	NAD	Detected	NAD
pH	3	8.5	8.4	5 – 9	0
Arsenic	3	13.0	9.9	640	0
Cadmium	3	0.2	0.2	190	0
Chromium (total)	3	35.0	24.5	8600	0
Hexavalent Chromium	3	1.2	0.5	33	0
Lead	3	25.7	24.5	2300	0
Mercury	3	0.2	0.2	1100	0
Nickel	3	19.3	16.7	980	0
Selenium	3	0.5	0.3	12000	0
TPH Aliphatic >EC ₅ - EC ₆	3	0.050	0.050	12000	0

TPH Aliphatic >EC ₆ - EC ₈	3	0.050	0.050	40000	0
TPH Aliphatic >EC ₈ - EC ₁₀	3	0.050	0.050	11000	0
TPH Aliphatic >EC ₁₀ - EC ₁₂	3	10.00	10.00	47000	0
TPH Aliphatic >EC ₁₂ - EC ₁₆	3	10.00	10.00	90000	0
TPH Aliphatic >EC ₁₆ - EC ₂₁	3	10.00	10.00	1800000	0
TPH Aliphatic >EC ₂₁ - EC ₃₅	3	37.00	35.67	1800000	0
TPH Aromatic >EC ₅ - EC ₇	3	0.050	0.050	86000	0
TPH Aromatic >EC ₇ - EC ₈	3	0.050	0.050	180000	0
TPH Aromatic >EC ₈ - EC ₁₀	3	0.050	0.050	17000	0
TPH Aromatic >EC ₁₀ - EC ₁₂	3	10.00	10.00	34000	0
TPH Aromatic >EC ₁₂ - EC ₁₆	3	10.00	10.00	38000	0
TPH Aromatic >EC ₁₆ - EC ₂₁	3	10.00	10.00	28000	0
TPH Aromatic >EC ₂₁ - EC ₃₅	3	54.00	37.67	28000	0
Benzene	3	0.020	0.020	90	0
Toluene	3	0.200	0.200	180000	0
Ethylbenzene	3	0.040	0.040	27000	0
Xylene	0	0.000	-	30000	0
Naphthalene	3	0.05	0.05	1100	0
Acenaphthylene	3	0.05	0.05	100000	0
Acenaphthene	3	0.05	0.05	100000	0
Fluorene	3	0.05	0.05	71000	0
Phenanthrene	3	0.10	0.10	23000	0
Anthracene	3	0.05	0.05	540000	0
Fluoranthene	3	0.10	0.08	23000	0
Pyrene	3	0.10	0.10	54000	0
Benzo(a)anthracene	3	0.10	0.10	180	0
Chrysene	3	0.10	0.10	350	0
Benzo(b)fluoranthene	3	0.10	0.10	45	0
Benzo(k)fluoranthene	3	0.10	0.10	1200	0
Benzo(a)pyrene	3	0.10	0.10	36	0
Indeno(1,2,3-c,d)pyrene	3	0.10	0.10	510	0
Dibenzo(a,h)anthracene	3	0.10	0.10	3.6	0
Benzo(g,h,i)perylene	3	0.10	0.10	4000	0
Phenol	3	1.0	1.0	1300	0
PHYTOTOXICITY RISK ASSESSMENT					
Copper	3	25.8	21.6	200	0
Nickel	3	19.3	16.7	110	0
Zinc	3	120.0	68.2	300	0

Subject: Topsoil testing and waste assessment
Our ref: L-22375-2.4.2-22-9-RL
Page: 7/7

IDOM

Samples were compared to screening levels specified by Mott MacDonald in the Remediation Strategy. A summary of the testing results can be seen in table 4 below, with full test results appended to this letter.

No exceedances of the provided screening criteria.

Should you have any further queries regarding the information presented above please do not hesitate to contact me.

Yours Sincerely,

A handwritten signature in black ink, appearing to read 'Amy Jones'.

Amy Jones
Associate

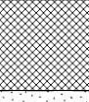
enc



Legend

- Site Boundary
- completed investigation
- Trial Pits
- Topsoil Testing Locations

First issue	JAN 22	-
Issue Details	RL	AFJ
Client	Dwn	Chd
VINCI CONSTRUCTION LTD		
Project	HUDDERSFIELD ROYAL INFIRMARY	
Dwg Title	COMPLETED INVESTIGATION LOCATION PLAN	
Drawing No.	22375-304-001	Revision
Scale	1:517	Date
Drawn	RL	Checked
		AFJ
		AFJ
London Kent Derbyshire Manchester Stirling 0 0.01 0.02 km		
Contains Imagery (c) 2022 Getmapping plc, Inforterra Ltd & Bluesky, Maxar Technologies, The Geoinformation Group, Map Data (c) 2022 IDOM Cromford Mills, Mill Lane, Matlock, Derbyshire DE4 3RQ t: +44(0)1773 829 988 e: info.derbyshire@idom.com		

IDOM						TRIAL PIT LOG		TrialPit No MTP102 Sheet 1 of 1		
Project Name: Huddersfield Royal Infirmary				Project No. 22375		Co-ords: - Level:		Date 10/12/2021		
Location: Acre Street, Hddersfield						Dimensions (m): 2.00 1.20		Scale 1:25		
Equipment: 13T Tracked Excavator						Depth 0.75		Logged RL	Checked	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
	Depth	Type	Results							
				0.20			CONCRETE with 10 mm reinforcement bar throughout			1 2 3 4 5
	0.40	D					(MADE GROUND) Blackish brown slightly clayey gravelly fine to coarse sand. Gravel is fine to coarse sub-angular to sub-rounded of brick, coal, ceramic, concrete. Small pockets of black ash found throughout			
				0.50			Layer of visqueen type material			
	0.65	D					Orangish brown clayey fine to medium SAND.			
				0.75			Layer of Geotextile			
							End of Pit at 0.750m			
D = small disturbed sample (tub) J = organic sample (amber glass jar) V = volatile sample (amber glass vial) B = bulk bag sample HSV = hand shear vane (kPa) PP = pocket penetrometer (kg.cm2) PID = photoionisation detector (ppm)				Stability Stable for excavations			Remarks Coordinates and levels, where indicated, must not be used for design purposes. The user is responsible for verifying all site and setting out dimensions.			

IDOM						TRIAL PIT LOG		TrialPit No MTP103 Sheet 1 of 1	
Project Name: Huddersfield Royal Infirmary				Project No. 22375		Co-ords: - Level:		Date 10/12/2021	
Location: Acre Street, Hddersfield						Dimensions (m): 2.00 1.20		Scale 1:25	
Equipment: 13T Tracked Excavator						Depth 0.60		Logged RL Checked	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
				0.20			CONCRETE with 10 mm reinforcement bar throughout		
	0.30	D		0.40			(MADE GROUND) Blackish brown slightly clayey gravelly fine to coarse sand. Gravel is fine to coarse sub-angular to sub-rounded of brick, coal, ceramic, concrete, wire, wood and bitumin. Small pockets of black ash found throughout		
	0.50	D		0.60			Layer of visqueen type material Orangish brown clayey fine to medium SAND. Layer of Geotextile Slight water ingress		
							End of Pit at 0.600m		
							1		
							2		
							3		
							4		
							5		
D = small disturbed sample (tub) J = organic sample (amber glass jar) V = volatile sample (amber glass vial) B = bulk bag sample HSV = hand shear vane (kPa) PP = pocket penetrometer (kg.cm2) PID = photoionisation detector (ppm)				Stability Stable for excavations			Remarks Coordinates and levels, where indicated, must not be used for design purposes. The user is responsible for verifying all site and setting out dimensions.		

MTP101



Plate 1: Picture of completed trial Pit

MTP102



Plate 2: Picture of completed trial Pit

MTP103



Plate 3: Picture of completed trial pit

MTP104



Plate 4: Picture of completed trial pit

Misc.



Plate 5: Trial pit area constrained by hoarding and adjacent building



Plate 6: Pockets of ash found within made ground



Ryan Lindsay
Merebrook
1 St Anns Street
Manchester
M2 7LR

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e: reception@i2analytical.com

e: rlindsay@idom.com

Analytical Report Number : 21-29070

Replaces Analytical Report Number: 21-29070, issue no. 1
Additional analysis undertaken.

Project / Site name:	HRI	Samples received on:	15/12/2021
Your job number:	22375	Samples instructed on/ Analysis started on:	15/12/2021
Your order number:	21-2-FDO-LABS	Analysis completed by:	30/12/2021
Report Issue Number:	2	Report issued on:	31/12/2021
Samples Analysed:	12 soil samples		

Signed: *A. Czerwińska*

Agnieszka Czerwińska
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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

Analytical Report Number: 21-29070

Project / Site name: HRI

Lab Sample Number				2116304	2116305	2116306	2116307	2116308
Sample Reference				MTP101	MTP102	MTP102	MTP103	MTP103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.40	0.65	0.30	0.50
Date Sampled				10/12/2021	10/12/2021	10/12/2021	10/12/2021	10/12/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	56	66	< 0.1	45	< 0.1
Moisture Content	%	0.01	NONE	7.5	7.1	15	8.4	17
Total mass of sample received	kg	0.001	NONE	1.1	1.1	1.1	1.2	1.2

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	< 0.001	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	< 0.001	-
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ	KSZ	KSZ	KSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.0	11.2	7.1	11.0	8.2
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.20	0.14	0.039	0.30	0.076
Sulphide	mg/kg	1	MCERTS	130	140	2.8	1.1	63
Organic Matter (automated)	%	0.1	MCERTS	4.6	4.3	0.7	5.3	0.7

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Phenols by GC-MS

Phenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dichlorophenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2-Chlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2-Nitrophenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloro-3-methylphenol	mg/kg	0.1	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Total Phenols (GC-MS)	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Project / Site name: HRI

Lab Sample Number				2116304	2116305	2116306	2116307	2116308
Sample Reference				MTP101	MTP102	MTP102	MTP103	MTP103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.40	0.65	0.30	0.50
Date Sampled				10/12/2021	10/12/2021	10/12/2021	10/12/2021	10/12/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.86	0.75	< 0.05	0.45	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.60	0.37	< 0.05	0.96	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	2.3	2.5	< 0.05	1.3	< 0.05
Fluorene	mg/kg	0.05	MCERTS	1.5	1.9	< 0.05	1.3	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	20	14	< 0.05	13	0.24
Anthracene	mg/kg	0.05	MCERTS	5.7	3.6	< 0.05	3.9	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	33	16	< 0.05	24	0.29
Pyrene	mg/kg	0.05	MCERTS	29	14	< 0.05	22	0.26
Benzo(a)anthracene	mg/kg	0.05	MCERTS	16	7.4	< 0.05	13	< 0.05
Chrysene	mg/kg	0.05	MCERTS	13	6.5	< 0.05	9.4	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	15	6.5	< 0.05	9.5	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	6.4	3.6	< 0.05	6.6	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	13	6.1	< 0.05	9.6	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	6.3	2.9	< 0.05	4.5	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.9	0.94	< 0.05	1.5	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	7.1	3.3	< 0.05	5.1	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	171	90.0	< 0.80	126	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.4	9.2	2.7	8.1	3.0
Barium (aqua regia extractable)	mg/kg	1	MCERTS	160	120	24	150	27
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.83	0.73	0.24	0.89	0.23
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	0.8	< 0.2	0.8	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	0.9	< 0.2	0.4	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	220	140	12	260	15
Copper (aqua regia extractable)	mg/kg	1	MCERTS	25	25	5.3	34	5.2
Lead (aqua regia extractable)	mg/kg	1	MCERTS	32	37	11	37	11
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	7.8	7.6	0.35	9.2	0.49
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	25	15	5.5	24	4.4
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	56	57	13	62	15
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	70	88	24	77	16

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Lab Sample Number	2116304	2116305	2116306	2116307	2116308
Sample Reference	MTP101	MTP102	MTP102	MTP103	MTP103
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.40	0.40	0.65	0.30	0.50
Date Sampled	10/12/2021	10/12/2021	10/12/2021	10/12/2021	10/12/2021
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	5.2	8.4	< 2.0	21	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	27	31	< 8.0	49	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	350	290	< 8.0	480	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	MCERTS	380	330	< 10	550	< 10

TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	2.3	2.7	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	17	22	< 2.0	20	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	110	74	< 10	93	< 10
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	500	380	< 10	550	< 10
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	MCERTS	620	480	< 10	670	< 10

Chlorophenols

Pentachlorophenol (PCP)	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 21-29070

Project / Site name: HRI

Lab Sample Number				2116309	2116310	2116311	2116312	2116313
Sample Reference				MTP104	MTP104	MB101	MB102	MB103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.45	0.70	0.10	0.10	0.10
Date Sampled				10/12/2021	10/12/2021	10/12/2021	10/12/2021	10/12/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	18	27	28	25
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2	1.2	1.2

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	0.002	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	0.002	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ	KSZ	KSZ	KSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.1	6.7	7.9	7.1	6.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	1.0	< 1.0
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.49	0.087	0.016	0.024	0.033
Sulphide	mg/kg	1	MCERTS	6.4	12	23	60	2.6
Organic Matter (automated)	%	0.1	MCERTS	5.3	1.9	9.3	13	5.9

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Phenols by GC-MS

Phenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dichlorophenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2-Chlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2-Nitrophenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloro-3-methylphenol	mg/kg	0.1	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Total Phenols (GC-MS)	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Lab Sample Number				2116309	2116310	2116311	2116312	2116313
Sample Reference				MTP104	MTP104	MB101	MB102	MB103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.45	0.70	0.10	0.10	0.10
Date Sampled				10/12/2021	10/12/2021	10/12/2021	10/12/2021	10/12/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	11	< 0.05	0.44	8.3	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.89	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	19	< 0.05	0.68	8.9	< 0.05
Fluorene	mg/kg	0.05	MCERTS	12	< 0.05	0.44	7.0	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	89	< 0.05	4.8	59	0.87
Anthracene	mg/kg	0.05	MCERTS	16	< 0.05	1.1	13	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	84	< 0.05	6.6	57	1.4
Pyrene	mg/kg	0.05	MCERTS	75	< 0.05	5.7	51	1.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	35	< 0.05	3.3	30	0.67
Chrysene	mg/kg	0.05	MCERTS	28	< 0.05	2.8	24	0.71
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	30	< 0.05	3.1	31	0.80
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	14	< 0.05	1.0	9.1	0.50
Benzo(a)pyrene	mg/kg	0.05	MCERTS	30	< 0.05	2.4	24	0.61
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	14	< 0.05	1.2	11	0.34
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	4.0	< 0.05	0.40	3.6	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	17	< 0.05	1.4	13	0.38

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	477	< 0.80	35.2	351	7.49
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	17	5.1	21	45	18
Barium (aqua regia extractable)	mg/kg	1	MCERTS	430	29	170	170	120
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.69	0.42	1.0	2.6	1.2
Boron (water soluble)	mg/kg	0.2	MCERTS	0.8	0.4	0.6	0.5	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6	< 0.2	1.0	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	110	12	48	24	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	69	6.7	66	100	46
Lead (aqua regia extractable)	mg/kg	1	MCERTS	92	20	170	270	88
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.4	< 0.3	0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	3.1	0.58	2.4	4.5	2.2
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	6.5	24	27	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	25	21	31	61	40
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	260	38	210	160	110

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 21-29070

Project / Site name: HRI

Lab Sample Number				2116309	2116310	2116311	2116312	2116313
Sample Reference				MTP104	MTP104	MB101	MB102	MB103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.45	0.70	0.10	0.10	0.10
Date Sampled				10/12/2021	10/12/2021	10/12/2021	10/12/2021	10/12/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	8.2	< 2.0	< 2.0	23	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	18	< 8.0	< 8.0	54	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	180	< 8.0	< 8.0	170	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	MCERTS	200	< 10	< 10	250	< 10
TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	13	< 1.0	< 1.0	16	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	43	< 2.0	6.8	57	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	150	< 10	15	270	< 10
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	290	< 10	31	530	< 10
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	MCERTS	490	< 10	53	870	13
Chlorophenols								
Pentachlorophenol (PCP)	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 21-29070

Project / Site name: HRI

Lab Sample Number				2116314	2116315
Sample Reference				MB104	MB105
Sample Number				None Supplied	None Supplied
Depth (m)				0.10	0.10
Date Sampled				10/12/2021	10/12/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	22	24
Total mass of sample received	kg	0.001	NONE	1.2	1.2

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-
Asbestos Analyst ID	N/A	N/A	N/A	JSW	JSW

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.9	6.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.024	0.015
Sulphide	mg/kg	1	MCERTS	< 1.0	1.9
Organic Matter (automated)	%	0.1	MCERTS	6.6	9.0

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30

Phenols by GC-MS

Phenol	mg/kg	0.2	NONE	< 0.2	< 0.2
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	< 0.2	< 0.2
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1
2,4-Dichlorophenol	mg/kg	0.3	NONE	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	NONE	< 0.3	< 0.3
2-Chlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3
2-Nitrophenol	mg/kg	0.3	NONE	< 0.3	< 0.3
4-Chloro-3-methylphenol	mg/kg	0.1	ISO 17025	< 0.1	< 0.1
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3
Total Phenols (GC-MS)	mg/kg	1	NONE	< 1.0	< 1.0

Analytical Report Number: 21-29070

Project / Site name: HRI

Lab Sample Number				2116314	2116315
Sample Reference				MB104	MB105
Sample Number				None Supplied	None Supplied
Depth (m)				0.10	0.10
Date Sampled				10/12/2021	10/12/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Speciated PAHs					
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.83	0.86
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	1.5	1.6
Pyrene	mg/kg	0.05	MCERTS	1.4	1.4
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.89	0.84
Chrysene	mg/kg	0.05	MCERTS	0.69	0.67
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.84	0.96
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.43	0.25
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.73	0.69
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.41	0.39
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.47	0.46

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	8.27	8.12
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	26
Barium (aqua regia extractable)	mg/kg	1	MCERTS	110	110
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.83	0.84
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	44	54
Lead (aqua regia extractable)	mg/kg	1	MCERTS	91	120
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.8	2.6
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	17
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	29	36
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100	100

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0

Analytical Report Number: 21-29070

Project / Site name: HRI

Lab Sample Number				2116314	2116315
Sample Reference				MB104	MB105
Sample Number				None Supplied	None Supplied
Depth (m)				0.10	0.10
Date Sampled				10/12/2021	10/12/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	MCERTS	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	6.3
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	10
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	13	19
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	MCERTS	20	35
Chlorophenols					
Pentachlorophenol (PCP)	mg/kg	0.1	NONE	< 0.10	< 0.10

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number: 21-29070

Project / Site name: HRI

Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
2116307	MTP103	0.30	132	Loose Fibres	Chrysotile	< 0.001	< 0.001
2116309	MTP104	0.45	136	Loose Fibres	Chrysotile	0.002	0.002

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

Analytical Report Number : 21-29070

Project / Site name: HRI

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2116304	MTP101	None Supplied	0.4	Brown clay with gravel and stones.
2116305	MTP102	None Supplied	0.4	Brown clay with gravel and stones.
2116306	MTP102	None Supplied	0.65	Brown sandy clay.
2116307	MTP103	None Supplied	0.3	Brown loam and sand with gravel and vegetation.
2116308	MTP103	None Supplied	0.5	Brown sandy clay.
2116309	MTP104	None Supplied	0.45	Brown loam and clay with vegetation and gravel
2116310	MTP104	None Supplied	0.7	Brown clay and loam with vegetation.
2116311	MB101	None Supplied	0.1	Brown loam and clay with gravel and vegetation.
2116312	MB102	None Supplied	0.1	Brown loam and clay with gravel and vegetation.
2116313	MB103	None Supplied	0.1	Brown loam and clay with gravel and vegetation.
2116314	MB104	None Supplied	0.1	Brown loam and clay with gravel and vegetation.
2116315	MB105	None Supplied	0.1	Brown loam and sand with vegetation and gravel.

Analytical Report Number : 21-29070

Project / Site name: HRI

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Phenols, speciated, in soil, by GCMS	Determination of speciated phenols in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Phenols, speciated, in soil, by HPLC	Determination of speciated phenols by HPLC.	In house method based on Blue Book Method.	L030-PL	W	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 dphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025

Analytical Report Number : 21-29070

Project / Site name: HRI

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
TO - Chlorophenols in soil	Determination of chlorophenols by GC-MS.	In-house method		W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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



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Analytical Report Number : 21-30464

Project / Site name:	HRI	Samples received on:	15/12/2021
Your job number:	22375	Samples instructed on/ Analysis started on:	22/12/2021
Your order number:	21-2-FDO-LABS	Analysis completed by:	31/12/2021
Report Issue Number:	1	Report issued on:	31/12/2021
Samples Analysed:	10:1 WAC sample		

Signed: *Karolina Marek*

Karolina Marek
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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

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Waste Acceptance Criteria Analytical Results								
Report No:	21-30464							
					Client: MERE BROOK			
Location	HRI							
Lab Reference (Sample Number)	2123807 / 2123808				Landfill Waste Acceptance Criteria			
					Limits			
Sampling Date	10/12/2021				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	
Sample ID	MTP103							
Depth (m)	0.30							
Solid Waste Analysis								
TOC (%)**	2.1				3%	5%	6%	
Loss on Ignition (%) **	4.1				--	--	10%	
BTEX (µg/kg) **	< 10				6000	--	--	
Sum of PCBs (mg/kg) **	< 0.007				1	--	--	
Mineral Oil (mg/kg) EH_ID_CU_AL	700				500	--	--	
Total PAH (WAC-17) (mg/kg)	182				100	--	--	
pH (units)**	11.0				--	>6	--	
Acid Neutralisation Capacity (mmol / kg)	130				--	To be evaluated	To be evaluated	
Eluate Analysis								
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:1	Limit values for compliance leaching test			
	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)			
Arsenic *	0.0076			0.0709	0.5	2	25	
Barium *	0.0223			0.207	20	100	300	
Cadmium *	< 0.0001			< 0.0008	0.04	1	5	
Chromium *	0.0047			0.043	0.5	10	70	
Copper *	0.016			0.15	2	50	100	
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2	
Molybdenum *	0.0071			0.0655	0.5	10	30	
Nickel *	0.0058			0.054	0.4	10	40	
Lead *	0.0037			0.034	0.5	10	50	
Antimony *	< 0.0017			< 0.017	0.06	0.7	5	
Selenium *	< 0.0040			< 0.040	0.1	0.5	7	
Zinc *	0.0016			0.015	4	50	200	
Chloride *	13			120	800	15000	25000	
Fluoride	0.59			5.5	10	150	500	
Sulphate *	20			190	1000	20000	50000	
TDS*	190			1800	4000	60000	100000	
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-	
DOC	7.76			72.1	500	800	1000	
Leach Test Information								
Stone Content (%)	45							
Sample Mass (kg)	1.2							
Dry Matter (%)	92							
Moisture (%)	8.4							
Results are expressed on a dry weight basis, after correction for moisture content where applicable.					** = UKAS accredited (liquid eluate analysis only)			
Stated limits are for guidance only and I2 cannot be held responsible for any discrepancies with current legislation					** = MCFRTS accredited			

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

*= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

** = MCERTS accredited

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



Analytical Report Number : 21-30464
Project / Site name: HRI

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2123807	MTP103	None Supplied	0.3	Brown loam and sand with gravel and vegetation.

Analytical Report Number : 21-30464

Project / Site name: HRI

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance""	L046-PL	W	NONE
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Total BTEX in soil (Poland)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073-PL	W	MCERTS
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by EC probe using a factor of 0.6.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	ISO 17025

Analytical Report Number : 21-30464

Project / Site name: HRI

Water matrix abbreviations:

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

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

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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

Information in Support of Analytical Results

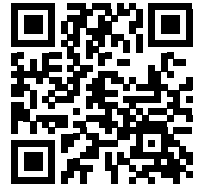
List of HWOL Acronyms and Operators

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

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)



DMJPE-SVMDJ-MY1G5

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

Job name

Huddersfield Royal Infirmary

Description/Comments

This assessment has been completed by IDOM for Vinci Construction UK Ltd.

The assessment has been completed using analytical data combined with observations made by the on-site engineer during the investigation.

The assessment has been completed using the following analytical report:

- I2 - Report Reference 21-29070. Dated 31/12/2021

This report does not account for the presence of asbestos within the soils. It should be noted that asbestos fibers have been identified to a maximum concentration of 0.002% w/w.

This assessment is not a stand-alone document and should be read in conjunction with further documentation produced by IDOM.

Acceptance of any material to a waste facility is entirely at the discretion of said facility.

Project

22375

Site

Acre Street

Classified by

Name: **Ryan Lindsay**
 Date: **06 Jan 2022 11:15 GMT**
 Telephone: **441613020950**

Company: **Idom Merebrook Ltd**

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

HazWasteOnline™ Certification:

CERTIFIED

Course
 Hazardous Waste Classification

Date
 18 Sep 2019

Next 3 year Refresher due by Sep 2022

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	MTP101	0.40	Hazardous	HP 7, HP 11	3
2	MTP102	0.40	Non Hazardous		6
3	MTP102[2]	0.65	Non Hazardous		9
4	MTP103	0.30	Hazardous	HP 3(i), HP 7, HP 11	11
5	MTP103[2]	0.50	Non Hazardous		14
6	MTP104	0.45	Non Hazardous		16
7	MTP104[2]	0.70	Non Hazardous		19

Related documents

#	Name	Description
1	Idom Core Contaminated Land WM3 waste suite	waste stream template used to create this Job

Report

Created by: Ryan Lindsay

Created date: 06 Jan 2022 11:15 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	21
Appendix B: Rationale for selection of metal species	22
Appendix C: Version	22

Classification of sample: MTP101

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

Sample details

Sample name:	LoW Code:
MTP101	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.40 m	Entry:
	17 05 03 * (Soil and stones containing hazardous substances)

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.: 0.1%)

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.: 0.1%)

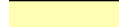
Determinands

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

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				8.4 mg/kg	1.32	11.091 mg/kg	0.00111 %		
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium sulfide }			1	0.5 mg/kg	1.285	0.643 mg/kg	0.00005 %		
	048-010-00-4	215-147-8	1306-23-6							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				220 mg/kg	1.462	321.542 mg/kg	0.0322 %		
		215-160-9	1308-38-9							
4	copper { dicopper oxide; copper (I) oxide }				25 mg/kg	1.126	28.147 mg/kg	0.00281 %		
	029-002-00-X	215-270-7	1317-39-1							
5	lead { lead chromate }			1	32 mg/kg	1.56	49.914 mg/kg	0.0032 %		
	082-004-00-2	231-846-0	7758-97-6							
6	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
7	nickel { nickel dihydroxide }				25 mg/kg	1.579	39.487 mg/kg	0.00395 %		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
9	zinc { zinc chromate }				70 mg/kg	2.774	194.19 mg/kg	0.0194 %		
	024-007-00-3	236-878-9	13530-65-9							

#	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								
10	pH				11 pH		11	pH	11pH		
11	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										
12	phenol				<1 mg/kg		<1	mg/kg	<0.0001 %		<LOD
	604-001-00-2	203-632-7	108-95-2								
13	TPH (C6 to C40) petroleum group				1000 mg/kg		1000	mg/kg	0.1 %		
			TPH								
14	chromium in chromium(VI) compounds { chromium(VI) oxide }				<4 mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
	024-001-00-0	215-607-8	1333-82-0								
15	naphthalene				0.86 mg/kg		0.86	mg/kg	0.000086 %		
	601-052-00-2	202-049-5	91-20-3								
16	acenaphthylene				0.6 mg/kg		0.6	mg/kg	0.00006 %		
		205-917-1	208-96-8								
17	acenaphthene				2.3 mg/kg		2.3	mg/kg	0.00023 %		
		201-469-6	83-32-9								
18	fluorene				1.5 mg/kg		1.5	mg/kg	0.00015 %		
		201-695-5	86-73-7								
19	phenanthrene				20 mg/kg		20	mg/kg	0.002 %		
		201-581-5	85-01-8								
20	anthracene				5.7 mg/kg		5.7	mg/kg	0.00057 %		
		204-371-1	120-12-7								
21	fluoranthene				33 mg/kg		33	mg/kg	0.0033 %		
		205-912-4	206-44-0								
22	pyrene				29 mg/kg		29	mg/kg	0.0029 %		
		204-927-3	129-00-0								
23	benzo[a]anthracene				16 mg/kg		16	mg/kg	0.0016 %		
	601-033-00-9	200-280-6	56-55-3								
24	chrysene				13 mg/kg		13	mg/kg	0.0013 %		
	601-048-00-0	205-923-4	218-01-9								
25	benzo[b]fluoranthene				15 mg/kg		15	mg/kg	0.0015 %		
	601-034-00-4	205-911-9	205-99-2								
26	benzo[k]fluoranthene				6.4 mg/kg		6.4	mg/kg	0.00064 %		
	601-036-00-5	205-916-6	207-08-9								
27	benzo[a]pyrene; benzo[def]chrysene				13 mg/kg		13	mg/kg	0.0013 %		
	601-032-00-3	200-028-5	50-32-8								
28	indeno[123-cd]pyrene				6.3 mg/kg		6.3	mg/kg	0.00063 %		
		205-893-2	193-39-5								
29	dibenz[a,h]anthracene				1.9 mg/kg		1.9	mg/kg	0.00019 %		
	601-041-00-2	200-181-8	53-70-3								
30	benzo[ghi]perylene				7.1 mg/kg		7.1	mg/kg	0.00071 %		
		205-883-8	191-24-2								
31	benzene				<1 mg/kg		<1	mg/kg	<0.0001 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
32	toluene				<1 mg/kg		<1	mg/kg	<0.0001 %		<LOD
	601-021-00-3	203-625-9	108-88-3								
33	ethylbenzene				<1 mg/kg		<1	mg/kg	<0.0001 %		<LOD
	601-023-00-4	202-849-4	100-41-4								
34	xylene				<1 mg/kg		<1	mg/kg	<0.0001 %		<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]								
Total:									0.182 %		

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because No evidence of visible free phase hydrocarbon product. Concentrations of TPH lower than 1000 mg/kg in soil where no free-phase product present extremely unlikely to present flammable properties.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.1%)

Classification of sample: MTP102

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

Sample details

Sample name:	LoW Code:
MTP102	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)
0.40 m	

Hazard properties

None identified

Determinands

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

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	9.2	mg/kg	1.32	12.147	mg/kg	0.00121 %		
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	0.9	mg/kg	1.285	1.157	mg/kg	0.00009 %		
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		140	mg/kg	1.462	204.618	mg/kg	0.0205 %		
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	25	mg/kg	1.126	28.147	mg/kg	0.00281 %		
5	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	37	mg/kg	1.56	57.713	mg/kg	0.0037 %		
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]	15	mg/kg	1.579	23.692	mg/kg	0.00237 %		
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8			<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9	88	mg/kg	2.774	244.125	mg/kg	0.0244 %		
10	pH		PH		11.2	pH		11.2	pH	11.2 pH		
11	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5			<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
12	phenol	604-001-00-2	203-632-7	108-95-2	<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
13	TPH (C6 to C40) petroleum group		TPH		810	mg/kg		810	mg/kg	0.081 %		
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
15	naphthalene	601-052-00-2	202-049-5	91-20-3	0.75	mg/kg		0.75	mg/kg	0.000075 %		

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	acenaphthylene	205-917-1	208-96-8		0.37 mg/kg		0.37 mg/kg	0.000037 %		
17	acenaphthene	201-469-6	83-32-9		2.5 mg/kg		2.5 mg/kg	0.00025 %		
18	fluorene	201-695-5	86-73-7		1.9 mg/kg		1.9 mg/kg	0.00019 %		
19	phenanthrene	201-581-5	85-01-8		14 mg/kg		14 mg/kg	0.0014 %		
20	anthracene	204-371-1	120-12-7		3.6 mg/kg		3.6 mg/kg	0.00036 %		
21	fluoranthene	205-912-4	206-44-0		16 mg/kg		16 mg/kg	0.0016 %		
22	pyrene	204-927-3	129-00-0		14 mg/kg		14 mg/kg	0.0014 %		
23	benzo[a]anthracene	601-033-00-9	200-280-6		7.4 mg/kg		7.4 mg/kg	0.00074 %		
24	chrysene	601-048-00-0	205-923-4		6.5 mg/kg		6.5 mg/kg	0.00065 %		
25	benzo[b]fluoranthene	601-034-00-4	205-911-9		6.5 mg/kg		6.5 mg/kg	0.00065 %		
26	benzo[k]fluoranthene	601-036-00-5	205-916-6		3.6 mg/kg		3.6 mg/kg	0.00036 %		
27	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		6.1 mg/kg		6.1 mg/kg	0.00061 %		
28	indeno[123-cd]pyrene	205-893-2	193-39-5		2.9 mg/kg		2.9 mg/kg	0.00029 %		
29	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.94 mg/kg		0.94 mg/kg	0.000094 %		
30	benzo[ghi]perylene	205-883-8	191-24-2		3.3 mg/kg		3.3 mg/kg	0.00033 %		
31	benzene	601-020-00-8	200-753-7		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
32	toluene	601-021-00-3	203-625-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
33	ethylbenzene	601-023-00-4	202-849-4		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
34	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.147 %		

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because No evidence of visible free phase hydrocarbon product. Concentrations of TPH lower than 1000 mg/kg in soil where no free-phase product present extremely unlikely to present flammable properties.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.081%)

Classification of sample: MTP102[2]

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

Sample details

Sample name:	LoW Code:
MTP102[2]	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.65 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

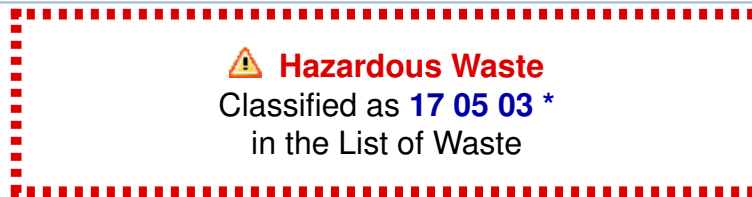
#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				2.7	mg/kg	1.32	3.565	mg/kg	0.000356 %		
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
	048-010-00-4	215-147-8	1306-23-6									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				12	mg/kg	1.462	17.539	mg/kg	0.00175 %		
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				5.3	mg/kg	1.126	5.967	mg/kg	0.000597 %		
	029-002-00-X	215-270-7	1317-39-1									
5	lead { lead chromate }			1	11	mg/kg	1.56	17.158	mg/kg	0.0011 %		
	082-004-00-2	231-846-0	7758-97-6									
6	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
7	nickel { nickel dihydroxide }				5.5	mg/kg	1.579	8.687	mg/kg	0.000869 %		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8											
9	zinc { zinc chromate }				24	mg/kg	2.774	66.58	mg/kg	0.00666 %		
	024-007-00-3	236-878-9	13530-65-9									
10	pH				7.1	pH		7.1	pH	7.1 pH		
11	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											
12	phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
	604-001-00-2	203-632-7	108-95-2									
13	TPH (C6 to C40) petroleum group				<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
14	chromium in chromium(VI) compounds { chromium(VI) oxide }				<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
15	naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
18	fluorene	201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	phenanthrene	201-581-5	85-01-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	fluoranthene	205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	pyrene	204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	chrysene	601-048-00-0	205-923-4		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
28	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
29	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
30	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
31	benzene	601-020-00-8	200-753-7		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
32	toluene	601-021-00-3	203-625-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
33	ethylbenzene	601-023-00-4	202-849-4		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
34	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.0151 %		

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: MTP103



Sample details

Sample name:	LoW Code:
MTP103	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.30 m	Entry:
	17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

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 hazardous because No evidence of visible free phase hydrocarbon product. Concentrations of TPH lower than 1000 mg/kg in soil where no free-phase product present extremely unlikely to present flammable properties.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.122%)

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.: 0.122%)

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.: 0.122%)

Determinands

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

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }									
	033-003-00-0	215-481-4	1327-53-3		8.1 mg/kg	1.32	10.695 mg/kg	0.00107 %		
2	cadmium { cadmium sulfide }									
	048-010-00-4	215-147-8	1306-23-6	1	0.4 mg/kg	1.285	0.514 mg/kg	0.00004 %		
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }									
		215-160-9	1308-38-9		260 mg/kg	1.462	380.005 mg/kg	0.038 %		
4	copper { dicopper oxide; copper (I) oxide }									
	029-002-00-X	215-270-7	1317-39-1		34 mg/kg	1.126	38.28 mg/kg	0.00383 %		
5	lead { lead chromate }									
	082-004-00-2	231-846-0	7758-97-6	1	37 mg/kg	1.56	57.713 mg/kg	0.0037 %		

#	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									
6	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
7	nickel { nickel dihydroxide }				24	mg/kg	1.579	37.908	mg/kg	0.00379 %		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8											
9	zinc { zinc chromate }				77	mg/kg	2.774	213.609	mg/kg	0.0214 %		
	024-007-00-3	236-878-9	13530-65-9									
10	pH				11	pH		11	pH	11pH		
11	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											
12	phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
	604-001-00-2	203-632-7	108-95-2									
13	TPH (C6 to C40) petroleum group				1220	mg/kg		1220	mg/kg	0.122 %		
14	chromium in chromium(VI) compounds { chromium(VI) oxide }				<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
15	naphthalene				0.45	mg/kg		0.45	mg/kg	0.000045 %		
	601-052-00-2	202-049-5	91-20-3									
16	acenaphthylene				0.96	mg/kg		0.96	mg/kg	0.000096 %		
		205-917-1	208-96-8									
17	acenaphthene				1.3	mg/kg		1.3	mg/kg	0.00013 %		
		201-469-6	83-32-9									
18	fluorene				1.3	mg/kg		1.3	mg/kg	0.00013 %		
		201-695-5	86-73-7									
19	phenanthrene				13	mg/kg		13	mg/kg	0.0013 %		
		201-581-5	85-01-8									
20	anthracene				3.9	mg/kg		3.9	mg/kg	0.00039 %		
		204-371-1	120-12-7									
21	fluoranthene				24	mg/kg		24	mg/kg	0.0024 %		
		205-912-4	206-44-0									
22	pyrene				22	mg/kg		22	mg/kg	0.0022 %		
		204-927-3	129-00-0									
23	benzo[a]anthracene				13	mg/kg		13	mg/kg	0.0013 %		
	601-033-00-9	200-280-6	56-55-3									
24	chrysene				9.4	mg/kg		9.4	mg/kg	0.00094 %		
	601-048-00-0	205-923-4	218-01-9									
25	benzo[b]fluoranthene				9.5	mg/kg		9.5	mg/kg	0.00095 %		
	601-034-00-4	205-911-9	205-99-2									
26	benzo[k]fluoranthene				6.6	mg/kg		6.6	mg/kg	0.00066 %		
	601-036-00-5	205-916-6	207-08-9									
27	benzo[a]pyrene; benzo[def]chrysene				9.6	mg/kg		9.6	mg/kg	0.00096 %		
	601-032-00-3	200-028-5	50-32-8									
28	indeno[123-cd]pyrene				4.5	mg/kg		4.5	mg/kg	0.00045 %		
		205-893-2	193-39-5									
29	dibenz[a,h]anthracene				1.5	mg/kg		1.5	mg/kg	0.00015 %		
	601-041-00-2	200-181-8	53-70-3									
30	benzo[ghi]perylene				5.1	mg/kg		5.1	mg/kg	0.00051 %		
		205-883-8	191-24-2									
31	benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
	601-020-00-8	200-753-7	71-43-2									

#	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							
32	toluene									
	601-021-00-3	203-625-9	108-88-3		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
33	ethylbenzene									
	601-023-00-4	202-849-4	100-41-4		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
34	xylene									
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.208 %		

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

Classification of sample: MTP103[2]

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

Sample details

Sample name:	LoW Code:
MTP103[2]	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.50 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				3 mg/kg	1.32	3.961 mg/kg	0.000396 %			
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium sulfide }			1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %			<LOD
	048-010-00-4	215-147-8	1306-23-6								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				15 mg/kg	1.462	21.923 mg/kg	0.00219 %			
		215-160-9	1308-38-9								
4	copper { dicopper oxide; copper (I) oxide }				5.2 mg/kg	1.126	5.855 mg/kg	0.000585 %			
	029-002-00-X	215-270-7	1317-39-1								
5	lead { lead chromate }			1	11 mg/kg	1.56	17.158 mg/kg	0.0011 %			
	082-004-00-2	231-846-0	7758-97-6								
6	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
7	nickel { nickel dihydroxide }				4.4 mg/kg	1.579	6.95 mg/kg	0.000695 %			
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
	034-002-00-8										
9	zinc { zinc chromate }				16 mg/kg	2.774	44.386 mg/kg	0.00444 %			
	024-007-00-3	236-878-9	13530-65-9								
10	pH				8.2 pH		8.2 pH	8.2 pH			
11	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										
12	phenol				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
	604-001-00-2	203-632-7	108-95-2								
13	TPH (C6 to C40) petroleum group				<20 mg/kg		<20 mg/kg	<0.002 %			<LOD
14	chromium in chromium(VI) compounds { chromium(VI) oxide }				<4 mg/kg	1.923	<7.692 mg/kg	<0.000769 %			<LOD
	024-001-00-0	215-607-8	1333-82-0								
15	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-052-00-2	202-049-5	91-20-3								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	• acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	• acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
18	• fluorene	201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	• phenanthrene	201-581-5	85-01-8		0.24 mg/kg		0.24 mg/kg	0.000024 %		
20	• anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	• fluoranthene	205-912-4	206-44-0		0.29 mg/kg		0.29 mg/kg	0.000029 %		
22	• pyrene	204-927-3	129-00-0		0.26 mg/kg		0.26 mg/kg	0.000026 %		
23	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	chrysene	601-048-00-0	205-923-4		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
28	• indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
29	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
30	• benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
31	benzene	601-020-00-8	200-753-7		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
32	toluene	601-021-00-3	203-625-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
33	• ethylbenzene	601-023-00-4	202-849-4		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
34	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.0132 %		

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: MTP104

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

Sample details

Sample name:	LoW Code:
MTP104	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)
0.45 m	

Hazard properties

None identified

Determinands

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

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	17	mg/kg	1.32	22.446	mg/kg	0.00224 %		
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	0.6	mg/kg	1.285	0.771	mg/kg	0.00006 %		
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		110	mg/kg	1.462	160.771	mg/kg	0.0161 %		
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	69	mg/kg	1.126	77.686	mg/kg	0.00777 %		
5	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	92	mg/kg	1.56	143.503	mg/kg	0.0092 %		
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]	23	mg/kg	1.579	36.328	mg/kg	0.00363 %		
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8			<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9	260	mg/kg	2.774	721.278	mg/kg	0.0721 %		
10	pH		PH		9.1	pH		9.1	pH	9.1 pH		
11	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5			<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
12	phenol	604-001-00-2	203-632-7	108-95-2	<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
13	TPH (C6 to C40) petroleum group		TPH		690	mg/kg		690	mg/kg	0.069 %		
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
15	naphthalene	601-052-00-2	202-049-5	91-20-3	11	mg/kg		11	mg/kg	0.0011 %		

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	acenaphthene	201-469-6	83-32-9		19 mg/kg		19 mg/kg	0.0019 %		
18	fluorene	201-695-5	86-73-7		12 mg/kg		12 mg/kg	0.0012 %		
19	phenanthrene	201-581-5	85-01-8		89 mg/kg		89 mg/kg	0.0089 %		
20	anthracene	204-371-1	120-12-7		16 mg/kg		16 mg/kg	0.0016 %		
21	fluoranthene	205-912-4	206-44-0		84 mg/kg		84 mg/kg	0.0084 %		
22	pyrene	204-927-3	129-00-0		75 mg/kg		75 mg/kg	0.0075 %		
23	benzo[a]anthracene	601-033-00-9	200-280-6		35 mg/kg		35 mg/kg	0.0035 %		
24	chrysene	601-048-00-0	205-923-4		28 mg/kg		28 mg/kg	0.0028 %		
25	benzo[b]fluoranthene	601-034-00-4	205-911-9		30 mg/kg		30 mg/kg	0.003 %		
26	benzo[k]fluoranthene	601-036-00-5	205-916-6		14 mg/kg		14 mg/kg	0.0014 %		
27	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		30 mg/kg		30 mg/kg	0.003 %		
28	indeno[123-cd]pyrene	205-893-2	193-39-5		14 mg/kg		14 mg/kg	0.0014 %		
29	dibenz[a,h]anthracene	601-041-00-2	200-181-8		4 mg/kg		4 mg/kg	0.0004 %		
30	benzo[ghi]perylene	205-883-8	191-24-2		17 mg/kg		17 mg/kg	0.0017 %		
31	benzene	601-020-00-8	200-753-7		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
32	toluene	601-021-00-3	203-625-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
33	ethylbenzene	601-023-00-4	202-849-4		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
34	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.23 %		

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because No evidence of visible free phase hydrocarbon product. Concentrations of TPH lower than 1000 mg/kg in soil where no free-phase product present extremely unlikely to present flammable properties.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.069%)

Classification of sample: MTP104[2]

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

Sample details

Sample name:	LoW Code:
MTP104[2]	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.70 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	 arsenic { arsenic trioxide }				5.1	mg/kg	1.32	6.734	mg/kg	0.000673 %		
	033-003-00-0	215-481-4	1327-53-3									
2	 cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
	048-010-00-4	215-147-8	1306-23-6									
3	 chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				12	mg/kg	1.462	17.539	mg/kg	0.00175 %		
		215-160-9	1308-38-9									
4	 copper { dicopper oxide; copper (I) oxide }				6.7	mg/kg	1.126	7.543	mg/kg	0.000754 %		
	029-002-00-X	215-270-7	1317-39-1									
5	 lead { lead chromate }			1	20	mg/kg	1.56	31.196	mg/kg	0.002 %		
	082-004-00-2	231-846-0	7758-97-6									
6	 mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
7	 nickel { nickel dihydroxide }				6.5	mg/kg	1.579	10.267	mg/kg	0.00103 %		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
8	 selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8											
9	 zinc { zinc chromate }				38	mg/kg	2.774	105.418	mg/kg	0.0105 %		
	024-007-00-3	236-878-9	13530-65-9									
10	 pH				6.7	pH		6.7	pH	6.7 pH		
11	 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											
12	 phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
	604-001-00-2	203-632-7	108-95-2									
13	 TPH (C6 to C40) petroleum group				<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
14	 chromium in chromium(VI) compounds { chromium(VI) oxide }				<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
15	 naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
18	fluorene	201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	phenanthrene	201-581-5	85-01-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	fluoranthene	205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	pyrene	204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	chrysene	601-048-00-0	205-923-4		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
28	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
29	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
30	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
31	benzene	601-020-00-8	200-753-7		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
32	toluene	601-021-00-3	203-625-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
33	ethylbenzene	601-023-00-4	202-849-4		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
34	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.0205 %		

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

• **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

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

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

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

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

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 06 Aug 2015

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

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 06 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

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

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 21 Aug 2015

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

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

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

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

Data source date: 21 Aug 2015

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

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 06 Aug 2015

Hazard Statements: Carc. 2; H351

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

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

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

Data source date: 23 Jul 2015

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

■ **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

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on hazard statements

cadmium {cadmium sulfide}

Worst case species based on hazard statements

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

Worst case species based on hazard statements

copper {dicopper oxide; copper (I) oxide}

Worst case species based on hazard statements

lead {lead chromate}

Worst case species based on hazard statements

mercury {mercury dichloride}

Worst case species based on hazard statements

nickel {nickel dihydroxide}

Worst case species based on hazard statements

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

(enter justification for selecting this species)

zinc {zinc chromate}

(enter justification for selecting this species)

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

Worst case species

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

(enter justification for selecting this species)

Appendix C: Version

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

HazWasteOnline Classification Engine Version: 2021.347.4961.9421 (13 Dec 2021)

HazWasteOnline Database: 2022.4.4967.9426 (04 Jan 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



Freeland Horticulture Ltd
Rosedale Nursery
College Road
Hextable
Kent BR8 7LT

Attention: Philippa Lambourne

Our Ref: SLC-1154-SA

19 April 2023

Dear Philippa

Topsoil Analysis Report: Doncaster, South Yorkshire Topsoil – April 2023

We have completed the analysis of the topsoil sample recently taken from the above site and it has been forwarded to an approved laboratory for analysis and have the pleasure of reporting our findings. The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes and its compliance with the current British Standard for topsoil (BS3882).

SOIL SAMPLING & EXAMINATION

At the time of our sampling visit the topsoil was stored in a stockpile. A series of 10 hand augered trial holes were constructed across the stockpile for the purpose of soil examination and sample collection. As the soil examination confirmed a consistent topsoil composition, the ten samples were combined together to form one composite sample for analysis purposes. The soil was described as dark brown, slightly moist and friable with a well-developed, fine to medium granular structure. The soil contained a low fraction of small stones and no deleterious materials (eg. building waste materials, glass, roots or rhizomes of pernicious weeds) or unusual odours (eg. hydrocarbons) were recorded.

LABORATORY ANALYSIS

The topsoil sample was submitted to a UKAS and MCERTS accredited laboratory for routine physical and chemical parameters to confirm the composition and fertility of the soil. The following parameters were determined:

- ⊕ pH & electrical conductivity values;
- ⊕ major plant nutrients (N, P, K, Mg) & organic matter content;
- ⊕ particle size distribution and stone content;
- ⊕ heavy metals & potentially toxic elements (As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn, B);
- ⊕ sulphate, sulphur, sulphide;
- ⊕ total cyanide and total (mono) phenols;
- ⊕ speciated PAHs (US EPA16)
- ⊕ banded aromatic and aliphatic petroleum hydrocarbons (C₅-C₃₅).
- ⊕ Asbestos

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

Phone: 01322 619161;

*Freeland horticulture Ltd, Registered in England: Rosedale Nursery, College Road, Hextable, Kent BR8 7LT
Company Registration No: 04015968*

COMMENTS**pH & Electrical Conductivity (salinity) Values**

The sample was alkaline in nature (pH 8.4) with a pH value that would be considered suitable for general landscaping purposes.

The electrical conductivity (salinity) value using the soil:water extract was (955µS/cm) indicating that soluble salts are not present at levels that would be harmful to plants.

The electrical conductivity values by CaSO₄ extract (BS3882 requirement) fell below the maximum specified value (3300µS/cm) given in BS3882:2015.

Organic Matter & Nutrient Status

The sample was rich in organic matter and all major plant nutrients. No further additions of compost or fertiliser are required, or indeed recommended, for at least the first growing season.

The C:N ratio of the sample was acceptable for general landscape purposes

Particle Size Distribution & Stone Content

The sample contained 82% sand and fell into the sandy loam texture class. This particle size distribution is considered suitable for a broad range of landscape applications, including tree and shrub planting, turfing and seeding.

The sample was Virtually free from stones of 50 mm and upwards in diameter and only contained a slight fraction of smaller stones (5.4%). As such, stones will not restrict the use of the soil for landscaping purposes.

Potential Contaminants

We are not aware of any specified contaminant levels set for the proposed end-use of this topsoil. This includes human health, environmental protection and metals considered toxic to plants. In the absence of any site-specific assessment criteria, the concentrations that affect human health have been compared with the 'residential with homegrown produce' land use in the Suitable For Use Levels presented in 'The LQM/CIEH S4UIs' for Human Health Risk Assessment (2015) and DEFRA SP1010: 'Development of Category 4 Screening Levels' for Assessment of Land Affected by Contamination – Policy Companion Document (2014).

Of the potential contaminants determined, none was found at levels that would exceed their respective guideline values.

CONCLUSION

The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes. From the soil examination and laboratory analysis, the soil is described as an alkaline, non-saline, sandy loam. The organic matter and nutrient levels are acceptable, and no significant contamination was found with respect to the parameters determined. This soil would adhere to the current BS3882 specification for 'multipurpose grade'.

To conclude, based on our findings, the topsoil would be considered well-suited to general landscaping purposes provided the physical condition of the soil is maintained.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if you have any queries or comments.

George Longmuir MSc Soil Sci. M.I Soil Sci.

Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Doncaster, S. Yorkshire
Month/Year	April 23
Our Ref	1154-SA
Date	19 April 2023

Composite sample

pH Value & Salinity

pH value (1:2.5 soil/water ext)	units	8.4
Electrical Conductivity (1:2.5 soil/water ext)	µS/cm	955
Electrical Conductivity (1:2.5 soil/CaSO4 ext)	µS/cm	2968

Organic Matter & Nutrient Status

Organic Matter (LOI)	%	7.1
Organic Carbon (Derived)	%	4.1
Total Nitrogen	%	0.301
Carbon:Nitrogen Ratio	:1	13.7
Available Phosphorus	mg/l	48.4
Available Potassium	mg/l	1203
Available Magnesium	mg/l	220

Particle Size Analysis & Stones

Clay (<0.002mm)	%	7
Silt (0.063-0.002mm)	%	11
Sand (2.0-0.063mm)	%	82
Texture Class	UK Class	Sandy loam

Stones 2-20mm	% by DW	3.5
Stones 20-50mm	% by DW	1.9
Stones >50mm	% by DW	0.0

Potential Contaminants

Total Arsenic (As)	mg/kg	9.0
Total Cadmium (Cd)	mg/kg	0.17
Total Chromium (Cr)	mg/kg	14.8
Hexavalent Chromium (CR ^{VI})	mg/kg	<0.2
Total Copper (Cu)	mg/kg	25.8
Total Lead (Pb)	mg/kg	25.7
Total Mercury (Hg)	mg/kg	<0.2
Total Nickel (Ni)	mg/kg	16.9
Total Selenium (Se)	mg/kg	0.31
Total Zinc (Zn)	mg/kg	120
Total Beryllium (Be)	mg/kg	<1
Total Barium (Ba)	mg/kg	80.5
Total Vanadium (V)	mg/kg	16.4
Hot Water Soluble Boron (B)	mg/kg	1.9
Total Cyanide (CN)	mg/kg	<1
Elemental Sulphur (S)	mg/kg	<5
Easily Liberated Sulphide (S ²⁻)	mg/kg	<1
Water Soluble Sulphate (SO ₄ ²⁻)	mg/l	63.4
Total Phenols Index	mg/kg	<1
Xenobios Screen	-	N.D.

Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Doncaster, S. Yorkshire
Month/Year	April 23
Our Ref	1154-SA
Date	19 April 2023

Polyaromatic Hydrocarbons

Naphthalene	mg/kg	<0.05
Acenaphthylene	mg/kg	<0.05
Acenaphthene	mg/kg	<0.05
Fluorene	mg/kg	<0.05
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.05
Fluoranthene	mg/kg	0.1
Pyrene	mg/kg	<0.1
Benzo[a]anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo[b]fluoranthene	mg/kg	<0.1
Benzo[k]fluoranthene	mg/kg	<0.1
Benzo[a]pyrene	mg/kg	<0.1
Indeno[1,2,3-cd]pyrene	mg/kg	<0.1
Dibenzo[a,h]anthracene	mg/kg	<0.1
Benzo[g,h,i]perylene	mg/kg	<0.1
Total PAHs sum US EPA 16	mg/kg	<1

Banded Petroleum Hydrocarbons

Aliphatic TPH >C ₅ -C ₆	mg/kg	<0.05
Aliphatic TPH >C ₆ -C ₈	mg/kg	<0.05
Aliphatic TPH >C ₈ -C ₁₀	mg/kg	<0.05
Aliphatic TPH >C ₁₀ -C ₁₂	mg/kg	<10
Aliphatic TPH >C ₁₂ -C ₁₆	mg/kg	<10
Aliphatic TPH >C ₁₆ -C ₂₁	mg/kg	<10
Aliphatic TPH >C ₂₁ -C ₃₅	mg/kg	37.0
Aliphatic TPH >C ₃₅ -C ₄₄	mg/kg	19.0

Aromatic TPH >C ₅ -C ₇	mg/kg	<0.05
Aromatic TPH >C ₇ -C ₈	mg/kg	<0.05
Aromatic TPH >C ₈ -C ₁₀	mg/kg	<0.05
Aromatic TPH >C ₁₀ -C ₁₂	mg/kg	<10
Aromatic TPH >C ₁₂ -C ₁₆	mg/kg	<10
Aromatic TPH >C ₁₆ -C ₂₁	mg/kg	<10
Aromatic TPH >C ₂₁ -C ₃₅	mg/kg	<10
Aromatic TPH >C ₃₅ -C ₄₄	mg/kg	<12

Total Petroleum Hydrocarbons (C ₅ -C ₄₄)	mg/kg	56.0
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BTEX

Benzene	mg/kg	<0.02
Toluene	mg/kg	<0.2
Ethyl Benzene	mg/kg	<0.04
m- & p-Xylene	mg/kg	<0.2
o-Xylene	mg/kg	<0.1



Freeland Horticulture Ltd
Rosedale Nursery
College Road
Hextable
Kent BR8 7LT

Attention: Philippa Lambourne

Our Ref: SLC-1136-SA

21 February 2023

Dear Philippa

Topsoil Analysis Report: Doncaster, South Yorkshire Topsoil – February 2023

We have completed the analysis of the topsoil sample recently taken from the above site and it has been forwarded to an approved laboratory for analysis and have the pleasure of reporting our findings. The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes and its compliance with the current British Standard for topsoil (BS3882).

SOIL SAMPLING & EXAMINATION

At the time of our sampling visit the topsoil was stored in a stockpile. A series of 10 hand augered trial holes were constructed across the stockpile for the purpose of soil examination and sample collection. As the soil examination confirmed a consistent topsoil composition, the ten samples were combined together to form one composite sample for analysis purposes. The soil was described as dark brown, slightly moist and friable with a well-developed, fine to medium granular structure. The soil contained a low fraction of small stones and no deleterious materials (eg. building waste materials, glass, roots or rhizomes of pernicious weeds) or unusual odours (eg. hydrocarbons) were recorded.

LABORATORY ANALYSIS

The topsoil sample was submitted to a UKAS and MCERTS accredited laboratory for routine physical and chemical parameters to confirm the composition and fertility of the soil. The following parameters were determined:

- ⊕ pH & electrical conductivity values;
- ⊕ major plant nutrients (N, P, K, Mg) & organic matter content;
- ⊕ particle size distribution and stone content;
- ⊕ heavy metals & potentially toxic elements (As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn, B);
- ⊕ sulphate, sulphur, sulphide;
- ⊕ total cyanide and total (mono) phenols;
- ⊕ speciated PAHs (US EPA16)
- ⊕ banded aromatic and aliphatic petroleum hydrocarbons (C₅-C₃₅).
- ⊕ Asbestos

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

Phone: 01322 619161;

***Freeland horticulture Ltd, Registered in England: Rosedale Nursery, College Road, Hextable, Kent BR8 7LT
Company Registration No: 04015968***

COMMENTS

pH & Electrical Conductivity (salinity) Values

The sample was alkaline in nature (pH 8.2) with a pH value that would be considered suitable for general landscaping purposes.

The electrical conductivity (salinity) value using the soil:water extract was (1431 μ S/cm) indicating that soluble salts are not present at levels that would be harmful to plants.

The electrical conductivity values by CaSO₄ extract (BS3882 requirement) fell below the maximum specified value (3300 μ S/cm) given in BS3882:2015.

Organic Matter & Nutrient Status

The sample was rich in organic matter and all major plant nutrients. No further additions of compost or fertiliser are required, or indeed recommended, for at least the first growing season.

The C:N ratio of the sample was acceptable for general landscape purposes

Particle Size Distribution & Stone Content

The sample contained 78% sand and fell into the sandy loam texture class. This particle size distribution is considered suitable for a broad range of landscape applications, including tree and shrub planting, turfing and seeding.

The sample was Virtually free from stones of 50 mm and upwards in diameter and only contained a slight fraction of smaller stones (2.3%). As such, stones will not restrict the use of the soil for landscaping purposes.

Potential Contaminants

We are not aware of any specified contaminant levels set for the proposed end-use of this topsoil. This includes human health, environmental protection and metals considered toxic to plants. In the absence of any site-specific assessment criteria, the concentrations that affect human health have been compared with the 'residential with homegrown produce' land use in the Suitable For Use Levels presented in 'The LQM/CIEH S4UIs' for Human Health Risk Assessment (2015) and DEFRA SP1010: 'Development of Category 4 Screening Levels' for Assessment of Land Affected by Contamination – Policy Companion Document (2014).

Of the potential contaminants determined, none was found at levels that would exceed their respective guideline values.

CONCLUSION

The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes. From the soil examination and laboratory analysis, the soil is described as an alkaline, non-saline, sandy loam. The organic matter and nutrient levels are acceptable, and no significant contamination was found with respect to the parameters determined. This soil would adhere to the current BS3882 specification for 'multipurpose grade'.

To conclude, based on our findings, the topsoil would be considered well-suited to general landscaping purposes provided the physical condition of the soil is maintained.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if you have any queries or comments.

George Longmuir MSc Soil Sci. M.I Soil Sci.

Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Doncaster, S. Yorkshire
Month/Year	February 23
Our Ref	1136-SA
Date	21 February 2023

Composite sample

pH Value & Salinity

pH value (1:2.5 soil/water ext)	units
Electrical Conductivity (1:2.5 soil/water ext)	µS/cm
Electrical Conductivity (1:2.5 soil/CaSO ₄ ext)	µS/cm
Neutralising Value (CaCO ₃ equivalent)	%

8.2
1431
2906
5

Organic Matter & Nutrient Status

Organic Matter (LOI)	%
Organic Carbon (Derived)	%
Total Nitrogen	%
Carbon:Nitrogen Ratio	:1
Available Phosphorus	mg/l
Available Potassium	mg/l
Available Magnesium	mg/l

7.7
4.5
0.449
10.0
52.2
1572
270

Particle Size Analysis & Stones

Clay (<0.002mm)	%
Silt (0.063-0.002mm)	%
Sand (2.0-0.063mm)	%
Texture Class	UK Class

15
78
Sandy Loam

Stones 2-20mm	% by DW
Stones 20-50mm	% by DW
Stones >50mm	% by DW

1.3
1.0
0.0

Potential Contaminants

Total Arsenic (As)	mg/kg
Total Cadmium (Cd)	mg/kg
Total Chromium (Cr)	mg/kg
Hexavalent Chromium (Cr ^{VI})	mg/kg
Total Copper (Cu)	mg/kg
Total Lead (Pb)	mg/kg
Total Mercury (Hg)	mg/kg
Total Nickel (Ni)	mg/kg
Total Selenium (Se)	mg/kg
Total Zinc (Zn)	mg/kg
Total Beryllium (Be)	mg/kg
Total Barium (Ba)	mg/kg
Total Vanadium (V)	mg/kg
Hot Water Soluble Boron (B)	mg/kg
Total Cyanide (CN)	mg/kg
Elemental Sulphur (S)	mg/kg
Easily Liberated Sulphide (S ²⁻)	mg/kg
Water Soluble Sulphate (SO ₄ ²⁻)	mg/l
Total Phenols Index	mg/kg
Asbestos Screen	-

7.8
0.20
35.0
1.2
18.6
24.4
<0.2
13.9
0.21
83.4
<1
56.6
16.4
2.3
<1
6.5
<1
145
<1
N.D.

Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Doncaster, S. Yorkshire
Month/Year	February 23
Our Ref	1136-SA
Date	21 February 2023

Polyaromatic Hydrocarbons

Naphthalene	mg/kg	<0.05
Acenaphthylene	mg/kg	<0.05
Acenaphthene	mg/kg	<0.05
Fluorene	mg/kg	<0.05
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.05
Fluoranthene	mg/kg	0.1
Pyrene	mg/kg	0.1
Benzo[a]anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo[b]fluoranthene	mg/kg	<0.1
Benzo[k]fluoranthene	mg/kg	<0.1
Benzo[a]pyrene	mg/kg	<0.1
Indeno[1,2,3-cd]pyrene	mg/kg	<0.1
Dibenzo[a,h]anthracene	mg/kg	<0.1
Benzo[g,h,i]perylene	mg/kg	<0.1
Total PAHs sum US EPA 16	mg/kg	<1

Banded Petroleum Hydrocarbons

Aliphatic TPH >C ₅ -C ₈	mg/kg	<0.05
Aliphatic TPH >C ₈ -C ₈	mg/kg	<0.05
Aliphatic TPH >C ₈ -C ₁₀	mg/kg	<0.05
Aliphatic TPH >C ₁₀ -C ₁₂	mg/kg	<10
Aliphatic TPH >C ₁₂ -C ₁₆	mg/kg	<10
Aliphatic TPH >C ₁₆ -C ₂₁	mg/kg	<10
Aliphatic TPH >C ₂₁ -C ₃₅	mg/kg	34.0
Aliphatic TPH >C ₃₅ -C ₄₄	mg/kg	<12

Aromatic TPH >C ₅ -C ₇	mg/kg	<0.05
Aromatic TPH >C ₇ -C ₈	mg/kg	<0.05
Aromatic TPH >C ₈ -C ₁₀	mg/kg	<0.05
Aromatic TPH >C ₁₀ -C ₁₂	mg/kg	<10
Aromatic TPH >C ₁₂ -C ₁₆	mg/kg	<10
Aromatic TPH >C ₁₆ -C ₂₁	mg/kg	<10
Aromatic TPH >C ₂₁ -C ₃₅	mg/kg	54.0
Aromatic TPH >C ₃₅ -C ₄₄	mg/kg	28.0

Total Petroleum Hydrocarbons (C ₅ -C ₄₄)	mg/kg	116
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BTEX

Benzene	mg/kg	<0.02
Toluene	mg/kg	<0.2
Ethyl Benzene	mg/kg	<0.04
m- & p- Xylene	mg/kg	<0.2
o-Xylene	mg/kg	<0.1



Freeland Horticulture Ltd
Rosedale Nursery
College Road
Hextable
Kent BR8 7LT

Attention: Philippa Lambourne

Our Ref: SLC-1131-SA

19 January 2023

Dear Philippa

Topsoil Analysis Report: Doncaster, South Yorkshire Topsoil – January 2023

We have completed the analysis of the topsoil sample recently taken from the above site and it has been forwarded to an approved laboratory for analysis and have the pleasure of reporting our findings. The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes and its compliance with the current British Standard for topsoil (BS3882).

SOIL SAMPLING & EXAMINATION

At the time of our sampling visit the topsoil was stored in a stockpile. A series of 10 hand augered trial holes were constructed across the stockpile for the purpose of soil examination and sample collection. As the soil examination confirmed a consistent topsoil composition, the ten samples were combined together to form one composite sample for analysis purposes. The soil was described as dark brown, slightly moist and friable with a well-developed, fine to medium granular structure. The soil contained a low fraction of small stones and no deleterious materials (eg. building waste materials, glass, roots or rhizomes of pernicious weeds) or unusual odours (eg. hydrocarbons) were recorded.

LABORATORY ANALYSIS

The topsoil sample was submitted to a UKAS and MCERTS accredited laboratory for routine physical and chemical parameters to confirm the composition and fertility of the soil. The following parameters were determined:

- ⊕ pH & electrical conductivity values;
- ⊕ major plant nutrients (N, P, K, Mg) & organic matter content;
- ⊕ particle size distribution and stone content;
- ⊕ heavy metals & potentially toxic elements (As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn, B);
- ⊕ sulphate, sulphur, sulphide;
- ⊕ total cyanide and total (mono) phenols;
- ⊕ speciated PAHs (US EPA16)
- ⊕ banded aromatic and aliphatic petroleum hydrocarbons (C₅-C₃₅).
- ⊕ Asbestos

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

Phone: 01322 619161;

Freeland horticulture Ltd, Registered in England: Rosedale Nursery, College Road, Hextable, Kent BR8 7LT
Company Registration No: 04015968

COMMENTS**pH & Electrical Conductivity (salinity) Values**

The sample was alkaline in nature (pH 8.5) with a pH value that would be considered suitable for general landscaping purposes.

The electrical conductivity (salinity) value using the soil:water extract was (768 μ S/cm) indicating that soluble salts are not present at levels that would be harmful to plants.

The electrical conductivity values by CaSO₄ extract (BS3882 requirement) fell below the maximum specified value (3300 μ S/cm) given in BS3882:2015.

Organic Matter & Nutrient Status

The sample was rich in organic matter and all major plant nutrients. No further additions of compost or fertiliser are required, or indeed recommended, for at least the first growing season.

The C:N ratio of the sample was acceptable for general landscape purposes

Particle Size Distribution & Stone Content

The sample contained 84% sand and fell into the sandy loam texture class. This particle size distribution is considered suitable for a broad range of landscape applications, including tree and shrub planting, turfing and seeding.

The sample was Virtually free from stones of 50 mm and upwards in diameter and only contained a slight fraction of smaller stones (12.3%). As such, stones will not restrict the use of the soil for landscaping purposes.

Potential Contaminants

We are not aware of any specified contaminant levels set for the proposed end-use of this topsoil. This includes human health, environmental protection and metals considered toxic to plants. In the absence of any site-specific assessment criteria, the concentrations that affect human health have been compared with the 'residential with homegrown produce' land use in the Suitable For Use Levels presented in 'The LQM/CIEH S4UIs' for Human Health Risk Assessment (2015) and DEFRA SP1010: 'Development of Category 4 Screening Levels' for Assessment of Land Affected by Contamination – Policy Companion Document (2014).

Of the potential contaminants determined, none was found at levels that would exceed their respective guideline values.

CONCLUSION

The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes. From the soil examination and laboratory analysis, the soil is described as an alkaline, non-saline, sandy loam. The organic matter and nutrient levels are acceptable, and no significant contamination was found with respect to the parameters determined. This soil would adhere to the current BS3882 specification for 'multipurpose grade'.

To conclude, based on our findings, the topsoil would be considered well-suited to general landscaping purposes provided the physical condition of the soil is maintained.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if you have any queries or comments.

George Longmuir MSc Soil Sci. M.I Soil Sci.

Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Doncaster, S. Yorkshire
Month/Year	January 23
Our Ref	1131-SA
Date	19 January 2023

Composite sample

pH Value & Salinity

pH value (1:2.5 soil/water ext)	units	8.5
Electrical Conductivity (1:2.5 soil/water ext)	µS/cm	768
Electrical Conductivity (1:2.5 soil/CaSO ₄ ext)	µS/cm	2719
Neutralising Value (CaCO ₃ equivalent)	%	2.0

Organic Matter & Nutrient Status

Organic Matter (LOI)	%	9.2
Organic Carbon (Derived)	%	5.3
Total Nitrogen	%	0.31
Carbon:Nitrogen Ratio	:1	17.3
Available Phosphorus	mg/l	32.6
Available Potassium	mg/l	996
Available Magnesium	mg/l	197

Particle Size Analysis & Stones

Clay (<0.002mm)	%	6
Silt (0.063-0.002mm)	%	10
Sand (2.0-0.063mm)	%	84
Texture Class	UK Class	Sandy loam

Stones 2-20mm	% by DW	9.1
Stones 20-50mm	% by DW	3.2
Stones >50mm	% by DW	0.0

Potential Contaminants

Total Arsenic (As)	mg/kg	13.0
Total Cadmium (Cd)	mg/kg	<0.1
Total Chromium (Cr)	mg/kg	23.7
Hexavalent Chromium (Cr ^{VI})	mg/kg	<0.2
Total Copper (Cu)	mg/kg	20.5
Total Lead (Pb)	mg/kg	23.5
Total Mercury (Hg)	mg/kg	<0.2
Total Nickel (Ni)	mg/kg	19.3
Total Selenium (Se)	mg/kg	0.47
Total Zinc (Zn)	mg/kg	92.9
Total Beryllium (Be)	mg/kg	1.2
Total Barium (Ba)	mg/kg	70.9
Total Vanadium (V)	mg/kg	23.7
Hot Water Soluble Boron (B)	mg/kg	1.3
Total Cyanide (CN)	mg/kg	<1
Elemental Sulphur (S)	mg/kg	9.1
Easily Liberated Sulphide (S ²⁻)	mg/kg	<1
Water Soluble Sulphate (SO ₄ ²⁻)	mg/l	41.5
Total Phenols Index	mg/kg	<1
Asbestos Screen	-	N.D.

Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Doncaster, S. Yorkshire
Month/Year	January 23
Our Ref	1131-SA
Date	19 January 2023

Polyaromatic Hydrocarbons

Naphthalene	mg/kg	<0.05
Acenaphthylene	mg/kg	<0.05
Acenaphthene	mg/kg	<0.05
Fluorene	mg/kg	<0.05
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.05
Fluoranthene	mg/kg	0.2
Pyrene	mg/kg	0.1
Benzo[a]anthracene	mg/kg	<0.1
Chrysene	mg/kg	0.1
Benzo[b]fluoranthene	mg/kg	0.1
Benzo[k]fluoranthene	mg/kg	<0.1
Benzo[a]pyrene	mg/kg	<0.1
Indeno[1,2,3-cd]pyrene	mg/kg	<0.1
Dibenzo[a,h]anthracene	mg/kg	<0.1
Benzo[g,h,i]perylene	mg/kg	<0.1
Total PAHs sum US EPA 16	mg/kg	<1

Banded Petroleum Hydrocarbons

Aliphatic TPH >C ₅ -C ₆	mg/kg	<0.05
Aliphatic TPH >C ₆ -C ₈	mg/kg	<0.05
Aliphatic TPH >C ₈ -C ₁₀	mg/kg	<0.05
Aliphatic TPH >C ₁₀ -C ₁₂	mg/kg	<10
Aliphatic TPH >C ₁₂ -C ₁₆	mg/kg	<10
Aliphatic TPH >C ₁₆ -C ₂₁	mg/kg	<10
Aliphatic TPH >C ₂₁ -C ₃₅	mg/kg	36.0
Aliphatic TPH >C ₃₅ -C ₄₄	mg/kg	<12

Aromatic TPH >C ₅ -C ₇	mg/kg	<0.05
Aromatic TPH >C ₇ -C ₈	mg/kg	<0.05
Aromatic TPH >C ₈ -C ₁₀	mg/kg	<0.05
Aromatic TPH >C ₁₀ -C ₁₂	mg/kg	<10
Aromatic TPH >C ₁₂ -C ₁₆	mg/kg	<10
Aromatic TPH >C ₁₆ -C ₂₁	mg/kg	<10
Aromatic TPH >C ₂₁ -C ₃₅	mg/kg	49.0
Aromatic TPH >C ₃₅ -C ₄₄	mg/kg	<12

Total Petroleum Hydrocarbons (C ₅ -C ₄₄)	mg/kg	85.0
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BTEX

Benzene	mg/kg	<0.02
Toluene	mg/kg	<0.2
Ethyl Benzene	mg/kg	<0.04
m- & p-Xylene	mg/kg	<0.2
o-Xylene	mg/kg	<0.1



TP205

MTP102

TP204

MTP101

MMBH101

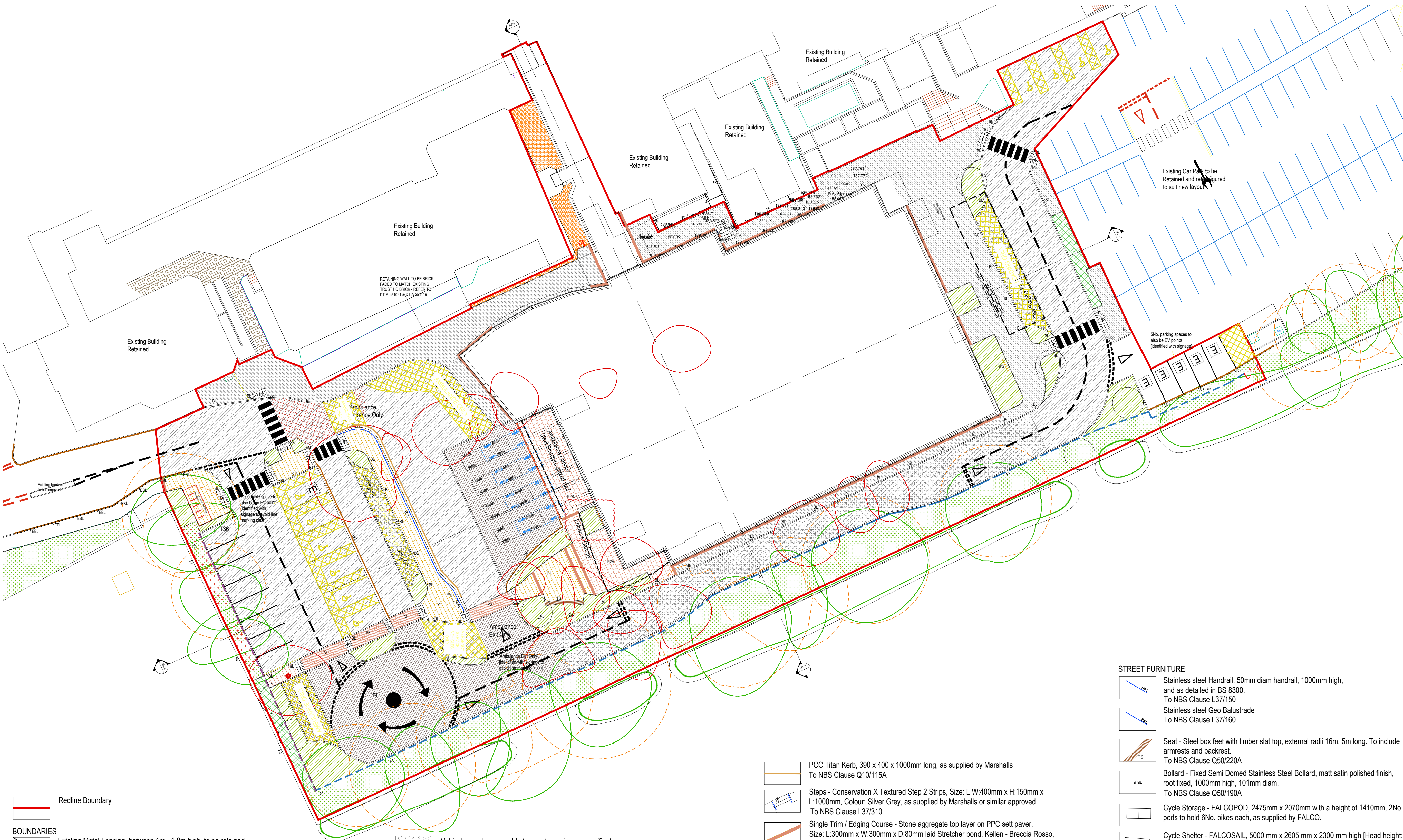
TP203

MTP104

MTP103

TP201

TP202



Notes:

- This drawing is copyright.
- Do not scale dimensions from this drawing.
- This drawing is to be read in conjunction with all other relevant drawings.
- All discrepancies on this drawing are to be reported to the architect.
- Do not modify any element of this drawing.
- Use drawing only for purpose(s) issued.

North Sign / Key Plan

SCALE - 1:250 @ A0

The following external model files are included within this drawing:

Rev				
C10	16/06/23	Sculpture adjacent to main entrance omitted following Contractor confirmation and replaced with planting	DW	DW
C09	19/05/23	EV Charging points added where instructed by Contractor	DW	DW
C08	26/04/23	Emergency Pick Up / Drop Off area amended to permeable tarmac following contractor comment dated 23/04/23	DW	DW
C07	13/04/23	Final Construction Issue	DW	DW
C06	29/03/23	Kellen paving trim extended to north east corner of building following contractor comment and amends to drainage requirement.	DW	DW
C05	13/03/23	Addition of car park payment machine to the GA plan	GR	DW
C04	25/01/23	Short stay cycle storage moved to front of site	MH	MH
C03	15/09/22	Cycle stands shown to FALCOSAIL short stay cycle storage. Key updated.	DW	DW
C02	31/08/22	Cycle storage updated, 22 No.	KT	DW
C01	11/07/22	Legend updated to include NBS refs. Minor amendments to GA	DW	DW
P10	13/05/22	Legend updated to suit amendments to layout site wide. Details for balustrade and signage provided.	DW	DW
P09	19/04/22	Amendments to external works to east side of building. Updated to hard materials and legend.	DW	DW
P08	25/01/22	Amendments to external works to east side of building to omit tank enclosure, show attenuation tank position, show additional planting and orientation of cycle storage. Minor amends to north and west site perimeter works. Red line amended and shown	DW	CH
P07	20/12/21	Plan and legend updated to suit amendments agreed with contractor and mark up issued 08/12/21.	DW	CH
P06	16/07/21	Plan and legend updated to suit co-ordination meeting dated 13/07/21	DW	JK
P05	06/07/21	Latest building details inserted into plan	DW	RW
P04	15/06/21	Proposed trees to southern boundary omitted. Fence spec of southern and eastern boundary amended to acoustic fence following comment. Spec of screening around Air Source Heat Pumps updated to suit comments. Hedge planting shown.	DW	RW
P03	08/06/21	Retained Trees updated in line with JCA AIA - 07/06/21	KT	MH
P02	04/06/21	Minor amends to GA incl legend and following meeting with design team. Specifically kerb amends to southern boundary and fence line position.	DW	NV
P01	17/05/21	First Issue	DW	RW
Rev	Date	Revision Notes	Dn	Rv
Client / Contractor				

Project
**Huddersfield Royal Infirmary;
Emergency Department**

Drawing Title
**EXTERNAL WORKS GENERAL ARRANGEMENT
PLAN**

Job Number 125043	Drawing Originated Date 18/04/2021	PAS 1192 Status Code -
Scale@A1 1:250	Purpose FINAL CONSTRUCTION ISSUE	
Drawing Number HG0052-IBI-ED-XX-PL-L-700001	Revision C10	

Redline Boundary

BOUNDARIES

Existing Metal Fencing, between 1m - 1.8m high, to be retained.
[Refer to topographical information for further details]

Proposed wall to engineers specification.
W1 - Stone Faced Wall, varying heights, to match detail on building
To NBS Clause F20/110A

Proposed Jakoustic Reflective / Acoustic Timber fence, 2.5m high, to sound insulation performance of min cat B2 and sound absorption performance of min cat A1, as defined in BS EN 1793 - 1 & 2
To NBS Clause Q40/170

Proposed Steel palisade fence, 1.8m high
To NBS Clause Q40/350A

Proposed Reflective / Acoustic Timber fence fixed to top of existing brick wall. Overall height of boundary to be 2.5m high. Timber fence to match detail of fence type F1. Fence to sound insulation performance of min cat B2 and sound absorption performance of min cat A1, as defined in BS EN 1793 - 1 & 2
To NBS Clause Q40/170A

Proposed Single Leaf Metal gate, 1.8m high
To NBS Clause Q40/570

Proposed Double Leaf Timber gate, 1.8m high
To NBS Clause Q40/550

HARD LANDSCAPE

Existing tarmac / paving to be retained and made good as necessary
To NBS Clause Q25/315A

Pedestrian grade tarmac to engineers specification.
To NBS Clause Q22/115

Vehicular grade tarmac to engineers specification.
To NBS Clause Q22/110

Vehicular grade permeable tarmac to engineers specification.
To NBS Clause Q22/127A

Stone aggregate top layer on PPC sett paver , Size: L:600mm x W:200mm x D:80mm laid Stretcher bond. Kellen - Breccia Rosso, as supplied by Hardscape.
To NBS Clause Q25/315A

Stone aggregate top layer on PPC slab paver , Size: L:500mm x W:500mm x D:80mm laid Stretcher bond. Kellen - Breccia Tagenta E, as supplied by Hardscape.
To NBS Clause Q25/315B

Stone aggregate top layer on PPC slab paver , Size: L:500mm x W:500mm x D:100mm laid Stretcher bond. Kellen - Breccia Tagenta E, as supplied by Hardscape.
To NBS Clause Q25/315C

Stone aggregate top layer on PPC sett paver , Size: L:210mm x W:105mm x D:80mm laid Stretcher bond. Kellen - Breccia Tagenta B, as supplied by Hardscape.
To NBS Clause Q25/315D

Total Traffic Exopave [TTE] Heavy Duty Pavers with Exopave Brick Inserts, Brick colour: Anthracite, TTE paving system to be laid stretcher bond. As supplied by Geosynthetics or similar approved.
To NBS Clause Q25/350

Stone aggregate top layer on PPC sett paver , Size: L:100mm x W:100mm x D:80mm laid Stack bond. Kellen - Liscio Bianco, as supplied by Hardscape.
To NBS Clause Q25/315E

PCC tactile paving, Blister Hazard Warning Paving, Colour: Natural.
Size: L:400mm x W:400mm x D:50mm
To NBS Clause Q25/320

PCC tactile paving, Corduroy Hazard Warning Paving, Colour: Natural.
Size: L:400mm x W:400mm x D:50mm
To NBS Clause Q25/320A

Existing gravel retained

Proposed gravel edge. Gravel to match existing.

PCC Titan Kerb, 390 x 400 x 1000mm long, as supplied by Marshalls
To NBS Clause Q10/115A

Steps - Conservation X Textured Step 2 Strips, Size: L W:400mm x H:150mm x L:1000mm, Colour: Silver Grey, as supplied by Marshalls or similar approved
To NBS Clause L37/310

Single Trim / Edging Course - Stone aggregate top layer on PPC sett paver, Size: L:300mm x W:300mm x D:80mm laid Stretcher bond. Kellen - Breccia Rosso, as supplied by Hardscape.
To NBS Clause Q25/315F

Please refer to drawing HG0052-IBI-ED-XX-PL-L-700004 for further details for kerb types

SOFT LANDSCAPE

Existing tree/vegetation to be removed

Existing Trees retained

Root Protection Areas [RPA's]

Proposed tree planting in soft landscape. Please refer to planting plan HG0052-IBI-ED-XX-PL-L-70000 and soft landscape details drawing HG0052-IBI-ED-XX-DT-L-700003 for further details.
To NBS Clause Q31/505

Proposed shrub planting. Please refer to planting plant HG0052-IBI-ED-XX-PL-L-700003 and soft landscape details drawing HG0052-IBI-ED-XX-DT-L-700003 for further details.
To NBS Clause Q31/405

Proposed hedge planting. Please refer to planting plant HG0052-IBI-ED-XX-PL-L-700003 and soft landscape details drawing HG0052-IBI-ED-XX-DT-L-700003 for further details.
To NBS Clause Q31/407

Existing grass retained, regraded and made good as required

Existing grass with new bulb planting. Please refer to planting plant HG0052-IBI-ED-XX-PL-L-700003 and soft landscape details drawing HG0052-IBI-ED-XX-DT-L-700003 for further details.
To NBS Clause Q31/445

Proposed grass seeding
To NBS Clause Q30/311A

STREET FURNITURE

Stainless steel Handrail, 50mm diam handrail, 1000mm high, and as detailed in BS 8300.
To NBS Clause L37/150

Stainless steel Geo Balustrade
To NBS Clause L37/160

Seat - Steel box feet with timber slat top, external radii 16m, 5m long. To include armrests and backrest.
To NBS Clause Q50/220A

Bollard - Fixed Semi Domed Stainless Steel Bollard, matt satin polished finish, root fixed, 1000mm high, 101mm diam.
To NBS Clause Q50/190A

Cycle Storage - FALCOPD, 2475mm x 2070mm with a height of 1410mm, 2No. pods to hold 6No. bikes each, as supplied by FALCO.

Cycle Shelter - FALCOSAIL, 5000 mm x 2605 mm x 2300 mm high [Head height: 2240 mm], to hold 10No. bikes, as supplied by FALCO.

Sculpture Feature - 2 no. Decorative Curved Corten Steel Panels or similar - 2.5m long, 1-1.6m high. Panels to be perforated with open sections to allows views out from adjacent waiting room.
To NBS Clause Q50/340A

Wayfinding Signage - dCipher monolith, single sided, powdercoat finish in black, as supplied by fitzpatrick woolmer or similar approved. Signage strategy TBC.
To NBS Clause N91/520

OTHER

Electric vehicle charging point

Accessible parking bays

Car Park Payment Machine
To specifications by Others

LEVELS

Indicative Proposed Levels

Existing Levels

NOTE:
Any anomalies in indicative levels shown and site information to be reported immediately.

NOTE:
1. Advice to be sought from Arboriculturist in regard to retained trees shown, their location

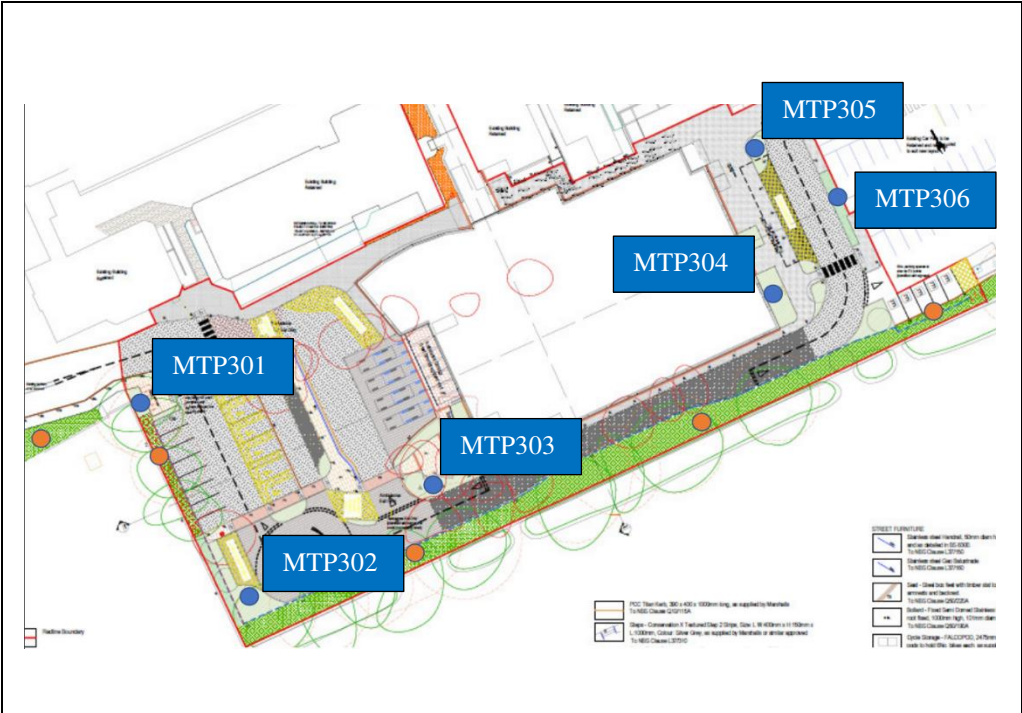


Plate 1: Reviewing aerial diagram, indicating the location of depth check verifications.



Plate 2: MTP301 verification of the depth, indicating the context of a vegetated section.



Plate 3: MTP301 Depth check showing 400 mm clean cover.



Plate 4: Photograph showing depth check in MTP301.



Plate 5: MTP302 verification of the depth, indicating the context of a roundabout.



Plate 6: Photograph showing depth check in MTP302.



Plate 7: MTP302 Depth check showing 475 mm clean cover.



Plate 8: MTP303 verification of the depth, indicating the context of a vegetated section within a carpark.



Plate 9: Photograph showing depth check in MTP303.



Plate 10: MTP303 Depth check showing 475 mm clean cover.

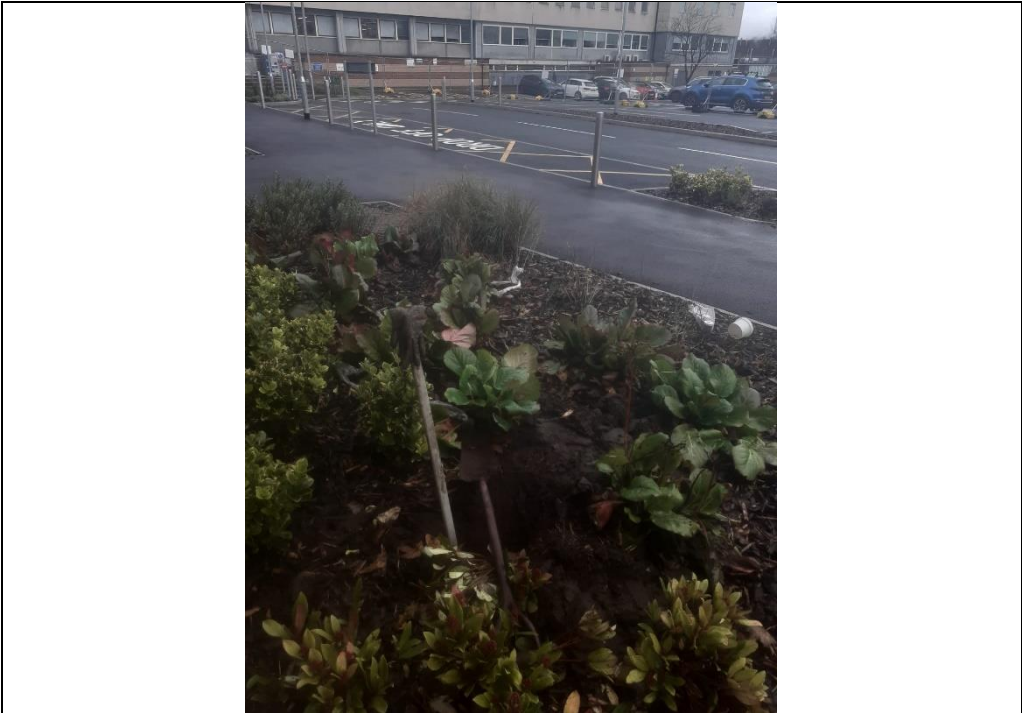


Plate 11: MTP304 verification of the depth, indicating the context of a vegetated section alongside a street behind the main hospital building.



Plate 12: MTP304 Depth check showing 400 mm clean cover.



Plate 13: Photograph showing depth check in MTP304.



Plate 14: MTP305 verification of the depth, indicating the context of a vegetated section near some disabled parking.



Plate 15: MTP305 Depth check showing 450 mm clean cover.



Plate 16: Photograph showing depth check in MTP305.



Plate 17: MTP306 verification of the depth, indicating the context of a barked section alongside a road.



Plate 18: MTP306 Depth check showing 475 mm clean cover.



Plate 19: Photograph showing depth check in MTP306.