



BIGDALE DRIVE, KIRKBY, LIVERPOOL

REMEDIAL STRATEGY
FOR
ALAN JOHNSTON PARTNERSHIP on behalf of LIVV
HOUSING GROUP

Project Ref:
P10680

Date:
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Prepared for:
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This report has been prepared in accordance with GRM's Accredited Quality Procedures

If you have any queries regarding this report please contact the project manager in the first instance.

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Issue	Initials
Rev.A: updated sampling rates, asbestos sampling for virgin soils and verification pits in each plot in accordance with MEAS requirements.	PW



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TABLE OF CONTENTS

1	INTRODUCTION.....	1
2	SITE SETTING AND PERTINENT FINDINGS OF THE PHASE I DESK STUDY	2
3	PERTINENT FINDINGS OF THE PHASE II SITE INVESTIGATION.....	3
4	REMEDIAL STRATEGY FOR SOIL CONTAMINATION	6
5	REPORTING.....	9

APPENDICES

General Appraisal Comments and Standard Limitations	Appendix A
Proposed Development Plan	Appendix B
Site Location and Boundary Plan	Appendix C
Remediation Plan	Appendix D
GRM Tier 1 Assessment Criteria	Appendix E
Waste Classification Report	Appendix F

1 INTRODUCTION

1.1 PREAMBLE

GRM Development Solutions Limited (GRM) has been appointed by Aland Johnston Partnership (Client's Agent) on behalf of Livv Housing Group (Client) to undertake a Remedial Strategy for the residential development at Bigdale Drive, Kirkby.

GRM standard limitations of reporting are provided in Appendix A of this report.

The following reports have been used in the preparation of this document:

- GRM Phase I Desk Study Report for Bigdale Drive, Kirkby, Liverpool, ref GRM/P10680/DS.1, September 2024.
- GRM Phase II Site Appraisal Report for Bigdale Drive, Kirkby, Liverpool, ref GRM/P10680/PII.SAR, October 2024.
- GRM Gas addendum Letter for Bigdale Drive, Kirkby, Liverpool, ref GRM/P10680/GAL.1, December 2024.

A Proposed Development Layout Plan is presented in Appendix B, and a Site Location and Boundary Plan is included as Appendix C.

1.2 OBJECTIVES OF THE REMEDIAL STRATEGY

The principal aims of this document are as follows:

- a) Assess the existing information relating to the soil, groundwater and ground gas conditions within the area of the site.
- b) Determine a cost and time effective remedial strategy.
- c) Set out the remediation and validation processes to be followed on site to ensure the site developed does not pose a risk to human health and controlled waters.

Whilst every effort has been made to pre-empt the likely requirements of the Local Authority and the Environment Agency, they are likely to have specific requirements that will need to be discussed and addressed at a later date.

2 SITE SETTING AND PERTINENT FINDINGS OF THE PHASE I DESK STUDY

The site is located approximately 14km north east of Liverpool city centre and comprises an approximately square parcel of land at the junction of Brook Hey Drive and Bigdale Drive. The site was a part of farmland until c.1962 when it became a vacant plot within the residential housing development of Northwood. In c.1984 the site was developed with a public house, which was subsequently demolished around 2010.

The Phase I Desk Study revealed the following potential geo-environmental hazards for the proposed development.

Potential Contamination Hazard	Potential Receptor	Perceived Risk
Made ground from on-site development	End users	Very low
	Construction Workers	
Asbestos mixed with site soils from demolition of previous structure (public house)	Controlled Waters (Principal aquifer, Secondary Aquifer, Abstraction point)	Very low

Potential Ground Gas Hazard	Potential Receptor	Perceived Risk
Made ground from on-site development	End users	Low

3 PERTINENT FINDINGS OF THE PHASE II SITE INVESTIGATION

3.1 ENCOUNTERED GROUND CONDITIONS

- Re-laid topsoil was encountered in one hole (WS01) situated in the north east of the site, from ground level to 0.10m below existing ground level (begl).

Various types of made ground were observed but these generally comprised:

- Tarmacadam / Asphalt from ground level to 0.1m begl in WS02.
- Brown, sandy GRAVEL in most boreholes either beneath the re-laid topsoil / tarmacadam, or from ground level to depths of between 0.30m and 0.40m begl. The material is potentially the remnants of a drainage layer placed beneath the hardstanding of the former public house's parking areas.
- Black slightly gravelly SAND in all boreholes encountered beneath the gravel horizon to depths of between 0.85m and 1.4m begl.
- Multi-coloured very gravelly, slightly sandy CLAY only recorded in WS02 between 0.6m and 0.75m begl.
- Glacial Till (clay or sand) was encountered in all boreholes, beneath the made ground and to the base of the boreholes at depths of between 2.86m and 4.00 begl, but were not fully penetrated.
- The monitoring program has confirmed the general presence of groundwater at depths of between 0.6m and 2.5m begl beneath the site.

3.2 RISK ASSESSMENT FOR SOIL CONTAMINATION

3.2.1 Human Health

End Users

The chemical analysis concluded that the made ground is pervasively contaminated with arsenic and lead, with concentrations in excess of the Tier 1 Assessment Criteria (TAC) for residential end use with plant uptake of 37mg/kg and 200mg/kg respectively.

Additionally, asbestos fibres (amosite) were identified in WS05 at 0.3m begl in the made ground.

Site Workers

The investigation revealed the presence of asbestos fibres within the made ground, The general comments outlined in Appendix A (vii) should be considered when site specific risk assessments are completed and the removal of any made ground should be undertaken in accordance with best practice.

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3.2.2 Controlled Waters

The made ground was identified as a potential source of contamination for controlled waters; however, the underlying geology (Glacial Till) was proven to be predominately cohesive in nature. Although granular horizons are present they are unlikely to be interconnected and accordingly a clear and consistent pathway to the underlying Principal aquifer (Chester Formation) is considered not to exist.

The risk to the aquifer below the site is considered to be very low.

No viable surface water receptors have been identified.

Remedial measures to protect controlled waters are considered not to be required.

3.2.3 Water Supply Pipes

It is considered that, based on the UKWIR guidance, the concentrations of contaminants recorded to date (specifically the hydrocarbons) are such that Barrier Type water supply pipes will be required for the site. However, it is recommended that the local water supply company for the site be contacted to confirm their requirements with regard to pipe materials.

From the investigation works completed the following Phase II Conceptual Model has been produced:

3.3 PHASE II CONCEPTUAL MODEL

HUMAN HEALTH			
Source	Pathway	Receptor	Remedial Solution
Elevated concentrations of arsenic, lead and asbestos in the made ground.	Indoor and outdoor inhalation of soil/soil dust and asbestos fibres, ingestion of, and dermal contact with contaminated soil and soil dust, ingestion of vegetables that have taken up contamination and contaminated soil attached to vegetables.	End users.	Soil capping or removal of contaminated soils.
		Construction workers.	
No significant source of ground gas identified.	Inhalation of carbon dioxide and / or methane.	End users.	No gas protection measures required.
Asbestos containing materials in made ground.	Inhalation.	Construction workers.	Use of suitable PPE / RPE and adoption of appropriate working protocols.
Elevated concentrations of hydrocarbons in the made ground.	Migration of contamination through leaks and joints, degradation of water pipe materials.	End Users.	Barrier Type water supply pipes and clean backfill required (to be confirmed by water supply company).
CONTROLLED WATERS			
Elevated concentrations of arsenic, lead and asbestos in the made ground.	Leaching of contaminants and vertical migration to the groundwater (risk reduced due to cohesive strata).	Principal Aquifer and Abstraction point.	No remediation required.

4 REMEDIAL STRATEGY FOR SOIL CONTAMINATION

The works outlined below are those considered necessary to commence the development of the site in accordance with the requirements of the Local Authority.

It is the responsibility of the Client to ensure that the recommendations given, and the risk assessment on which they have been based, have been approved by the Local Authority prior to development taking place.

The areas requiring remediation are identified on the Remediation Plan, included as Appendix D.

4.1 HUMAN HEALTH

For this site, it is considered that the use of a soil 600mm thick clean soil capping layer in private gardens and soft landscaped areas to break the source-pathway-receptor linkage would currently represent a suitable form of remediation.

The capping layer should include a geotextile marker beneath the topsoil/subsoil.

No capping would be required below areas of hard standing, such as roads, drives and houses as the hard cover will remove the possibility of a plausible linkage being present by removing the pathway.

If current ground levels are to be maintained then sufficient material should be removed to facilitate the capping layer. Any material removed to facilitate the capping layer can be placed under areas of hardstanding.

The site is devoid of topsoil and some will need to be imported to complete the development. It is recommended that a maximum thickness of 300mm of topsoil is used to ensure the longevity of the quality of it.

Any materials imported (topsoil or capping layer) will require chemical validation to confirm that they are suitable for use, more details being provided in the table below:

Source	Imported Material Type	Chemical Validation Rate	Chemical Validation Suite		
			General Screening Suite	TPHCWG	Asbestos
Greenfield	Topsoil	1 per 4 gardens OR 1 sample per 150m ³	✓		✓*
Brownfield / Recycled		1 per 2 gardens OR 1 sample per 50m ³	✓	✓	✓*
Virgin	Subsoil	1 per plot	✓		

Note: Minimum of three samples per source and soil type required.

* GRM do not assign a screening value for asbestos and only a non-detect is considered acceptable.

The results of the chemical analysis should be compared with to the TAC presented in Appendix E.

It is also recommended that the topsoil be subjected to analysis to BS3882 to confirm that it conforms to this standard. A typical analysis rate of one sample per 5,000m³ is considered appropriate for this site.

Once the capping layer is laid, the thickness of it will require verifying by way of hand dug pits within each plot and two hand-excavated pits within the communal garden and drying areas. Where made ground is completely removed then no capping layer will be required, but validation that the made ground has been removed will be needed.

Ground Gas

Following the monitoring program the site has been classified as Characteristic Situation 1, for which gas protection measures are not required. The site is not in an area of elevated radon.

SITE WORKERS

The risk to site workers from the identified soil contamination is low. No remedial measures are required. However the use of suitable PPE / RPE and adoption of appropriate working protocols should be enforced during the ground works stage of construction and suitable precautions should be taken during the removal of any made ground in which asbestos fibres have been identified.

WATER PIPES

It is considered that, based on the UKWIR guidance, the concentrations of contaminants recorded to date (specifically the hydrocarbons) are such that Barrier Type water supply pipes are likely to be required. However, it is recommended that the local water supply company for the site be contacted to confirm their requirements with regard to pipe materials.

4.2 UNEXPECTED CONTAMINATION

Should any material suspected of being significantly contaminated be encountered during the redevelopment of the site, GRM shall be contacted to undertake additional investigation, if necessary. The local Environmental Health Officer will be contacted and informed of any additional remedial work required.

4.3 DISPOSAL AND SOIL MANAGEMENT

4.3.1 Disposal

The topsoil will be classified as Non-Hazardous Waste.

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Based on the Waste Classification Report (Appendix F) it is considered that the made ground will generally be classed as Non-Hazardous Waste; however, an allowance for a volume of soil to be disposed of as hazardous waste would be prudent due to the presence of asbestos noted in WS05. Early consultation with the relevant landfill sites over their particular acceptance criteria may produce cost savings. Reference should be made to the relevant notes presented in Appendix A (x).

The natural strata underlying the site should be suitable for disposal at an Inert landfill site, although further testing (including WAC analysis) may be required to confirm this. Natural soils may be suitable for re-use on-site as part of any capping layer and consideration should be given to retaining this material on-site. Alternatively, it may be sold as a commodity to off-set construction costs.

4.3.2 Soil Management

Any topsoil/subsoil strip will need to be undertaken when the material is dry. The stripped material will need to be stockpiled and stored in accordance with the Defra Code of Practice Construction Code of Practice for the Sustainable Use of Soils on Construction Sites, BS3882:2015 and BS8601:2013.

The topsoil / subsoil will need to be placed within garden areas in accordance with the methods outlined in the aforementioned documents, taking care not to compact them whilst doing so. Should soils become compacted as part of the building process then allowance should be made for the soils to be loosened and thereby promote aeration and drainage, which will reduce water-logging and subsequent aftercare costs. GRM would recommend that the topsoil is not laid in thicknesses in excess of 300mm to avoid serviceability issues.

Care should be taken to keep natural arisings separate from the made ground and free from construction materials, as natural soils mixed with made ground and construction materials may attract additional disposal costs.

Although not identified, if any visible asbestos containing materials (ACMs) within soils are identified, this will result in the soils being classified as Hazardous Waste. Visible ACMs should be removed, employing appropriate health and safety protocols and where possible should be undertaken prior to disposal.

It is recommended that any materials to be exported are stockpiled and tested to confirm disposal rates, as this may be more cost effective than using the results contained within this report.

It is recommended that an Materials Management Plan produced in accordance with the CL:AIRE Definition of Waste Code of Practice for importation of topsoil and subsoil. This document should be approved by a CL:AIRE-registered Qualified Person prior to excavation of materials, and be maintained throughout the duration of the project. A Verification Report should be produced on completion of the project in order to confirm

the control and recording of material movements around or between sites in accordance with current waste management legislation and guidance.

5 REPORTING

A Remediation Validation Completion Report will be required by the Local Authority to confirm that the remedial strategy has been implemented appropriately. The report should include the following:

- Verification of the thickness of the soil capping layer.
- Details of the source, chemical composition and thickness of the soils imported to form the capping layer (or the growing medium) in gardens and areas of soft landscaping, including confirmation that they are suitable for use. It is recommended that a separate MMP be prepared for the importation of these materials.
- Copies of haulage notes confirming the import / export of any soils (including any contaminated arisings) will also be required.
- If encountered during construction, details of any unexpected contamination including, location of material and photographs confirming the remediation and/or disposal.



A P P E N D I X A

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GENERAL APPRAISAL COMMENTS

i INFORMATION SOURCES

Where available the following sources have been used for the identification and assessment of potential ground hazards:

- Relevant British Standards
- British Geological Survey (BGS) Geology Map Scale 1:10,000 for local area
- British Geological Survey (BGS) Geology Map Scale 1:50,000/1:63,320
- BGS Memoir
- BGS Borehole Records: <https://mapapps2.bgs.ac.uk/geoindex/home.html>
- BGS online viewer: <https://geologyviewer.bgs.ac.uk>
- Magic Groundwater Vulnerability Maps
- Historical Ordnance Survey (OS) Maps
- Environmental Data Report
- Environment Agency Website: <http://www.environment-agency.gov.uk/>
- Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites, UKWIR, 2010.
- Coal Authority Records / Coal Mining Report
- DEFRA/Environment Agency Contaminated Land publications and DoE Industry Profiles
- BRE Guide BR211 (2023), 'Radon: Guidance on protective measures for new buildings (including supplementary advice for extensions, conversions and refurbishment projects)'
- UK HSA Radon Maps: <https://www.ukradon.org/information/ukmaps>
- CIRIA C665 'Assessing risks posed by hazardous ground gases to buildings'
- BS8485:2015 +A1: 2019, 'Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'
- Other technical references used throughout this document are detailed in the text.

ii CONTAMINANTS OF CONCERN

The DoE Industry Profiles are normally used to assess likely contaminants from past land use and potential nearby industrial sources. For land uses where no profile is available, likely contaminants of concern are selected by GRM based on past experience of similar sites, a general screening suite of contaminants covered by CLEA and common contaminants from the Industry Profiles.

- | | | |
|------------|-------------------|--|
| · Arsenic | · Copper | · Water soluble sulphate |
| · Cadmium | · Nickel | · PAH (polycyclic aromatic hydrocarbons) |
| · Chromium | · Zinc | |
| · Lead | · Phenols | |
| · Mercury | · cyanide (total) | |
| · Selenium | · pH | |

Asbestos and PCBs are listed in the vast majority of profiles. PCBs are listed as the profiles expect electricity substations and switch boxes on all industrial sites. There is the potential for asbestos containing material to be mixed up with made ground, following any demolition works.

iii CONCEPTUAL MODEL METHODOLOGY

The consideration of contamination is based upon the principles of risk assessment, using the 'source-pathway-receptor' model in order to establish the presence, or potential presence, of a pollutant linkage.

To create a risk, contamination must have the potential to cause harm to susceptible targets or receptors such as humans, the water environment or the built environment. The potential for harm to occur requires three conditions to be satisfied to form a pollutant linkage:

- The presence of substances that may cause harm (SOURCE).
- The presence of a target which may be harmed (RECEPTOR).
- The existence of a plausible migration route between the source and the receptor (PATHWAY).

In the absence of a plausible pollutant linkage there is no risk. Where a potential linkage is identified in order for it not to pose a risk to the identified receptor it must be broken.

iv INTRUSIVE INVESTIGATION SAMPLING METHODOLOGY

The ground investigation (including fieldwork, sampling, monitoring and laboratory analyses) has been designed to identify and assess potential ground related problems and to allow cost effective solutions to be advised. It has been planned on the basis of the desk study, site inspection and the proposed development layout (where available). All fieldwork and soil descriptions were carried out in general accordance with relevant British Standards.

The exploratory holes have been positioned and advanced to depths to determine the general ground/groundwater/gas conditions below the site. A general grid pattern has been adopted, where possible, to provide sufficient information based on the current proposed layout scheme. Some holes have been targeted at particular hazards identified in the Phase I assessment. The resultant exploratory hole density is considered to be commensurate with the complexity of the site conditions and detail of information required for this phase of the investigation.

v GROUND GAS RISK ASSESSMENT METHODOLOGY

Gas monitoring programmes undertaken by GRM are designed to broadly comply with the recommendations outlined in CIRIA Report C665 'Assessing risks posed by hazardous ground gas to buildings' (2007) and BS8576 'Guidance on Investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs) (2013).

To assess the risks posed by ground gases such as radon, carbon dioxide and methane, the relevant current guidance has been used. For radon the site has been assessed following the guidelines in 'Radon: guidance on protective measures for new dwellings (including supplementary advice for extensions, conversions and refurbishment projects) (BR211: 2023)'. For methane and carbon dioxide the primary guidance document used to determine if protection measures are required is *BS8485:2015 Code of practice for the design of protective measures from methane and carbon dioxide ground gases for new buildings*. This uses hazardous gas flow rates (Q_{hg}), which are gas concentrations multiplied by borehole flow rates, to derive a Gas Flow Rate (GSV) for the site. The gas regime is then determined based on the GSV and other limiting factors such as gas concentrations.

Where flow is not recorded during the monitoring a default flow rate of 0.1l/hr will be used in the assessment to produce a positive result.

vi HUMAN HEALTH RISK ASSESSMENT METHODOLOGY

Guidance contained in the Environment Agency's CLEA Reports has been used to assess the risks posed to human health.

For residential developments that include domestic gardens the default Tier 1 Assessment Criteria (TAC) for 'residential land with plant uptake' are used, i.e. a female with a start age class of one and an end age class of six. All pathways are considered including the consumption of home-grown vegetables.

For residential developments that do not include domestic gardens the default Tier 1 Assessment Criteria (TAC) for 'residential land without plant uptake' are used, i.e. a female with a start age class of one and an end age class of six. All pathways are considered except the consumption of home-grown vegetables. For commercial/industrial developments the default Tier 1 Assessment Criteria (TAC) for 'commercial/industrial' are used, i.e. a female with a start age class of sixteen and an end age class of eighteen. All pathways are considered except the consumption of home-grown vegetables.

The TAC used by GRM include Category 4 Screening Levels (C4SLs) published by DEFRA, values calculated by GRM using the CLEA v1.071 risk assessment, and values and Suitable for Use Levels (S4UL) developed by LQM/CIEH. The TAC used in the assessment are selected based on the lowest site specific SOM values returned as part of the chemical analysis.

Where soil chemical analysis results are found to exceed the TAC, Site-Specific Risk Assessments may be undertaken using the CLEA v1.071 risk assessment software using the age classes and pathways described above.

vii RISK TO SITE WORKERS – GENERAL COMMENTS

The risks to site workers are similar to those posed to site end users, although likely to be less severe due to the site workers' shorter exposure to the identified contamination. However, site workers (particularly groundworkers) are more likely to come into direct contact with contaminated soils due to the nature of their work. On this basis ground and construction workers should be provided with basic Personal Protective Equipment based on the site's general health and safety risk assessment, but including as a minimum safety footwear, gloves and overalls.

A site specific risk assessment should be carried out for all hazards identified within the ground investigation in accordance with current health and safety legislation. This assessment should identify any measures required to further reduce risks i.e. providing further Personal Protective Equipment, welfare facilities and if necessary preventing access to certain areas.

Demolition and dismantling of existing structures on the site must be carried out to a safe and acceptable standard, in accordance with current UK guidance and best practice. Whilst not ground related, asbestos and hazardous substances surveys should be conducted prior to any demolition.

Any unusual colours, odours and suspicious ground should be reported immediately to site management and then GRM.

Whilst this appraisal has considered the long-term effects of contamination, GRM can also help during the formulation of Health and Safety documentation, if required.

viii CONTROLLED WATERS RISK ASSESSMENT METHODOLOGY

Where the desk study and fieldwork do not reveal a potential source of contamination no leachate or groundwater testing will be performed. Where a potential source is identified the testing will comprise leachate testing on the material considered most likely to pose a risk, groundwater testing will be undertaken if water is present at shallow depth.

The UK Drinking Water Standards (UKDWS) or Environmental Quality Standards (EQS) are usually adopted for comparison with the leachate/groundwater test results. When the most sensitive receptor is considered to be the aquifer (groundwater) UKDWS will be adopted as the Initial Tier 1 screening values.

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Where the most sensitive receptor is a surface water feature the EQS values will be used as Initial Tier I Screening values.

ix CONSTRUCTION MATERIALS RISK ASSESSMENT METHODOLOGY

The 'screening levels' adopted for the assessment of risk to construction materials are taken from the following documents:

- UK Water Industry Research (UKWIR) Contamination thresholds for sub-surface water pipes, for the protection of buried pipes.
- Building Research Establishment (BRE) Special Digest SD1 (2005), 'Concrete in Aggressive Ground', for the protection of buried concrete.

x WASTE DISPOSAL, SITE WASTE MANAGEMENT PLANS AND MATERIAL MANAGEMENT PLANS

Under current Waste Management Regulations, waste soil materials produced from the site will require characterisation to enable it to be disposed of correctly.

The chemical analysis results included in this report should be provided to the relevant landfill operators to establish the characterisation of the waste, confirm its suitability for landfill disposal and provide estimated costings. If material is classified as hazardous, then the site will need to be registered with the Environment Agency prior to the movement of the waste. Depending on the receiving landfill's current permit, further chemical analysis, incorporating Waste Acceptance Criteria (WAC) leachate analysis, may be required.

All materials removed from the site will be classified as 'waste' and therefore must be removed by a suitably licensed carrier of waste. This applies whether or not the waste is contaminated. All waste removed to landfill will attract Landfill Tax.

The developer/builder is likely to be classed as the waste producer and therefore, has a duty of care to ensure that all waste is disposed of appropriately. This includes ensuring the waste carrier is licensed and disposes of the waste to a suitably licensed landfill site. They are also required to keep a paper trail from 'cradle to grave' including copies of the waste disposal tickets.

Efficient materials management on site is recommended as it can lead to significant cost savings when compared to the traditional side casting or single stockpile of arisings. GRM can assist in the production of Material Management Plans under the CL:AIRE Definition of Waste: Code of Practice. The DoWCoP enables:

- The direct transfer and re-use of clean naturally occurring soil materials between sites, and
- The re-use of both contaminated and uncontaminated materials on their site of origin and between sites within defined Cluster projects.

GRM can also undertake the role of Qualified Person and submit the DoW CoP project Declaration.

Likewise making the site as volume neutral as possible will reduce the costs of development. Whilst not a statutory requirement, Site Waste Management Plans allow better waste management practices, help to reduce the amount of waste produced and identify best environmental disposal options. Implementing a Site Waste Management Plan (SWMP) can reduce costs (increasing business profits) and maximise resource efficiency.

xi GEOTECHNICAL ASSESSMENT GENERAL COMMENTS

Where finished floor levels of proposed structures have not been provided by the Client, then for the purposes of initial assessment, GRM will assume that finished levels will not vary appreciably from the existing ground levels. If the depths of any underground engineering works (i.e. sewers, pumping stations etc.) are unknown they will not be taken in to account in the assessment and it will be assumed that any such works will not compromise foundation or ground stability.

Should the development proposals or finished levels be different from these assumptions then the comments/recommendations in the Geotechnical Assessment may require revising.

It should be noted that the results of window sampling and/or cable percussive boreholes may not give a true indication of a soils actual engineering properties (i.e. stability, mass structure etc). GRM consider that that prior to development trial pitting should be undertaken to confirm the recommendations in the Geotechnical Assessment.

xii GEOTECHNICAL ASSESSMENT – ENGINEERING GROUND TREATMENT

Near surface soils have the potential to be disturbed by weathering and site traffic. Precautions should always be taken to avoid this, as excessive disturbance may leads to more onerous floor slab designs, road cap thickness and increased amounts of off-site disposal etc.

Near surface soils may need treatment or reinforcing to allow safe movement of construction plant and labour. An assessment by the contractor should be undertaken once the type of machinery/plant needed to complete the development is known.

xiii GEOTECHNICAL ASSESSMENT – EXCAVATIONS

Excavation instability (over-break) can result in damage to existing services or structures (e.g. foundations, roads or boundary walls/fences) both on and off-site, as well as increased foundation concrete costs. In order to minimise this, all excavations deeper than 1.2m deep (or any excavation within 1.5m of any existing structure or service) should be supported. Full support should be provided to the full depth of all near vertically sided excavations in made ground, soft and very soft clays and granular soils. A reduction to intermediate support should be acceptable within firm and stiffer natural clays.

Wherever possible, man entry into excavations should be prevented; however, where this is not possible, entry to, and time spent in, excavations should be kept to a minimum.

The build program should be tailored to reflect the impact that deep excavations through potentially unstable strata can have on adjacent properties, so that they are not undermined.

All excavations on site should be in accordance with HSE guidelines and stability should be practically maintained at all times. Reference should be made to HSE construction information sheet No. 8 (Revision 1) 'Safety in Excavations'.

Care should be taken to ensure that falls from excavation faces do not adversely affect the integrity of foundation concrete.

If contaminated water enters excavations it should be removed and transported to an appropriate treatment facility by a suitably licensed carrier before construction begins.

xiv GEOTECHNICAL ASSESSMENT – SUBSTRUCTURES

Where practicable, existing buried construction should be fully removed; however, if this is not practicable all new foundations should be carried down to fully penetrate it and it should be broken well away from all new structures.

There may be existing structures and/or infrastructure in close proximity to the proposed development. New build foundations may be constructed next to pavements with existing underground services beneath them, or excavations may be required near existing footings associated with adjacent properties. These potential hazards need to be taken into consideration when designing foundations and the groundworker needs to be made aware of their potential impact during the redevelopment works. Foundations close to existing underground services or buildings may require alternative foundation techniques (such as piling) to protect the integrity of these structures.

The contractor for the works should carry them out in such a fashion so as to not cause excessive overbreak, concrete usage or undermine existing buildings/roads/ services that are to be retained.

xv **GEOTECHNICAL ASSESSMENT – SOAKAWAYS**

Soakaway testing in trial pits by GRM is broadly carried out in accordance with BRE DG 365 (2016). The testing comprises the excavation of a test pit to a suitable depth, and the placement of water into the pit. The level of water present is then monitored over time. For borehole installations, the permeability testing (falling head/rising head) is undertaken in accordance with BS5930.

If it is decided to proceed with the use of soakaway drainage, then the following general points should be noted:

- Soakaways should not be placed so that water can be discharged through potentially contaminated made ground.
- The Environment Agency may require soakaways to be sealed systems such that only roof run off falls to soakaway.
- Interceptors are likely to be required for soakaways for highway drainage. The adopting authority for the highways should be consulted at the earliest opportunity regarding the use of soakaways for highways drainage.
- Consideration of site levels and slopes should be taken into account during the design.
- The construction of all soakaways should be in accordance with the current building regulations.
- Soakaways should not be placed within 5m of a proposed building.
- Placement of soakaways needs to be considered so as to avoid ponding of water down slope.
- The base of a soakaway should not be below the highest recorded water level.
- The Environment Agency prefer 1m of dry soil to be present between the base of a soakaway and the water table to provide attenuation for contamination.

xvi **GEOTECHNICAL ASSESSMENT – FOUNDATIONS**

If soft or hard spots are encountered during foundation excavation then they should be replaced with suitably compacted material or the footings deepened to suitable strata, to avoid differential settlement.

If strata of differing bearing character (e.g. sand and clay) are encountered at foundation levels within the excavations for a single plot then the excavation depths should be altered as appropriate to ensure the foundations rest on a single stratum, or strata that will not induce differential settlement. Where this is impractical then GRM should be contacted to assess a reinforced concrete detail or an alternative foundation solution (e.g. piles or vibro-replacement).

NOTES ON LIMITATIONS

General

GRM Development Solutions Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement had been executed, or with whom an assignment had been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from GRM Development Solutions Limited; a charge may be levied against such approval.

GRM Development Solutions Limited accepts no responsibility or liability for:

- a) the consequences of this document being used for any purpose or project other than for which it was commissioned, and
- b) the consequences of this document being used by any third party with whom an agreement has not been executed.

Phase I Environmental Audits/ Desk Studies

The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, GRM Development Solutions Limited reserves the right to review such information and as considered necessary and appropriate to modify the opinions accordingly. It should be noted that any risks identified in a Phase 1 report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Phase II Environmental Audits (Contamination Investigations)

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, ground and groundwater conditions to allow a reasonable risk assessment to be made. The objectives of the investigation have been limited to establishing the risks associated with potential human targets, building materials, and controlled waters.

The amount of exploratory work and chemical testing undertaken has necessarily been restricted by the short timescale available, and the locations of exploratory holes have been restricted to the areas unoccupied by the building(s) on the site and by buried services. A more comprehensive investigation may be required if the site is to be redeveloped as, in addition to risk assessment, a number of important engineering and environmental issues need to be resolved.

For these reasons if costs have been included in relation to site remediation these must be considered as provisional only and must, in any event, be confirmed by a commercial adviser.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. Whilst exploratory testing is intended to gain an accurate representation of the site, the very nature of sampling and testing is such that it cannot ensure that all localised conditions are detected.

The risk assessment and opinions provided take in to consideration, inter alia, currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

Phase II Geo-environmental Investigations (Combined Geotechnical and Contamination Investigations)

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, geotechnical characteristics, and ground and groundwater conditions to provide a reasonable assessment of the environment risks together with engineering and development implications. If costs have been included in relation to site development a commercial adviser must confirm these.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site for each of the exploratory holes. There may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.

The comments made on groundwater conditions are based on observations made at the time the site work was conducted. It should be noted that groundwater levels will vary owing to seasonal, tidal and weather related effects. The scope of the investigation was selected on the basis of the specific development proposed by the Client and may be inappropriate to another form of development or scheme.



The risk assessment and opinions provided take in to consideration, inter alia, currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.



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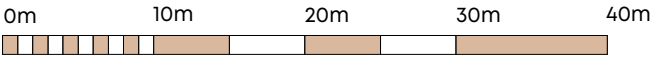
Notes: This drawing is the copyright Paddock Johnson Partnership Limited and may not be used without their prior written consent.
Written dimensions to be taken in preference to scaled dimensions.
Due to the inaccuracies of scanning, scanned images should not be scaled.

REV:	DATE:	DESCRIPTION:	BY:
A	30.3.22	Areas Increased	PO
B	21.07.22	Entrance to apartment relocated.	RD
C	22.09.22	Layout Re-Design of two end units (Brook Hey Dr)	RD
D	18.10.22	Updated layout to suit redesigned footprint.	RD
E	27.10.22	Planning Issue	EG
F	01.12.22	Site layout amendments to suit the proposed indicative FFL.	RD
G	01.12.22	Additional levels added as per planning officer's request.	RD
H	10.03.23	Amendments made to planner's requests	EG
J	19.07.23	drying area added, parking removed at planner's request	EG

- Ground Floor Apartment 50sqm
Apartment Type 1
8no. units
- Ground Floor Apartment 52sqm
Apartment Type 2
2no. units
- First Floor Apartment 55sqm (5+50)
Apartment Type 3
10no. units

External works to be a combination of hard and soft landscaping in the form of shrubbery/ low-no maintenance planting and paving.

- EV charging point
- Secure covered bike storage
- 1100mm h. timber fencing to boundary
- for all other boundary treatments, refer to elevations and streetscenes, generally low level brick walls and timber fencing



VISUAL SCALE 1:500 @ A3

CLIENT:

Advent Construction Ltd/ Livv Housing Group

PROJECT:

Residential Development
Bigdale Drive, Kirkby

DRAWING TITLE:

Proposed Site Plan

DRAWING NUMBER:

22017-PJA-00-ZZ-DR-A-1000-J

SCALE:

As indicated@A3

DATE:

23.3.22

STATUS:

PLANNING

BY:

PO

CHECKED:

SH

PADDOCK
JOHNSON

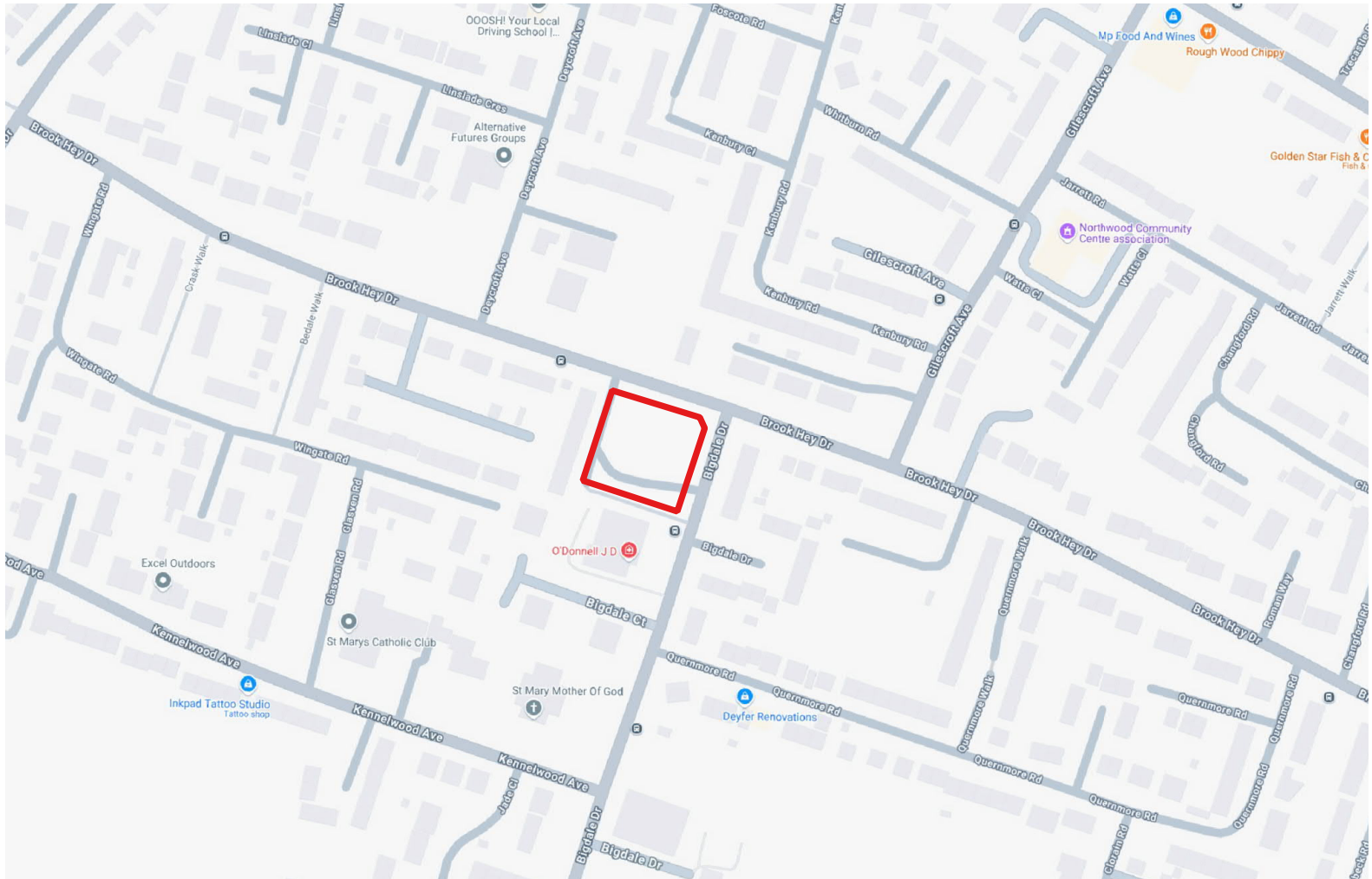
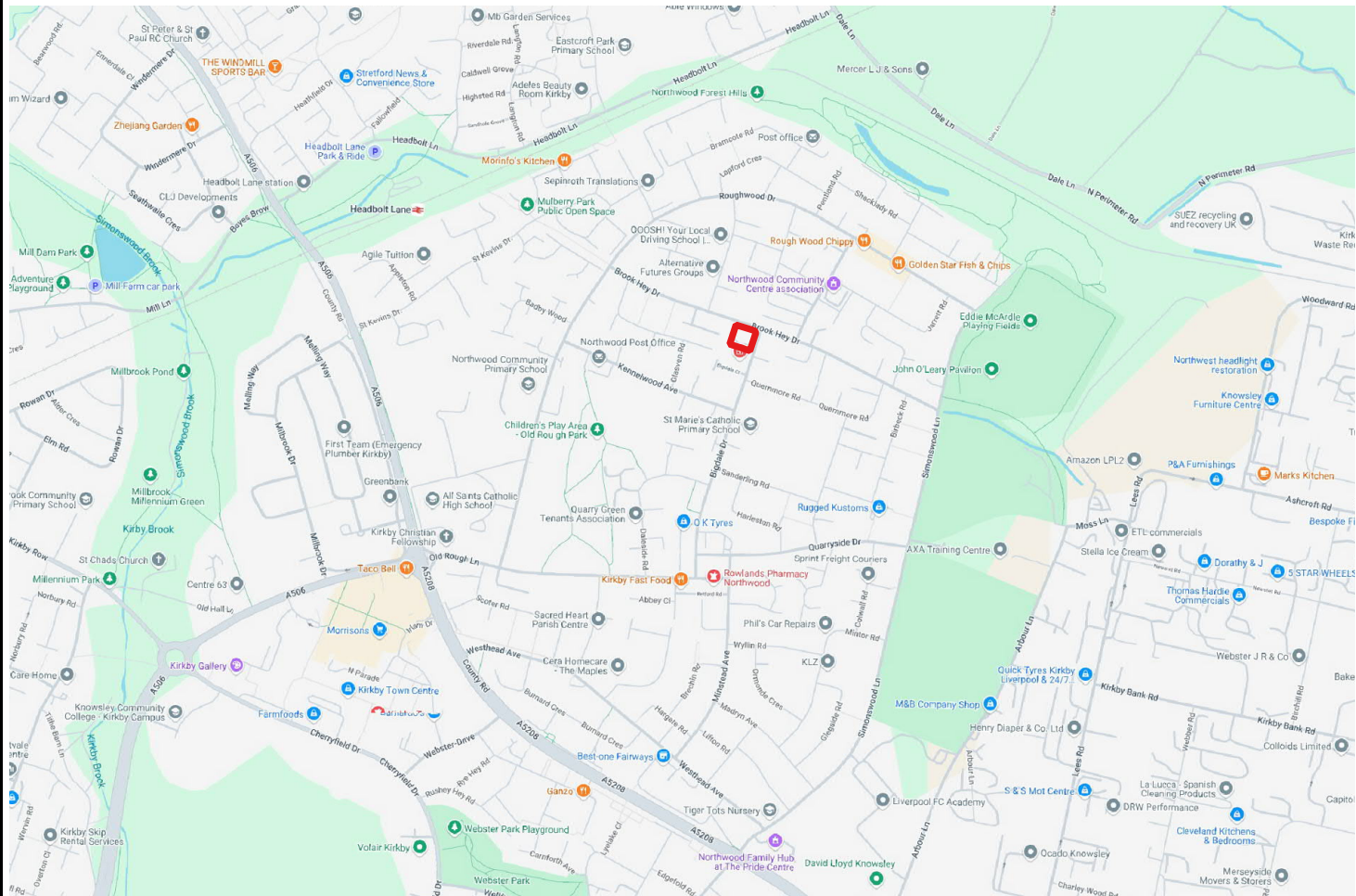
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NOTES:	CLIENT: ALAN JOHNSTON PARTNERSHIP on behalf of LIVV HOUSING GROUP	PROJECT No: P10680	DATE: 09 / 2024	DESIGN/DRAWN: RJH	 GRM Development Solutions Ltd Tel: 01283 551 249 mail@grm-uk.comwww.grm-uk.com
	PROJECT: BIGDALE DRIVE, KIRKBY	DRAWING NUMBER: 001		ISSUE: A	
	TITLE: SITE LOCATION AND BOUNDARY PLAN	© GRM Development Solutions Ltd © Crown Copyright. AL 100014100			



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Legend

- Site Boundary
- Remediation: Area requiring 600mm thick clean soil cap and incorporation of a geotextile layer



NOTES:

CLIENT:	Livv Housing Group
PROJECT:	Bigdale Drive, Kirby
TITLE:	Remediation Plan

PROJECT No:	P10680	DATE:	March 2025	DESIGN/DRAWN:	PW
DRAWING NUMBER:		ISSUE:			
RS-002		Final			
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	GRM TIER 1 ASSESSMENT CRITERIA		
LAND USE	Residential with Plant Uptake		
CONTAMINANT	Metals and Inorganic Compounds		
^a Arsenic	37		
^a Cadmium	22		
^b Chromium III	910		
^a Chromium VI	21		
^a Lead	200		
^{b/c} Mercury	11		
^b Selenium	250		
^b Nickel	130		
^b Phenols	200		
^b Copper	2400		
^b Zinc	3700		
^d Cyanide	34		
	Organic Compounds		
BTEX	1% SOM	2.5% SOM	6% SOM
^a Benzene	0.20	0.41	0.87
^b Toluene	130	290	660
^b Ethylbenzene	47	110	260
^b <i>o</i> - xylene	60	140	330
^b <i>m</i> - xylene	59	140	320
^b <i>p</i> - xylene	56	130	310
Non Genotoxic PAHs			
^b Acenaphthene	210	510	1100
^b Acenaphthylene	170	420	920
^b Anthracene	2400	5400	11000
^b Fluoranthene	280	560	890
^b Fluorene	170	400	860
^b Naphthalene	2.3	5.6	13
^b Phenanthrene	95	220	440
^b Pyrene	620	1200	2000
Genotoxic PAHs			
^{a/e} Benzo(a)pyrene	5	5	5
ALIPHATIC HYDROCARBONS			
^b C5-C6	42	78	160
^b C6-C8	100	230	530
^b C8-C10	27	65	150
^b C10-C12	130	330	760
^b C12-C16	1100	2400	4300
^b C16-35	65000	92000	110000
AROMATIC HYDROCARBONS			
^b C5-7 (benzene)	70	140	300
^b C7-8 (toluene)	130	290	660
^b C8-C10	34	83	190
^b C10-C12	74	180	380
^b C12-C16	140	330	660
^b C16-C21	260	540	930
^b C21-C35	1100	1500	1700

Notes

- C4SL - SP1010 (2014) - Benzene (2.5% SOM) and Benzo(a)pyrene values (1% and 2.5% SOM) have been calculated using default C4SL parameters in CLEA v1.071. Cadmium using lifetime exposure.
- LQM/CIEH S4UL values (2015). Publication number S4UL3066.
- S4UL for Methyl Hg used.
- Atkins ATRISKsoil Value
- Benzo(a)pyrene is a surrogate marker for the 8 genotoxic PAHs (Benzo(a)pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Chrysene, Dibenzo(ah)anthracene, Ideno(1,2,3-cd)pyrene)
All values in mg/kg unless otherwise stated

GRM TAC 02-2024

Contaminant Thresholds for Subsurface Water Pipes

Contaminant	Thresholds (mg/kg)
Corrosion	
Wrapped Steel	pH<7 Cond >400µS/cm
Wrapped Ductile Iron	pH<5 Cond >400µS/cm, he not neutral
Copper	pH<5 >8 and Eh +ve
Toxic Substances	
Chromium (total) (Cr)	Applies to above pipe materials
Organic Contaminants	
VOC's	0.5 PE/0.125 PVC
BTEX & MTBE	0.1 PE/0.03 PVC
SVOC	2 PE/1.4 PVC
Phenols	2 PE/0.4 PVC
Cresols & Chlorinated Phenols	2 PE/0.04 PVC
Mineral Oil C11-C20	10 PE
Mineral Oil C21 - C40	500
Ether/Ketone/Amines, Nitrobenzene/Aldehydes	0.5 PE/0.02-1 PVC

Notes.

It is not recommended that water pipes should be laid in sites where these substances are identified or suspected
Local Utility Companies should be consulted prior to pipe specifications being finalised.

Ref: Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites. UKWIR Ref. No. 10/WM/03/21. 2010.

GRM Controlled Waters Tier 1 Assessment Criteria

Table 1a

UKDWS (µg/l)		EQS freshwater (µg/l)*	EQS other surface water (µg/l)* (Including saline waters)
Parameter	Concentration		
Acrylamide	0.1	-	-
Aluminium	200	-	-
Total Ammonia (as N)	-	200 (See Table 3)	-
Ammonia (Unionised as N)	-	-	21
Ammonium (NH4)	500	-	-
Antimony	5	-	-
Arsenic	10	50 (dissolved)	25 (dissolved)
Benzene	1	10	8
Boron	1,000	750#	7,000
Bromate	10	-	-
Cadmium	5	See Table 2	0.2
Chromium	50	-	-
Chromium (III)	-	4.7	-
Chromium (VI)	-	3.4	0.6
Chloride	250,000	188,000#	-
Conductivity (µS/cm at 20°C)	2,500	-	-
Copper	2,000	1 (dissolved & bioavailable)	3.76 (where DOC <1mg/l)
Cyanide	50	1	1
1, 2 dichloroethane	3	10	10
Dichloromethane	-	20	20
Epichlorohydrin	0.4***	-	-
Fluoride	1,500	See Table 4	5,000
Hydrogen ion (pH)	<6.5 or >9.5	-	<6.0 or >9.0
Iron	200	1000 (dissolved)	1000 (dissolved)
Lead (II)	10	1.2 (dissolved & bioavailable)	1.3
Manganese	50	123 (bioavailable)	-
Mercury	1	0.07 (dissolved)	0.07 (dissolved)
Mineral Oil (TPH##)	10	5000 (total) ****	5000 (total) ****
Nickel	20	4 (dissolved & bioavailable)	8.6
Nitrate	50,000	-	-
Nitrite	500	-	-
Phenol	0.5	7.7	7.7
Polycyclic Aromatic Hydrocarbons *#	0.1	0.00017	0.00017
Fluoranthene	-	0.0063	0.0063
Naphthalene	-	2	2
Benzo(a)pyrene	0.01	0.00017	0.00017
Benzo(b)fluoranthene	-	use BaP as marker	use BaP as marker
Benzo(k)fluoranthene	-	use BaP as marker	use BaP as marker
Benzo(g,h,i)perylene	-	use BaP as marker	use BaP as marker
Indeno(1,2,3-cd)pyrene	-	use BaP as marker	use BaP as marker
Anthracene	-	0.1	0.1
Selenium	10	7.5#	-
Sodium	200,000	150,000#	-
Sulphate	250,000	188,000#	-
Tetrachloroethene and Trichloroethene	10	10	10
Tetrachloroethane	-	140	1848
Tetrachloromethane (Carbon Tetrachloride)	3	12	12
Toluene	700***	74	74
Xylene	500***	30*	30*
Ethylbenzene	300***	20**	20**
1,1,1-Trichloroethane	-	100*	100*
Trichlorobenzenes	-	0.4	0.4
Trichloromethane (chloroform)	-	2.5	2.5
Trihalomethanes Total ###	100	-	-
Tributyltin	-	0.0002	0.0002
Vinyl chloride	0.5	-	-
Zinc	5000	10.9 (dissolved & bioavailable) + background concentration - See table 5	6.8 (dissolved) + 1.1

Table 1b

Pesticides	UKDWS (µg/l)	EQS freshwater (µg/l)*	EQS other surface water (µg/l)* (Including saline waters)
Aldrin	0.03	-	-
Dieldrin	0.03	-	-
Heptachlor	0.03	-	-
Heptachlor epoxide	0.03	-	-
other pesticides	0.1	-	-
Cyclodiene pesticides: Sum of Aldrin, Dieldrin, Endrin & Isodrin	-	0.01 (sum)	0.005
DDT total	-	0.025	0.025
Pesticides: Total	0.5	-	-

Table 2

EQS for Hardness Related Substances*						
Substance	EQS Type	EQS (µg/l) for hardness classes (mg/l CaCO ₃)				
		Class 1: <40	Class 2: 40-50	Class 3: 50-100	Class 4: 100-200	Class 5: >200
Cadmium (dissolved)	Annual average	<0.08	0.08	0.09	0.15	0.25

Reference

*# Drinking water standards based on PAH - benzo(b)fluoranthene + benzo(k)fluoranthene + benzo(g,h,i)perylene + indeno(1,2,3-cd)pyrene
 * The Water Framework Directive (Standards and Classification) Directions (England and Wales) Directions 2015

** Provisional EQS Value

*** WHO Drinking Water Standard

**** EA PPG3

* The River Basin Districts Typology, Standards and Groundwater Threshold Values (Water Framework Directive) (England and Wales) Directions 2010 - Now Withdrawn

Groundwater Drinking Water Protected Zones Only

Speciated TPH thresholds - available from WHO, 2005

the specified compounds are chloroform, bromoform, dibromochloromethane and bromodichloromethane

Table 3 Ammonia - inland waters (high status)*		
Akailinity (as mg/l CaCO ₃)	Altitude	EQS (ug/l)
<10	Any	200
10 to 50	Any	200
50 to 100	<80m	300
50 to 100	>80m	200
100 to 200	<80m	300
100 to 200	>80m	200
>200	Any	300

The Appropriate Agency has categorised a river, or part of a river, by type, in accordance with paragraphs 1(1) and 1(2) of Schedule 2 - standards for high, good, moderate or poor

Alkalinity is the concentration of CaCO₃ in mg/l.

Altitude means the site's altitude above mean sea level in metres.

Total ammonia in the environment comprises two principal forms: the ionised ammonium ion (NH₄⁺) and un-ionised ammonia (NH₃). The proportion of ionised and un-ionised ammonia can be calculated from total ammonia, taking into account salinity, temperature and pH. The proportion of unionised ammonia increases with increasing temperature and pH, but decreases with increasing salinity. Of the three main factors affecting ammonia speciation, salinity appears to be relatively unimportant. Temperature and pH, however, have a much more significant effect. At pH 8.5, the proportion of un-ionised ammonia is approximately 10 times that at pH 7.5 and, for every 9°C increase in temperature, the proportion of un-ionised ammonia approximately doubles. At the pH of most biological systems, ammonia exists predominantly in the ionised form (NH₄⁺).

Table 4 Substance	EQS Type	Freshwater EQS (mg/l) based on hardness (mg/l CaCO ₃)*	
		<50	>50
Fluoride (dissolved)	AA	1	5
	MAC	3	15

Table 5 Ambient Background Concentrations (i) for dissolved zinc in freshwaters in England and Wales*	
Catchment/Group of catchments (ii)	ABC (µg/l)
Tyne	4.8
Tees	4.1
Ouse, Humber	2.9
Nene	4.0
Great Ouse	3.1
River Stour	3.0
Blackwater/Chelmer	3.6
Lee	3.3
Thames	2.0
Test	2.0
Avon/Hants	3.1
Exe	1.4
Dart	1.7
Clywd/Conwy	2.0
Dee	2.9
Eden	1.2
Anglesey	3.0
Tamar	2.9
Fal	5.8
Camel	7.1
Tone/Parrett	3.3
Frome, Bristol Avon	2.3
Wye	2.0
Usk	2.2
Taff	2.8
Neath	2.8
Loughar	3.9
Tywi	2.0
Teifi	2.5
Rheidol/Ystwyth	4.1
Dovey	3.2
Glaslyn	2.6
All other freshwaters not listed above	1.4

(i) Ambient Background Concentration is an estimate of background concentration based on a low percentile of monitoring data. Ambient Background Concentration ABC is the environmental concentration expected where no (or only minor) anthropogenic inputs are present. (ii) Freshwater Ambient Background Concentrations in England and Wales are delineated by Hydrometric Area, details of which can be found on the website of the Centre for Ecology & Hydrology.



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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)



PDVH7-IXAAO-RPEOS

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

Job name

P10680 - Bigdale Drive, Kirkby

Description/Comments

Project

P10680

Site

Bigdale Drive, Kirkby

Classified by

Name: **George Salloway**
 Date: **01 Oct 2024 07:45 GMT**
 Telephone: **01283 551 249**
 Company: **GRM Development Solutions Ltd**
Laurus House
First Avenue
Burton on Trent
DE14 2WH

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
 Most recent 3 year Refresher

Date

06 Dec 2018
 03 Dec 2024 *

Next 3 year Refresher due by Dec 2024
 * training course booked

Purpose of classification

2 - Material Characterisation

Address of the waste

Bigdale Drive, Kirkby Liverpool

Post Code N/A

SIC for the process giving rise to the waste

41202 Construction of domestic buildings

Description of industry/producer giving rise to the waste

construction.

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

Foundation arisings generated during construction.

Description of the waste

Made ground



Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	WS01	0.40	Non Hazardous		3
2	WS02	0.30	Non Hazardous		5
3	WS03	0.20	Non Hazardous		7
4	WS04	0.30	Non Hazardous		9
5	WS05	0.30	Non Hazardous		11

Related documents

#	Name	Description
1	GRM Validation Suite - WM3 V1.2.GB	waste stream template used to create this Job

Report

Created by: George Salloway

Created date: 01 Oct 2024 07:45 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	13
Appendix B: Rationale for selection of metal species	14
Appendix C: Version	15

Classification of sample: WS01

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

Sample details

Sample name:	LoW Code:
WS01	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.40 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
15%	
(dry weight correction)	

Hazard properties

None identified

Determinands

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

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1		arsenic { arsenic trioxide }			1	410 mg/kg	1.32	470.725 mg/kg	0.0471 %	✓	
		033-003-00-0	215-481-4	1327-53-3							
2		cadmium { cadmium sulfide }			1	1 mg/kg	1.285	1.118 mg/kg	0.000087 %	✓	
		048-010-00-4	215-147-8	1306-23-6							
3		chromium { chromium(III) oxide (worst case) }				32 mg/kg	1.462	40.669 mg/kg	0.00407 %	✓	
			215-160-9	1308-38-9							
4		copper { dicopper oxide; copper (I) oxide }				100 mg/kg	1.126	97.903 mg/kg	0.00979 %	✓	
		029-002-00-X	215-270-7	1317-39-1							
5		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	220 mg/kg		191.304 mg/kg	0.0191 %	✓	
		082-001-00-6									
6		mercury { mercury dichloride }				<2.5 mg/kg	1.353	<3.384 mg/kg	<0.000338 %		<LOD
		080-010-00-X	231-299-8	7487-94-7							
7		nickel { nickel dihydroxide }				24 mg/kg	1.579	32.963 mg/kg	0.0033 %	✓	
		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 }				<8 mg/kg	1.405	<11.24 mg/kg	<0.00112 %		<LOD
		034-002-00-8									
9		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }				150 mg/kg	4.398	573.643 mg/kg	0.0574 %	✓	
		030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
10		phenol				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2							
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		pH				8.5 pH		8.5 pH	8.5 pH		
				PH							
13		acenaphthene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
			201-469-6	83-32-9							

#	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							
14	acenaphthylene	205-917-1	208-96-8		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
15	anthracene	204-371-1	120-12-7		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.52 mg/kg		0.452 mg/kg	0.0000452 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.55 mg/kg		0.478 mg/kg	0.0000478 %	✓	
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.66 mg/kg		0.574 mg/kg	0.0000574 %	✓	
19	benzo[ghi]perylene	205-883-8	191-24-2		0.39 mg/kg		0.339 mg/kg	0.0000339 %	✓	
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.24 mg/kg		0.209 mg/kg	0.0000209 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	0.59 mg/kg		0.513 mg/kg	0.0000513 %	✓	
22	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
23	fluoranthene	205-912-4	206-44-0		1 mg/kg		0.87 mg/kg	0.000087 %	✓	
24	fluorene	201-695-5	86-73-7		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.33 mg/kg		0.287 mg/kg	0.0000287 %	✓	
26	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
27	phenanthrene	201-581-5	85-01-8		0.62 mg/kg		0.539 mg/kg	0.0000539 %	✓	
28	pyrene	204-927-3	129-00-0		0.95 mg/kg		0.826 mg/kg	0.0000826 %	✓	
29	TPH (C6 to C40) petroleum group		TPH		100 mg/kg		86.957 mg/kg	0.0087 %	✓	
Total:								0.152 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 1000 mg/kg (0.1%) because: No free phase product present.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0087%)

Classification of sample: WS02

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

Sample details

Sample name:	LoW Code:
WS02	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.30 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
20%	
(dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 20% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
1		arsenic { arsenic trioxide }			1	15	mg/kg	1.32	16.504	mg/kg	0.00165 %	✓	
	033-003-00-0	215-481-4	1327-53-3										
2		cadmium { cadmium sulfide }			1	0.7	mg/kg	1.285	0.75	mg/kg	0.0000583 %	✓	
	048-010-00-4	215-147-8	1306-23-6										
3		chromium { chromium(III) oxide (worst case) }				23	mg/kg	1.462	28.013	mg/kg	0.0028 %	✓	
		215-160-9	1308-38-9										
4		copper { dicopper oxide; copper (I) oxide }				59	mg/kg	1.126	55.356	mg/kg	0.00554 %	✓	
	029-002-00-X	215-270-7	1317-39-1										
5		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	59	mg/kg		49.167	mg/kg	0.00492 %	✓	
	082-001-00-6												
6		mercury { mercury dichloride }				<2.5	mg/kg	1.353	<3.384	mg/kg	<0.000338 %		<LOD
	080-010-00-X	231-299-8	7487-94-7										
7		nickel { nickel dihydroxide }				28	mg/kg	1.579	36.855	mg/kg	0.00369 %	✓	
	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 }				<8	mg/kg	1.405	<11.24	mg/kg	<0.00112 %		<LOD
	034-002-00-8												
9		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }				98	mg/kg	4.398	359.164	mg/kg	0.0359 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]										
10		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
	604-001-00-2	203-632-7	108-95-2										
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		pH				9.9	pH		9.9	pH	9.9 pH		
			PH										
13		acenaphthene				0.05	mg/kg		0.0417	mg/kg	0.00000417 %	✓	
		201-469-6	83-32-9										

#	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							
14	acenaphthylene	205-917-1	208-96-8		0.31 mg/kg		0.258 mg/kg	0.0000258 %	✓	
15	anthracene	204-371-1	120-12-7		0.36 mg/kg		0.3 mg/kg	0.00003 %	✓	
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	1.7 mg/kg		1.417 mg/kg	0.000142 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	2.1 mg/kg		1.75 mg/kg	0.000175 %	✓	
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	2.3 mg/kg		1.917 mg/kg	0.000192 %	✓	
19	benzo[ghi]perylene	205-883-8	191-24-2		1.3 mg/kg		1.083 mg/kg	0.000108 %	✓	
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.87 mg/kg		0.725 mg/kg	0.0000725 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	1.6 mg/kg		1.333 mg/kg	0.000133 %	✓	
22	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.26 mg/kg		0.217 mg/kg	0.0000217 %	✓	
23	fluoranthene	205-912-4	206-44-0		2.8 mg/kg		2.333 mg/kg	0.000233 %	✓	
24	fluorene	201-695-5	86-73-7		0.04 mg/kg		0.0333 mg/kg	0.00000333 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		1.3 mg/kg		1.083 mg/kg	0.000108 %	✓	
26	naphthalene	601-052-00-2	202-049-5	91-20-3	0.04 mg/kg		0.0333 mg/kg	0.00000333 %	✓	
27	phenanthrene	201-581-5	85-01-8		0.48 mg/kg		0.4 mg/kg	0.00004 %	✓	
28	pyrene	204-927-3	129-00-0		2.5 mg/kg		2.083 mg/kg	0.000208 %	✓	
29	TPH (C6 to C40) petroleum group		TPH		15 mg/kg		12.5 mg/kg	0.00125 %	✓	
Total:								0.0591 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 1000 mg/kg (0.1%) because: No free phase product present.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00125%)

Classification of sample: WS03

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

Sample details

Sample name:	LoW Code:
WS03	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.20 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
12%	
(dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1		arsenic { arsenic trioxide }			1	20 mg/kg	1.32	23.577 mg/kg	0.00236 %	✓	
		033-003-00-0	215-481-4	1327-53-3							
2		cadmium { cadmium sulfide }			1	0.6 mg/kg	1.285	0.689 mg/kg	0.0000536 %	✓	
		048-010-00-4	215-147-8	1306-23-6							
3		chromium {  chromium(III) oxide (worst case) }				26 mg/kg	1.462	33.929 mg/kg	0.00339 %	✓	
			215-160-9	1308-38-9							
4		copper { dicopper oxide; copper (I) oxide }				40 mg/kg	1.126	40.21 mg/kg	0.00402 %	✓	
		029-002-00-X	215-270-7	1317-39-1							
5		lead {  lead compounds with the exception of those specified elsewhere in this Annex }			1	74 mg/kg		66.071 mg/kg	0.00661 %	✓	
		082-001-00-6									
6		mercury { mercury dichloride }				<2.5 mg/kg	1.353	<3.384 mg/kg	<0.000338 %		<LOD
		080-010-00-X	231-299-8	7487-94-7							
7		nickel { nickel dihydroxide }				18 mg/kg	1.579	25.385 mg/kg	0.00254 %	✓	
		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 }				<8 mg/kg	1.405	<11.24 mg/kg	<0.00112 %		<LOD
		034-002-00-8									
9		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }				76 mg/kg	4.398	298.431 mg/kg	0.0298 %	✓	
		030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
10		phenol				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2							
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		pH				8.8 pH		8.8 pH	8.8 pH		
				PH							
13		acenaphthene				0.81 mg/kg		0.723 mg/kg	0.0000723 %	✓	
			201-469-6	83-32-9							

#	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							
14	acenaphthylene	205-917-1	208-96-8		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
15	anthracene	204-371-1	120-12-7		1.1 mg/kg		0.982 mg/kg	0.0000982 %	✓	
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	1.8 mg/kg		1.607 mg/kg	0.000161 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	1.5 mg/kg		1.339 mg/kg	0.000134 %	✓	
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	1.8 mg/kg		1.607 mg/kg	0.000161 %	✓	
19	benzo[ghi]perylene	205-883-8	191-24-2		0.82 mg/kg		0.732 mg/kg	0.0000732 %	✓	
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.7 mg/kg		0.625 mg/kg	0.0000625 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	1.9 mg/kg		1.696 mg/kg	0.00017 %	✓	
22	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
23	fluoranthene	205-912-4	206-44-0		4.7 mg/kg		4.196 mg/kg	0.00042 %	✓	
24	fluorene	201-695-5	86-73-7		0.55 mg/kg		0.491 mg/kg	0.0000491 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.78 mg/kg		0.696 mg/kg	0.0000696 %	✓	
26	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
27	phenanthrene	201-581-5	85-01-8		4.9 mg/kg		4.375 mg/kg	0.000438 %	✓	
28	pyrene	204-927-3	129-00-0		4 mg/kg		3.571 mg/kg	0.000357 %	✓	
29	TPH (C6 to C40) petroleum group		TPH		120 mg/kg		107.143 mg/kg	0.0107 %	✓	
Total:								0.0636 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 1000 mg/kg (0.1%) because: No free phase product present.

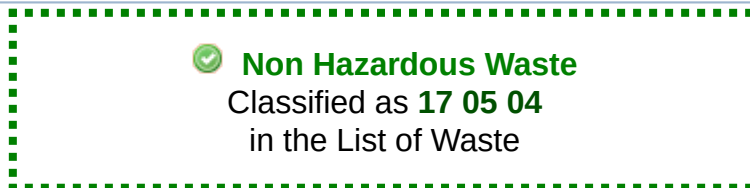
Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0107%)

Classification of sample: WS04



Sample details

Sample name:	LoW Code:
WS04	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.30 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
20%	
(dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 20% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				21	mg/kg	1.32	23.106	mg/kg	0.00231 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium sulfide }			1	1	mg/kg	1.285	1.071	mg/kg	0.0000833 %	✓	
	048-010-00-4	215-147-8	1306-23-6									
3	chromium { chromium(III) oxide (worst case) }				19	mg/kg	1.462	23.141	mg/kg	0.00231 %	✓	
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				44	mg/kg	1.126	41.283	mg/kg	0.00413 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	600	mg/kg		500	mg/kg	0.05 %	✓	
	082-001-00-6											
6	mercury { mercury dichloride }				<2.5	mg/kg	1.353	<3.384	mg/kg	<0.000338 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
7	nickel { nickel dihydroxide }				16	mg/kg	1.579	21.06	mg/kg	0.00211 %	✓	
	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 selenosulfide and those specified elsewhere in this Annex }				<8	mg/kg	1.405	<11.24	mg/kg	<0.00112 %		<LOD
	034-002-00-8											
9	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }				410	mg/kg	4.398	1502.625	mg/kg	0.15 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]									
10	phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
	604-001-00-2	203-632-7	108-95-2									
11	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric cyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5											
12	pH				9	pH		9	pH	9pH		
			PH									
13	acenaphthene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		201-469-6	83-32-9									

#	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							
14	acenaphthylene	205-917-1	208-96-8		0.06 mg/kg		0.05 mg/kg	0.000005 %	✓	
15	anthracene	204-371-1	120-12-7		0.29 mg/kg		0.242 mg/kg	0.0000242 %	✓	
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.64 mg/kg		0.533 mg/kg	0.0000533 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.35 mg/kg		0.292 mg/kg	0.0000292 %	✓	
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.7 mg/kg		0.583 mg/kg	0.0000583 %	✓	
19	benzo[ghi]perylene	205-883-8	191-24-2		0.29 mg/kg		0.242 mg/kg	0.0000242 %	✓	
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.2 mg/kg		0.167 mg/kg	0.0000167 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	0.79 mg/kg		0.658 mg/kg	0.0000658 %	✓	
22	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.07 mg/kg		0.0583 mg/kg	0.00000583 %	✓	
23	fluoranthene	205-912-4	206-44-0		1.8 mg/kg		1.5 mg/kg	0.00015 %	✓	
24	fluorene	201-695-5	86-73-7		0.11 mg/kg		0.0917 mg/kg	0.00000917 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.24 mg/kg		0.2 mg/kg	0.00002 %	✓	
26	naphthalene	601-052-00-2	202-049-5	91-20-3	0.04 mg/kg		0.0333 mg/kg	0.00000333 %	✓	
27	phenanthrene	201-581-5	85-01-8		0.65 mg/kg		0.542 mg/kg	0.0000542 %	✓	
28	pyrene	204-927-3	129-00-0		1.5 mg/kg		1.25 mg/kg	0.000125 %	✓	
29	TPH (C6 to C40) petroleum group		TPH		300 mg/kg		250 mg/kg	0.025 %	✓	
Total:								0.239 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 1000 mg/kg (0.1%) because: No free phase product present.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.025%)

Classification of sample: WS05

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

Sample details

Sample name:	LoW Code:
WS05	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.30 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				17	mg/kg	1.32	22.446	mg/kg	0.00224 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium sulfide }			1	0.3	mg/kg	1.285	0.386	mg/kg	0.00003 %	✓	
	048-010-00-4	215-147-8	1306-23-6									
3	chromium { chromium(III) oxide (worst case) }				24	mg/kg	1.462	35.077	mg/kg	0.00351 %	✓	
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				27	mg/kg	1.126	30.399	mg/kg	0.00304 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	48	mg/kg		48	mg/kg	0.0048 %	✓	
	082-001-00-6											
6	mercury { mercury dichloride }				<2.5	mg/kg	1.353	<3.384	mg/kg	<0.000338 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
7	nickel { nickel dihydroxide }				16	mg/kg	1.579	25.272	mg/kg	0.00253 %	✓	
	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 }				<8	mg/kg	1.405	<11.24	mg/kg	<0.00112 %		<LOD
	034-002-00-8											
9	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }				79	mg/kg	4.398	347.436	mg/kg	0.0347 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]									
10	phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
	604-001-00-2	203-632-7	108-95-2									
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	pH				9.1	pH		9.1	pH	9.1 pH		
13	acenaphthene				<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
		201-469-6	83-32-9									
14	acenaphthylene				<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	anthracene	204-371-1	120-12-7		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.27 mg/kg		0.27 mg/kg	0.000027 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.31 mg/kg		0.31 mg/kg	0.000031 %	✓	
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.36 mg/kg		0.36 mg/kg	0.000036 %	✓	
19	benzo[ghi]perylene	205-883-8	191-24-2		0.25 mg/kg		0.25 mg/kg	0.000025 %	✓	
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
21	chrysene	601-048-00-0	205-923-4	218-01-9	0.28 mg/kg		0.28 mg/kg	0.000028 %	✓	
22	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
23	fluoranthene	205-912-4	206-44-0		0.41 mg/kg		0.41 mg/kg	0.000041 %	✓	
24	fluorene	201-695-5	86-73-7		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
25	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
26	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
27	phenanthrene	201-581-5	85-01-8		0.2 mg/kg		0.2 mg/kg	0.00002 %	✓	
28	pyrene	204-927-3	129-00-0		0.4 mg/kg		0.4 mg/kg	0.00004 %	✓	
29	TPH (C6 to C40) petroleum group		TPH		520 mg/kg		520 mg/kg	0.052 %	✓	
Total:								0.105 %		

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

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 1000 mg/kg (0.1%) because: No free phase product present.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.052%)

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

■ **lead compounds with the exception of those specified elsewhere in this Annex**

GB MCL index number: 082-001-00-6

Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following MCL protocols, considers many simple lead compounds to be Carcinogenic category 2

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 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

■ **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

■ **pH** (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

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

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

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

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

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

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

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

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

Data source date: 23 Jul 2015

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

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 21 Aug 2015

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

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

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

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

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

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

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

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

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

• **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

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on risk phrases

cadmium {cadmium sulfide}

Worst case species based on risk phrases

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

No hexavalent chromium recorded above the laboratory limit of detection.

copper {dicopper oxide; copper (I) oxide}

Most likely common species

lead {lead compounds with the exception of those specified elsewhere in this Annex}

No hexavalent chromium recorded above the laboratory limit of detection.

mercury {mercury dichloride}

Worst case species based on risk phrases

nickel {nickel dihydroxide}

Worst case species based on risk phrases

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

Worst case species based on risk phrases

zinc {zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2]}

No hexavalent chromium recorded above the laboratory limit of detection.

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

Appendix C: Version

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

HazWasteOnline Classification Engine Version: 2024.271.6257.11459 (29 Sep 2024)

HazWasteOnline Database: 2024.271.6257.11459 (29 Sep 2024)

This classification utilises the following guidance and legislation:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GB MCL List - version 1.1 of 09 June 2021

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

GB MCL List v3.0 - version 3.0 of 11th January 2024

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

GB MCL List v5.0 - version 5.0 of 26th June 2024