

RIDGE

GROUND CONDITION ASSESSMENT & REMEDIATION STRATEGY

JLR EASTLANDS CARPARK,
HALEWOOD

JAGUAR LAND ROVER LTD
8th May 2026

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JAUGAR LAND ROVER LTD

8th May 2026

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RIDGE

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RIDGE

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EXECUTIVE SUMMARY

INSTRUCTIONS	The brief was to undertake a combined Contamination and Geotechnical Ground Investigation to a) refine the contamination conceptual site model and risk assessment, and b) provide additional assessment of the materials present beneath the site and present characteristic parameters that should be used in design of geotechnical facets of the proposed development.
PROPOSAL	Proposals for the site include clearance of the site and construction of a secure car park.
SITE CONDITIONS	The site is currently an area of lorry parking and storage of construction material. Bunds of vegetated material are present along the eastern boundary.
ADJACENT SITE CONDITIONS	Railway sidings present to the north. Historical landfill now vegetated undeveloped land to the east. Lorry Park to the south. East Road to the west with works buildings beyond that.
SITE HISTORY	The historical mapping within the desk study indicates that the site comprised an area of woodland and fields from 1849 mapping, with a series of ponds and associated water course through the centre of the site. The area of woodland is annotated Crab Tree Rough. The surrounding area is predominantly undeveloped other than railway sidings approximately 20m north. No significant development is noted on site until 1966 mapping, where field boundaries are no longer present. A second row of ponds and drain are noted in the centre of the site. East Road is now present bounding the west of the site. By 1968 mapping several of the ponds onsite are no longer present, potentially infilled. The ponds onsite are no longer present by 1994 mapping and a track is present across the site. Local Authority landfill data shows the site to be within a historical landfill operated by Ford Motor Factory. The records do not give dates of first or final deposition but do note the waste used as 'Industrial'.
GEOLOGY	Devensian Till (Clay) over Kinnerton Sandstone Formation (Sandstone).
HYDROLOGY	Nearest surface water Ram's Brook 58m south.
HYDROGEOLOGY	Devensian Till – Secondary Undifferentiated Aquifer. Kinnerton Sandstone – Principal Aquifer.
CONTAMINANTS	Asbestos was identified in the made ground below the site and as expected within the material encapsulated within the bund along the east of the site however levels were generally low. No elevated levels of any other contaminants tested for were identified. As the proposed end use (carpark) does not include any buildings with enclosed spaces ground gas protection measures are not required, should any buildings be proposed in the future this risk will need appropriate assessment. Modelling of potential groundwater contamination demonstrated that risks to controlled waters are low. Based on the testing carried out the topsoil present on site is suitable for re-use in a cover system in areas of soft landscaping.
WASTE DISPOSAL	The results of the chemical testing indicated that the made ground may need to be disposed of as hazardous waste with BH06 (lead) and BH19, TP08 and TP11 (pH) classified as hazardous. Additional testing may be required once waste materials are identified.
FOUNDATION SOLUTION	Removal of the tarmacadam hardstanding and the topsoil for offsite disposal or use in landscaping. Both made ground and natural soils are likely to be suitable for use within the build up subject to appropriate compaction and moisture content. No significant building foundations are anticipated as part of the proposed development. It is anticipated that some ground improvement may be required for the retaining structure along the east of the site. All materials to be used in building up of levels onsite will need to be tested to make sure they are geotechnically suitable and engineered in line with a suitable earthwork's specification. A 5% CBR is required at formation level.

DRAINAGE	The made ground beneath the site is of low permeability and not suitable for a soakage-based drainage solution as such suitable drainage will need to be designed and implemented.
GEOTECHNICAL CONSIDERATIONS	It is likely that DS-2 AC-1 sulphate resistant concrete will be required where concrete will be in contact with made ground.
REMEDIATION	Based upon the findings of the ground investigation works and the proposed end use no remediation measures will be required across the majority of the site as the hardstood carpark end use will sever the human health pollutant linkage. A cover system will only be required in any areas where soft landscaping is proposed due to the presence of low levels of asbestos within the made ground. A watching brief should be maintained throughout the construction process with construction personal made aware of the nature of the soils present on site with any significant variation being reported. An Asbestos Management Plan (AMP) should be completed by the appointed contractor to manage the risks from asbestos containing materials on site. A Materials Management Plan (MMP) should be completed by the appointed contractor to ensure appropriate management of materials on site.

1. INTRODUCTION

1.1. Commissioning

Ridge and Partners LLP (Ridge) were commissioned by Jaguar Land Rover Ltd to undertake an intrusive Ground Investigation and compile a Ground Condition Assessment (GCA) Report for land to the east of East Road, Speke, L24 9LE (hereafter referred to as 'the site'). A Site Location Plan is included as Figure 1.

1.2. Site Setting

A Site Location and Boundary Plan is included as Figure 1 and is presented on Plate 1.1, showing the proposed development area in red.

The site is centred on 345585E, 384285N, situated at approximately 4mAOD (above ordnance datum) located off East Road.



Plate 1.1: Investigation Area

1.3. Proposals

Proposals for the site include clearance of the site and construction of a secure car park.

1.4. Objectives

The brief was to undertake a combined Contamination and Geotechnical Ground Investigation to a) refine the contamination conceptual site model and risk assessment, and b) provide additional assessment of the materials present beneath the site and present characteristic parameters that should be used in design of geotechnical facets of the proposed development.

1.5. Previous Works

The following reports have previously been undertaken for the site area. Where pertinent, information from these previous reports shall be used in this report.

- Desk Top Study for Jaguar Land Rover, Halewood, Eastlands undertaken by LandWise Consulting Ltd (ref: LW25/136/DS, dated 23rd February 2026).
- Site Investigation Report (East Site) undertaken by Silkstone Environmental Ltd (ref: 16015, dated April 2016.
- Remediation Strategy, Landscape Bunds, Trailer Park Eastlands undertaken by Arcadis (ref: 3443710033_02, dated March 2017).
- Letter Report, regarding movement of by Santia Asbestos Management Ltd (dated 10th September 2019).

It is recommended that this report be read in conjunction with the above previous reports for completeness.

1.6. Scope of Works

The scope of this assessment has been developed in accordance with relevant British Standards and authoritative technical guidance as referenced through the report. The contamination assessment/ screening is in line with the technical approach presented in *Land Contamination Risk Management* (LCRM) [Environment Agency 2020], which supersedes CLR11 Model Procedures for Land Contamination, and in general accordance with BS10175:2026 *Investigation of Potentially Contaminated Sites: Code of Practice*. It is also compliant with relevant planning policy and guidance.

The scope of the intrusive investigation has been designed in line with the recommendations of BS5930:2015+A1:2020 *Code of Practice for Ground Investigations.* It has also been developed as a 'main' investigation in general accordance with BS10175:2026.

The Ground Investigation was specified by Ridge and undertaken by Beech Group Ltd.

The Ground Investigation comprised the following:

- 25 no. Windowless Sample Boreholes (WS101 to WS125) drilled to a maximum depth of 5.45mbgl with SPT (Standard Penetration Test) at intervals of approximately 1.00mbgl.
- 15 no. Machine Excavated Pits (TP101 to TP115) excavated to a maximum depth of 3.30mbgl.
- 4 no. Soakaway tests (SA101 to SA104) excavated to a maximum depth of 2.20mbgl.
- 20 no. Dynamic Cone Penetrometer tests to 1.00mbgl to provide CBR values with depth.

- Groundwater monitoring.

Further ground investigation works were undertaken at a later date to aid in the understanding a bund of previously site won material along the eastern boundary of the site. This comprised the following:

- 9 no. Machine Excavated Pits (SP01 to SP09) excavated along the length of the stockpile.

1.7. Report Scope and Limitation

This report is based upon a review of readily available information and the Ground Investigation data detailed herein. The report presents an interpretation of the trial pit, borehole and laboratory data provided by the Ground Investigation undertaken by Beech Group between the 19th and 22nd of January 2026. In addition, this report outlines the basic ground conditions encountered in the exploratory holes and the results of monitoring of installed wells.

This information has been collated, processed and used to provide an interpretation of the ground conditions, with recommendations on any contamination issues and geotechnical-related design.

The recommendations and opinions expressed in this report are based on the strata observed in the exploratory holes, the results of the site and laboratory tests, and information obtained as part of the desk study or provided by others. Ridge takes no responsibility for conditions that have not been revealed by the exploratory holes, or which occur between them or for features which may be more widespread to those found.

Whilst efforts have been made to interpret the conditions between investigation locations, such information is only indicative, and liability cannot be accepted for its accuracy. Information provided from other sources is taken in good faith and Ridge cannot guarantee its accuracy.

The information contained in this report is intended for the use of Jaguar Land Rover Ltd and Ridge can take no responsibility for the use of this information by any other party or for uses other than that described in this report.

Conditions are presented in Appendix 1.

2. SITE SETTING

2.1. Site Description

A Ridge Geo-Environmental Engineer attended the site on 19th December 2025 to conduct a walkover survey of the site and the surrounding areas for the purpose of identifying any potential contamination or evidence of previous contaminative processes and also to identify potential constraints to the proposed development.

It should be acknowledged that the descriptions focus on site conditions at the time of the walkover survey only.

The site was accessed by off East Road. The site itself is split into three parcels of land, each separated by metal fencing.

The two main parcels of the site are covered by a combination of gravel and hardstanding. The far north of the site appears to have been recently cleared and gravelled to provide a storage area.

Bunds of vegetated material are present along the eastern boundary.

Significant quantities of discarded construction materials are present across the site surface in the northwest.

Areas of standing water were also present on the site surface.

2.2. Site History

Ridge & Partners were provided with a Desk Top Study undertaken by LandWise Consulting Ltd (ref: LW25/136/DS, dated 30th January 2026).

The historical mapping within the desk study indicates that the site comprised an area of woodland and fields from 1849 mapping, with a series of ponds and associated water course through the centre of the site. The area of woodland is annotated Crab Tree Rough. The surrounding area is predominantly undeveloped, other than railway sidings present approximately 20m north from the earliest mapping in 1849.

No significant development is noted on site until 1966 mapping, where field boundaries are no longer present and a second row or ponds and drain are noted across the centre of the site. East Road is also noted to be present bounding the west of the site.

By 1968 mapping several of the ponds onsite are no longer present, potentially infilled.

The remaining ponds onsite are no longer present by 1994 mapping and a track is present across the site.

Local Authority landfill data shows the site to be within a historical landfill operated by Ford Motor Factory. The records do not give dates of first or final deposition but do note the waste used as ‘Industrial’. The mapped extent of the known landfilling is shown in Plate 2.1.

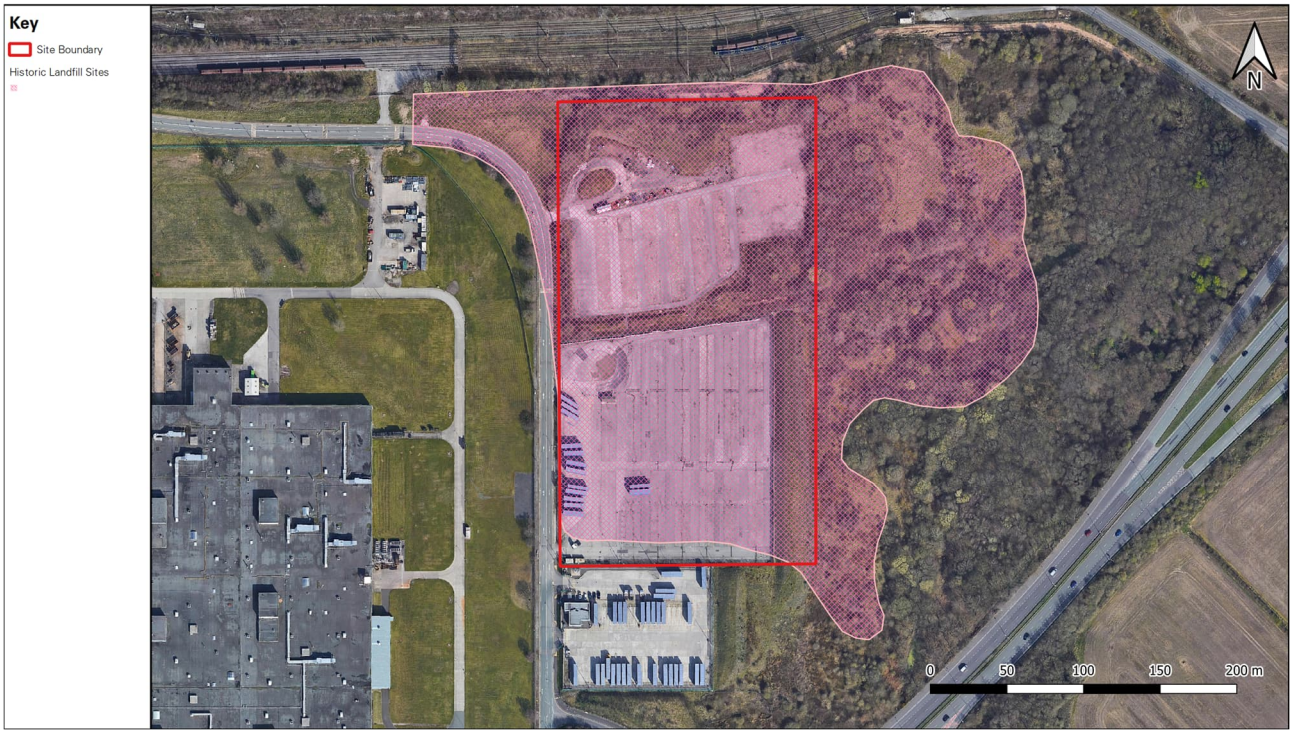


Plate 2.1: Extent of Local Authority Historic Landfill Mapping.

2.3. Beech Information

It is understood that Beech Group have previously undertaken works relating to the site. This involved creation of the current trailer park / parking areas and the construction of the soil bunds present along the eastern boundary of the site from site won material.

It is understood that a significant quantity of asbestos impacted material was encountered during these works which was incorporated into these bunds, sealed in a membrane and covered in topsoil as per the Arcadis Remediation Strategy.

3. PHYSICAL SETTING

3.1. Geology and Hydrogeology

The following observations are taken from the British Geological Survey (BGS) Geology of Britain Viewer (2026). The Geology of Britain Viewer indicates that the site is likely underlain by Till deposits over Bedrock Geology of the Kinnerton Sandstone. The table below identifies the expected composition of the published strata and associated aquifer classification.

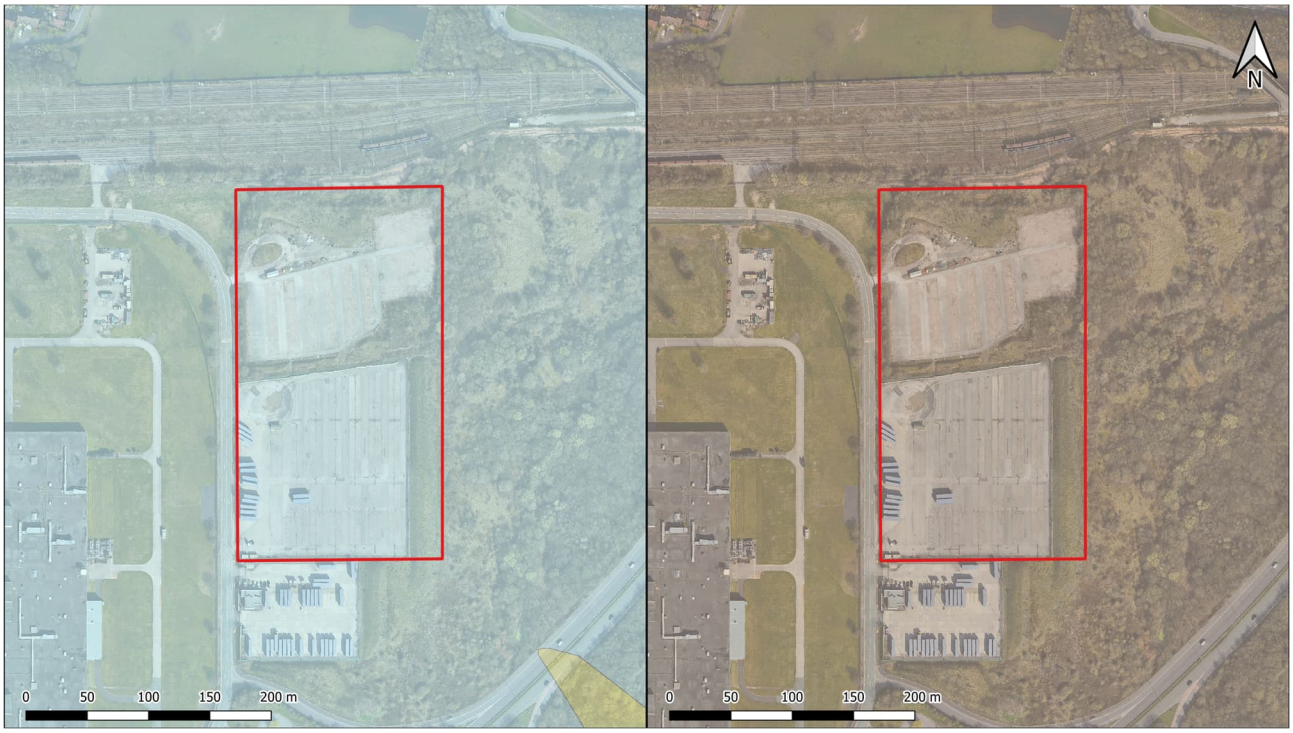


Plate 3.1: Superficial Geology (left) and Bedrock Geology (right).

SUPERFICIAL DEPOSITS	
Unit Name	Till, Devensian-Diamicton.
Geology Description	Diamicton (unsorted sediment with gravel in a fine mud matrix). These sedimentary deposits are glaciogenic in origin. They are detrital, created by the action of ice and meltwater, they can form a wide range of deposits and geomorphologies associated with glacial and inter-glacial periods during the Quaternary.
Aquifer	Secondary Undifferentiated Aquifer.
BEDROCK GEOLOGY	
Unit Name	Kinnerton Sandstone Formation-Sandstone.
Geology Description	Sandstone. These sedimentary rocks are fluvial, lacustrine and marine in origin. They are detrital, deposited in lagoons or shallow seas; where a hot, arid climate also leads to the precipitation of beds of evaporites.
Aquifer	Principal Aquifer.

Table 3.1: Geology and Hydrogeology

3.1.1. Artificial Ground, Landslips and Faults

While artificial ground is not mapped onsite the whole site area is within a historical landfill.

There are no landslips recorded within 250m of the site.

There are no faults recorded within 250m of the site.

3.1.2. Radon

The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level. No Radon Protective Measures are considered necessary for new properties or extensions to existing ones.

4. PREVIOUS REPORTS

4.1. Silkstone Site Investigation Report (2016)

In 2016, Silkstone carried out a ground investigation at the site on behalf of Arcadis. These investigation works covered the southern portion of the current site of interest as well as land further to the south .It is understood that these works were undertaken to provide information for the creation of the current trailer parks. Pertinent information from the investigation has been summarised in the following sections.



Plate 4.1: Silkstone site investigation locations with relation to the current site boundary.

4.1.1. Investigation Scope

The ground investigation works comprised:

- 32 no. Machine Excavated Trial Pits, (17 no. of which are within our site area) to a maximum depth of 3.50mbgl.
- 4 no. Dynamic Probe tests undertaken adjacent to their correspondingly numbered trial pits.
- Chemical testing of soil and water samples.
- Geotechnical testing of soil samples.

4.1.2. Ground Conditions

Topsoil was not encountered in any of the investigation locations. Organic material from a previously undertaken site scrape was present in the location of TP28 (within the current site boundary).

Granular made ground was encountered in the near surface across the site. This comprised ash, brick concrete, tarmac, timber, metal and pieces of asbestos.

Cohesive made ground was generally present beneath the granular material, with similar anthropogenic inclusions.

Thickness of made ground varied from 0.50m to 3.50mbgl. Made ground generally was present to the full depth of the trial pits.

Where encountered natural strata comprised stiff sandy gravelly Clay. Within the site boundary of this report natural clay was encountered at 1.00mbgl in TP01 and 3.00m in TP11.

4.1.3. Groundwater

Most trial pits were dry or had only slight seepages. Significant water strikes are shown in Table 4.1. It should be noted that the investigation works were undertaken in March.

EXPLORATORY HOLE ID	GROUNDWATER STRIKE DEPTH (MBGL)
TP03	1.00
TP05	2.20
TP06	1.50
TP13	1.00
TP14	1.00
TP15	1.20
TP16	1.70
TP22	0.90
TP24	1.10
TP30	3.20
TP32	1.00

Table 4.1: Silkstone site investigation groundwater strikes.

4.1.4. Evidence of contamination

Visual and olfactory evidence of potential contamination was identified across the site with made ground containing brick, glass, ceramics, metals, ash, clinker and timber.

However, when compared to the assessment criteria for ‘Public Open Space’ no elevated levels of these contaminants were identified.

Eight samples of suspect materials and soil were tested for asbestos, with chrysotile present in three samples. No quantification was undertaken.

EXPLORATORY HOLE ID	DEPTH (MBGL)	ASBESTOS TYPE
TP07	0.50	Chrysotile loose insulation
TP11	1.10	Chrysotile loose fibres
TP21	0.30	Chrysotile loose fibres

Table 4.2: Silkstone site investigation Asbestos data.

4.1.5. Key Findings – Groundwater

No water sampling or testing was undertaken, however the risk to water was not considered significant within the report which stated that no potentially mobile contamination was encountered.

Silkstone note that would not be suited to the site due to its historical use as a landfill.

4.1.6. Key Findings – Gas & Vapour

No gas monitoring was undertaken as it was not considered required for the proposed development. Silkstone note that should buildings be proposed within the development (at the time) that gas monitoring would then be required.

4.1.6.1. Key Geotechnical Considerations

Testing was undertaken, predominantly on the clayey made ground beneath the granular layer. The following is a summary of the testing undertaken by Silkstone.

TEST	UNITS	NUMBER OF TESTS	RESULTS	
			MIN	MAX
Moisture Content	%	6	12	17
Liquid Limit	%	6	26	30
Plastic Limit	%	6	14	16
Plasticity Index	%	6	11	14
Maximum Dry Density	Mg/m^3	5	1.88	2.09
Optimum Moisture Content	%	5	9	15
CBR Range at OMC (4.5kg compaction)	%	2	32.1	42.4
CBR Range at OMC (2.5kg compaction)	%	3	6.5	12.2

Table 4.3: Silkstone site investigation geotechnical testing data.

The cohesive made ground beneath the site was of low plasticity.

No elevated levels of sulphate were identified onsite and DS-1 AC-1s was deemed acceptable within the Silkstone Report.

4.2. Arcadis Materials Management Plan (2017)

A materials management plan (MMP) was prepared by Arcadis for the formation of bunds to the southeast of the current site required to enable the construction of the existing trailer park. The following has been summarised from the Arcadis report:

Soils impacted with asbestos will be 'chicken picked' by a licenced contractor under compliance with the Control of Asbestos Regulations (2012), to remove the fragments/artefacts of ACM. The ACM will be sent for offsite disposal at an appropriately licenced site. The remaining soils will be used to form the core of the new eastern bund around the Trailer Park (Site 3). The MMP indicates that approximately 1,585m^3 of impacted excavated materials are to be placed in the bund. These material were then to be covered with a geotextile and a clean capping layer installed (from North Road Car Park).

Any excess impacted soil was to be sent offsite to an appropriately licenced facility.

No treatment of the excavated materials was proposed except for the removal of any significant debris e.g. tree roots from the top soil and the licenced removal of asbestos fragments. The MMP details that the excavated material is to be reused within the JLR Halewood scheme for the following use:

- Creation of a security bund to the south of the new Trailer Park from uncontaminated excavated material from North Road Car Park. (note not within subject site)
- Creation of security bund to the east of the Trailer Park from ACM contaminated material from Trailer Park and the installation of clean capping soils from North Road Car Parks. (Within subject site)
- Capping existing security bund at Eastlands Car Park which has been found to contain ACM with clean soils from North Road Car Parks. (Within subject site)

Approximately 7,095m^3 of uncontaminated sub soils or made ground will be used to create the bund core (to south bund) and top soils to dress the surface to facilitate revegetation (all bunds). Approximately 1,585m3 of contaminated excavated ground will be used to form the core of the eastern bund followed by a topsoil cap.

Any excavated materials found to be in excess of that required, or out of scope with the MMP, were to be sent offsite for disposal and subject to Waste Legislation.

Based on the Arcadis MMP it was understood that the bunds present along the eastern boundary of the current development site have been constructed in this manner.

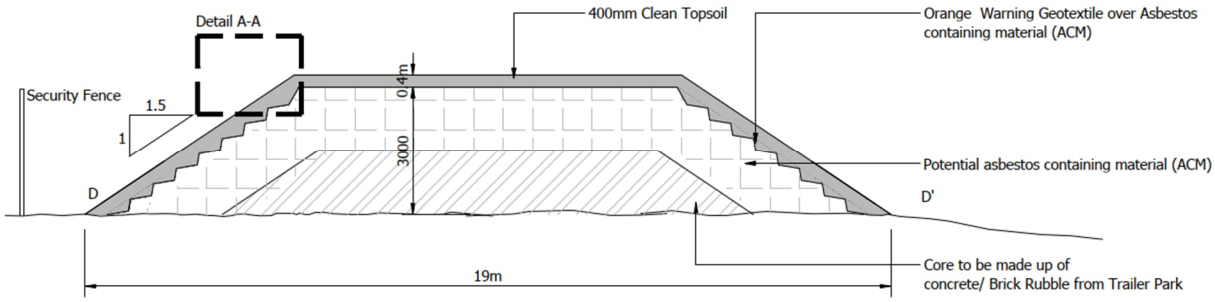


Plate 4.2: Arcadis proposed bund construction.

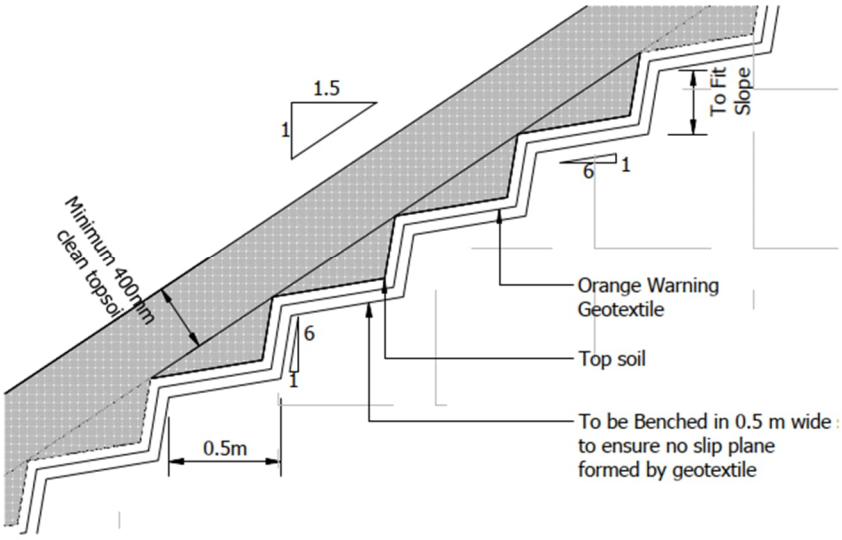


Plate 4.3: Arcadis proposed bund construction.

4.3. LandWise Desk Study (2026)

The desk study by LandWise has been summarised in the previous sections detailing the site history and ground conditions.

4.3.1. Potential Sources of Contamination

Based on information obtained as part of the preliminary risk assessment, the following potential contamination sources were identified:

4.3.1.1. On Site – Historical and Current

Potential sources of onsite contamination identified within the desk study are summarised below:

- Deposition of contaminated fill materials within the landfill (Asbestos, PAHs, TPH and heavy metals).
- Leaks and spills of fuel and chemicals associated with the use of the site for parking, storage or industrial activities in association with the motor works (PAHs, TPH).

4.3.1.2. Off Site – Historical and Current

Potential sources of off site contamination identified within the desk study are summarised below:

- Deposition of contaminated materials associated with made ground in the wider area (Asbestos, PAHs, TPH and heavy metals).

4.3.2. Pathways

The key environmental pathways and exposure routes by which potentially toxic substances can reach the identified potential receptors are considered to be:

4.3.2.1. Indirect

- Vertical and lateral migration of ground gas and soil vapour leading to accumulation in enclosed spaces.

- Vertical and lateral migration of organic and inorganic compounds through underlying geology associated with offsite land uses.
- Windblow dust and fibres to adjacent receptors.
- Surface runoff.

4.3.2.2. Direct

- Inhalation of ground gases and soil vapour.
- Inhalation of contaminated dust.
- Ingestion of contaminated dust.
- Dermal contact.

4.3.3. Receptors

Receptors that may be affected by the potential contamination are considered to be:

4.3.3.1. Human

- Future site users and construction workers.
- Off site land users

While Ridge note that the Desk Study also included risks to construction works within the conceptual model; it should be noted that while there may be risk from short term exposure from contaminated soil to site workers, the Preliminary Contamination Conceptual Model should deal with long term exposure to key receptors. Acute risks can be easily mitigated by good environmental management of the site during site works. Standard health and safety precautions (as per HSE guidance) should be adopted by all workers involved with site enabling and construction works. Therefore, this receptor is not considered in the contamination conceptual model.

4.3.3.2. Structural

- Services of infrastructure onsite coming into contact with aggressive ground.

4.3.3.3. Environmental

- Controlled Waters - surface water (Ram's Brook) and the underlying Secondary Undifferentiated and Principal Aquifers.
- Vegetation

4.3.4. Preliminary Contamination Risk Assessment

The following risk assessment was produced by LandWise and is shown in Plate 4.4.

Areas of Concern	Risk	Comment
Human Health	Moderate	Based on site history, there is potential for significant made ground including landfill deposits which may contain contaminants associated with the motor works site including asbestos ACMs and fibres
Vegetation	Moderate	Based on the site history there is potential for phytotoxic contamination within the anticipated made ground soils.
Surface Water Environment	Moderate	We considered that there is a potential of contaminant migration from on-site soils to Controlled Waters.
Groundwater Environment	Moderate	We considered that there is a potential of contaminant migration from on-site soils to the Principal Aquifer.
Ground Gas	*Not Applicable*	The anticipated made ground deposits are a potential source of ground gas generation. However, the nature of the proposed development is such that there would be no end-use receptor. *Notwithstanding, we would note any excavations requiring manned entry at depths beyond 1.20 m should be treated as confined spaces and appropriate health and safety precautions taken with respect to ground gas and/or anoxic conditions.*
Radon Gas	*Not Applicable*	The site is within an elevated radon area where 1-3% of properties may be affected. However, the nature of the proposed development is such that there would be no receptor.
Mine Gas	*None*	There was no evidence of historical mining within a potential impact distance of the site.
Hydrocarbon Vapour	*Not Applicable*	Hydrocarbon vapours from made ground and historical landfill are possible. However, the nature of the proposed development is such that there would be no receptor.
Buried Environment	Moderate	Based on the developmental history of the site, there is a potential risk to the buried environment (concrete and water supply) from contamination within made ground soils. We note that this may not be applicable to the proposed development.

Plate 4.4: Preliminary Conceptual Model (LandWise).

4.3.5. Recommendations

Based on the findings of the Desk Study further investigation was recommended in order to help refine the risks to end users, the water environment and proposed structures and services onsite from potential Asbestos Containing Materials (ACMs), heavy metals, Poly Aromatic Hydrocarbons (PAHs) and fuel oils.

5. FIELDWORK SUMMARY OF SCOPE AND RATIONALE

5.1. Site Management and Preparation

The intrusive investigation was undertaken by LandWise between the 19th January to 22nd January 2026. Methods employed during the investigation were carried out in general accordance with statutory guidance including BS5930:2015+A1:2020 *Code of Practice for Site Investigations* and BS10175:2011+A2:2017 *Investigation of Potentially Contaminated Sites: Code of Practice*.

The LandWise information provided to Ridge indicates that:

- The drilling works have been undertaken by a suitably accredited sub-contractor. The geological succession at each exploratory hole location has been logged by an experienced field specialist and samples taken for laboratory analysis. A visual assessment was made of the geological profile and potential contamination if present. Soil samples have been taken at regular intervals, or change in lithology, or where evidence of potential contamination was observed.

- In selecting the appropriate samples for testing, we have taken cognisance of several factors, including the proposed site use. Sampling rationale has been determined in accordance with R&D Technical Report P5-066/TR Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination.

- The scope of the testing implemented considered the interpreted origin of the materials in association with their description. This is consistent with best practice under current contaminated land guidance.

- The chemical condition of these materials was assessed for a wide spectrum of potential contaminants, comprising a broad range of common organic and inorganic substances primarily of a toxic or phytotoxic nature, and appropriate to the past usage of the site.

- During sample collection, relevant information such as notes of field observations has been logged before transferring the samples to laboratory-prepared sample container of appropriate type. Care was also taken to minimise the aeration of samples during transfer to the jars/bottles.

Ridge consider the above to be appropriate and inline with guidance for investigation works of this nature.

5.2. Rationale and Summary of Scope

The Site Investigation scope was devised by Ridge, based on current guidance, information reviewed to date and the proposed development. Investigation works comprised the following:

- 25 no. Windowless Sample Boreholes (WS101 to WS125) drilled to a maximum depth of 5.45mbgl with SPT (Standard Penetration Test) at intervals of approximately 1.00mbgl.

- 15 no. Machine Excavated Pits (TP101 to TP115) excavated to a maximum depth of 3.30mbgl.

- 4 no. Soakaway tests (SA101 to SA104) excavated to a maximum depth of 2.20mbgl.

- 20 no. Dynamic Cone Penetrometer tests to 1.00mbgl to provide CBR values with depth.

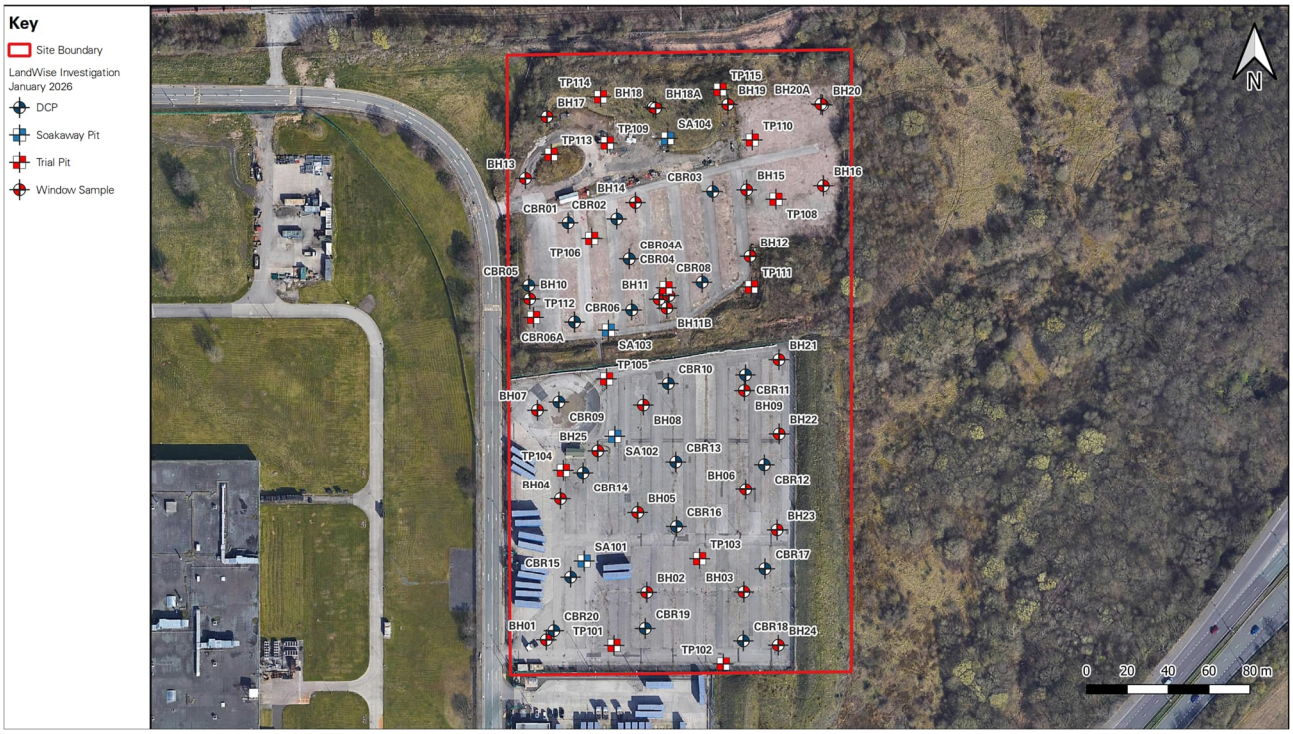


Plate 5.1: Beech site investigation locations with relation to the current site boundary.

The first phase of the site investigation works are presented on the Site Investigation location plan is shown in Figure 2.

Further investigation works were undertaken on the 31st March and 1st April 2026 by LandWise comprising 9no. additional trial pits within the bund along the east of the site.

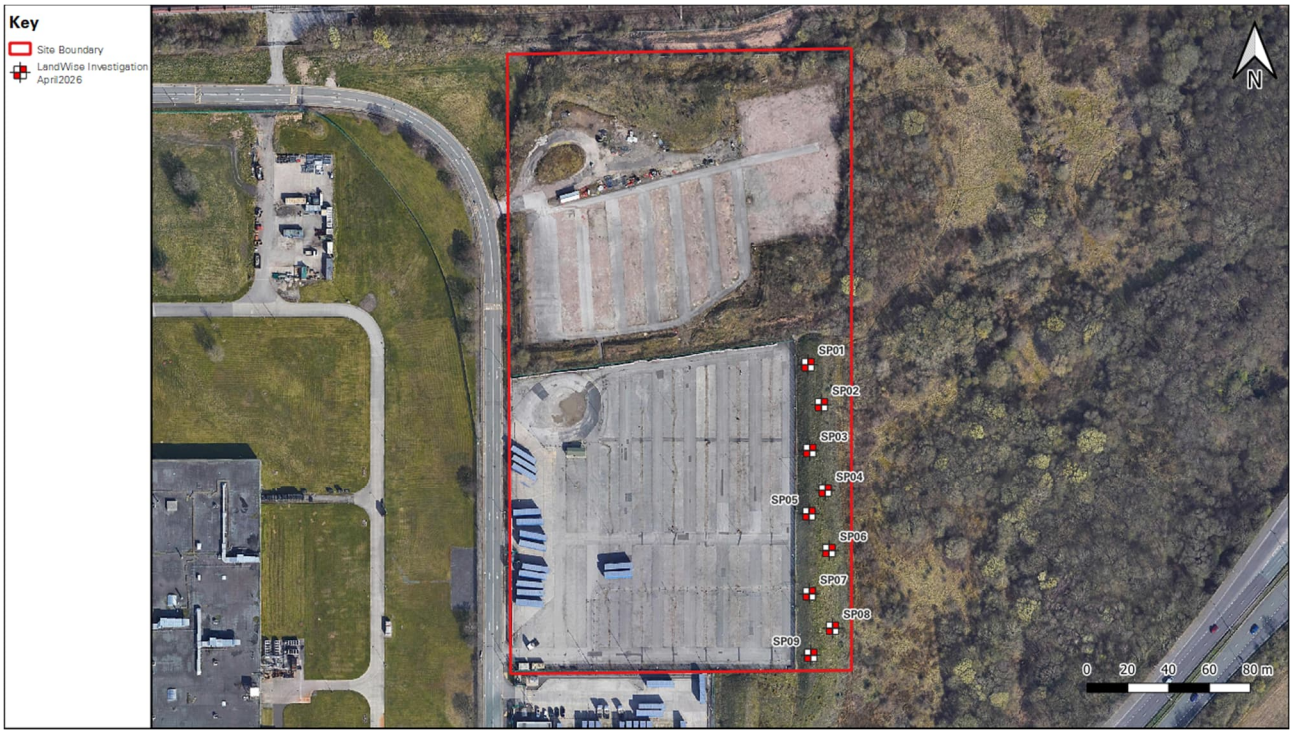


Plate 5.2: Bund Investigation Works with relation to the current site boundary.

The locations of the bund investigation works are presented in Figure 3.

All investigation location logs are presented in Appendix 2.

5.2.1. Window Sample Drilling

The window sample boreholes were distributed across the site to provide site coverage. Ten of the boreholes were installed with monitoring wells for groundwater monitoring and sampling. Monitoring wells were installed in accordance with BS10175 and CIRIA C665 and generally comprised approximately 1.00m plain pipe over a length of slotted pipe surrounded by pea gravel and sealed at the top with bentonite and concrete.

5.2.2. Machine Excavated Trial Pits

Machine Excavated Trial Pits were carried out across the site to confirm shallow ground conditions and provide good site coverage to confirm the information known to date. The machine excavated trial pits within the eastern bund were carried out in order to assess the material and its suitability for re-use (PS01 to SP09 inclusive).

5.2.3. Machine Excavated Soakaway Pits

Four Soakaway tests were undertaken within machine excavated trial pits ion order to provide data on the permeability of the ground.

5.3. Soil Sampling

Standard sampling protocol and preservation of samples was undertaken as described in the EA guidance on site investigations.

All soil samples recovered for chemical analysis were contained in sealed plastic tubs, labelled, and stored on site in cool boxes to maintain natural temperature. Where hydrocarbon or organic contamination was suspected, samples were contained in amber glass jars to prevent chemical breakdown because of exposure to light and limit absorption of the contaminant to the sample container. The procedure is designed to maintain sample integrity and ensure that the chemical analysis is as representative of the site conditions as possible. If collection was not possible the same day then samples were stored in the sample storage fridge below 4˚C. Samples were tracked using appropriate Chain of Custody forms provided by DETS.

Samples were handled using a fresh pair of nitrile gloves. Equipment was cleaned between use at different test locations and different sampling depths to prevent cross-contamination. Selected samples were placed in sealable bags, sealed glass jars or plastic tubs (dependent on the exact laboratory requirement and analysis to be undertaken) and stored in a temperature-controlled environment before transit.

5.4. Groundwater Gauging & Sampling

To confirm the risks previously identified, groundwater monitoring was undertaken on one occasion on the 16th February 2026 by LandWise. Groundwater samples were obtained from 4no. monitoring wells based on observations made during the soil sampling.

6. GROUND CONDITIONS ENCOUNTERED

6.1. Soil Conditions

A summary of the soil conditions encountered during the investigation works is present below. Full engineers' logs are present within Appendix 2.

6.1.1. Surface Covering

While tarmacadam was present in some areas of the site, predominantly the surface was covered in a layer of compacted grey clayey sandy Gravel with brick fragments to depths between 0.30m to 0.50mbgl.

This was not present in TP114 or TP115.

6.1.2. Made Ground

Deep made ground was encountered in all exploratory locations.

The logs indicate that the made ground generally comprised sandy gravelly Clay with frequent brick fragments, concrete and occasional ash, timber and metal encountered to depths of between 2.30m to >5.00mbgl. In several locations large pieces of oversize and brickwork were encountered leading to shallower refusal within the made ground.

Visual and olfactory evidence of hydrocarbon contamination was identified across the site within the Made Ground, with dark patches oily and slight to moderate hydrocarbon odours occasionally noted.

Within TP114 and TP115 in the north of the site, made ground comprising clayey gravelly Sand with frequent rootlets, occasional brick and timber was encountered to between 1.80m and 2.50mbgl over the compacted granular material. This is considered likely to be the 'topsoil' from a previous vegetation strip of the site.

6.1.3. Till (Superficial Geology)

Firm to stiff sandy gravelly Clay was encountered at depths of between 2.30m to >5.50mbgl but was on average below 3.50mbgl and not encountered in many of the trial pits for this reason.

Presumed natural Sand was encountered in TP108 at 2.70mbgl and in TP109 at 1.30mbgl but was not identified in any other locations.

6.1.4. Kinnerton Sandstone Formation (Bedrock Geology)

Bedrock was not encountered within any of the investigation locations.

6.2. Groundwater Conditions

6.2.1. Groundwater Strikes during Drilling

A summary of groundwater strikes noted during the site investigation work is presented in Table 6.1 for the Window Sample boreholes and in Table 6.2 for the Trial Pits. Groundwater was generally encountered within the made ground strata.

EXPLORATORY HOLE ID	GROUNDWATER STRIKE DEPTH (MBGL)	GROUNDWATER STRIKE DEPTH (MAOD)
BH01	DRY	DRY
BH02	1.50	20.29
BH03	2.00	19.60
BH04	DRY	DRY
BH05	3.00	18.80
BH06	1.00	20.53
BH07	DRY	DRY
BH08	DRY	DRY
BH09	2.50	19.16
BH10	2.50	20.02
BH11	DRY	DRY
BH11A	DRY	DRY
BH11B	DRY	DRY
BH12	DRY	DRY
BH13	2.50	20.11
BH14	3.50	19.10
BH15	DRY	DRY
BH16	4.70	17.34
BH17	3.90	18.69
BH18	DRY	DRY
BH19	DRY	DRY
BH20	DRY	DRY
BH21	DRY	DRY
BH22	2.00	19.46
BH23	2.00	19.43
BH24	DRY	DRY
BH25	DRY	19.10

Table 6.1: Window Sample borehole groundwater strikes.

EXPLORATORY HOLE ID	GROUNDWATER STRIKE DEPTH (MBGL)	GROUNDWATER STRIKE DEPTH (MAOD)
TP101	DRY	DRY
TP102	1.20	20.11
TP103	0.80	20.91
TP104	0.40	21.20
TP105	1.70	20.07
TP106	2.80	19.93
TP107	2.40	19.88
TP108	2.70	19.13
TP109	DRY	DRY
TP110	DRY	DRY
TP111	0.70	21.27
TP112	0.50	21.89
TP113	2.00	20.70
TP114	DRY	DRY
TP115	DRY	DRY

Table 6.2: Windowless Sample Borehole Groundwater Strikes.

Based on the number of locations and depths at which ground water was identified during the investigation and monitoring works it is considered to be perved and not pervasive across the site.

6.3. Visual/ Olfactory Evidence of Contamination

6.3.1. Soils

Visual and olfactory evidence of contamination was noted in 15no. of the 46no. investigation locations within the Made Ground, with a moderate hydrocarbon odour identified in SA103, SA104, TP105-TP111 and TP111 while a slight hydrocarbon odour was detected in TP101, TP108, TP110, TP112-113, BH03, BH06, BH12 and BH15 and at a range of depths.

6.3.2. Groundwater

Visual and olfactory evidence, moderate hydrocarbon odours and a slight sheen of hydrocarbon contamination was evident during both the ground investigation.

6.4. Bund Investigation Works

6.4.1. Topsoil

The eastern bund appeared to be comprised of sandy gravelly Clay topsoil of between 0.30m and 0.45m thickness, over an orange geotextile membrane. Rare glass, pottery and timber was encountered within the topsoil.

6.4.2. Enclosed material

The material enclosed within the geotextile membrane comprised predominantly cohesive made ground with brick, plastic, timber, wood (including tree roots) metal and glass.

6.4.3. Contamination

A strong hydrocarbon odour was encountered in SP03, associated with a timber sleeper at 1.20mbgl. No visual or olfactory evidence of hydrocarbon contamination was noted in any of the other locations. As such testing at this location was extended to include a suite of petroleum hydrocarbons.

Pieces of hosepipe and scrap metal were noted within the enclosed soil, along with other anthropogenic inclusions. Limited anthropogenic inclusions were noted within the topsoil.

No visually identified pieces of asbestos was noted within the bunds; however, samples were taken to test for asbestos contamination.

7. CONTAMINATION ASSESSMENT

7.1. Relevant Industry Profile

Based on a review of historical site use and the previous ground investigation works an appropriate suite of environmental testing was carried out. Environmental testing included asbestos screening (inc. Quantification if present) heavy metals, PAHs TPH CWG, phenols, pH and organic matter content.

7.2. Soil Assessment Methodology

Specific soil sample location and depth was chosen based on site coverage, where anthropogenic materials were identified, and where desk-based research has shown contaminants are more likely to present.

7.2.1. Generic Assessment Criteria

Ridge have undertaken a screen of the soil laboratory results using generic assessment criteria for A commercial end use. Generic assessment criteria (GAC) are conservative contaminant concentration values used for comparison purposes to assess the risk associated with contaminant concentrations found on site and are derived using non-site-specific information.

In order to assess the soil analyses results with regard to potential human health risks, Ridge has adopted published guidance criteria widely referred to by professionals within the industry, which include the following:

- Suitable 4 Use Levels (S4ULs) Generic Assessment Criteria (GAC) developed by the Chartered Institute of Environmental Health (CIEH) in partnership with Land Quality Management Ltd. (LQM).
- Category 4 Screening Levels (C4SL) for lead, produced by CL:AIRE (2014).
- The UK Soil Guideline Values (SGVs) for selected metals, BTEX and phenols, produced by the EA and Department of Environment, Food and Rural Affairs (2009).

The site will be developed as car parking and will be predominantly hardstood, which would generally be considered a commercial end use for the purposes of Generic Assessment Criteria.

Results were compared to the most appropriate soil organic matter value unless otherwise stated with the average soil organic matter value from all samples being 2.84%.

With regard to human health, the CLEA model states that, ‘the contamination is assumed to be at or within 1.00m of the surface’ (CLR10 pg10). It is considered that at depths greater than 1m, the probability of human exposure via the direct contact pathways are significantly reduced, leaving inhalation of volatile compounds as the dominant pathway with regard to human health risks. Typically, volatile compounds only significantly affect the indoor inhalation pathway. Therefore, for the purposes of statistical analysis, data from the top 1.00m to 1.50m is used for assessment of risks to /human health via direct contact pathways in accordance with the CLEA model, dependant on proposed future site levels.

7.3. Soil Assessment

7.3.1. General

39 no. soil samples collected during the LandWise site investigation from Made Ground at various depths and locations were submitted to a UKAS accredited laboratory for analysis for a suite of asbestos, heavy metals,

PAHs and TPH CWG. Testing for volatile contaminants was not carried out based on the findings of the previous reports.

Additional samples were taken of the bund material in order to assess whether it was suitable for re-use to help raise levels of the proposed development.

9no. samples were taken of the overlying topsoil and 11no. samples were taken of the enclosed made ground and tested for a broad range of contaminants including heavy metal, organic matter, pH and sulphate.

Laboratory analysis certificates are included as Appendix 3.

The range of potentially hazardous contaminants present on the site can be wide and varied and the suite has been chosen to reflect commonly found contaminants and others indicated by review of the previous report to have a chance of being present.

Primarily, samples were obtained from worst case Made Ground, where anthropogenic constituents were at their most prevalent, or where higher risk constituents such as brick were encountered.

7.3.2. Organic Matter

Organic matter from samples beneath the site ranged from 0.70 to 8.7% in Made Ground. This is likely due to the presence of roots and timber noted in the logs. The average SOM across the 39no. samples was 2.84%.

From within the bund, organic matter within the enclosed material ranged from 1.0 to 3.9%. Timber was still noted as present, but the soil matrix appears to have an organic content low enough for earthworks purposes.

7.3.3. Asbestos

39no. samples across the site were tested for asbestos. 9 no. samples tested identified asbestos, which were then subjected to quantification.

An additional 20no. samples were alco collected form the eastern bund and tested for asbestos. 4 no. samples identified asbestos which was then quantified. The positive results are summarised in Table 7.1.

SAMPLE LOCATION ID	DEPTH (MBGL)	ASBESTOS TYPE	ASBESTOS QUANITIFICATION (%)
BH09	2.00	Chrysotile present in microscopic insulation	0.005
BH10	3.00	Chrysotile & Amosite present in microscopic insulation	0.011
BH12	2.00	Chrysotile present as fibre bundles	<0.001
BH24	0.80	Chrysotile present as fibre bundles	<0.001
TP101	0.50	Amosite & Chrysotile present as fibre bundles	0.002
TP104	0.40	Amosite present as fibre bundles	<0.001
TP112	0.60	Amosite present as fibre bundles	<0.001

TP113	2.20	Amosite present as fibre bundles	<0.001
TP114	1.20	Chrysotile present in microscopic bitumen	0.002
SP02	2.20	Chrysotile present as fibre bundles	0.003
SP07	0.50	Chrysotile present as fibre bundles	0.004
SP07	1.70	Amosite present as fibre bundles	0.002
SP09	2.00	Amosite present as fibre bundles	0.002

Table 7.1: Asbestos identification and quantification results.

While asbestos has been identified within the soils beneath the site, it should be noted that these are below hazardous waste levels (0.1%v/v) and that, once suitably encapsulated beneath hardstanding, the pollutant linkage will be severed.

No asbestos was identified in any of the topsoil covering the bund.

It is recommended that additional precautions are taken during site clearance, earthworks and construction across the site. The presence of asbestos in the made ground at the site presents a potential risk of generation of airborne fibres if this material is disturbed, such as for excavations for drainage and services. Precautions should also include appropriate segregation of the soils (topsoil) where no asbestos was identified to avoid cross contamination.

This risk can be managed by careful procedures and site monitoring to reduce the risk of airborne fibres, and it is recommended that an appropriate 'Asbestos Management Strategy' is developed and adopted for all intrusive ground works which disturb the made ground. This should be carried out in line with CIRIA C733.

Ridge have utilised the Joint Industry Working Group (JIWG) Decision Support Tool for receptor risk ranking of Asbestos Containing Materials onsite and for the potential work categories and protection required while reusing site won material. This model incorporates guidance from CL:AIRE CAR-SOIL (2012) and CIRIA C733.

While it is considered that the risk to end users will be mitigated through the provision of hard stood tarmacadam across the majority of the site, the potential risk to groundworkers excavating and recompacting this material needs to be considered.

A low respirable index was assumed based on the ACM identified onsite as per RIVM (2003) 'Assessment of the Risks of Soil Contamination with Asbestos'.

The assessment was carried out assuming 'not low intensity' work at full time occupational exposure.

For added conservatism, the model does not take into account moisture content, which can significantly reduce the potential for airborne fibre release from soil in a typical UK climate. AGS 'assessment and control of asbestos risk in soil' (2021), based on work by Addison et al (1988), notes that the addition of 10% water to soil decreases the risk of potential fibre release by a factor of between 2 and 10.

The moisture content of the soil from this area was 7-19% making fibre release unlikely. Moisture content of the bunded material is higher than this

Data from Addison et al shows that a clay soil with Chrysotile fibre concentrations of 0.01%w/w (the highest asbestos concentration present within the soils tested onsite, BH10 at 0.011%) when agitated in a moderately aggressive way, produced between 0.01fibres/ml and no recordable fibres at moisture contents of 5% and above. It should be noted that the clearance level is 0.01f/ml.

The JWIG model output sheet is presented in Appendix 4.

It suggests that movement of these soils would be classed as Non-Licensed Work but recommends the wearing of RPE onsite and the use of localised dust suppression. Should any of the site surface not be covered by carparking the asbestos containing made ground would need to be suitably capped.

7.3.4. Heavy Metals

When compared to the relevant assessment criteria no elevations were identified for heavy metals as such the risk is considered to be low.

7.3.5. Polycyclic Aromatic Hydrocarbons (PAHs)

When compared to the relevant assessment criteria no elevations were identified for PAHs as such the risk is considered to be low.

7.3.6. Total Petroleum Hydrocarbons (TPH)

When compared to the relevant assessment criteria no elevated values were noted within the soils tested with regards to human health.

While most locations returned limit of detection results, several locations returned small amounts of heavy end hydrocarbon (>C21) which are the likely cause of the hydrocarbon odours noted in the soil. With regards to the proposed development and the absence of enclosed spaces the risks from hydrocarbons, including hydrocarbon vapours, is considered to be low

7.3.7. Discussion of Results

Results across the site appear to reflect observations made in the field and the findings of the previous ground investigation carried out by Silkstone. While there were detectable levels of a number of contaminants, no exceedances were noted when compared to the relevant assessment criteria.

As with the previous reports the main driver for risk from the near surface soils is considered to be the asbestos contamination identified.

It had been understood that the bund present along the eastern boundary could include a significant amount of asbestos contamination, however limited relatively low-level asbestos contamination was encountered. The material encapsulated within the bund appears to be similar to that already onsite.

7.4. Controlled Waters Assessment

This section of the report presents the generic risk assessment for the controlled waters receptors.

7.4.1. Screening Criteria

The Environment Agency's approach to groundwater protection (2018 version 1.2) provides information on the appropriate compliance criteria to adopt 'a general approach is to use an environmental standard. This standard should be relevant to the current or intended use of the aquifer'.

The standards adopted for Generic Assessment Criteria (GAC) are as follows:

- Water Supply (Water Quality Regulations – UK DWS).
- Surface Waters (Dangerous Substances) (Classification) Regulations – UK EQS.
- Directive establishing a framework for Community action in the field of water policy (Water Framework Directive) – EU EQS.
- Surrogate indicator compounds (used as a proxy standard for compounds of similar chemical attributes and toxicity).
- International Standards (European Council Directive, WHO, USEPA, Surface Water Abstraction Directive) – appropriate for the receptor and in line with UK approach.

Where a number of standards are available for a particular compound, that standard selected for screening purposes is based on the most relevant standard for the receptor, in the first instance. Therefore, statutory standards are prioritised over non statutory standards. With regards to hydrocarbon mixtures (TPHCWG) for UKDWS, Ridge will use the CL:AIRE guidance on petroleum hydrocarbons in groundwater based on WHO guidelines.

No criteria values have been presented for surface waters (EQS) except the odour, visual evidence and taste test for fish. However, criteria for each banding has been presented by WHO within the CL:AIRE report for drinking water and will be used in the assessment.

7.4.2. Identification of Primary Receptor

The superficial deposits are a Secondary Undifferentiated Aquifer which is not continuous across the site and so are not considered at significant receptor. The bedrock Principal Aquifer is considered to be a primary receptor; the nearest surface water is Ram's Brook 58m to the south of the site.

7.4.3. Design of Assessment

Factors detailed in Table 7.2 were pertinent in the design of the controlled waters assessment. Information detailed in the table has either been taken from the Desk Top Study or interpreted from the intrusive investigation conducted.

FACTOR	FURTHER ASSESSMENT REQUIRED	LESS ASSESSMENT REQUIRED
Sensitivity of controlled waters receptors	Bedrock beneath the site is a Principal Aquifer.	The secondary undifferentiated aquifer in the superficial deposits appears to be discontinuous based on monitoring results and are considered to be Low in terms of sensitivity. The EA classified the principal aquifer as poor in 2019 and classified the vulnerability of the groundwater as low. Ram's Brook is not classified by the EA.
Visual / olfactory evidence of contamination in soils	-	While made ground noted across the site included notes of hydrocarbon odours the subsequent testing of those samples demonstrated levels of heavier

FACTOR	FURTHER ASSESSMENT REQUIRED	LESS ASSESSMENT REQUIRED
		end hydrocarbons close to limits of detection indicating a limited source potential.
Visual / olfactory evidence of contamination in groundwater	-	No free product noted.
Soil Analysis	-	Laboratory testing did not identify significant potentially mobile contamination, hydrocarbon results in particular were noted to be only marginally above detection limits.
Soil contaminant mobility	-	Average soil pH is approximately 9.9, therefore shallow soils are not considered acidic.
Depth to Groundwater	Shallow groundwater across the site.	Shallow ground water not considered to be continuous with groundwater within the bedrock aquifer and is separated by the superficial Glacial Till deposits.

Table 7.2: Factors influencing design of Controlled Waters Assessment

7.4.4. Monitoring Programme

In light of factors detailed in Table 7.2 above, it was considered that at least one round of groundwater monitoring and analysis should be carried out.

7.4.5. Groundwater Samples

Four groundwater samples were collected from BH01, BH02, BH03 and BH08 on the 16th February 2026.

Samples were submitted to a UKAS accredited laboratory for analysis for a suite of pH, total phenols, heavy metals, PAHs, TPH CWG, Cyanide, Sulphate and VOCs.

Full Laboratory analysis certificates are included in Appendix 5.

The range of potentially hazardous contaminants present on the site can be wide and varied and the suite has been chosen to reflect commonly found contaminants and others indicated by review of the previous report to have a chance of being present. While a number of leachate tests were also carried out across the site leachate testing is aggressive and unlikely to give a true representation of the groundwater on site as such only the results of actual groundwater testing have been included in this assessment.

7.4.6. Results

Surface Water Assessment

With the closest surface water receptor being Ram's Brook the, EQS for freshwater was utilised in the first instance where no freshwater EQS is available the alternative assessment criteria applied has been listed. Only contaminants which exceed the assessment criteria have been listed.

CONTAMINANT	UNITS	NO. OF SAMPLES	ELEVATED RESULT	LOCATION	ASSESSMENT CRITERIA	SOURCE OF CRITERIA
METALS						
Lead	µg/l	4	4.11	BH02	1.2	EA EQS

CONTAMINANT	UNITS	NO. OF SAMPLES	ELEVATED RESULT	LOCATION	ASSESSMENT CRITERIA	SOURCE OF CRITERIA
			2.21	BH03		
Mercury	µg/l	4	24.29	BH02	0.07	EA EQS
			4.56	BH03		
Zinc	µg/l	4	63.52	BH01	10.9	EA EQS
			11.64	BH02		
			41.17	BH03		
			53.53	BH08		
Total Cyanide	µg/l	4	2.6	BH01	1.0	EA EQS
			13	BH02		
			11	BH03		
			2.2	BH08		
PAHs*						
Anthracene	µg/l	4	1.6	BH01	0.1	EA EQS
			130.0	BH02		
			1.7	BH03		
			1.1	BH08		
Fluoranthene	µg/l	4	8.1	BH01	0.0063	EA EQS
			450.0	BH02		
			5.6	BH03		
			4.8	BH08		
Naphthalene	µg/l	4	3.1	BH01	2.0	EA EQS
			170.0	BH02		
			3.5	BH03		
			3.3	BH08		
Benzo(a)pyrene	µg/l	4	4.2	BH01	0.00017	EA EQS
			160.0	BH02		
			0.99	BH03		
			0.70	BH08		
Benzo(b)fluoranthene	µg/l	4	4.9	BH01	0.00017	No EQS for these substances as such the value for Benzo(a)pyrene has been used for comparison
			220.0	BH02		
			1.1	BH03		
			0.77	BH08		
Benzo(k)fluoranthene	µg/l	4	2.1	BH01	0.00017	
			110.0	BH02		
			0.52	BH03		
			0.38	BH08		
Benzo(g,h,i)perylene	µg/l	4	0.26	BH01	0.00017	
			110.0	BH02		
			0.11	BH03		
			0.09	BH08		
Ideno(1,2,3-cd)pyrene	µg/l	4	2.5	BH01	0.00017	
			110	BH02		
			0.55	BH03		
			0.39	BH08		
TPH						
Aro >EC12-EC16	µg/l	4	160	BH08	90	WHO*
Aro >EC16-EC21	µg/l	4	130	BH08	90	WHO*
Aro >EC21-EC35	µg/l	4	280	BH01	90	WHO*
			140	BH08		

Table 7.3: Groundwater samples in excess of the surface water receptor target values.

When results have been compared to the appropriate guideline values for a surface water receptor exceedances were identified for lead, mercury, zinc and total cyanide, PAH's and aliphatic TPH fractions from EC12 to EC35. It should be noted that the aliphatic fractions are compared to drinking water standards in absence of EQS values.

Ground Water Assessment

Although it is considered that a significant thickness of clay isolates the contamination present on site from the principal aquifer within sandstone beneath the site it was considered appropriate to compare the results of the water sample testing with the appropriate generic assessment criteria.

CONTAMINANT	UNITS	NO. OF SAMPLES	ELEVATED RESULT	LOCATION	ASSESSMENT CRITERIA	SOURCE OF CRITERIA
METALS						
Arsenic	µg/l	4	21.4	BH02	10	UK DWS
			10.24	BH03		
Nickel	µg/l	4	24.29	BH02	20	UK DWS
PAHs*						
Fluoranthene	µg/l	4	8.1	BH01	0.1	UK DWS
			450.0	BH02		
			5.6	BH03		
			4.8	BH08		
Benzo(a)pyrene	µg/l	4	4.2	BH01	0.01	UK DWS
			160.0	BH02		
			0.99	BH03		
			0.70	BH08		
Benzo(b)fluoranthene	µg/l	4	4.9	BH01	0.1	UK DWS
			220.0	BH02		
			1.1	BH03		
			0.77	BH08		
Benzo(k)fluoranthene	µg/l	4	2.1	BH01	0.1	UK DWS
			110.0	BH02		
			0.52	BH03		
			0.38	BH08		
Benzo(g,h,i)perylene	µg/l	4	0.26	BH01	0.1	UK DWS
			110.0	BH02		
			0.11	BH03		
			0.09	BH08		
Ideno(1,2,3-cd)pyrene	µg/l	4	2.5	BH01	0.1	UK DWS
			110	BH02		
			0.55	BH03		
			0.39	BH08		
TPH						
Aro >EC12-EC16	µg/l	4	160	BH08	90	WHO
Aro >EC16-EC21	µg/l	4	130	BH08	90	WHO
Aro >EC21-EC35	µg/l	4	280	BH01	90	WHO
			140	BH08		

Table 7.4: Groundwater samples in excess of the groundwater receptor target values.

When results have been compared to the appropriate guideline values for a groundwater receptor exceedances were identified for arsenic, nickel, PAH's and aliphatic TPH fractions from EC12 to EC35.

7.4.7. Groundwater Modelling

Due to the exceedances of the relevant assessment criteria for both surface water and groundwater receptors LandWise, the appointed ground investigation subcontractor carried out modelling of the results of the water sampling.

The modelling of the potential risks of the identified contaminants to the receptors carried out by LandWise utilized RD P20 RTM (V3.2) published by the Environment Agency. The highest concentrations observed in the groundwater sampling were used within the model by LandWise. The P20 modelling carried out by LandWise has been included in Appendix 5.

Ram's Brook

With regards to the surface water receptor, Ram's Brook LandWise used the parameters listed in Plate 7.1 and 7.2 with the results presented in Plate 7.3:

Criteria	Value Utilised (Superficial Soils)	Justification
Width of plume in aquifer at source	165m	The width of plume is the distance between wells laterally or down gradient where samples did not record an elevated contaminant concentration. Where the plume is not constrained by the data collected, we consider using the width of the site to be an appropriately conservative approach
Plume thickness at source	BH01 – 0.768m BH02 – 0.953m BH03 – 0.934m BH08 – 0.920m	Plume thickness has been estimated at 10% saturated aquifer thickness, as most contaminant plumes typically only affect the top half meter of the aquifer, or beyond the top half meter, the contaminant will quickly mix to a lesser concentration.
Saturated aquifer thickness	BH01 – 7.68m BH02 – 9.53m BH03 – 9.34m BH08 – 9.20m	Utilises depth of water recorded in borehole with maximum exceedances of contamination. BH01 = GW level recorded between 2.32mbgl and rockhead level conjectured at 10.00mbgl = 7.68m water column BH02 = GW level recorded between 0.47mbgl and rockhead level conjectured at 10.00mbgl = 9.53m water column BH03 = GW level recorded between 0.66mbgl and rockhead level conjectured at 10.00mbgl = 9.34m water column BH08 = GW level recorded between 0.80mbgl and rockhead level conjectured at 10.00mbgl = 9.2m water column
Bulk density of aquifer materials	2.01 g/cm^3	Testing of the site soils (made) indicated to have a minimum bulk density of 2.01 g/cm^3). The average bulk density of the natural clay soils is indicated to be 2.126g/cm^3. We have utilised 2.01g/cm^3 as this is considered more conservative.
Effective porosity of aquifer	55 fraction	Freeze and Cherry (1979) indicated glacial till to have a porosity of between 0.40 and 0.70 so we have used the mean of 0.55.
Hydraulic gradient	0.057 – 0.0917	BH01 (19.31 mAOD - 16.00 mAOD (Rams Brook) / 58 = 0.057) BH02 (21.32 mAOD - 16.00 mAOD (Rams Brook) / 58 = 0.0917)

Plate 7.1: P20 Modelling Parameter Justifications used by LandWise (reproduced from LandWise information)

		BH03 (20.94 mAOD - 16.00 mAOD (Rams Brook) / 58 = 0.08517) BH08 (20.98 mAOD - 16.00 mAOD (Rams Brook) / 58 = 0.08586)
Hydraulic conductivity of aquifer	0.000864 m/day	The academic value for glacial till is 10^{-7} to 10^{-1}. The academic value for silty sand is 10^{-5} to 10^{-1} .We have used a value of 10^{-6} as this is considered conservative. From the site investigation undertaken it is known that the made ground deposits are underlain by cohesive glacial till soils. Source: Freeze and Cherry (1979).
Distance to compliance point	BH01 – 220m BH02 – 210m BH03 – 135m BH08 – 240m	The distance to the nearest surface water body, the 'Rams Brook', from the borehole location being modelled.

Plate 7.1 (continued): P20 Modelling Parameter Justifications used by LandWise (reproduced from LandWise information)

	Substance	Kd (l/kg)	Reference	Half Life (days)	Reference
Metals	Zinc	30651	EPA 2005	Metal – assumed no decay	N/A
	Mercury	6309			
	Selenium	923.4			
	Cadmium	3981			
	Copper	8175			
	Lead	15849			
	Nickel	5629.5			
PAHs	Naphthalene	1700579		258	Howard et al. – document presents half-lives as a range, and so the most conservative value was utilised.
	Acenaphthylene	234897		120	
	Acenaphthene	2834714		204	
	Fluorene	1709756		120	
	Phenanthrene	142969599		401.5	
	Fluoranthene	10926014		879.65	
	Anthracene	4196816		919.8	
	Pyrene	13577369		3796	
	Benzo(a,h)anthracene	6165924		1361.45	
	Chrysene	5956863		2000	
	Benzo[b]fluoranthene	4049020		1219	
	Benzo[k]fluoranthene	2272222		4270.5	
	Benzo[a]pyrene	6659477		1058.5	
	Indeno(1,2,3-c,d)Pyrene	2919608		1460	
	Benzo[g,h,i]perylene	4216667		1314	
	Phenol	83.17		7	
TPHs	Aliphatic C5-C6	631		16	
	Aliphatic C6-C8	3162.3		28	
	Aliphatic C8-C10	31623		60	
	Aliphatic C10-C12	316228		102	
	Aliphatic C12-C16	316228		440	
	Aliphatic C16-C21	398107171		530	
	Aliphatic C21-C35	398107171		730	
	Aliphatic C5-C35	398107171		730	
	Aromatic C5-C7	79.4		16	
	Aromatic C7-C8	251.2		28	
	Aromatic C8-C10	1259		60	
	Aromatic C10-C12	3162.3		102	
	Aromatic C12-C16	6310		440	
	Aromatic C16-C21	15849		530	
	Aromatic C21-C35	125893		730	
	Aromatic C5-C35	125893		730	

Plate 7.2: P20 Modelling Parameter Justifications (Kd and Halflife) used by LandWise (reproduced from LandWise information from EPA:Partition Coefficients for Metals in Surface Water, Soil and Waste, July 2005 (EPA/600/R-05/074)

Contaminant	Maximum Recorded Exceedance (µg/l)	Target Value (µg/l)	Target Value Source	Final Concentration (µg/l)
Lead	BH02 4.11ug/l	1.20	EA EQS	$2.48X10^{-32}$
Mercury	BH02 24.29ug/l	0.07	EA EQS	$2.44X10^{-19}$
Zinc	BH01 63.52 ug/l	10.9	EA EQS	$5.50X10^{-58}$
Cyanide	BH02 13ug/l	1	EA EQS	1.03
Aliphatic C10-C12	BH01 11ug/l	1.0	LoD	$3.38X10^{-176}$
Aliphatic C12-C16	BH01 23ug/l	1.0	LoD	$7.13X10^{-84}$
Aliphatic C16-C21	BH01 130ug/l	1.0	LoD	$1.56X10^{-78}$
Aliphatic C21-C35	BH01 600ug/l	1.0	LoD	$2.34X10^{-66}$
Aromatic C10-C12	BH08 54ug/l	1.0	LoD	$4.95X10^{-149}$
Aromatic C12-C16	BH08 160ug/l	1.0	LoD	$2.87X10^{-73}$
Aromatic C16-C21	BH08 130ug/l	1.0	LoD	$6.69X10^{-64}$
Aromatic C21-C35	BH01 280 ug/l	1.0	LoD	$8.97X10^{-54}$
Naphthalene	BH02 170ug/l	2.0	EA EQS	$2.14X10^{-83}$
Acenaphthylene	BH01 0.28 ug/l	0.01	LoD	$6.07X10^{-164}$
Acenaphthene	BH02 120ug/l	0.01	LoD	$2.97X10^{-94}$
Fluorine	BH02 89ug/l	0.01	LoD	$9.55X10^{-123}$
Phenanthrene	BH02 450ug/l	0.01	LoD	$6.26X10^{-66}$
Anthracene	BH02 130ug/l	0.1	EA EQS	$4.15X10^{-43}$
Fluoranthene	BH02 450ug/l	0.0063	EA EQS	$1.35X10^{-43}$
Pyrene	BH02 410ug/l	0.01	LoD	$1.50X10^{-22}$
Benzo[a]anthracene	BH02 170ug/l	0.01	LoD	$6.74X10^{-35}$
Chrysene	BH02 130ug/l	0.01	LoD	$1.75X10^{-31}$
Benzo[b]fluoranthene	BH02 220ug/l	0.00017	EA EQS	$6.58X10^{-37}$
Benzo[k]fluoranthene	BH02 110ug/l	0.00017	EA EQS	$7.60X10^{-19}$
Benzo[a]pyrene	BH02 160ug/l	0.00017	EA EQS	$6.19X10^{-40}$
Indeno(1,2,3-c,d)Pyrene	BH02 110ug/l	0.00017	EA EQS	$8.36X10^{-34}$
Dibenz(a,h)anthracene	BH02 25ug/l	0.01	LoD	$3.56X10^{-30}$
Benzo(g,h,i)perylene	BH02 110ug/l	0.00017	EA EQS	$9.35X10^{-36}$

Plate 7.3: Results of the P20 Modelling to Ram's Brook produced by LandWise

Based on the modelling carried out by LandWise the final concentration of contaminants are all below the appropriate guideline values. As such there is not considered to be a risk to Ram's Brook from the subject site.

Principal Aquifer

With regards to the groundwater receptor, the principal aquifer, LandWise used the parameters listed in Plate 7.4 and 7.5 with the results presented in Plate 7.6:

Criteria	Value Utilised (Superficial Soils)	Value Utilised (bedrock)	Justification
Width of plume in aquifer at source	165m		The width of plume is the distance between wells laterally or down gradient where samples did not record an elevated contaminant concentration. Where the plume is not constrained by the data collected, we consider using the width of the site to be an appropriately conservative approach
Plume thickness at source	BH01 – 0.768m BH02 – 0.953m BH03 – 0.934m BH08 – 0.920m		Plume thickness has been estimated at 10% saturated aquifer thickness, as most contaminant plumes typically only affect the top half meter of the aquifer, or beyond the top half meter, the contaminant will quickly mix to a lesser concentration.
Saturated aquifer thickness	BH01 – 7.68m BH02 – 9.53m BH03 – 9.34m BH08 – 9.20m		Utilises depth of water recorded in borehole with maximum exceedances of contamination. BH01 = GW level recorded between 2.32mbgl and rockhead level conjectured at 10.00mbgl = 7.68m water column BH02 = GW level recorded between 0.47mbgl and rockhead level conjectured at 10.00mbgl = 9.53m water column BH03 = GW level recorded between 0.66mbgl and rockhead level conjectured at 10.00mbgl = 9.34m water column BH08 = GW level recorded between 0.80mbgl and rockhead level conjectured at 10.00mbgl = 9.2m water column
Bulk density of aquifer materials	2.01 g/cm^3	2.185 g/cm^3	Testing of the site soils (made) indicated to have a minimum bulk density of 2.01 g/cm^3). The average bulk density of the natural clay soils is indicated to be
			2.126g/cm^3. We have utilised 2.01g/cm^3 as this is considered more conservative. https://gpg.geosci.xyz/ - Sandstone bulk density Field derived values for sandstone were not collected, and as per the literature, values range from 1.61 g/m3 to 2.76 g/m3. As such, a mid-value of 2.185 m/g3 has been utilised in our assessment
Effective porosity of aquifer	55 fraction	20 fraction	Freeze and Cherry (1979) indicated glacial till to have a porosity of between 0.40 and 0.70 so we have used the mean of 0.55. Freeze and Cherry (1979) indicated sandstone to have a porosity of 0.20.
Hydraulic gradient	0.1		The hydraulic gradient in the north Merseyside Permo-Triassic sandstone aquifer is reported to be very low. We have utilised a value of 0.1

Plate 7.4: P20 Modelling Parameter Justifications used by LandWise (reproduced from LandWise information)

Criteria	Value Utilised (Superficial Soils)	Value Utilised (bedrock)	Justification
Hydraulic conductivity of aquifer	0.000864 m/day	0.0864 m/day	The academic value for glacial till is 10^{-7} to 10^{-1}. The academic value for silty sand is 10^{-5} to 10^{-1} .We have used a value of 10^{-6} as this is considered conservative. From the site investigation undertaken it is known that the made ground deposits are underlain by cohesive glacial till soils. The academic value for sandstone is 10^{-8} to 10^{-3}. We have utilised 10^{-4} which we consider to be conservative. Source: Freeze and Cherry (1979).
Distance to compliance point	BH01 – 220m BH02 – 210m BH03 – 135m BH08 – 240m	250m	250m as per EA guidance (urban environment)

Plate 7.4 (continued): P20 Modelling Parameter Justifications used by LandWise (reproduced from LandWise information)

	Substance	Kd (l/kg)	Reference	Half Life (days)	Reference
Metals	Zinc	30651	EPA 2005	Metal – assumed no decay	N/A
	Mercury	6309			
	Selenium	923.4			
	Cadmium	3981			
	Copper	8175			
	Lead	15849			
	Nickel	5629.5			
PAHs	Naphthalene	1700579		258	Howard et al. – document presents half-lives as a range, and so the most conservative value was utilised.
	Acenaphthylene	234897		120	
	Acenaphthene	2834714		204	
	Fluorene	1709756		120	
	Phenanthrene	142969599		401.5	
	Fluoranthene	10926014		879.65	
	Anthracene	4196816		919.8	
	Pyrene	13577369		3796	
	Benzo(a,h)anthracene	6165924		1361.45	
	Chrysene	5956863		2000	
	Benzo[b]fluoranthene	4049020		1219	
	Benzo[k]fluoranthene	2272222		4270.5	
	Benzo[a]pyrene	6659477		1058.5	
	Indeno(1,2,3-c,d)Pyrene	2919608		1460	
	Benzo[g,h,i]perylene	4216667		1314	
	Phenol	83.17		7	
TPHs	Aliphatic C5-C6	631		16	
	Aliphatic C6-C8	3162.3		28	
	Aliphatic C8-C10	31623		60	
	Aliphatic C10-C12	316228		102	
	Aliphatic C12-C16	316228		440	
	Aliphatic C16-C21	398107171		530	
	Aliphatic C21-C35	398107171		730	
	Aliphatic C5-C35	398107171		730	
	Aromatic C5-C7	79.4		16	
	Aromatic C7-C8	251.2		28	
	Aromatic C8-C10	1259		60	
	Aromatic C10-C12	3162.3		102	
	Aromatic C12-C16	6310		440	
	Aromatic C16-C21	15849		530	
	Aromatic C21-C35	125893		730	
	Aromatic C5-C35	125893		730	

Plate 7.5: P20 Modelling Parameter Justifications (Kd and Halflife) used by LandWise (reproduced from LandWise information from EPA:Partition Coefficients for Metals in Surface Water, Soil and Waste, July 2005 (EPA/600/R-05/074)

Contaminant	Maximum Recorded Exceedance (µg/l)	Target Value (µg/l)	Target Value Source	Final Concentration (µg/l)
Arsenic	BH02 21.40ug/l	10	MRV/DWS	0.524
Nickel	BH02 24.29ug/l	20	MRV/DWS	0.209
Sulphate	BH02 310ug/l	250	MRV/DWS	18.8
Aliphatic C10-C12	BH02 310ug/l	1.0	LoD	$1.46X10^{-24}$
Aliphatic C12-C16	BH01 23ug/l	1.0	LoD	$7.44X10^{-11}$
Aliphatic C16-C21	BH01 130ug/l	1.0	LoD	$9.36X10^{-11}$
Aliphatic C21-C35	BH01 600ug/l	1.0	LoD	$1.86X10^{-7}$
Aromatic C10-C12	BH08 54ug/l	1.0	LoD	$2.46X10^{-25}$
Aromatic C12-C16	BH08 160ug/l	1.0	LoD	$7.80X10^{-11}$
Aromatic C16-C21	BH08 130ug/l	1.0	LoD	$8.91X10^{-11}$
Aromatic C21-C35	BH01 280 ug/l	1.0	LoD	$8.69X10^{-8}$
Naphthalene	BH02 170ug/l	0.1	LoD	$9.19X10^{-15}$
Acenaphthylene	BH01 0.28 ug/l	0.01	LoD	$1.40X10^{-25}$
Acenaphthene	BH02 120ug/l	0.01	LoD	$4.94X10^{-17}$
Fluorene	BH02 89ug/l	0.01	LoD	$5.51X10^{-23}$
Phenanthrene	BH02 450ug/l	0.01	LoD	$5.62X10^{-11}$
Anthracene	BH02 130ug/l	0.01	LoD	$2.14X10^{-5}$
Fluoranthene	BH02 450ug/l	0.1	DWS	$1.33X10^{-6}$
Pyrene	BH02 410ug/l	0.01	LoD	$4.40X10^{-2}$
Benzo[a]anthracene	BH02 170ug/l	0.01	LoD	$2.89X10^{-5}$
Chrysene	BH02 130ug/l	0.01	LoD	$3.86X10^{-4}$
Benzo[b]fluoranthene	BH02 220ug/l	0.1	MRV/DWS	$1.46X10^{-5}$
Benzo[k]fluoranthene	BH02 110ug/l	0.1	MRV/DWS	$2.00X10^{-2}$
Benzo[a]pyrene	BH02 160ug/l	0.01	MRV/DWS	$2.95X10^{-6}$
Indeno(1,2,3-c,d)Pyrene	BH02 110ug/l	0.1	MRV/DWS	$3.29X10^{-5}$
Dibenzo(a,h)anthracene	BH02 25ug/l	0.01	LoD	$4.85X10^{-5}$
Benzo(ghi)perylene	BH02 110ug/l	0.1	MRV/DWS	$1.39X10^{-5}$

Plate 7.6: Results of the P20 Modelling to the principal aquifer produced by LandWise

Based on the modelling carried out by LandWise the final concentration of contaminants are all below the appropriate guideline values for all contaminants where a guideline value exists. While the value for pyrene is noted to exceed the final concentration criteria the target value is based on the limit of detection as no assessment criteria currently exists for pyrene. Additionally, it is likely that the thickness of clay present below the made ground on site will act to insulate the principal aquifer from the made ground above. The proposed end use of the site is also to be almost entirely hardstood which will minimise infiltration.

Based upon the above modelling carried out by LandWise the risk to the principal aquifer within the bedrock is considered to be low and no further works are recommended.

7.5. Ground Gas Assessment

As the proposed development of a car park will not contain any buildings or enclosed spaces, gas build up is not considered to be a significant risk as such the risk from hazardous ground was is considered to be low and no monitoring has been carried out.

However, should buildings be proposed in the future a ground gas assessment will need to be undertaken which should include an appropriate period of gas monitoring due to the identified significant thickness of made ground onsite with organic contents higher than 3%.

7.5.1. Radon

The site is in an area where radon protection measures are not required, additionally the end use contains no buildings or confined spaces as such the risk from radon is considered to be low.

8. WASTE ASSESSMENT

8.1. Waste Material

The following section provides classification of typical soil materials identified on site during the recent Ground Investigation and the bund investigation works

Waste classification should be based on analyses that are representative of the particular waste load, so it is normally not possible to classify the soils at the investigation stage, since the materials that will become waste have generally not been defined yet. Ground investigation data can however provide a useful guide to the likely waste classification and can indicate the scale of the classification analyses that will be required after the waste has been defined and before it is generated.

8.1.1. Identification of Hazardous Properties

Results from all soil samples that underwent the full contamination suite were input into a Soils Characterisation Assessment Tool (CAT-Waste Soil) to identify whether soils on site had hazardous properties.

Only three samples returned hazardous properties. Thirty-six returned non-hazardous properties. All twenty bund samples returned non-hazardous properties.

The following hazardous properties were identified.

NUMBER	LOCATIONS	HAZARD	HAZARD PROPERTIES
3	BH19 (0.50m) TP108 (1.00m) TP111 (0.20m)	HP8	Waste which on application can cause skin corrosion.

Table 8.1: Hazardous Properties Summary.

This is most likely due to a high pH produced by concrete crush within the soils. The Haz-Waste Soil output sheet is included as Appendix 6.

We understand from Beech that ACM may have been buried in the bund adjacent to the east of the site. Although this investigation did not uncover any buried ACM, it may be present in locations not investigated, it is therefore recommended that as part of due diligence, a watching brief is maintained during excavation by a qualified person and that groundworkers be asbestos awareness trained as a minimum.

8.1.2. Waste Management

All earthworks' operations should be carried out in accordance with relevant waste management regulations. This should comprise one of the following routes:

- Environmental Permit – Authorising use of waste.
- Exemptions – Appropriate exemptions in place from EA/LPA.
- CL:AIRE Definition of Waste Code of Practice.
- WRAP Protocol – Demonstrates material is no longer waste

Confirmation of which approach is to be adopted is required from the Contractor.

9. GEOTECHNICAL TESTING AND ASSESSMENT

9.1. Introduction

This geotechnical assessment and the subsequent recommendations will use the findings of the investigation and the results of the in-situ and laboratory geotechnical testing carried out in the boreholes and trial pits, and on representative samples of the materials encountered across the site.

This section discusses the key geotechnical characteristics of each encountered stratum as determined from field observations, in-situ and laboratory geotechnical testing.

Please refer to Section 6 for further discussion on each stratum.

9.2. In – Situ Testing

9.2.1. Standard Penetration Testing (SPT)

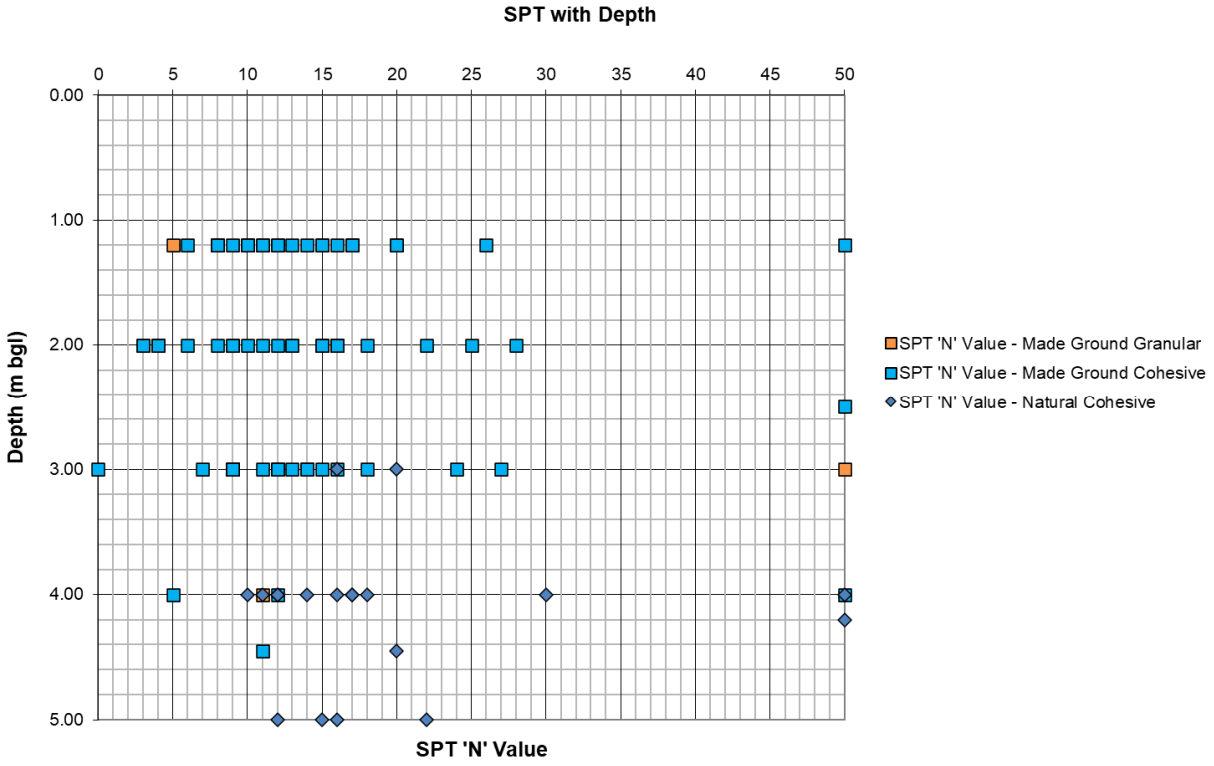
SPTs were completed throughout the drilling process to confirm refusal. SPT is an in-situ dynamic penetration test designed to provide information on the geotechnical engineering properties of soil. The test is completed using a 63.5kg drop hammer weight, over a 750mm drop, measuring the blow counts for six, 75mm increments. The first two values are recorded as seating blows, with the remaining four values, added together to provide an 'N-value'.

Graph 9.1 overleaf shows the SPT results for test locations.

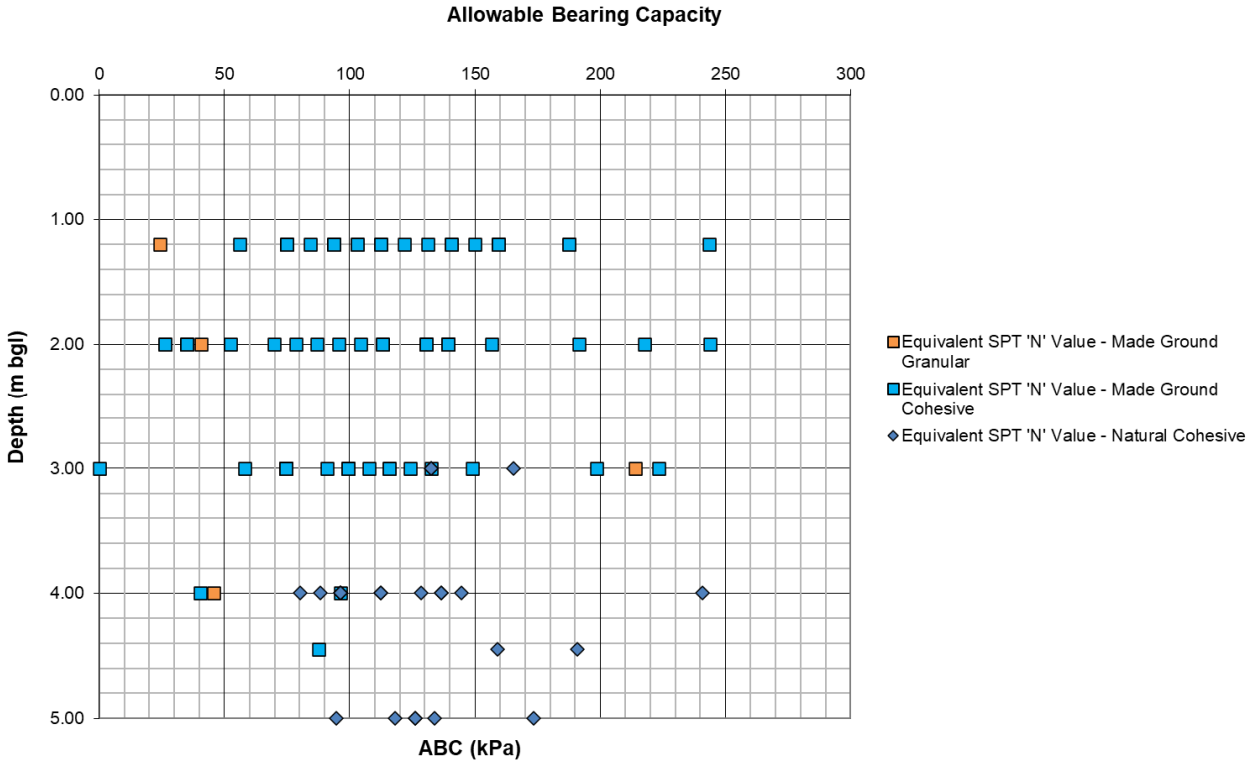
These results show a fairly wide spread at all depths tested. Refusals ('N' = 50) are likely the result of oversize such as brickworks and concrete noted within the trial pits.

Engineering logs showing the full test results are included in Appendix 2.

Graph 9.2 shows the converted SPT values to approximate Allowable Bearing Capacity for a strip foundation using a Factor of Safety of 2.5. This is to provide guidance as to the strength of the strata.



Graph 9.1: SPT 'N' Value with depth.



Graph 9.2: Allowable Bearing Capacity with depth.

9.2.2. Dynamic Cone Penetrometer testing (DCP)

Equivalent CBR values from the DCP results have been calculated and are provided in Appendix 2.

Exceptionally high or low CBR results which deviate from the expected best fit line are most likely due to the driving of coarse gravel or cobble sized particles.

Generally, the ground was very hard with high CBR values reported, and although they values ranged significantly the minimum reported value was 11.4%.

9.3. Laboratory Testing

The complete geotechnical results are included in Appendix 7.

9.3.1. Moisture Content & Atterberg tests

3 no. samples underwent Moisture Content & Atterberg limits testing to determine the consistency limits. The results are shown in Table 9.1 below. Below includes a summary of the Atterberg Limits and calculated modified plasticity index as detailed in the NHBC standards (modified plasticity index = plasticity index x % less than 425µm sieve / 100%).

SAMPLE ID	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425µm (%)	Modified Plasticity Index (%)
BH07 4.30m	19.3	30	18	12	61	7.32
BH14 2.50m	17.5	34	19	15	65	9.75
BH21 3.50m	23.6	28	15	13	73	9.49

Table 9.1: Atterberg Limits.

The modified plasticity index is between 7.32% and 9.75%. This characterises the clay as having a low volume change potential.

9.3.2. Particle Size Distribution Test (PSD)

Table 9.2 summarises the findings of PSD testing carried out on samples collected across the site and within the bund.

SAMPLE ID	Soil type	Passing 60mm (%)	Passing 2mm (%)	Passing 0.06mm (%)
BH01 0.00-0.50m	MADE GROUND	100	23	10
BH01 1.00-1.90m	MADE GROUND	100	88	72
BH02 2.00-3.00m	MADE GROUND	100	74	51
BH03 1.20-2.00m	MADE GROUND	100	73	44
BH04 2.00-2.90m	MADE GROUND	100	90	67
BH06 1.80m	MADE GROUND	100	37	12
BH07 0.00-0.50m	MADE GROUND	100	26	13
BH08 0.00-0.50m	MADE GROUND	100	4	2
BH10 1.00-1.50m	MADE GROUND	100	62	33
BH11 0.00-0.50m	MADE GROUND	100	31	10
BH12 0.00-0.80m	MADE GROUND	100	94	70
BH18 0.00-0.50m	MADE GROUND	100	21	10
BH18 3.00-3.90m	Natural Clay	100	94	75
BH23 0.50-1.00m	MADE GROUND	100	74	42
BH24 0.00-0.50m	MADE GROUND	100	37	18
SP01 1.50m	MADE GROUND (Bund)	96	74	41
SP02 2.20m	MADE GROUND (Bund)	100	70	38
SP03 1.20m	MADE GROUND (Bund)	95	62	36
SP04 1.00m	MADE GROUND (Bund)	100	76	40
SP05 1.50m	MADE GROUND (Bund)	97	71	33
SP06 1.20m	MADE GROUND (Bund)	100	71	41
SP07 0.50m	MADE GROUND (Bund)	100	73	38
SP07 1.70m	MADE GROUND (Bund)	100	71	31
SP08 1.50m	MADE GROUND (Bund)	100	64	26
SP09 0.60m	MADE GROUND (Bund)	100	77	49
SP09 2.00m	MADE GROUND (Bund)	100	84	47

Table 9.2: Particle Size Distribution testing results.

The Particle Size Distribution of the bund material is similar to that of the made ground present beneath the gravel layer onsite.

9.3.3. Undrained Multistage Triaxial Compression Tests

Five samples were obtained from the superficial geology and submitted for undrained multi stage triaxial testing.

SAMPLE ID	Moisture Content (%)	Bulk Density (Mg/m^3)	Failure Mode	Undrained Shear Strength (kPa)	Angle of Internal Friction (°)
BH01 4.80m	18	2.00	Plastic	58	4.2
BH07 4.40m	19	2.23	Plastic	52.7	6.1
BH14 2.60m	21	2.06	Intermediate	13.5	4.5
BH15 4.60m	15	2.22	Plastic	89.1	6.7
BH19 3.30m	19	2.12	Plastic	58.6	5.1

Table 9.3: Singe Stage Triaxial testing results.

9.3.4. Procter Tests

Eleven samples were taken from the material enclosed within the bund and subjected to Procter Testing. This will provide a Maximum Dry Density and Optimal Moisture content for these materials when compacted.

SAMPLE ID	Maximum Dry Density (Mg/m^3)	Optimum Water Content (%)	Natural Water Content (%)
SP01 1.50m	1.83	12	18.2
SP02 2.20m	1.69	13	21.0
SP03 1.20m	1.76	14	17.7
SP04 1.00m	1.70	12	21.3
SP05 1.50m	1.67	13	23.3
SP06 1.20m	1.73	13	14.3
SP07 0.50m	1.71	16	16.9
SP07 1.70m	1.67	15	26.8
SP08 1.50m	1.65	14	21.2
SP09 0.60m	1.85	12	15.8
SP09 2.00m	1.81	13	18.0

Table 9.4: Proctor Test results, Bund material.

All samples have been plotted far to the left of the 0% air voids line on the graph. This is likely an artifact of the assumed particle density of 2.65 Mg/m^3

This gives an average Maximum Dry Density (MDD) of 1.73 and an Optimum Moisture Content (OMC) of 13.36%. The average received moisture content of the material within the bund is 19.5%.

In order to achieve compaction to 95% of the MDD it is likely that the moisture content of the bund material will have to be reduced.

Given the presence of asbestos within the bund drying by turning or windrows may not be appropriate, it may be more reasonable to add lime to lower the moisture content of the soil. This may add significant cost to the process through the importation of lime, use of specialist machinery and the need for safety measures when handling and mixing lime.

9.3.5. pH/ Total Potential Sulphate

39 no. representative samples of the exploratory holes underwent pH and Total Potential Sulphate as SO_4 testing to determine the pH level and sulphate content of the material. The results are shown in Table 9.5 below.

SAMPLE ID	pH value	Total Potential Sulphate (SO_4 %)	Concrete classification design class	Aggressive chemical environment for concrete class
BH01 0.80m	9.4	0.03	DS-1	AC-1s
BH02 3.00m	10.4	0.06	DS-1	AC-1s
BH03 3.00m	10.4	0.10	DS-1	AC-1s
BH04 0.50m	8.5	0.23	DS-1	AC-1s
BH05 1.00m	9.3	0.10	DS-1	AC-1s
BH06 1.00m	9.0	0.43	DS-2	AC-1s
BH07 3.00m	9.8	0.21	DS-1	AC-1s
BH08 0.50m	10.4	0.17	DS-1	AC-1s
BH09 2.00m	10.5	0.22	DS-1	AC-1s
BH10 3.00m	10.5	0.40	DS-2	AC-1s
BH11 0.50m	11.3	0.46	DS-2	AC-1s
BH12 2.00m	9.5	0.21	DS-1	AC-1s
BH13 0.80m	11.2	0.23	DS-1	AC-1s
BH14 0.50m	10.3	0.22	DS-1	AC-1s
BH15 3.00m	10.2	0.18	DS-1	AC-1s
BH16 0.50m	10.3	0.14	DS-1	AC-1s
BH18 0.80m	10.6	0.18	DS-1	AC-1s

SAMPLE ID	pH value	Total Potential Sulphate (SO_4 %)	Concrete classification design class	Aggressive chemical environment for concrete class
BH19 0.50m	11.5	0.23	DS-1	AC-1s
BH20 1.00m	9.9	0.10	DS-1	AC-1s
BH21 0.80m	10.2	0.12	DS-1	AC-1s
BH22 2.50m	9.0	0.05	DS-1	AC-1s
BH23 1.00m	7.8	0.05	DS-1	AC-1s
BH24 0.80m	8.5	0.11	DS-1	AC-1s
BH25 0.80m	11.3	0.33	DS-2	AC-1s
TP01 0.50m	8.4	0.13	DS-1	AC-1s
TP02 0.50m	8.9	0.05	DS-1	AC-1s
TP03 0.50m	9.8	0.12	DS-1	AC-1s
TP04 0.40m	9.8	0.08	DS-1	AC-1s
TP05 0.50m	8.6	0.15	DS-1	AC-1s
TP06 0.80m	10.2	0.31	DS-2	AC-1s
TP07 0.20m	10.6	0.58	DS-2	AC-1s
TP08 1.00m	11.6	0.49	DS-2	AC-1s
TP09 0.80m	10.8	0.68	DS-2	AC-1s
TP10 0.50m	10.6	0.26	DS-2	AC-1s
TP11 0.20m	11.8	0.35	DS-2	AC-1s
TP12 0.60m	9.2	0.14	DS-1	AC-1s
TP13 2.20m	10.0	0.09	DS-1	AC-1s
TP14 1.20m	10.1	0.15	DS-1	AC-1s
TP15 1.00m	8.9	0.13	DS-1	AC-1s

Table 9.5: pH/Sulphate Results.

BRE SD1 recommends in this case, that the value taken for the site as a whole should be the mean of the highest 20% of the sulphate test results. As there are thirst nine samples the top eight shall be averaged to provide the characteristic value for the site.

Ten out of thirty nine samples of the soil returned slightly elevated sulphate levels.

Sulphate resistant concrete will be required for any infrastructure that comes into contact with the made ground. It is likely that DS-2 AC-1 will be required.

9.4. Pavement Foundations

Generally, the thickness of pavement foundations is dependent on the traffic load. However, as a minimum it is recommended that all material to be used in the top 450mm of the road surface shall be non-frost susceptible.

For road construction in weaker ground (<2.5% CBR or around 30MPa, Surface Dynamic Modulus) the subgrade will require improvement through stabilisation or capping. Capping layer is obligatory if the CBR is less than 2.5%. As such in this case a capping layer will not be required as the made ground subgrade provides a minimum CBR or 11%, and it will be suitable to construct roads of subbase and running top.

The material across the site, though varying in its level of compaction, is well compacted and should achieve suitable CBR values for a car park if re-used. However it is recommended that proof rolling of the surface be undertaken once any stripping work has been done to help homogenise the surface and allow the identification and removal of any oversize present close to the surface.

Site won materials can then be emplaced in order to raise levels of the site. A minimum 5% CBR value is required where materials have been emplaced.

9.4.1. Building foundations

Currently the development does not include any building structures. However, should small buildings such as security cabins be required, due to the deep made ground traditional shallow foundation are not recommended however, it may be suitable to provide raft foundations on the suitably tested and validated compacted material emplaced on the site for such small buildings. Made ground is not generally considered a suitable founding strata unless it can be homogenised and improved via ground engineering.

9.4.2. Ground Improvement

It is understood that some excavation and re-compaction of the site will be undertaken before the build-up of the subbase for the car park. This will help homogenise the compaction across the site.

9.5. Foundations – General

Other foundation solutions and ground improvement solutions are available and may be suitable dependant on the design loads. It may be necessary for a suitable risk assessment and cost / benefit analysis to be carried out by the foundations designer's at the appropriate time.

The above recommendations are based on interpolation of ground conditions between exploratory hole locations and interpretation should take the access restrictions at the time of investigation into account.

9.6. Infiltration Drainage

A total of 4no. soakage tests inline with BRE365 were undertaken by LandWise during the ground investigation works. 3no. of the tests were noted to fail with no significant infiltration recorded during a 3-hour period. The soils noted in the 4th location, SA04 were noted to have a permeability of $1.18x10^{-4}$. With meaningful infiltration only noted in 1no. location and the presence of deep made ground across the site it is considered unlikely that the site is suitable for a soakaway-based drainage system

9.7. Site Clearance

It is recommended that the site be cleared in line with Manual of contract Documents for Highways Work NG200 vol.2.

Vegetation and all topsoil shall be removed from the areas across the site (this may be deeper in previously stockpiled areas of topsoil such as the vicinity of TP114 and TP115)) and the subgrade shall be visually inspected for any voids, organics or soft spots. Any 'soft spots' such as areas of historic infilling or obvious timber and deleterious materials and 'hard spots' such as the remains of brickwork, concrete and infrastructure which could lead to differential settlement, can be removed and the resulting voids infilled with a suitably engineered and compacted granular material.

Proof rolling of the subgrade prior to infilling is recommended once the above has been confirmed. Once proof rolled a geogrid may be installed, if deemed appropriate.

It is understood that the bunds bounding the east of the site will also be incorporated into the proposed works. If constructed to the previous Arcadis specification these too should have a minimum 400mm layer of topsoil over a membrane.

9.8. Earthworks

Materials required for raising levels onsite and providing a suitable subbase to the proposed car park will need to be suitably engineered. It is recommended that such material be tested in order to provide a method specification and that, once emplaced, a limited amount of plate testing is undertaken to provide assurance that the material us suitably and uniformly compacted.

It is recommended that any soils to be used as earthworks material onsite be tested for human health purposes.

Geotechnical testing, such as Procter Tests are recommended to provide the Optimum Moisture Content (OMC) and Maximum Dry Density (MDD) for the soil. Laboratory CBR tests can then be undertaken at 95% MDD to check that the material, once compacted, will provide a suitable CBR value for the proposed works.

Any material that is not suitable for use will need to be disposed of.

Unacceptable material for use as backfill as part of the works shall comprise:

- Topsoil
- Peat, materials from swamps marshes or bogs.
- Logs, stumps or perishable material.
- Clay having a liquid limit exceeding 90% or a plasticity index exceeding 65%.
- Material susceptible to spontaneous combustion.
- Materials in a frozen condition
- Material having hazardous chemical or physical properties requiring special measures for its excavation, handling, storage, transportation, deposition and disposal;
- Any visible asbestos containing materials or material with asbestos concentrations that 0.1%v/v.

Topsoil is not considered a geotechnically suitable material and all topsoil present onsite and within the capping of the bund will need to be either used in landscaping or disposed of appropriately.

The soils encapsulated within the bund appear to be suitable for use onsite from a human health and contaminated land perspective, with no elevations noted when compared to the relevant assessment criteria.

The encapsulated soils themselves have an organic content below 5% but will require all the organic or perishable material noted during the investigation works, e.g. timbers, to be removed.

10. CONCEPTUAL SITE MODEL/ RISK ASSESSMENT

10.1. Sources

Following investigations conducted to date and screening of chemical analysis results, the following contaminant sources have been identified:

- Asbestos fibres present within soil samples.

No other sources of contamination have been identified during ground investigation works.

10.2. Pathways

The key environmental pathways and exposure routes by which potentially toxic substances may possibly reach the identified potential receptors are considered to be:

10.2.1. Indirect

- Vertical and lateral migration of organic and inorganic compounds through underlying geology associated with offsite land uses.
- Windblown dust and fibres to adjacent receptors.
- Surface run off.

10.2.2. Direct

- Inhalation of contaminated dust.
- Ingestion of contaminated dust.
- Dermal contact.

Inhalation of soil vapours and build-up of ground gas have been discounted as the proposed development is for a car park and no confined spaces will be present. Should this change, this risk will need to be re-assessed.

10.3. Receptors

Receptors that may be affected by the identified contaminant sources are considered to be:

10.3.1. Human

- Future end users
- Adjacent land users

It should be noted that there may be risk from short term exposure from contaminated soil to site workers. The Preliminary Contamination Conceptual Model deals with long term exposure to key receptors. Acute risks can be mitigated by good environmental management of the site during site works. Standard health and safety precautions (as per HSE (1991). “Protection of Workers and the General Public During Development of Contaminated Land”. London HMSO) should be adopted by all workers involved with site enabling and construction works. Therefore, this receptor is not considered in the contamination conceptual model.

10.3.2. Structural

- Buildings/structures.
- Potable water pipes.

10.3.3. Environmental

- Bedrock Principal Aquifer.
- Surface Water Ram's Brook 58m south.

11. CONTAMINATION RISK ASSESSMENT

11.1. Risk Assessment Procedure

By considering the sources, pathways and receptors (pollutant linkages), an assessment of the human health/ environmental risks is made with reference to the significance and degree of the risk. This assessment is based on consideration of whether the source contamination can reach a receptor and hence whether it is of major or minor significance.

The risk assessment has been undertaken with reference to BS 10175:2011+A1:2013 and CIRIA Document C552: Contaminated Land Risk assessment 'A Guide to Good Practice'. The risk assessment has been carried out by assessing the severity of the potential consequence, taking into account both the potential magnitude of the hazard and the sensitivity of the target, based on the categories provided below.

CATEGORY	EXAMPLES
High	Residential with gardens/Groundwater Source Protection Zone
Medium	Residential without gardens/Principal (Major) Aquifer/sensitive watercourse
Low	Commercial and industrial use/Secondary (Minor) Aquifer
Very Low	Construction and maintenance workers/non-sensitive watercourse

Table 11.1: Sensitivity of receptor

CATEGORY	EXAMPLES
Gross Impact	Heavily contaminated gasworks or industrial Site, hazardous waste landfill
Moderate Impact	Major leaks and spills from fuel infrastructure (e.g. petrol stations), domestic waste landfills
Slight Impact	Minor leaks and spills from fuel infrastructure, 'inert' waste landfills

Table 11.2: Magnitude of impact

MAGNITUDE OF IMPACT	SENSITIVITY OF RECEPTOR			
	HIGH	MEDIUM	LOW	VERY LOW
Gross Impact	Severe	Medium	Mild	Minor
Moderate Impact	Medium	Mild	Minor	Minor
Slight Impact	Mild	Minor	Minor	Minor

Table 11.3: Level of severity of potential hazard

The likelihood of an event (probability) takes into account both the presence of the hazard and target and the integrity of the pathway and has been assessed based on the categories given below.

CATEGORY	EXAMPLES
High likelihood	Pollutant linkage may be present, and risk is almost certain to occur in long term, or there is evidence of harm to the receptor
Likely	Pollutant linkage may be present, and it is probable that the risk will occur over the long term
Low likelihood	Pollutant linkage may be present, and there is a possibility of the risk occurring, although there is no certainty that it will do so
Unlikely	Pollutant linkage may be present, but the circumstances under which harm would occur are improbable

Table 11.4: Probability of risk definition

The potential severity of the risk and the probability of the risk occurring have been combined in accordance with the following matrix in order to give a level of risk for each potential hazard.

PROBABILITY OF RISK	SENSITIVITY OF RECEPTOR			
	SEVERE/ HIGH	MEDIUM	MILD/ LOW	MINOR/ V. LOW
High likelihood	Very High	High	Moderate	Low/Moderate
Likely	High	Moderate	Low/Moderate	Low
Low likelihood	Moderate	Low/Moderate	Low	Very Low
Unlikely	Low/Moderate	Low	Very Low	Very Low

Table 11.5: Level of risk for potential hazard definition

The assessment is discussed below in terms of plausible pollutant linkages. A complete assessment of the pollutant linkages is presented in Table 11.6.

A description of these risk classifications and likely action required are given in CIRIA 552 as:

Very high risk – High probability that severe harm could arise to a designated receptor from an identified hazard OR there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in substantial liability. Urgent investigation and remediation are likely to be required.

High risk – Harm is likely to arise to a designated receptor from an identified hazard. This risk, if realised, is likely to result in substantial liability. Urgent investigation is required and remedial works may be necessary in the short term and are likely over the long term.

Moderate risk – It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation is normally required to clarify risks and to determine potential liability. Some remedial works may be required in the long term.

Low risk – It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.

Very low risk – It is a low possibility that harm could arise to a designated receptor. In the event of such harm being realised it is not likely to be severe.

11.2. Pollutant Linkage Discussion

11.2.1. Development and associated Human Receptors

Proposals involve construction of a car park with no buildings or confined spaces. As such Commercial assessment criteria was deemed suitable and suitably conservative in terms of the risk assessment.

11.2.2. Contaminants in Soil

Low levels of asbestos fibres (chrysotile and amosite) were identified in made ground across the site. While not at a significant level, it is still recommended that control measures are implemented during site works. With regards to the proposed use these levels are not considered a problem, and the proposed development would have the area capped in tarmacadam, severing the pollutant linkage.

As such, with an unlikely probability and a medium consequence, the risk level from asbestos contamination is considered to be Low and no further work or remediation is required where the site is to be hardstood. In any areas of soft landscaping the probability will be likely, with a medium consequence the risk level is considered to be moderate and a cover system would be required.

Made ground was present across the site but the results of the testing did not identify any elevated levels heavy metals, PAHs or TPHCWG when compared to the relevant assessment criteria. With an unlikely probability and a medium consequence, the risk level is considered to be Low and no further work or remediation is required.

With regards to the risk from contaminants in the soil to potable water supply, A United Utilities risk assessment is recommended only IF potable water pipes be required in the proposed development.

11.2.3. Controlled Waters

The results of the groundwater testing and the subsequent modelling carried out by LandWise indicates a low risk to controlled waters and no further work or remediation is required.

11.2.4. Gas

No gas assessment has been undertaken as it is understood that the proposed development is for a car park with no buildings or confined spaces. Should this change further assessment should be undertaken.

For the proposed development this pollutant linkage is considered severed.

11.3. Pollutant Linkage Assessment

The proposed end use of the site comprises a carpark covered in a tarmacadam finish across the site, the presence of the tarmacadam will act to several the pollutant linkage to human health as such no further works or remedial measures are recommended across hardstood areas.

Should soft landscaping be incorporated in any location a moderate risk to human health from asbestos contamination within the made ground will be present as such an environmental cover system will be required in order to sever the pollutant linkage.

12. CONCLUSIONS AND RECOMMENDATIONS

12.1. Contamination

With regards to human health, asbestos has been identified within the made ground soils present on site. The proposed development of a car park will break the human health pollutant linkage where the site its hardstood. Should any areas of the site incorporate soft landscaping then a cover system will be required in those areas to ensure no pollutant linkage is complete.

A low risk to controlled waters has been established.

Ground gas and hydrocarbon vapours are not considered a risk to the site due to the proposed end use as a car park.

12.1.1. Asbestos Mitigation During Construction Works

Asbestos was identified onsite and in the previous site investigation. While no visible pieces of ACMs were noted during the walkover or investigation works it is recommended that groundworkers be briefed on the potential for ACMs to be present in the ground and that Asbestos Awareness training is undertaken.

Good environmental practice such as dampening down will help prevent any potential fibres from becoming airborne.

Ridge recommends that an appropriate 'Asbestos Management Strategy' is developed in line with CIRIA C733.

While only low levels of asbestos were encountered in the soil samples taken from the eastern bund there is a potential for caches of ACMs to be present. Safe removal of the undesirable material such as timbers with regards to the earthworks will need to be undertaken with careful control measures.

It is also recommended that, due to the potential for asbestos, any larger rubble potentially present within the bund could be buried rather than crushed, the latter of which could result in the spread of asbestos containing material.

Any ACMs identified in the bund material during the removal of earthworks incompatible material will need to be disposed of offsite in a suitable manner.

12.1.2. Waste Removal

Soils have been classified predominantly as Non-Hazardous across the site, with the exception of three samples with high pH. This is likely due to the presence of concrete crush within the made ground.

We recommend further testing when removing portions of material from the site to allow appropriate classification – this may allow significant cost savings associated with waste disposal.

12.1.3. Watching brief

A significant amount of investigation work has been undertaken across the site however it is always a possibility that previously unidentified conditions may be present on site. A watching brief should be maintained during groundworks for any evidence of unexpected contamination. Should any significant

contamination be identified the advice of an appropriately qualified and experienced geo-environmental engineer should be obtained as to the next steps.

12.2. Geotechnical

12.2.1. Foundations

Generally, the ground was noted to be hard with high CBR values reported, and although they values ranged significantly the minimum reported value was 11.4%.

For road construction in weaker ground (<2.5% CBR or around 30MPa, Surface Dynamic Modulus) the subgrade will require improvement through stabilisation or capping. Capping layer is obligatory if the CBR is less than 2.5%. As such in this case a capping layer will not be required as the made ground subgrade provides a minimum CBR or 11%, and it will be suitable to construct roads of subbase and running top.

The material across the site, though varying in its level of compaction, is well compacted and should achieve suitable CBR values for a car park if re-used. However, it is recommended that proof rolling of the surface be undertaken once any stripping work has been done to help homogenise the surface and allow the identification and removal of any oversize present close to the surface.

A CBR value of 5% is required at formation level to facilitate the construction of the carpark.

12.2.2. Groundwater

Shallow groundwater is present in places across the site and dewatering works may be required to allow excavation.

It is considered that the water is perched within the made ground and is not continuous across the site. Traditional sump and pump methods are likely acceptable to allow the excavation of the made ground to take place, however consideration may need to be given to the disposal of the water.

12.2.3. Buried Concrete

The results of laboratory pH and sulphate content indicate that sulphate resistant concrete (DS2-AC1) is required at the site in terms of the durability and structural performance where concrete is to be in contact with made ground.

12.2.4. Earthworks

All infilling and raising of levels will need to be suitably engineered. It is recommended that a suitable method specification is derived from the testing undertaken and that, once emplaced, a limited amount of plate testing is undertaken to provide assurance that the material us suitably and uniformly compacted.

13. REMEDIATION & VALIDATION

13.1.1. Remedial Requirements

At present, and prior to the implementation of remedial actions, the risk of impact to identified receptors from the identified sources is considered to be Moderate. This upper risk level relates to Made Ground contamination potentially impacting site end users in areas where soft landscaping may be present.

13.1.2. Soils

The ground investigation works discussed within this report identified contamination relating to asbestos within the made ground on site. Quantification demonstrated relatively low levels of asbestos, marginally above limits of detection. The proposed end use of a hardstood carpark will sever the human health pollutant linkage across site.

Should any areas of soft landscaping be present then a cover system will be required in order to sever the human health pollutant linkage in these areas. The cover system should comprise a minimum of 400mm of clean topsoil over a high visibility geotextile membrane where soft landscaping is present.

13.1.3. Controlled water

No remediation is required with respect to controlled waters.

13.1.4. Gas / Vapours

No remediation is required with respect to gas or vapour.

13.2. Construction Management Plan and Health and Safety

A Construction Management Plan and Method Statement should be produced which details appropriate Health and Safety measures to be employed during the site works.

Risks to site workers and adjacent receptors from contamination present in the site soils can be easily mitigated by good environmental management of the site during site works. Standard health and safety precautions (as per HSE guidance - Protection of Workers and the General Public During Development of Contaminated Land" London HMS) should be adopted by all workers involved with site enabling and construction works.

13.3. Asbestos Management

Due to the presence of asbestos containing material within made ground, it is recommended that additional precautions are taken during site clearance, earthworks and in future the construction of the proposed development. The presence of asbestos in the made ground at the site presents a potential risk of generation of airborne fibres if this material is disturbed, such as during earth moves, creating levels or excavation of existing foundations.

This risk can be managed by careful procedures and site monitoring to reduce the risk of airborne fibres, such as wetting techniques and it is recommended that an appropriate 'Asbestos Management Strategy' is developed and adopted for all intrusive ground works which disturb the made ground in the area of concern. This should be carried out in line with CIRIA C733.

This may include asbestos awareness training for all site staff, provision of suitable personal and respiratory protective equipment and air monitoring.

With regards to cement bound asbestos, this can be handpicked, doubled bagged and disposed of appropriately to a licenced landfill. Guidance on removing asbestos cement is described in HSE (2012).

If gross ACM contamination is identified in soil arisings, then soil should be placed directly into covered skips and disposed of at a suitable licenced landfill, after further testing to quantify the extent of asbestos contamination of the soils. It should be considered that blue asbestos is notifiable (if present) and must be removed by a licenced contractor.

Further risk assessment should be undertaken if any further asbestos containing material is encountered during the development works.

13.4. Materials Management

Where materials are to be excavated and re-used on site or materials imported from another site a Materials Management Plan (MMP) will be required (depending upon the volume of material). This will refer to the proposed remedial and validation works as detailed in this document and set out the proposals for re-use, off-site disposal and proposed import of materials for the development. The MMP will be refined as required following approval of the remedial strategy and as the site works progress. This will be produced following the determination of the earthwork's strategy and movement volumes by the contractor. This work will be underpinned by the CL:AIRE Code of Practice using a Qualified Person. Upon completion of the works a separate MMP validation report will be produced.

An appropriate permit will be required to allow processing of recycled aggregate, and the deployment notification should be presented to the Local Authority prior to commencement.

The CL:AIRE Industry Code of Practice (CoP) allows for remediation projects to take place without the need for formal Environmental Permitting of the deposit of excavated materials, provided that certain requirements are met and that certain protocols are observed and that there is an auditable process verified by an independent "Qualified Person".

Alternatively re-use of material should be compliant with appropriate legislation. A U1 Standard Rule Permit (U1 exemption) can be registered and allow up to 1,000 tonnes (approximately 600m cube) of non-hazardous soil, up to 5,000 tonnes (approximately 3,000m cube) of material within construction and up to 50,000 tonnes (approximately 25,000m cube) of bituminous and road sub-base in the construction of roads.

A T5 Standard Rule Permit (T5 exemption) allows the screening and recovery of 5,000 tonnes (approximately 3,000m cube) of material, such as concrete or brick for re-use in construction.

Sampling of all re-used / imported material should ensure material is 'suitable for use' and should not be classified as waste.

13.5. Site Clearance

No buildings are present on site. The site should be cleared of any fly tipped materials, residual debris and vegetation require to enable the future development works. All materials removed from site should be disposed of in line with current best practice, legislation and guidance, including where necessary to appropriately licensed waste management facility.

13.6. Breaking out and Processing of in ground structures

Any and all man-made or natural hard materials including, but not limited to, concrete slabs, tarmacadam hardstanding, brick hardstanding, concrete foundations, brickwork, foundations and relic utilities at or below the surface will be broken out across the site.

The location and depths of all below ground obstructions remaining during the remedial works will be recorded by the contractor.

All hard materials, as well as arisings, excavated out during the works which are intended for re-use shall be processed and stockpiled for chemical testing to demonstrate that they are suitable for re-use within the proposed commercial development. Ultimately site won granular fill reused within the development will require further chemical testing to be placed below the proposed cover system. As the on-construction remediation will take place during a subsequent phase of works all materials should be stockpiled appropriately as to not cause unacceptable risks to on or off-site receptors.

13.7. Breaking out and Processing of relict drainage

The condition of any relic drains below the site is not currently known.

Where present the relict drainage should be cleared prior to removal to ensure that impacted sludge, sediment and liquids are removed as far as reasonably possible. The contents of the drains are to be removed for off site disposal to a suitably licensed facility. Once cleared the drains shall be surveyed to establish that as far as possible, they are free of potentially contaminative materials before break out commences. This will ensure that the risk of any potentially contaminative substance contained within the relict drainage system is removed and the risk of release during break it is minimised.

A watching brief should be maintained by the environmental consultant during the removal or the relict drainage to check for visual or olfactory evidence of contamination in the surrounding soils and groundwater.

13.8. Stockpile Management

Stockpiled material should be suitably managed. The source of each stockpile should be recorded and appropriate validation testing for the proposed re-use or potential offsite disposal should be undertaken as required. Depending on the nature of the material the potential for dust generation or release of asbestos fibres will be mitigated by dampening down and covering as required.

Material should be segregated by type and source. For example, construction / demolition arisings, site won topsoil and site won subsoil.

A quarantine area for suspect contaminated soils should established on site. This should comprise a Visqueen (or similar) lined area with a small bund to prevent run off and to minimise the risk of contaminating other areas of the site. The material should also be covered to minimise the generation of vapours, fibres, dust and possible nuisance to adjacent receptors, and to prevent rainwater ingress which may mobilise soluble contaminants.

Potentially suitable site won material will be stockpiled separately for potential reuse as subsoil and suitable processed material will be stockpiled for potential reuse as a break layer or no-dig layer within the future cover system in areas of soft landscaping.

In order to assess the suitability of such materials each stockpile / type of material will be subjected to appropriate validation sampling and testing subject to the source and proposed use. Results should be compared to the generic assessment criteria for human health for a commercial end use.

The destination of each stockpile / source of material will be recorded and reported in the pre-construction validation report.

13.9. Disposal

13.9.1. Soils

If any made ground or natural material is required to be removed from site this should be undertaken under an appropriate duty of care and the results of chemical analysis should be provided to a licensed landfill for confirmation of waste classification.

Waste records such as disposal tickets and waste carrier licences should be provided in the Site Completion Report.

In general soils and made ground present on site were identified as non-hazardous with limited hazardous materials based on pH. Any waste to be removed from the site should be tested at the time in order to determine the most appropriate disposal route.

13.9.2. Water

Any waters encountered that require removal should be chemically assessed and disposed of in accordance with current legislation and guidance either via an appropriate discharge consent issued by the local authority or where required off site.

Any perched waters showing significant contamination should be appropriately managed and removed from site, potentially via localised dewatering of made ground and natural deposits

13.10. Watching Brief / Unexpected or Gross Contamination

Although robust Site Investigations have been carried out, no Site Investigation can inspect 100% of the ground and undiscovered contamination may be present (visual or olfactory evidence of contamination etc.). Should materials different to those revealed by the investigations carried out to date be encountered during site works, or should impacted soils be suspected, the following actions will be taken:

- Stop work in that part of the site immediately and inform the Site Manager who will document details of the discovery, including time, date and nature of materials encountered.
- An environmental consultant will then be contacted to discuss how this material will be dealt with and whether remediation recommendations should be amended.
- If underground storage tanks are identified or suspected appropriate precautions should be employed including the use of specialists to check for vapours / gases prior to removal.
- The environmental consultant will assess each occurrence on merit, should it be deemed necessary the environmental consultant shall attend site to oversee the removal of the contamination and collect validation samples.

- The Local Authority / Environment Agency will then be contacted to confirm agreement of any amendments to the remediation strategy.

- Should potentially impacted material be excavated during site works, this material will be segregated and stockpiled and an environmental consultant contacted immediately. Samples will then be taken from the stockpile and scheduled for chemical analysis to determine whether materials are suitable for re-use or if they should be removed from site.

- Subject to appropriate Health and Safety controls the excavation will remain open until validation of the removal of contamination has been completed. Where not possible to leave the excavation open for Health and Safety reasons the excavation should be backfilled with site won materials. If this is required, the location of the excavation should be accurately recorded and reopened IF required subject to the results of the validation testing.

- Suspected ACMs will be moistened and covered to reduce the chance of fibres becoming airborne; and,

- The discovery strategy methodology will be included within the site contractor's method statement.

Site work will be managed by the contractor and their site manager, who should display relevant experience of managing similar development sites, including brownfield areas.

A watching brief will be maintained for evidence of contamination during the remediation earthworks and development works.

13.11. Validation

Where required installation of the cover system should be verified throughout installation. Photographs will be provided throughout the process, and these will include photos of a measuring stick and soil depth. Alternatively, it may be necessary to excavate through the cover in a number of locations to ensure sufficient thickness has been placed. Evidence of level survey data before and after the placement of the cover system may also be used to verify the cover thickness.

13.12. Removal of Made Ground/ Waste Material

Materials that are to be removed from site will be disposed of in accordance with the *Landfill Regulations* 2005. This will involve verification that waste is not hazardous through use of a classification system such as CAT-WASTE Soil, and then subsequent Waste Acceptance Criteria (WAC) testing. Results will be provided to hauliers and landfill operators, to ensure that the materials are disposed of correctly. Should materials be revealed during site works that appear to be different to those tested, additional testing may be required, prior to disposal of such materials.

13.12.1. Verification

Haulage dockets and any correspondence with waste facilities will be provided. Laboratory certificates will be made available.

13.13. Testing of Imported Soils

All materials to be imported to site should be tested prior to delivery to site to prevent double handling and ensure their suitability. Ideally with follow on testing.

If not logistically possible soils should be segregated based on their source and type, with validation samples taken prior to placement.

The testing density and suite of analysis is required by the Local Authority and presented in Table 13.1.

In addition, all topsoil for use onsite must also adhere to BS3882 (2015) with regards to its matrix, suitability as a growing medium and its absence of sharps.

Material Type	Source	Suite of Analysis	Sampling Rate
Topsoil	Greenfield	Heavy metals / metalloids, asbestos, PAH (16 USEPA speciation), pH, water soluble sulphate and Soil Organic Matter (SOM) (or calculated from Total Organic Carbon (TOC)).	1 sample per 50m^3 (min. 3 per source)
	Brownfield / Unknown	Heavy metals/metalloids, asbestos, PAH (16 USEPA speciation), TPH (CGW banded), BETX, MTBE pH, water soluble sulphate and SOM / TOC.	1 sample per 50m^3 (min. 3 per source)
Subsoil	Brownfield / Unknown	Heavy metals/metalloids, asbestos, PAH (16 USEPA speciation), TPH (CGW banded), BETX, MTBE pH, water soluble sulphate and SOM / TOC.	1 sample per 50m^3 (min. 3 per source)
	Naturally occurring site source or imported to site	Heavy metals / metalloids, asbestos, PAH (16 USEPA speciation), pH, water soluble sulphate and Soil Organic Matter (SOM) (or calculated from Total Organic Carbon (TOC)).	1 sample per 50m^3 (min. 3 per source
	First Generation Quarried Sand	No testing required. Certificate of material provenance required.	N/A
Break Layer	Recycled Stone / 6F2	Heavy metals/metalloids, asbestos, PAH (16 USEPA speciation), TPH (CGW banded), BETX, MTBE pH, water soluble sulphate and SOM / TOC.	1 sample per 500m^3 (min. 3 per source)
	First Generation Quarried Stone	No testing required. Certificate of material provenance required.	NA

Table 13.1: Imported Soil Testing Frequencies

Any soil with visual or olfactory evidence of hydrocarbon contamination should be immediately rejected.

13.13.1. Verification of Suitability

Generic assessment criteria (GAC) are conservative contaminant concentration values used for comparison purposes to assess the risk associated with contaminant concentrations found on site and are derived using non-site-specific information.

In order to assess the soil analyses results with regard to potential human health risks, Ridge has adopted published guidance criteria widely referred to by professionals within the industry, which include the following:

- Suitable 4 Use Levels (S4ULs) Generic Assessment Criteria (GAC) developed by the Chartered Institute of Environmental Health (CIEH) in partnership with Land Quality Management Ltd. (LQM)
- Category 4 Screening Levels (C4SL) for lead, produced by CL:AIRE (2014)

In the first instance, based on the proposed future use of the site, comparisons will be made against the 'commercial' land use setting as a conservative criterion.

13.13.2. Possible Re-Use of Site-Won Soil

LCRM promotes a sustainable approach to remediation. If a sustainable approach is utilised it can help to ensure that the benefit of doing the remediation is greater than its impact. Re-use of site-won soil is significantly more sustainable than the import of all soil.

The topsoil encountered on site is likely suitable for re-use within a cover system.

Re-use of soil would be subject to verification of suitability for reuse by a Geo-Environmental consultant. A photographic record and soil logs will be kept for inclusion into the Validation Report.

- Soils must be natural
- There should be no evidence of impact to soils e.g. hydrocabon odours
- If soil characterisitcs are inconsistent or different to soils logged in (Ground Investigation) test postions within the vicinity previously, chemical testing will be required to confirm suitablilty.
  - Soil samples will be collected from each cut area and tested for asbestos, heavy metals, PAHs, TPH CWG, BTEX and MTBE – in line with the process outlined in Table 13.1, appropriate to the volume of soil.

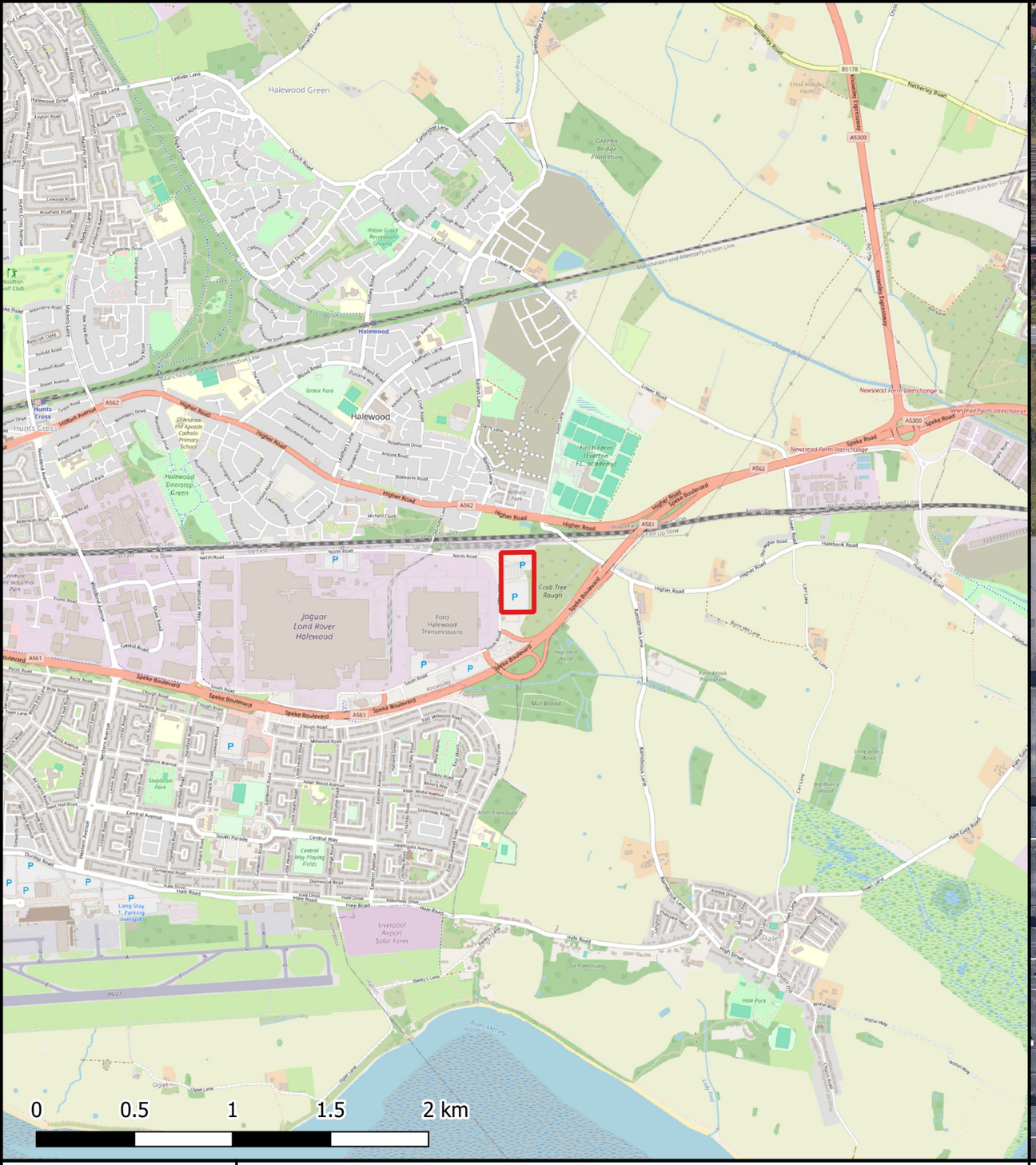
13.13.3. Verification

On completion of remedial works a Validation Report will be prepared for submission to the Statutory Authorities. The Validation Report provides a complete record of all remediation activities on site and the data collected as during the works to support compliance with the agreed remediation objectives and criteria.

The report incorporates all site data and measurements of quality-critical parameters.

The Report should be produced by a qualified environmental specialist and should include a final statement that outlines that the site is suitable for the intended use and poses minimal or no risks to identified receptors.

FIGURE 1 - SITE LOCATION PLAN





Project:	Eastlands Car Park, Speke		
Job Number:	5031818	Client:	JLR
Drawing:	5031818-Fig1	Revision:	-
Drawn:	PW	Date:	19/02/2025
Checked by:	BS	Scale:	1:25,000 / 1:2,500

Title: Site Location Plan

Ridge and Partners LLP
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www.ridge.co.uk

2nd Floor,
100 Embankment,
Cathedral Approach,
Manchester
M3 7FB

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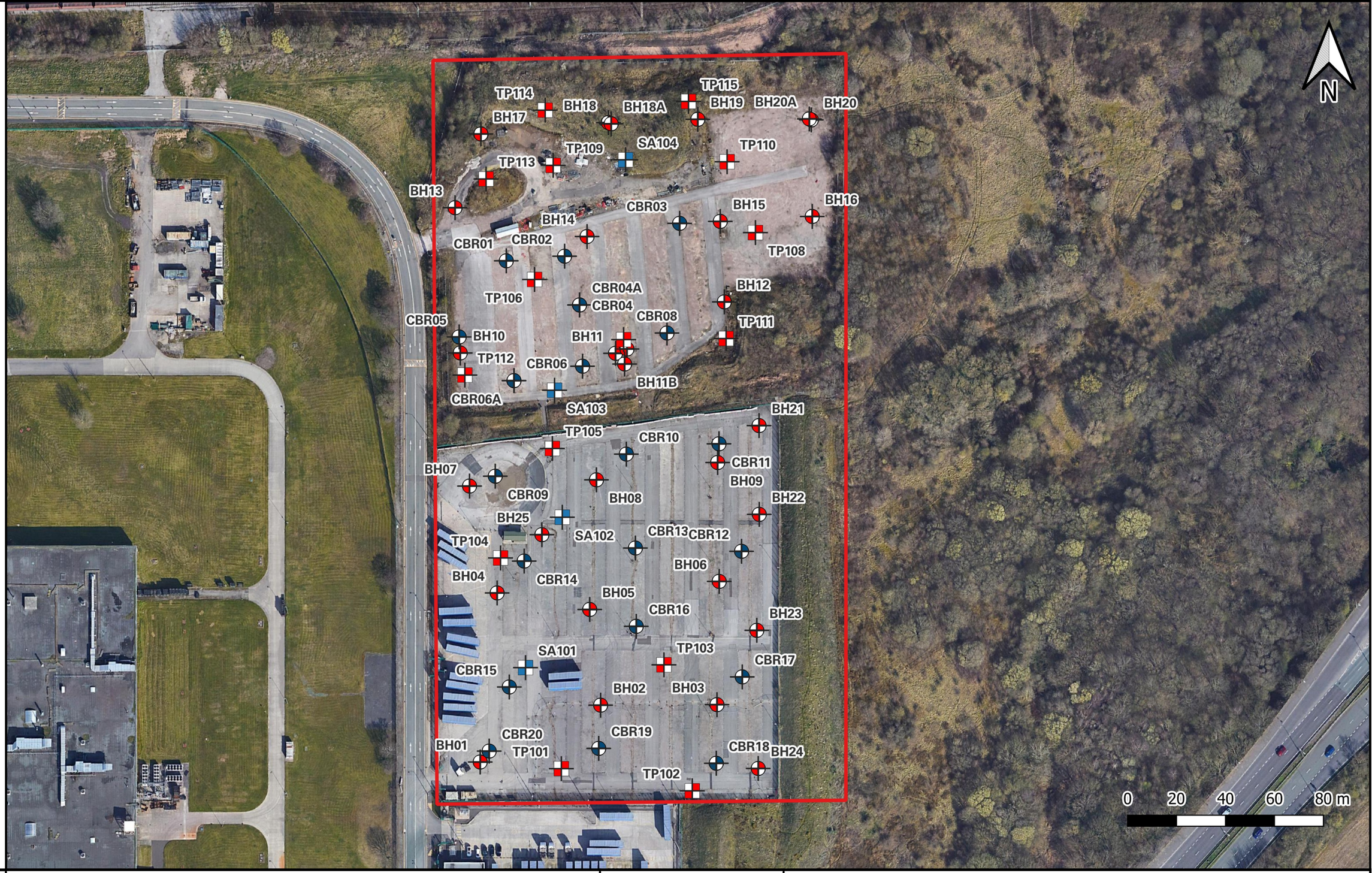
FIGURE 2 – SAMPLING LOCATION PLAN

Key

- Site Boundary

LandWise Investigation
January 2026

- DCP
- Soakaway Pit
- Trial Pit
- Window Sample



Project:	JLR Eastlands, Speke	Title:	Sampling Location Plan
Job Number:	5031818	Client:	JLR
Drawing:	5031818-Fig2	Revision:	-
Drawn:	PW	Date:	04/12/2025
Checked by:	BS	Scale:	1:1,500

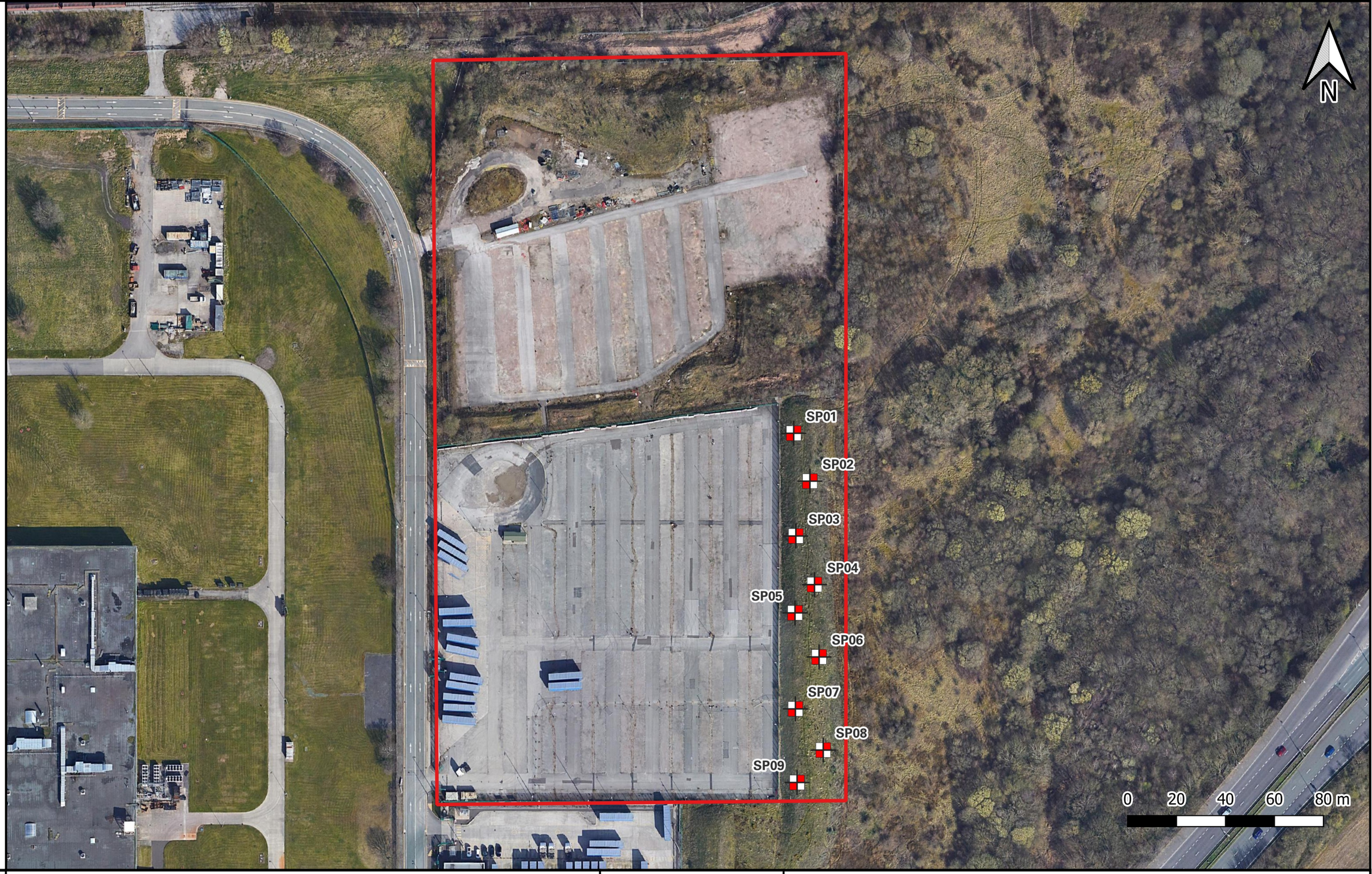
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Key

- Site Boundary
- LandWise Bund Investigation April 2026



Project:	JLR Eastlands, Speke	Title:	Bund Investigation Sampling Location Plan
Job Number:	5031818	Client:	JLR
Drawing:	5031818-Fig3	Revision:	-
Drawn:	PW	Date:	27/04/2026
Checked by:	BS	Scale:	1:1,500

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APPENDIX 1 - REPORT CONDITIONS

Report Conditions

This report is produced solely for the benefit of Jaguar Land Rover Ltd and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of future changes in the condition of the Site.

This report is based on a visual Site inspection, study of readily accessible referenced historical records, information supplied by those parties noted in the text and preliminary discussions with local and Statutory Authorities. Some of the opinions are based on unconfirmed data and information and are presented in good faith without exhaustive clarification. Where ground contamination is suspected but no physical Site test results are available to confirm this, the report must be regarded as initial advice only, and further assessment should be undertaken prior to detailed activities related to the Site. Where test results undertaken by others have been made available these can only be regarded as a limited sample. The possibility of the presence of contaminants, not revealed by this research cannot be discounted.

Whilst confident in the findings detailed within this report because there are no exact UK definitions of these matters, being subject to risk analysis, we are unable to give categoric assurances that they will be accepted by Authorities or Funds etc. without question, as such bodies may have unpublished, often more stringent objectives. This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to Ridge and Partners LLP. In time improved practices or amended legislation may necessitate a re-assessment.

The report is necessarily limited to those aspects of land contamination specifically reported on and no liability is accepted for any other aspect especially concerning gradual or sudden pollution incidents that may occur. The opinions expressed cannot be absolute due to the limitations of time and resources within the context of the agreed brief and the possibility of unrecorded previous use and abuse of the Site and adjacent Sites. The report concentrates on the Site as defined in the report and provides an opinion on surrounding Sites. If migrating pollution or contamination (past or present) exists this can only practically be better assessed following extensive on and off Site intrusive investigations and monitoring.

APPENDIX 2 – ENGINEERING LOGS

Window Sampler

BH01

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345525.85	384157.16	21.63	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.00-0.50	B					MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
		0.20	ES			(0.45)		
					21.18	0.45		MADE GROUND: Stiff locally firm brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale. Rare wood noted.
		0.50	ES					
		0.50-1.00	B					
		0.80	ES					
		1.00-1.45	D					
		1.00-2.00	U					
		1.20	SPT	N=17 (2,3/5,4,3,5)				
						(2.05)		
		2.00	SPT	N=15 (2,3/3,4,4,4)				
		2.00	ES					
		2.00-2.45	D					
		2.00-3.00	U					
					19.13	2.50		MADE GROUND: Stiff grey slightly sandy silty clay (presumed reworked).
		3.00	SPT	N=16 (2,3/3,4,4,5)		(1.00)		
		3.00-3.45	D					
		3.00-4.00	U					
					18.13	3.50		Firm brown and grey slightly silty slightly sandy slightly gravelly CLAY. Gravel is composed of subangular to subrounded fine to medium of various lithologies.
		4.00	SPT	N=14 (3,3/3,3,4,4)				
		4.00-4.45	D					
		4.00-5.00	U					
						(1.50)		
		5.00	SPT	N=15 (3,4/3,4,4,4)	16.63	5.00		*End of Borehole at 5.00m*
		5.00-5.45	D					

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	T Caddick
1.20 - 5.00m	WLS	Window Sample	T Caddick

Checked By: GD **Approved By:** GD

Created using Pebble Geo

Window Sampler

BH01

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345525.85	384157.16	21.63	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=17 (2,3/5,4,3,5)
2.00 (S)	0.00	0.00	DART577	74	N=15 (2,3/3,4,4,4)
3.00 (S)	0.00	0.00	DART577	74	N=16 (2,3/3,4,4,5)
4.00 (S)	0.00	0.00	DART577	74	N=14 (3,3/3,3,4,4)
5.00 (S)	0.00	0.00	DART577	74	N=15 (3,4/3,4,4,4)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	B		
	ES		
	ES		
	B		
	ES		
	D		
	U		
	ES		
	D		
	U		
	D		
	U		
	D		
	U		
	D		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	T Caddick
1.20 - 5.00m	WLS	Window Sample	T Caddick

Checked By: GD **Approved By:** GD

Window Sampler

BH02

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345575.03	384180.36	21.79	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Legend	Description
		0.20-0.00	ES 1			(0.30)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
					21.49	0.30		
		0.50-0.00	ES 2					MADE GROUND: Firm brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale. Rare plastic noted.
		0.50-1.00	B 1					
		1.00-0.00	ES 3					
		1.20	SPT	N=10 (2,3/3,4,1,2)				
		1.20-1.65	D 1					
		1.20-2.20	U 1	Blows: 55				
		1.80-0.00	B 2					
		2.00	SPT	N=15 (3,5/4,4,4,3)				
		2.00-0.00	ES 4					
		2.00-2.45	D 2					
		2.00-3.00	U 2	Blows: 67		(4.00)		
		3.00	SPT	N=11 (1,2/2,3,4,2)				
		3.00-0.00	ES 5					
		3.00-3.45	D 3					
		3.00-4.00	B 3					
		4.00	SPT	N=12 (2,2/3,2,3,4)				
		4.00-4.45	D 4					
					17.49	4.30		Firm grey slightly silty slightly sandy slightly gravelly CLAY. Gravel is composed of subangular to subrounded fine to medium of various lithologies.
						(0.70)		
					16.79	5.00		*End of Borehole at 5.00m*

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. Water strike at 1.50m and rising to 1.12m after 20mins. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Gerry Devlin
1.20 - 5.00m	WS	Window Sample	Gerry Devlin

Checked By: GD **Approved By:** GD

Created using Pebble Geo

GD Drilling Ltd

Window Sampler

BH02

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345575.03	384180.36	21.79	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
1.50	0.00	0.00	2026-01-20T00:00	Med flow

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
1.50	1.50	5	Med
1.50	1.40	10	Med
1.50	1.30	15	Med
1.50	1.12	20	Med

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=10 (2,3/3,4,1,2)
2.00 (S)	0.00	0.00	DART577	74	N=15 (3,5/4,4,4,3)
3.00 (S)	0.00	0.00	DART577	74	N=11 (1,2/2,3,4,2)
4.00 (S)	0.00	0.00	DART577	74	N=12 (2,2/3,2,3,4)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
GD1181-BH02-ES-1	ES		
GD1181-BH02-ES-2	ES		
GD1181-BH02-ES-3	ES		
GD1181-BH02-ES-4	ES		
GD1181-BH02-ES-5	ES		
GD1181-BH02-B-1	B		
GD1181-BH02-B-2	B		
GD1181-BH02-D-1	D		
GD1181-BH02-D-2	D		
GD1181-BH02-D-3	D		
GD1181-BH02-D-4	D		
GD1181-BH02-B-3	B		
GD1181-BH02-U-1	U		
GD1181-BH02-U-2	U		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. Water strike at 1.50m and rising to 1.12m after 20mins. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Gerry Devlin
1.20 - 5.00m	WS	Window Sample	Gerry Devlin

Checked By: GD **Approved By:** GD

Window Sampler

BH03

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345622.54	384180.57	21.60	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.10	ES 1			(0.30)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
					21.30	0.30		
		0.50 0.50-1.00	ES 2 B 1					MADE GROUND: Firm brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale. Rare wood and plastic noted.
		1.00	ES 3					
		1.20 1.20-2.00	SPT U 1	N=8 (4,6/2,2,2,2) Blows: 56				
						(2.85)		
	▼	2.00 2.00	SPT ES 4	N=22 (2,3/4,6,4,8)				
		2.80	B 2					*From 2.80m: Slight hydrocarbon odour noted. (2.80 - 3.15m)*
		3.00 3.00	SPT ES 5	N=50 for 0mm (12,13)				
					18.45	3.15		*No further progress, possible boulder obstruction.*
								End of Borehole at 3.15m

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 3.15m and terminated on possible boulder obstruction. Water strike at 2.00m and remaining at this level after 20mins. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Joel McMillan
1.20 - 3.15m	WS	Window Sample	Joel McMillan

Checked By: GD **Approved By:** GD

Window Sampler

BH03

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345622.54	384180.57	21.60	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
2.00	0.00	0.00	2026-01-20T00:00	flow

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
2.00	2.00	20	

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART560	71	N=8 (4,6/2,2,2,2)
2.00 (S)	0.00	0.00	DART560	71	N=22 (2,3/4,6,4,8)
3.00 (S)	0.00	0.00	DART560	71	N=50 for 0mm (12,13)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
GD1181-WS03-B-1	B		
GD1181-WS03-B-2	B		
GD1181-WS03-ES-1	ES		
GD1181-WS03-ES-2	ES		
GD1181-WS03-ES-3	ES		
GD1181-WS03-ES-4	ES		
GD1181-WS03-ES-5	ES		
GD1181-WS03-U-1	U		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 3.15m and terminated on possible boulder obstruction. Water strike at 2.00m and remaining at this level after 20mins. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Joel McMillan
1.20 - 3.15m	WS	Window Sample	Joel McMillan

Checked By: GD **Approved By:** GD

Window Sampler

BH04

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345532.76	384226.16	21.60	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.20	ES			(0.40)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
					21.20	0.40		
		0.50	ES					MADE GROUND: Firm brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale.
		1.00	ES					
		1.20 1.20 1.20	SPT U 2 D 1.65	N=12 (3,3/3,3,3,3)				
		2.00 2.00 2.00 2.00 2.00	SPT ES U 3 D 2.45 D 3.45	N=11 (2,2/3,3,2,3)		(3.10)		
		3.00 3.00 3.00 3.00	SPT ES U 4 D 3.45	N=15 (3,3/3,4,4,4)				
					18.10	3.50		Firm becoming stiff brown and grey slightly silty slightly sandy CLAY with rare gravel.
		4.00 4.00 4.00	SPT U 5 D 4.45	N=17 (3,3/4,4,4,5)				
						(2.00)		
		5.00 5.00	SPT D 5.45	N=16 (3,4/4,4,4,4)				
					16.10	5.50		*End of Borehole at 5.50m*

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	T Caddick
1.20 - 5.50m	WLS	Window Sample	T Caddick

Checked By: GD **Approved By:** GD

Created using Pebble Geo

Window Sampler

BH04

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345532.76	384226.16	21.60	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=12 (3,3/3,3,3,3)
2.00 (S)	0.00	0.00	DART577	74	N=11 (2,2/3,3,2,3)
3.00 (S)	0.00	0.00	DART577	74	N=15 (3,3/3,4,4,4)
4.00 (S)	0.00	0.00	DART577	74	N=17 (3,3/4,4,4,5)
5.00 (S)	0.00	0.00	DART577	74	N=16 (3,4/4,4,4,4)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	ES		
	ES		
	ES		
	U		
	U		
	U		
	U		
	D		
	D		
	D		
	D		
	D		
	D		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	T Caddick
1.20 - 5.50m	WLS	Window Sample	T Caddick

Checked By: GD **Approved By:** GD

Window Sampler

BH05

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345570.57	384219.41	21.80	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.20-0.00	ES 1			(0.40)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate. Sand is fine to coarse.
					21.40	0.40		
		0.50-0.00 0.50-1.00	ES 2 B 1					MADE GROUND: Firm brown locally grey slightly sandy gravelly locally very gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale. Lenses of gravelly sand from 3.00m
		1.00-0.00	ES 3					
		1.20 1.20-1.65 1.20-2.20	SPT D 1 U 1	N=9 (2,2/2,1,2,4) Blows: 55				
	▼	2.00 2.00-2.45 2.00-3.00 2.00-3.00	SPT D 2 ES 4 U 2	N=9 (2,2/2,3,2,2) Blows: 68		(3.30)		
	▽	3.00 3.00-3.45 3.00-3.80	SPT D 3 U 3	N=24 (7,8/7,7,6,4) Blows: 66				
					18.10	3.70		Firm to stiff brown grey slightly silty slightly gravelly CLAY. Gravel is composed of subangular to subrounded fine to coarse of various lithologies.
						(0.50)		
		4.20 4.20-4.45	SPT D 4	N=50 for 100mm (4,5/15,35 for 25mm)	17.60	4.20		*No further progress, possible boulder obstruction.*
								End of Borehole at 4.20m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 4.20m and terminated on Engineer's instruction. Water strike at 3.00m and rising to 2.00m after 20mins. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Gerry Devlin
1.20 - 4.45m	WS	Window Sample	Gerry Devlin

Checked By: GD **Approved By:** GD

Created using Pebble Geo

GD Drilling Ltd

Window Sampler

BH05

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345570.57	384219.41	21.80	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
3.00	0.00	0.00	2026-01-20T00:00	Slow flow

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
3.00	2.80	5	Slow
3.00	2.50	10	Slow
3.00	2.30	15	Slow
3.00	2.00	20	Slow

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=9 (2,2/2,1,2,4)
2.00 (S)	0.00	0.00	DART577	74	N=9 (2,2/2,3,2,2)
3.00 (S)	0.00	0.00	DART577	74	N=24 (7,8/7,7,6,4)
4.20 (S)	4.00	0.00	DART577	74	N=50 for 100mm (4,5/15,35 for 25mm)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
GD1181-BH05-D-1	D		
GD1181-BH05-D-2	D		
GD1181-BH05-D-3	D		
GD1181-BH05-D-4	D		
GD1181-BH05-B-1	B		
GD1181-BH05-ES-1	ES		
GD1181-BH05-ES-2	ES		
GD1181-BH05-ES-3	ES		
GD1181-BH05-ES-4	ES		
GD1181-BH05-U-1	U		
GD1181-BH05-U-2	U		
GD1181-BH05-U-3	U		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 4.20m and terminated on Engineer's instruction. Water strike at 3.00m and rising to 2.00m after 20mins. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Gerry Devlin
1.20 - 4.45m	WS	Window Sample	Gerry Devlin

Checked By: GD **Approved By:** GD

Window Sampler

BH06

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345623.45	384230.86	21.53	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.20-0.00	ES 1			(0.40)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate. Sand is fine to coarse.
		0.50-0.00 0.50-1.00	ES 2 B 1		21.13	0.40		MADE GROUND: Blackish grey very sandy subangular fine to coarse gravel and cobbles of various lithologies including brick and burnt shale. Occasional wood and plastic. Slight hydrocarbon odour. Traces of ash and pockets of clay noted. Very loose from 1.20m.
		1.00-1.50	ES 3					
		1.20 1.20-1.65	SPT D 1	N=5 (1,2/1,2,1,1)				
						(2.60)		
		1.80-0.00	B 2					
		2.00 2.00-2.45	SPT D 2	N=9 (1,2/4,1,1,3)				
		2.80-0.00	B 3					
		3.00	SPT	N=50 for 0mm (25 for 0mm/)	18.53	3.00		*No further progress, possible boulder obstruction.*
								End of Borehole at 3.00m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 3.00m and terminated on Engineer's instruction. Water strike at 1.00m and rising to 0.05m after 20mins. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Gerry Devlin
1.20 - 3.00m	WS	Window Sample	Gerry Devlin

Checked By: GD **Approved By:** GD

Created using Pebble Geo

GD Drilling Ltd

Window Sampler

BH06

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345623.45	384230.86	21.53	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
1.00	0.00	0.00	2026-01-21T00:00	Fast flow

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
1.00	0.80	5	Fast
1.00	0.07	10	Fast
1.00	0.60	15	Fast
1.00	0.05	20	Fast

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=5 (1,2/1,2,1,1)
2.00 (S)	0.00	0.00	DART577	74	N=9 (1,2/4,1,1,3)
3.00 (S)	0.00	0.00	DART577	74	N=50 for 0mm (25 for 0mm/)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
GD1181-BH06-ES-1	ES		
GD1181-BH06-ES-2	ES		
GD1181-BH06-ES-3	ES		
GD1181-BH06-B-1	B		
GD1181-BH06-D-1	D		
GD1181-BH06-D-2	D		
GD1181-BH06-B-2	B		
GD1181-BH06-B-3	B		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 3.00m and terminated on Engineer's instruction. Water strike at 1.00m and rising to 0.05m after 20mins. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Gerry Devlin
1.20 - 3.00m	WS	Window Sample	Gerry Devlin

Checked By: GD **Approved By:** GD

Borehole Log

BH07

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
	345521.49	384269.77	21.85	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.00-0.50	B			(0.30)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
		0.20	ES		21.55	0.30		
		0.50	ES					MADE GROUND: Firm brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale.
		0.50-1.00	B					
		0.80	ES					
		1.00-1.45	D					
		1.00-2.00	U					
		1.20	SPT	N=20 (3,6/5,6,5,4)				
		2.00	SPT	N=13 (2,2/3,3,4,3)		(3.40)		
		2.00	ES					
		2.00-2.45	D					
		2.00-3.00	U					
		3.00	SPT	N=14 (3,3/3,3,4,4)				
		3.00	ES					
		3.00-3.45	D					
		3.00-4.00	U					
		4.00	SPT	N=12 (2,2/3,3,3,3)	18.15	3.70		Firm brown and grey slightly silty slightly sandy slightly gravelly CLAY. Gravel is composed of subangular to subrounded fine to medium of various lithologies.
		4.00-4.45	D					
		4.00-5.00	U			(1.30)		
		5.00	SPT	N=12 (2,3/3,3,3,3)	16.85	5.00		*End of Borehole at 5.00m*
		5.00	D					

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions
0.00 - 5.00m WLS Window Sample

Logger
T Caddick

Checked By: GD **Approved By:** GD

Created using Pebble Geo

Borehole Log

BH07

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
	345521.49	384269.77	21.85	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=20 (3,6/5,6,5,4)
2.00 (S)	0.00	0.00	DART577	74	N=13 (2,2/3,3,4,3)
3.00 (S)	0.00	0.00	DART577	74	N=14 (3,3/3,3,4,4)
4.00 (S)	0.00	0.00	DART577	74	N=12 (2,2/3,3,3,3)
5.00 (S)			DART577	74	N=12 (2,3/3,3,3,3)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	B		
	ES		
	ES		
	B		
	ES		
	D		
	U		
	ES		
	D		
	U		
	ES		
	D		
	U		
	D		
	U		
	D		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

0.00 - 5.00m WLS Window Sample

Logger

T Caddick

Checked By: GD **Approved By:** GD

Window Sampler

BH08

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345573.32	384272.31	21.78	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Legend	Description
		0.00-0.50	B					MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
		0.20	ES			(0.40)		
					21.38	0.40		MADE GROUND: Firm brown locally grey slightly sandy gravelly locally very gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale. Lenses of gravelly sand from 2.00m.
		0.50	ES					
		0.50-1.00	B					
		0.80	ES					
		1.00-1.45	D					
		1.00-2.00	U					
		1.20	SPT	N=16 (2,2/3,3,5,5)				
		2.00	SPT	N=16 (3,3/4,4,4,4)				
		2.00	ES					
		2.00-2.45	D			(3.60)		
		2.00-3.00	U					
		3.00	SPT	N=27 (5,7/9,5,6,7)				
		3.00	D					
		4.00	SPT	N=50 for 0mm (25 for 0mm/)	17.78	4.00		*No further progress, possible boulder obstruction.*
								Between 3.00m and 4.00m: Driller records no recovery. (3.00 - 4.00m)
								End of Borehole at 4.00m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 4.00m and terminated on possible boulder obstruction. No groundwater encountered. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions
0.00 - 4.00m WLS Window Sample

Logger
T Caddick

Checked By: GD **Approved By:** GD

Created using Pebble Geo

GD Drilling Ltd

Window Sampler

BH08

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345573.32	384272.31	21.78	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=16 (2,2/3,3,5,5)
2.00 (S)	0.00	0.00	DART577	74	N=16 (3,3/4,4,4,4)
3.00 (S)	0.00	0.00	DART577	74	N=27 (5,7/9,5,6,7)
4.00 (S)			DART577	74	N=50 for 0mm (25 for 0mm/)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	B		
	ES		
	ES		
	B		
	ES		
	D		
	U		
	ES		
	D		
	U		
	D		

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 4.00m and terminated on possible boulder obstruction. No groundwater encountered. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions
0.00 - 4.00m WLS Window Sample

Logger
T Caddick

Checked By: GD **Approved By:** GD

Window Sampler

BH09

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345622.81	384279.38	21.66	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.20-0.00	ES 1			(0.40)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate. Sand is fine to coarse.
					21.26	0.40		
		0.50-0.00	ES 2					MADE GROUND: Firm locally soft brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including brick, concrete and burnt shale. Occasional lenses of gravelly sand from 2.50m.
		0.50-1.00	B 1					
		1.00-0.00	ES 3					
		1.20	SPT	N=10 (2,3/2,3,2,3)				
		1.20-1.65	D 1					
		1.20-2.20	U 1	Blows: 83				
		2.00	SPT	N=4 (1,1/1,1,1,1)				
		2.00-0.00	ES 4					
		2.00-2.45	D 8			(3.60)		
		2.00-3.00	U 2	Blows: 55				
		3.00	SPT	N=18 (2,3/5,2,5,6)				
		3.00-0.00	ES 5					*Between 3.00m and 4.00m: Driller records no recovery, possibly pushing cobbles. (3.00 - 4.00m)*
		3.00	U 3	Blows: 71				
		3.00-3.45	D 3					
		4.00	SPT	N=30 (2,2/2,7,10,11)	17.66	4.00		Firm to stiff brown slightly silty slightly sandy gravelly CLAY. Gravel is composed of subangular to subrounded fine to medium of various lithologies.
		4.00-4.45	D 13					
		4.45	SPT	N=20 (5,6/4,5,6,5)		(1.00)		
		4.45-4.90	D 14					
					16.66	5.00		*End of Borehole at 5.00m*

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. Water strike at 2.50m and remaining at this level after 20mins. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Gerry Devlin
1.20 - 5.00m	WS	Window Sample	Gerry Devlin

Checked By: GD **Approved By:** GD

Created using Pebble Geo

GD Drilling Ltd

Window Sampler

BH09

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345622.81	384279.38	21.66	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
2.50	0.00	0.00	2026-01-21T00:00	Med flow

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=10 (2,3/2,3,2,3)
2.00 (S)	0.00	0.00	DART577	74	N=4 (1,1/1,1,1,1)
3.00 (S)	0.00	0.00	DART577	74	N=18 (2,3/5,2,5,6)
4.00 (S)	0.00	0.00	DART577	74	N=30 (2,2/2,7,10,11)
4.45 (S)	0.00	0.00	DART577	74	N=20 (5,6/4,5,6,5)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
GD1181-BH09-D-1	D		
GD1181-BH09-ES-1	ES		
GD1181-BH09-ES-2	ES		
GD1181-BH09-ES-3	ES		
GD1181-BH09-ES-4	ES		
GD1181-BH09-ES-5	ES		
GD1181-BH09-D-8	D		
GD1181-BH09-B-1	B		
GD1181-BH09-D-3	D		
GD1181-BH09-D-13	D		
GD1181-BH09-D-14	D		
GD1181-BH09-U-1	U		
GD1181-BH09-U-2	U		
GD1181-BH09-U-3	U		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. Water strike at 2.50m and remaining at this level after 20mins. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Gerry Devlin
1.20 - 5.00m	WS	Window Sample	Gerry Devlin

Checked By: GD **Approved By:** GD

Window Sampler

BH10

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345517.71	384324.08	22.52	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.20	ES			(0.42)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
					22.10	0.42		
		0.50	B					MADE GROUND: Firm brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale.
		0.50	ES					
		0.50-1.00	B					
		0.80	ES					
		1.00-1.45	D					
		1.00-2.00	U					
		1.20	SPT	N=17 (2,3/4,4,4,5)				
		2.00	SPT	N=10 (2,2/2,2,3,3)		(3.08)		
		2.00	ES					
		2.00-2.45	D					
		2.00-3.00	U					
	▼							
		3.00	SPT	N=13 (2,7/4,3,3,3)				
		3.00	ES					
		3.00-4.00	U					
					19.02	3.50		Firm brown and grey slightly silty slightly sandy slightly gravelly CLAY. Gravel is composed of subangular to subrounded fine to medium of various lithologies.
						(0.50)		
		4.00	SPT	N=50 for 0mm (25 for 0mm/)	18.52	4.00		*End of Borehole at 4.00m*

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on possible boulder obstruction. Water strike at 2.50m and remaining at this level after 20mins. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions
0.00 - 4.00m WLS Window Sample

Logger
T Caddick

Checked By: GD **Approved By:** GD

Created using Pebble Geo

Window Sampler

BH10

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345517.71	384324.08	22.52	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
2.50				

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
2.50	2.50	20	

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART560	71	N=17 (2,3/4,4,4,5)
2.00 (S)	0.00	0.00	DART560	71	N=10 (2,2/2,2,3,3)
3.00 (S)	0.00	0.00	DART560	71	N=13 (2,7/4,3,3,3)
4.00 ()			DART577	74	N=50 for 0mm (25 for 0mm/)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	B		
	ES		
	ES		
	B		
	ES		
	D		
	U		
	ES		
	D		
	U		
	ES		
	U		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on possible boulder obstruction. Water strike at 2.50m and remaining at this level after 20mins. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

0.00 - 4.00m WLS Window Sample

Logger

T Caddick

Checked By: GD **Approved By:** GD

Window Sampler

BH11

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345581.11	384323.94	22.31	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.00-0.50	B					MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
		0.20	ES			(0.40)		
					21.91	0.40		MADE GROUND: Firm brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale. Rare plastic noted.
		0.50	ES					
		0.50-1.00	B					
		1.00	D			(1.40)		
		1.20	SPT	N=50 for 265mm (5,7/11,12,15,12 for 40mm)				
					20.51	1.80		*No further progress, possible boulder obstruction.*
								End of Borehole at 1.80m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed to 1.80m and terminated on possible boulder obstruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions
0.00 - 1.00m IP Hand Tools

Logger
T Caddick

Checked By: GD **Approved By:** GD

Created using Pebble Geo

Window Sampler

BH11

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345581.11	384323.94	22.31	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART560	71	N=50 for 265mm (5,7/11,12,15,12 for 40mm)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	B		
	ES		
	ES		
	B		
	D		

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed to 1.80m and terminated on possible boulder obstruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions
0.00 - 1.00m IP Hand Tools

Logger
T Caddick

Checked By: GD **Approved By:** GD

Window Sampler

BH12

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345625.54	384344.92	21.88	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.10	ES 1			(0.30)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
		0.20	B 1		21.58	0.30		
		0.50	ES 2					MADE GROUND: Soft becoming firm brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale.
		0.80	B 2					
		1.00	ES 3					
		1.20	SPT	N=6 (2,2/1,2,2,1)				*Between 1.20m and 2.00m: Slight hydrocarbon odour noted. (1.20 - 2.00m)*
		1.80	B 3					
		2.00	SPT	N=4 (2,1/1,1,1,1)		(3.30)		
		2.00	ES 4					
		2.80	B 4					
		3.00	SPT	N=9 (2,2/2,2,2,3)				
		3.00	ES 5					
		3.80	B 5		18.28	3.60		MADE GROUND: Greyish brown slightly clayey silty very gravelly fine to coarse sand. Gravel is subangular to subrounded fine to coarse of various lithologies including burnt shale and concrete.
		4.00	SPT	N=11 (2,3/3,2,3,3)				
		4.00	ES 6					
		4.00-5.00	U 1	Blows: 99		(1.40)		
					16.88	5.00		*End of Borehole at 5.00m*

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Joel McMillan
1.20 - 5.00m	WS	Window Sample	Joel McMillan

Checked By: GD **Approved By:** GD

Window Sampler

BH12

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345625.54	384344.92	21.88	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client	Consultant	Contractor
Beech Group Consulting	Hugh O'Leary	GD Drilling Ltd

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART560	71	N=6 (2,2/1,2,2,1)
2.00 (S)			DART577	74	N=4 (2,1/1,1,1,1)
3.00 (S)			DART577	74	N=9 (2,2/2,2,2,3)
4.00 (S)			DART577	74	N=11 (2,3/3,2,3,3)
()			DART577	74	N=0 (0,0/0,0,0,0)
()			DART577	74	N=0 (0,0/0,0,0,0)
()			DART577	74	N=0 (0,0/0,0,0,0)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
GD1181-WS12-ES-1	ES		
GD1181-WS12-ES-2	ES		
GD1181-WS12-ES-3	ES		
GD1181-WS12-ES-4	ES		
GD1181-WS12-ES-5	ES		
GD1181-WS12-B-2	B		
GD1181-WS12-B-1	B		
GD1181-WS12-ES-6	ES		
GD1181-WS12-B-3	B		
GD1181-WS12-B-4	B		
GD1181-WS12-B-5	B		
GD1181-WS12-U-1	U		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions			Logger
0.00 - 1.20m	IP	Hand Tools	Joel McMillan
1.20 - 5.00m	WS	Window Sample	Joel McMillan

Checked By: GD **Approved By:** GD

Window Sampler

BH13

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345515.58	384383.36	22.61	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client
Landwise Consulting

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.20	ES			(0.47)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
		0.50	B		22.14	0.47		
		0.50	ES					MADE GROUND: Firm brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale. Rare wood and plastic noted.
		0.50-1.00	B					
		0.80	ES					
		1.00-1.45	D					
		1.00-2.00	U					
		1.20	SPT	N=14 (2,2/3,3,4,4)				
		2.00	SPT	N=4 (2,1/1,1,1,1)				
		2.00	ES					
		2.00-2.45	D					
		2.00-3.00	U			(3.53)		
	▼							
		3.00	SPT	N=14 (2,3/3,3,4,4)				
		3.00	ES					
		3.00-3.45	D					
		3.00-4.00	U					
		4.00	SPT	N=16 (2,3/4,4,4,4)	18.61	4.00		Firm becoming stiff brown and grey slightly silty slightly sandy slightly gravelly CLAY. Gravel is composed of subangular to subrounded fine to medium of various lithologies.
		4.00-4.45	D					
		4.00-5.00	U			(1.00)		
					17.61	5.00		*End of Borehole at 5.00m*

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. Water strike at 2.50m and remaining at this level after 20mins. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions
0.00 - 5.00m WLS Window Sample

Logger
T Caddick

Checked By: GD **Approved By:** GD

Created using Pebble Geo

Window Sampler

BH13

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345515.58	384383.36	22.61	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
2.50				

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
2.50	2.50	20	

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
2.00 (S)	0.00	0.00	DART560	71	N=4 (2,1/1,1,1,1)
1.20 (S)	0.00	0.00	DART560	71	N=14 (2,2/3,3,4,4)
2.00 (S)	0.00	0.00	DART560	71	N=12 (2,2/3,3,3,3)
3.00 (S)	0.00	0.00	DART560	71	N=14 (2,3/3,3,4,4)
4.00 (S)	0.00	0.00	DART560	71	N=16 (2,3/4,4,4,4)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	B		
	ES		
	ES		
	B		
	ES		
	D		
	U		
	ES		
	D		
	U		
	ES		
	D		
	U		
	D		
	U		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. Water strike at 2.50m and remaining at this level after 20mins. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

0.00 - 5.00m WLS Window Sample

Logger

T Caddick

Checked By: GD **Approved By:** GD

Window Sampler

BH14

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345569.49	384371.60	22.60	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.20	ES			(0.30)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
					22.30	0.30		
		0.50	B					MADE GROUND: Stiff brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale. Rare wood noted.
		0.50	ES					
		0.50-1.00	B					
		0.80	ES					
		1.00-1.45	D					
		1.00-2.00	U					
		1.20	SPT	N=20 (8,6/5,5,5,5)		(2.00)		
		2.00	SPT	N=16 (2,2/3,4,4,5)				
		2.00	ES					
		2.00-2.45	D					
		2.00-3.00	U		20.30	2.30		Stiff brown grey slightly silty slightly gravelly CLAY. Gravel is composed of subangular to subrounded fine to coarse of various lithologies.
		3.00	SPT	N=9 (2,2/2,2,2,3)				
		3.00-3.45	D					
		3.00-4.00	U					
	▼					(2.70)		
		4.00	SPT	N=18 (3,3/4,4,5,5)				
		4.00-4.45	D					
		4.00-5.00	U					
		5.00	SPT	N=22 (4,5/5,5,6,6)	17.60	5.00		*End of Borehole at 5.00m*
		5.00	D					

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. Water strike at 3.50m and remaining at this level after 20mins. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions
0.00 - 5.00m WLS Window Sample

Logger
T Caddick

Checked By: GD **Approved By:** GD

Created using Pebble Geo

GD Drilling Ltd

Window Sampler

BH14

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345569.49	384371.60	22.60	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
3.50				

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
3.50	3.50	20	

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
3.00 (S)	0.00	0.00	DART560	71	N=9 (2,2/2,2,2,3)
1.20 (S)	0.00	0.00	DART560	71	N=20 (8,6/5,5,5,5)
2.00 (S)	0.00	0.00	DART560	71	N=16 (2,2/3,4,4,5)
3.00 (S)	0.00	0.00	DART560	71	N=20 (3,4/5,5,5,5)
4.00 (S)	0.00	0.00	DART560	71	N=18 (3,3/4,4,5,5)
5.00 (S)	0.00	0.00	DART560	71	N=22 (4,5/5,5,6,6)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	B		
	ES		
	ES		
	B		
	ES		
	D		
	U		
	ES		
	D		
	U		
	D		
	U		
	D		
	U		
	D		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. Water strike at 3.50m and remaining at this level after 20mins. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

0.00 - 5.00m WLS Window Sample

Logger

T Caddick

Checked By: GD **Approved By:** GD

Window Sampler

BH15

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345623.89	384377.77	22.13	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Legend	Strata Description
		0.10	ES 1			(0.30)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
		0.20	B 1		21.83	0.30		
		0.50	ES 2					MADE GROUND: Firm locally soft brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including brick, concrete and burnt shale.
		0.50	B 2					
		1.00	ES 3					
		1.00	B 3					
		1.20	SPT	N=11 (2,2/2,2,3,4)				
		1.80	B 4			(3.10)		
		2.00	SPT	N=3 (3,1/0,1,1,1)				
		2.00	ES 4					*Between 2.00m and 3.40m: Slight hydrocarbon odour noted. (2.00 - 3.40m)*
		2.80	B 5					
		3.00	SPT	N=9 (3,2/2,2,2,3)				
		3.00	ES 5					
		3.80	B 6		18.73	3.40		Firm brown grey mottled silty gravelly CLAY. Gravel is composed of subangular to rounded fine to coarse of various lithologies.
		4.00	SPT	N=11 (2,3/3,2,3,3)				
		4.00	ES 6					
		4.00-5.00	U 1	Blows: 37		(1.60)		
					17.13	5.00		*End of Borehole at 5.00m*

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Joel McMillan
1.20 - 5.00m	WS	Window Sample	Joel McMillan

Checked By: GD **Approved By:** GD

Window Sampler

BH15

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345623.89	384377.77	22.13	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
4.00 (S)	0.00	0.00	DART560	71	N=11 (2,3/3,2,3,3)
1.20 (S)	0.00	0.00	DART560	71	N=11 (2,2/2,2,3,4)
2.00 (S)	0.00	0.00	DART560	71	N=3 (3,1/0,1,1,1)
3.00 (S)	0.00	0.00	DART560	71	N=9 (3,2/2,2,2,3)
4.00 (S)	0.00	0.00	DART560	71	N=12 (2,3/3,3,3,3)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
GD1181-WS15-ES-1	ES		
GD1181-WS15-ES-2	ES		
GD1181-WS15-ES-3	ES		
GD1181-WS15-ES-4	ES		
GD1181-WS15-ES-5	ES		
GD1181-WS15-ES-6	ES		
GD1181-WS15-B-1	B		
GD1181-WS15-B-2	B		
GD1181-WS15-B-3	B		
GD1181-WS15-B-4	B		
GD1181-WS15-B-5	B		
GD1181-WS15-B-6	B		
GD1181-WS15-U-1	U		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Joel McMillan
1.20 - 5.00m	WS	Window Sample	Joel McMillan

Checked By: GD **Approved By:** GD

Window Sampler

BH16

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345661.44	384379.78	22.04	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.10	ES 1			(0.30)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
		0.20	B 1		21.74	0.30		
		0.50	ES 2					MADE GROUND: Firm locally stiff brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale. Rare wood noted.
		0.80	B 2					
		1.00	ES 3					
		1.20	SPT	N=12 (8,9/3,3,2,4)				
		1.80	B 3					
		2.00	SPT	N=25 (12,12/9,7,5,4)				
		2.00	ES 4			(3.60)		
		2.80	B 4					
		3.00	SPT	N=12 (3,3/4,4,2,2)				
		3.00	ES 5					
		4.00	SPT	N=10 (4,3/2,2,3,3)	18.14	3.90		Firm brown and grey slightly silty slightly sandy slightly gravelly CLAY. Gravel is composed of subangular to subrounded fine to medium of various lithologies.
		4.00	ES 6					
		4.00-4.40	U 1	Blows: 65		(1.10)		
	▼				17.04	5.00		*End of Borehole at 5.00m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. Water strike at 4.70m and remaining at this level after 20mins. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Joel McMillan
1.20 - 5.00m	WS	Window Sample	Joel McMillan

Checked By: GD **Approved By:** GD

Window Sampler

BH16

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345661.44	384379.78	22.04	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
4.70	0.00	0.00	2026-01-19T00:00	flow

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
4.70	4.70	20	

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART560	71	N=12 (8,9/3,3,2,4)
2.00 (S)	0.00	0.00	DART560	71	N=25 (12,12/9,7,5,4)
3.00 (S)	0.00	0.00	DART560	71	N=12 (3,3/4,4,2,2)
4.00 (S)	0.00	0.00	DART560	71	N=10 (4,3/2,2,3,3)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
GD1181-WS16-ES-1	ES		
GD1181-WS16-ES-3	ES		
GD1181-WS16-ES-2	ES		
GD1181-WS16-ES-4	ES		
GD1181-WS16-ES-5	ES		
GD1181-WS16-ES-6	ES		
GD1181-WS16-B-1	B		
GD1181-WS16-B-2	B		
GD1181-WS16-B-3	B		
GD1181-WS16-B-4	B		
GD1181-WS16-U-1	U		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. Water strike at 4.70m and remaining at this level after 20mins. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Joel McMillan
1.20 - 5.00m	WS	Window Sample	Joel McMillan

Checked By: GD **Approved By:** GD

Window Sampler

BH17

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345526.14	384413.45	22.59	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.20	B 1			(0.30)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
					22.29	0.30		MADE GROUND: Firm locally soft brown slightly sandy gravelly locally very gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale. Occasional lenses of gravelly fine to coarse sand between 3.00m and 4.00m.
		0.80	B 2					
		1.20 1.20-2.00	SPT U 1	N=8 (2,3/2,2,2,2) Blows: 37				
		2.00 2.00-3.00	SPT B 3	N=6 (4,4/3,1,1,1)				
						(4.60)		
		3.00 3.00-4.00	SPT B 4	N=12 (2,3/3,3,3,3)				
		4.00	SPT	N=5 (1,1/1,2,1,1)				
		4.45	SPT	N=11 (2,2/3,2,3,3)				
					17.69	4.90		*End of Borehole at 4.90m*

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 4.90m and terminated on Engineer's instruction. Water strike at 3.90m and remaining at this level. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Joel McMillan
1.20 - 4.90m	WS	Window Sample	Joel McMillan

Checked By: GD **Approved By:** GD

GD Drilling Ltd

Window Sampler

BH17

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345526.14	384413.45	22.59	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
3.90	0.00	0.00	2026-01-20T00:00	flow

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
3.90	3.90	20	

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART560	71	N=8 (2,3/2,2,2,2)
2.00 (S)	0.00	0.00	DART560	71	N=6 (4,4/3,1,1,1)
3.00 (S)	0.00	0.00	DART560	71	N=12 (2,3/3,3,3,3)
4.00 (S)	0.00	0.00	DART560	71	N=5 (1,1/1,2,1,1)
4.45 (S)	0.00	0.00	DART560	71	N=11 (2,2/3,2,3,3)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
GD1181-WS17-B-1	B		
GD1181-WS17-B-2	B		
GD1181-WS17-B-3	B		
GD1181-WS17-B-4	B		
GD1181-WS17-U-1	U		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 4.90m and terminated on Engineer's instruction. Water strike at 3.90m and remaining at this level. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Joel McMillan
1.20 - 4.90m	WS	Window Sample	Joel McMillan

Checked By: GD **Approved By:** GD

Window Sampler

BH18

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345578.20	384418.09	22.33	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.00-0.50	B					MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate. Sand is fine to coarse.
		0.20	ES			(0.40)		
					21.93	0.40		MADE GROUND: Firm brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale.
		0.50	ES					
		0.50-1.00	B					
		0.80	ES					
		1.00-2.00	U					
		1.00-145.00	D					
		1.20	SPT	N=15 (2,3/3,4,4,4)				
						(2.10)		
		2.00	SPT	N=13 (2,3/3,4,3,3)				
		2.00	ES					
		2.00-2.45	D					
		2.00-3.00	U					
					19.83	2.50		Firm brown and grey slightly silty slightly sandy slightly gravelly CLAY. Gravel is composed of subangular to subrounded fine to medium of various lithologies.
		3.00	SPT	N=16 (2,3/4,4,4,4)				
		3.00-3.45	D					
		3.00-4.00	U					
						(2.50)		
		4.00	SPT	N=17 (3,3/4,4,4,5)				
		4.00-4.45	D					
		4.00-5.00	U					
		5.00	SPT	N=17 (2,4/4,4,4,5)	17.33	5.00		*End of Borehole at 5.00m*
		5.00-5.45	D					

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	T Caddick
1.20 - 5.00m	WLS	Window Sample	T Caddick

Checked By: GD **Approved By:** GD

Created using Pebble Geo

Window Sampler

BH18

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345578.20	384418.09	22.33	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=15 (2,3/3,4,4,4)
2.00 (S)	0.00	0.00	DART577	74	N=13 (2,3/3,4,3,3)
3.00 (S)	0.00	0.00	DART577	74	N=16 (2,3/4,4,4,4)
4.00 (S)	0.00	0.00	DART577	74	N=17 (3,3/4,4,4,5)
5.00 (S)	0.00	0.00	DART577	74	N=17 (2,4/4,4,4,5)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	B		
	ES		
	ES		
	B		
	ES		
	D		
	U		
	ES		
	D		
	U		
	D		
	U		
	D		
	U		
	D		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	T Caddick
1.20 - 5.00m	WLS	Window Sample	T Caddick

Checked By: GD **Approved By:** GD

Window Sampler

BH19

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345614.72	384419.43	22.28	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.00-0.50	B					MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate. Sand is fine to coarse.
		0.20	ES			(0.43)		
					21.85	0.43		MADE GROUND: Firm brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale.
		0.50	ES					
		0.50-1.00	B					
		0.80	ES					
		1.00-1.45	D					
		1.00-2.00	U					
		1.20	SPT	N=13 (4,5/4,3,3,3)				
						(2.07)		
		2.00	SPT	N=16 (2,3/4,4,4,4)				
		2.00	ES					
		2.00-2.45	D					
		2.00-3.00	U					
					19.78	2.50		Firm becoming stiff brown and grey slightly silty slightly sandy CLAY with rare gravel.
		3.00	SPT	N=16 (2,3/3,4,4,5)				
		3.00-3.45	D					
		3.00-4.00	U					
						(2.50)		
		4.00	SPT	N=12 (3,3/3,3,3,3)				
		4.00-4.45	D					
		4.00-5.00	U					
		5.00	SPT	N=16 (3,4/3,4,4,5)	17.28	5.00		*End of Borehole at 5.00m*
		5.00-5.45	D					

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	T Caddick
1.20 - 5.00m	WLS	Window Sample	T Caddick

Checked By: GD **Approved By:** GD

Created using Pebble Geo

GD Drilling Ltd

Window Sampler

BH19

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345614.72	384419.43	22.28	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-20	2026-01-20

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=13 (4,5/4,3,3,3)
2.00 (S)	0.00	0.00	DART577	74	N=16 (2,3/4,4,4,4)
3.00 (S)	0.00	0.00	DART577	74	N=16 (2,3/3,4,4,5)
4.00 (S)	0.00	0.00	DART577	74	N=12 (3,3/3,3,3,3)
5.00 (S)	0.00	0.00	DART577	74	N=16 (3,4/3,4,4,5)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	B		
	ES		
	ES		
	B		
	ES		
	D		
	U		
	ES		
	D		
	U		
	D		
	U		
	D		
	U		
	D		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	T Caddick
1.20 - 5.00m	WLS	Window Sample	T Caddick

Checked By: GD **Approved By:** GD

Borehole Log

BH20
Sheet 1 of 1

GD Drilling Ltd

Hole Type	Easting	Northing	Ground Level (m)	Scale
	345661.06	384419.19	22.03	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-22	2026-01-22

Client Beech Group

Consultant Hugh O'Leary

Contractor GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.20	ES			(0.35)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
					21.68	0.35		
		0.50 0.50-1.00	ES B					MADE GROUND: Stiff locally firm brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale.
		1.00	ES					
		1.20 1.20-1.65	SPT D	N=26 (10,12/7,9,5,5)				
		1.80	B					
		2.00 2.00-2.45 2.00-3.00	SPT D U	N=28 (11,11/10,7,5,6) Blows: 86		(3.45)		
		3.00 3.00 3.00-3.45 3.00-4.00	SPT ES D U	N=9 (2,3/2,2,2,3) Blows: 40				
					18.23	3.80		Firm becoming stiff brown and grey slightly silty slightly sandy slightly gravelly CLAY. Gravel is composed of subangular to subrounded fine to medium of various lithologies.
		4.00 4.00-4.45	SPT D	N=14 (2,2/3,3,3,5)				
		4.45 4.45-4.90	SPT D	N=24 (4,5/6,7,6,5)		(1.20)		
					17.03	5.00		*End of Borehole at 5.00m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions
0.00 - 5.00m WLS Window Sample

Logger
Gerry Devlin

Checked By: GD **Approved By:** GD

Created using Pebble Geo

Borehole Log

BH20

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
	345661.06	384419.19	22.03	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-22	2026-01-22

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=26 (10,12/7,9,5,5)
2.00 (S)	0.00	0.00	DART577	74	N=28 (11,11/10,7,5,6)
3.00 (S)	0.00	0.00	DART577	74	N=9 (2,3/2,2,2,3)
4.00 (S)	0.00	0.00	DART577	74	N=14 (2,2/3,3,3,5)
4.45 (S)	0.00	0.00	DART577	74	N=24 (4,5/6,7,6,5)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	B		
	ES		
	D		
	B		
	D		
	U		
	D		
	ES		
	U		
	D		
	D		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

0.00 - 5.00m WLS Window Sample

Logger

Gerry Devlin

Checked By: GD **Approved By:** GD

Borehole Log

BH21

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
	345639.72	384294.44	21.49	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.00-0.50	B					MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
		0.20	ES			(0.45)		
					21.04	0.45		MADE GROUND: Firm becoming stiff brown locally grey slightly sandy gravelly locally very gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale.
		0.50	ES					
		0.50-1.00	B					
		0.80	ES					
		1.00-1.45	D					
		1.00-2.00	U					
		1.20	SPT	N=15 (3,3/3,4,4,4)				
						(2.15)		
		2.00	SPT	N=16 (2,3/4,4,4,4)				
		2.00	ES					
		2.00-2.45	D					
		2.00-3.00	U					
					18.89	2.60		Firm becoming stiff brown and grey slightly silty slightly sandy slightly gravelly CLAY. Gravel is composed of subangular to subrounded fine to medium of various lithologies.
		3.00	SPT	N=15 (3,3/3,4,4,4)				
		3.00-3.45	D					
		3.00-4.00	U					
						(2.40)		
		4.00	SPT	N=16 (4,4/4,4,4,4)				
		4.00-4.45	D					
		4.00-5.00	U					
		5.00	SPT	N=18 (2,4/4,4,5,5)	16.49	5.00		*End of Borehole at 5.00m*
		5.00	D					

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions
0.00 - 5.00m WLS Window Sample

Logger
T Caddick

Checked By: GD **Approved By:** GD

Created using Pebble Geo

Borehole Log

BH21

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
	345639.72	384294.44	21.49	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=15 (3,3/3,4,4,4)
2.00 (S)	0.00	0.00	DART577	74	N=16 (2,3/4,4,4,4)
3.00 (S)	0.00	0.00	DART577	74	N=15 (3,3/3,4,4,4)
4.00 (S)	0.00	0.00	DART577	74	N=16 (4,4/4,4,4,4)
5.00 (S)	0.00	0.00	DART577	74	N=18 (2,4/4,4,5,5)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	B		
	ES		
	ES		
	B		
	ES		
	D		
	U		
	D		
	ES		
	U		
	D		
	U		
	D		
	U		
	D		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

0.00 - 5.00m WLS Window Sample

Logger

T Caddick

Checked By: GD **Approved By:** GD

Window Sampler

BH22

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345639.81	384258.22	21.45	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.20-0.00	ES 1			(0.35)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate. Sand is fine to coarse.
					21.10	0.35		
		0.50-0.00 0.50-1.00	ES 2 B 1					MADE GROUND: Firm locally soft brown slightly sandy gravelly locally very gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale. Occasional lenses of gravelly fine to coarse sand between 3.00m and 4.00m.
	▼	1.00-1.50	ES 3					
		1.20 1.20-1.65 1.20-2.20	SPT D 1 U 1	N=8 (6,4/3,2,2,2,1) Blows: 48				
	▽	2.00 2.00-2.45 2.00-52.00	SPT D 2 U 2	N=8 (1,2/2,2,2,2) Blows: 55		(3.65)		
		2.50-3.50	ES 4					
		3.00 3.00-3.45 3.00-4.00	SPT D 3 B 2	N=7 (1,0/1,1,1,4)				
		4.00 4.00-4.45	SPT D 4	N=17 (3,4/4,4,4,5)	17.45	4.00		Stiff brown slightly silty slightly sandy gravelly CLAY. Gravel is composed of subangular to subrounded fine to medium of various lithologies.
		4.45 4.45-4.90	SPT D 5	N=22 (3,4/5,6,5,6)		(1.00)		
					16.45	5.00		*End of Borehole at 5.00m*

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. Water strike at 2.00m and rising to 1.00m after 20mins. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Gerry Devlin
1.20 - 5.00m	WS	Window Sample	Gerry Devlin

Checked By: GD **Approved By:** GD

Created using Pebble Geo

Window Sampler

BH22

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345639.81	384258.22	21.45	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
2.00	0.00	0.00	2026-01-21T00:00	Fast flow

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
2.00	1.80	5	Fast
2.00	1.60	10	Fast
2.00	1.40	15	Fast
2.00	1.00	20	Fast

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=8 (6,4/3,2,2,1)
2.00 (S)	0.00	0.00	DART577	74	N=8 (1,2/2,2,2,2)
3.00 (S)	0.00	0.00	DART577	74	N=7 (1,0/1,1,1,4)
4.00 (S)	0.00	0.00	DART577	74	N=17 (3,4/4,4,4,5)
4.45 (S)	0.00	0.00	DART577	74	N=22 (3,4/5,6,5,6)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
GD1181-BH22-D-1	D		
GD1181-BH22-ES-1	ES		
GD1181-BH22-ES-2	ES		
GD1181-BH22-ES-3	ES		
GD1181-BH22-ES-4	ES		
GD1181-BH22-D-2	D		
GD1181-BH22-D-3	D		
GD1181-BH22-B-1	B		
GD1181-BH22-D-4	D		
GD1181-BH22-D-5	D		
GD1181-BH22-B-2	B		
GD1181-BH22-U-1	U		
GD1181-BH22-U-2	U		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. Water strike at 2.00m and rising to 1.00m after 20mins. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Gerry Devlin
1.20 - 5.00m	WS	Window Sample	Gerry Devlin

Checked By: GD **Approved By:** GD

Window Sampler

BH23

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345638.80	384210.90	21.43	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.20-0.00	ES 1			(0.40)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate. Sand is fine to coarse.
		0.50-0.00 0.50-1.00	ES 2 B 1		21.03	0.40		MADE GROUND: Firm brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale. Rare wood and plastic noted.
		1.00-1.50	ES 3					
		1.20 1.20-1.65 1.20-2.00	SPT D 6 B 2	N=10 (2,3/3,3,2,2)		(2.10)		
	▽	2.00 2.00-2.45 2.00-2.50	SPT D 7 B 3	N=3 (1,0/1,0,1,1)				
		2.50 2.50	SPT D 3	N=50 for 0mm (25 for 0mm/)	18.93	2.50		*No further progress, possible boulder obstruction.* *End of Borehole at 2.50m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on possible boulder obstruction. Water strike at 2.00m and remaining at this level after 20mins. Borehole backfilled with a wellpoint on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Gerry Devlin
1.20 - 2.50m	WS	Window Sample	Gerry Devlin

Checked By: GD **Approved By:** GD

Created using Pebble Geo

Drilling Ltd

Window Sampler

BH23

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345638.80	384210.90	21.43	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
2.00	0.00	0.00	2026-01-21T00:00	Med flow

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=10 (2,3/3,3,2,2)
2.00 (S)	0.00	0.00	DART577	74	N=3 (1,0/1,0,1,1)
2.50 (S)	0.00	0.00	DART577	74	N=50 for 0mm (25 for 0mm/)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
GD1181-BH23-ES-1	ES		
GD1181-BH23-ES-2	ES		
GD1181-BH23-ES-3	ES		
GD1181-BH23-B-1	B		
GD1181-BH23-B-2	B		
GD1181-BH23-D-6	D		
GD1181-BH23-D-7	D		
GD1181-BH23-D-3	D		
GD1181-BH23-B-3	B		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on possible boulder obstruction. Water strike at 2.00m and remaining at this level after 20mins. Borehole backfilled with a wellpoint on completion.

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Hand Tools	Gerry Devlin
1.20 - 2.50m	WS	Window Sample	Gerry Devlin

Checked By: GD **Approved By:** GD

Window Sampler

BH24

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345639.39	384154.53	21.33	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-22	2026-01-22

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.00-0.50	B					MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
		0.20	ES			(0.50)		
		0.50	ES		20.83	0.50		MADE GROUND: Firm brown locally grey slightly sandy gravelly locally very gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale. Lenses of gravelly sand from 2.00m
		0.50-1.00	B					
		0.80	ES					
		1.00-1.45	D					
		1.00-2.00	U					
		1.20	SPT	N=11 (2,2/3,2,3,3)				
						(2.00)		
		2.00	SPT	N=15 (3,4/4,4,3,4)				
		2.00	ES					
		2.00-2.45	D					
		2.00-3.00	U					
					18.83	2.50		Firm becoming stiff brown and grey slightly silty slightly sandy slightly gravelly CLAY. Gravel is composed of subangular to subrounded fine to medium of various lithologies.
		3.00	SPT	N=14 (3,3/3,4,3,4)				
		3.00-3.45	D					
		3.00-4.00	U					
						(1.50)		
		4.00	SPT	N=16 (3,4/3,4,4,5)	17.33	4.00		*No further progress, possible boulder obstruction.*
		4.00-4.45	D					*End of Borehole at 4.00m*

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 4.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions
0.00 - 4.00m WLS Window Sample

Logger
T Caddick

Checked By: GD **Approved By:** GD

Created using Pebble Geo

Window Sampler

BH24

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345639.39	384154.53	21.33	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-22	2026-01-22

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=11 (2,2/3,2,3,3)
2.00 (S)	0.00	0.00	DART577	74	N=15 (3,4/4,4,3,4)
3.00 (S)	0.00	0.00	DART577	74	N=14 (3,3/3,4,3,4)
4.00 (S)	0.00	0.00	DART577	74	N=16 (3,4/3,4,4,5)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	B		
	ES		
	ES		
	B		
	ES		
	D		
	U		
	ES		
	D		
	U		
	D		
	U		
	D		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 4.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions

0.00 - 4.00m WLS Window Sample

Logger

T Caddick

Checked By: GD **Approved By:** GD

Window Sampler

BH25

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345551.04	384249.93	21.56	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.00-0.50	B					MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
		0.20	ES			(0.40)		
					21.16	0.40		MADE GROUND: Stiff locally firm brown locally grey slightly sandy gravelly locally very gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale.
		0.50	ES					
		0.50-1.00	B					
		0.80	EW					
		1.00-1.45	D					
		1.00-2.00	U					
		1.20	SPT	N=17 (2,3/3,5,4,5)				
		2.00	SPT	N=18 (3,4/4,4,5,5)		(3.10)		
		2.00	ES					
		2.00-2.45	D					
		2.00-3.00	U					
		3.00	SPT	N=12 (2,2/3,3,3,3)				
		3.00	ES					
		3.00-3.45	D					
		3.00-4.00	U					
					18.06	3.50		Firm becoming stiff brown and grey slightly silty slightly sandy slightly gravelly CLAY. Gravel is composed of subangular to subrounded fine to medium of various lithologies.
		4.00	SPT	N=14 (2,3/3,3,4,4)				
		4.00-4.45	D					
		4.00-5.00	U			(1.50)		
		5.00	SPT	N=16 (3,3/4,4,4,4)	16.56	5.00		*End of Borehole at 5.00m*
		5.00	D					

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions
0.00 - 5.00m WLS Window Sample

Logger
T Caddick

Checked By: GD **Approved By:** GD

Created using Pebble Geo

Window Sampler

BH25

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345551.04	384249.93	21.56	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-21	2026-01-21

Client	Consultant	Contractor
Beech Group	Hugh O'Leary	GD Drilling Ltd

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	0.00	0.00	DART577	74	N=17 (2,3/3,5,4,5)
2.00 (S)	0.00	0.00	DART577	74	N=18 (3,4/4,4,5,5)
3.00 (S)	0.00	0.00	DART577	74	N=12 (2,2/3,3,3,3)
4.00 (S)	0.00	0.00	DART577	74	N=14 (2,3/3,3,4,4)
5.00 (S)	0.00	0.00	DART577	74	N=16 (3,3/4,4,4,4)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	B		
	ES		
	ES		
	B		
	EW		
	D		
	U		
	ES		
	D		
	U		
	ES		
	D		
	U		
	D		
	U		
	D		

Remarks

Inspection pit dug to a depth of 1.20m. Borehole progressed with windowless sampling techniques to a depth of 5.00m and terminated on Engineer's instruction. No groundwater encountered. Borehole fitted with a wellpoint on completion.

Method, Plant, Stability, Dimensions

0.00 - 5.00m WLS Window Sample

Logger

T Caddick

Checked By: GD **Approved By:** GD

Window Sampler

BH11A

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345585.79	384325.70	22.34	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.45)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
					21.89	0.45		MADE GROUND: Firm brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale. Rare plastic noted.
						(1.45)		
					20.44	1.90		*No further progress, possible boulder obstruction.*
								End of Borehole at 1.90m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed to 1.90m and terminated on possible boulder obstruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions
0.00 - 1.90m WLS Window Sample

Logger
T Caddick

Checked By: GD **Approved By:** GD

Created using Pebble Geo

Window Sampler

BH11B

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	345584.81	384319.57	22.31	1:35

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover , Liverpool	GD 1181	2026-01-19	2026-01-19

Client
Beech Group

Consultant
Hugh O'Leary

Contractor
GD Drilling Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.40)		MADE GROUND: Grey (compact) slightly sandy slightly clayey angular fine to coarse gravel of crushed aggregate and brick fragments. Sand is fine to coarse.
					21.91	0.40		MADE GROUND: Firm brown locally grey slightly sandy gravelly clay (reworked). Gravel is subangular and subrounded fine to coarse of various lithologies including frequent brick, concrete and burnt shale. Rare plastic noted.
						(1.55)		
					20.36	1.95		*No further progress, possible boulder obstruction.*
								End of Borehole at 1.95m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0

Remarks
Inspection pit dug to a depth of 1.20m. Borehole progressed to 1.950m and terminated on possible boulder obstruction. No groundwater encountered. Borehole backfilled with arisings on completion.

Method, Plant, Stability, Dimensions
0.00 - 1.95m WLS Window Sample

Logger
T Caddick

Checked By: GD **Approved By:** GD

Created using Pebble Geo

LandWise
geo-environmental consultants

Key to exploratory hole symbols and abbreviations

SAMPLE TYPES

ACM - Asbestos sample
AMAL - Amalgamated sample
B - Bulk disturbed sample
BLK - Block sample
C - Core sample
CBR - CBR test sample
D - Disturbed sample
ES - Environmental sample
EW - Environmental water sample
G - Gas sample
J - Jar sample
L - Liner sample
TW - Pushed thin wall sample
U - Undisturbed sample
UT - Undisturbed thin wall sample
W - Water sample

IN-SITU TESTS

HV - Hand shear vane
HV(r) - Hand shear vane residual
PID - Photo ionisation detector
PP - Hand penetrometer
SPT - Standard penetration test
SPT(C) - SPT using cone

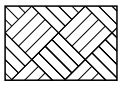
GROUNDWATER

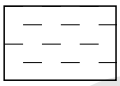
Groundwater strike
Groundwater rest level

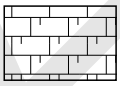
ROTARY CORE DETAILS

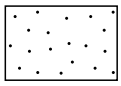
TCR - Total core recovery (%)
SCR - Solid core recovery (%)
RQD - Rock quality designation (%)
FI - Fracture index
NI - Non-intact core
AZCL - Assumed zone of core loss

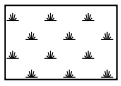
LEGEND

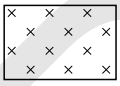

Topsoil

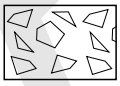

Clay

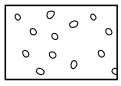

Chalk

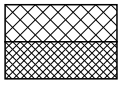

Sand backfill


Peat

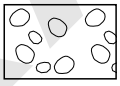

Silt

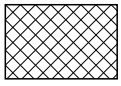

Breccia

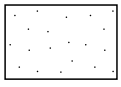

Gravel backfill

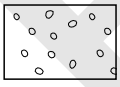

Made ground [cohesive]

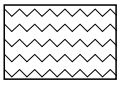

Sand

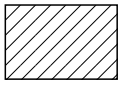

Conglomerate

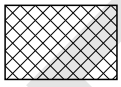

Arisings

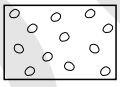

Concrete

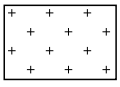

Gravel

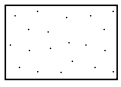

Metamorphic

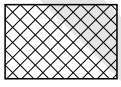

Bentonite

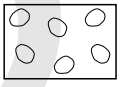

Wood


Cobbles


Igneous

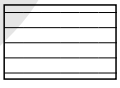

Concrete


Brick

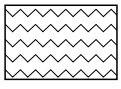

Boulders

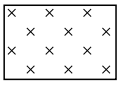

Grout


Bituminous material

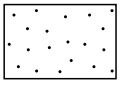

Mudstone


Plain pipe

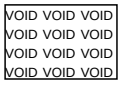

Gypsum


Siltstone

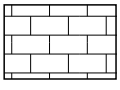

Coal


Sandstone


Slotted pipe



Void


Limestone

DRAFT

Trial Pit

SA101

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-20	2026-01-20

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(0.35)		MADE GROUND: Grey slightly sandy fine to coarse angular to subangular gravel of quarried aggregate. Sand is fine to coarse.
						0.35		MADE GROUND: Brown sandy very gravelly clay with frequent extraneous brick and fragments of brick and rare extraneous fragments of metal and plastic. *Black plastic geotextile (0.35m)*
						(1.85)		
						2.20		*End of Trial Pit at 2.20m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

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Remarks

Method, Plant, Stability, Dimensions
0.00 - 2.10m TP JCB 3CX
Stable
L = 2.00m
W = 0.70m

Logger
A Todd

Checked By: HOL

Trial Pit

SA102

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-19	2026-01-19

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(0.40)		MADE GROUND: Grey slightly sandy fine to coarse angular to subangular gravel of quarried aggregate. Sand is fine to coarse.
						0.40		
						(0.40)		MADE GROUND: Brown sandy gravelly clay with frequent bricks and fragments of brick. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology. *Black plastic geotextile (0.40m)*
						0.80		
						(1.40)		MADE GROUND: Dark grey sandy very gravelly clay with frequent extraneous bricks and fragments of brick and rare pockets of remnant topsoil.
						2.20		*End of Trial Pit at 2.20m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

DRAFT

Remarks

Method, Plant, Stability, Dimensions
0.00 - 2.20m TP JCB 3CX
Stable
L = 2.00m
W = 0.70m

Logger
A Todd

Checked By: HOL

Trial Pit

SA103

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-19	2026-01-19

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(0.10) 0.10		MADE GROUND: Brownish grey clayey sandy gravel. Sand is coarse. Gravel is fine to medium angular to subrounded of various lithology.
						(0.10) 0.20		MADE GROUND: Orange fine to coarse angular gravel of crushed brick and blaes.
						(0.20) 0.40		MADE GROUND: Dark brown mottled dark grey sandy very gravelly clay with frequent extraneous brick and blaes fragments rare extraneous glass, ash, rope, ceramic and timber. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
						(0.50) 0.90		MADE GROUND: Black mottled brown sandy very gravelly clay with occasional extraneous plastic, metal and rubber.
						(1.05) 1.95		MADE GROUND: Brown very gravelly clay with occasional extraneous brick and metal. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
								End of Trial Pit at 1.95m

DRAFT

Remarks
Moderate hydrocarbon odour 0.40-0.90 m

Method, Plant, Stability, Dimensions
0.00 - 1.95m TP JCB 3CX
Stable
L = 1.70m
W = 0.70m

Logger
A Todd

Checked By: HOL

Trial Pit

SA104

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-19	2026-01-19

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(0.30)		MADE GROUND: Reddish brown slightly sandy fine to coarse angular to subrounded gravel of various lithology. Sand is fine to coarse.
						0.30 (0.10) 0.40		MADE GROUND: Grey slightly sandy fine to coarse angular to subangular gravel of quarried aggregate. Sand is fine to coarse.
						(0.40)		MADE GROUND: Brown clayey gravelly fine to coarse sand with occasional brick and concrete cobbles. Gravel was fine to coarse angular to subangular of various lithology.
						0.80 (1.30)		MADE GROUND: Dark grey clayey gravelly fine to coarse sand with frequent timber and metal cable and occasional brick and concrete cobbles and concrete boulders. Gravel was fine to coarse angular to subangular of various lithology.
						2.10		*End of Trial Pit at 2.10m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

DRAFT

Remarks
Moderate hydrocarbon odour 0.80-2.10 m

Method, Plant, Stability, Dimensions
0.00 - 2.10m TP JCB 3CX
Stable
L = 1.80m
W = 0.70m

Logger
A Todd

Checked By: HOL

Trial Pit

TP101

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-20	2026-01-20

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.20	ES 1			(0.30) 0.30		MADE GROUND: Grey clayey sandy gravel with rare extraneous fragments of blaes. Sand is fine to coarse. Gravel is fine to coarse angular to subangular of various lithology predominantly quarried aggregate.
		0.50	ES 2			(0.50) 0.80		MADE GROUND: Brown sandy very gravely friable clay with frequent extraneous bricks and fragments of brick and blaes and rare extraneous metal, glass and timber. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology. *Black plastic geotextile (0.30m)*
		0.90	ES 3			(0.30) 1.10		MADE GROUND: Black sandy slightly gravelly clay. Sand is fine to coarse. Gravel is fine to medium subrounded of various lithology.
		2.00	ES 4			(0.70) 1.80		MADE GROUND: Brown sandy very gravely friable clay with frequent extraneous cobble sized concrete fragments and occasional extraneous metal. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
						(1.50) 3.30		MADE GROUND: Brown sandy gravelly clay with frequent extraneous blaes and rare extraneous bricks metal and rubber. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
								End of Trial Pit at 3.30m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Slight hydrocarbon odour 0.80-1.10 m

Method, Plant, Stability, Dimensions
0.00 - 3.30m TP JCB 3CX
Stable
L = 2.50m
W = 1.00m

Logger
A Todd

Checked By: HOL

DRAFT

Trial Pit

TP102

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-20	2026-01-20

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(0.25)		MADE GROUND: Grey clayey sandy gravel with rare extraneous fragments of blaes. Sand is fine to coarse. Gravel is fine to coarse angular to subangular of various lithology predominantly quarried aggregate.
		0.30	ES 5			0.25		
						(0.25)		MADE GROUND: Brown very sandy gravelly clay with localised pockets of soft to firm light brown slightly gravelly clay and frequent blaes. Sand is fine to coarse. Gravel is fine to coarse angular to subangular of various lithology.
						0.50		*Black plastic geotextile (0.25m)*
	▼	0.80	ES 6			(0.70)		MADE GROUND: Multi coloured slightly clayey very gravelly cobbles of demolition rubble including bricks concrete ceramic and timber with rare ceramic and metal. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology including demolition rubble.
	▽					1.20		*End of Trial Pit at 1.20m*

DRAFT

Remarks
Rapid groundwater ingress 1.20 m, rose to 0.80 m in 5 min thereafter no change. Terminated due to water ingress.

Method, Plant, Stability, Dimensions
0.00 - 1.20m TP JCB 3CX
Stable
L = 2.00m
W = 1.00m

Logger
A Todd

Checked By: HOL

Trial Pit

TP103

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-20	2026-01-20

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.20	ES 7			(0.30) 0.30		MADE GROUND: Grey slightly sandy gravel. Sand is fine to coarse. Gravel is fine to coarse angular to subangular of quarried aggregate.
		0.50	ES 8			(0.30) 0.60		MADE GROUND: Brown sandy gravelly clay with frequent blaes. Sand is fine to coarse. Gravel is fine to coarse angular to subangular of various lithology.
	▽	0.70	ES 9			(0.20) 0.80		MADE GROUND: Black sandy slightly gravelly clay. Sand is fine to coarse. Gravel is fine to medium subrounded of various lithology.
		1.50	ES 10			(1.90)		MADE GROUND: Brown sandy very gravelly clay with frequent extraneous material including bricks, brick fragments, blaes, corrugated steel sheet, timber, metal wire, old pipes, hardened bitumen and occasional pockets of soft very gravelly dark grey clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
	▽					2.70		*End of Trial Pit at 2.70m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable
L = 2.50m
W = 1.00m

Logger
A Todd

Checked By: HOL

DRAFT

Trial Pit

TP104

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-21	2026-01-21

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.10	ES 12			(0.10) 0.10		MADE GROUND: Black tarmac with medium angular to subangular gravel aggregate.
						(0.25)		MADE GROUND: Grey slightly sandy gravel. Sand is fine to coarse. Gravel is fine to coarse angular to subangular of quarried aggregate.
	▽	0.40	ES 11			0.35		MADE GROUND: Brown sandy very gravelly clay with frequent extraneous bricks, fragments of brick and blaes and rare extraneous fragments of ceramic, glass, plastic, metal and wood. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
						(0.45)		*Black plastic geotextile (0.35m)*
						0.80		MADE GROUND: Dark brown slightly sandy gravelly clay occasional extraneous fragments of blaes. Localised pockets of black sandy clay with frequent tree wood. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
						(0.80)		
		1.70	ES 13			1.60		MADE GROUND: Grey sandy slightly gravelly clay with rare remnant vegetation. Sand is fine to medium. Gravel is fine to medium subangular to subrounded of various lithology. (Presumed reworked)
						(1.60)		
						3.20		*End of Trial Pit at 3.20m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks

Method, Plant, Stability, Dimensions
0.00 - 3.20m TP JCB 3CX
Stable
L = 2.50m
W = 1.00m

Logger
A Todd

Checked By: HOL

DRAFT

Trial Pit

TP105

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-21	2026-01-21

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.20	ES 14			(0.30) 0.30		MADE GROUND: Grey very clayey sandy gravel with occasional cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subangular of quarried aggregate.
		0.50	ES 15			(0.70) 1.00		MADE GROUND: Brown sandy very gravelly clay with frequent extraneous bricks, fragments of brick and blaes and rare extraneous fragments of ceramic, glass, plastic, metal and wood. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology. *Black plastic geotextile (0.30m)*
		1.20	ES 16			(0.70) 1.70		MADE GROUND: Black slightly clayey very sandy gravel with frequent extraneous bricks and timber and occasional blaes and concrete cobbles. Sand is predominantly coarse. Gravel is fine to coarse angular to subrounded of various lithology. *Frequent metal wire (1.65m)*
		1.90	ES 17			(0.60) 2.30		MADE GROUND: Grey very clayey sandy gravel with frequent bricks. (Recovered wet)
								End of Trial Pit at 2.30m

DRAFT

Remarks
Moderate hydrocarbon 1.70-2.30 m. Rapid groundwater ingress below 1.70 m. Terminated due to water ingress.

Method, Plant, Stability, Dimensions
0.00 - 2.30m TP JCB 3CX
Stable
L = 2.00m
W = 1.00m

Logger
A Todd

Checked By: HOL

Trial Pit

TP106

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-19	2026-01-19

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(0.10) 0.10		MADE GROUND: Brownish grey sandy gravel. Sand is coarse. Gravel is fine to medium angular to subrounded of various lithology.
						(0.10) 0.20		MADE GROUND: Grey sandy gravel. Sand is fine to coarse. Gravel is fine to coarse angular to subangular of quarried aggregate.
		0.30	ES 18			(0.20) 0.40		MADE GROUND: Orange fine to coarse angular gravel of crushed brick and blaes.
		0.80	ES 19			(1.20)		MADE GROUND: Brown very gravelly clay with frequent extraneous cobbles of demolition rubble and fragments of plastic occasional metal wire and rare timber, glass, and tins (20 cm, cylinder) with remnant product (creosote or similar). Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
		1.40	ES 20			1.60		MADE GROUND: Brown very gravelly clay with occasional extraneous cobbles of demolition rubble, timber and fragments of plastic, metal wire and rare glass. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
						(1.20)		
	▽	2.90	ES 21			2.80 (0.40)		MADE GROUND: Grey sandy very gravelly clay with frequent cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subangular of various lithology. Cobbles were angular to subangular of various lithology
						3.20		*End of Trial Pit at 3.20m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Moderate hydrocarbon odour 0.40-1.60 m. Strong hyrocarbon odour 1.60-3.20 m.

Method, Plant, Stability, Dimensions
0.00 - 3.20m TP JCB 3CX
Stable
L = 2.50m
W = 1.00m

Logger
A Todd

Checked By: HOL

DRAFT

Trial Pit

TP107

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-21	2026-01-21

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.10	ES 22			(0.15) 0.15		MADE GROUND: Brownish grey clayey sandy gravel. Sand is coarse. Gravel is fine to medium angular to subrounded of various lithology.
		0.20	ES 23			(0.20) 0.35		MADE GROUND: Orange fine to coarse angular gravel of crushed brick and blaes.
		0.40	ES 24			(0.45) 0.80		MADE GROUND: Dark brown mottled dark grey sandy very gravelly clay with frequent extraneous brick and blaes fragments rare extraneous glass, ash, rope, ceramic and timber. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
		0.90	ES 25			(0.70) 1.50		MADE GROUND: Dark grey and brown clayey very gravelly sand with abundant cobbles and boulders of brick, stone block and concrete and rare metal wire. Stiff dark brown mottled dark grey sandy very gravelly clay with frequent extraneous brick and blaes fragments rare extraneous glass, ash, rope, ceramic and timber. Sand was fine to coarse. Gravel was fine to coarse angular to subrounded of various lithology.
	▽	2.40	ES 26			(1.20) 2.70		MADE GROUND: Multicoulored sandy gravelly cobbles and boulders of demolition rubble with rare timber. Sand is coarse. Gravel is fine to coarse predominantly angular to subangular of demolition rubble. Cobbles are angular cubic of brick, stonework and concrete. Boulders are subangular of concrete.
								End of Trial Pit at 2.70m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Moderate hydrocarbon odour recorded 2.40-2.70 m. Rapid groundwater ingress below 2.40 m. Unstable below 1.50 m.

Method, Plant, Stability, Dimensions

0.00 - 1.50m TP JCB 3CX
Stable
L = 2.50m
W = 1.00m

1.50 - 2.70m TP JCB 3CX
Unstable
L = 2.50m
W = 1.00m

Logger
A Todd
A Todd

Checked By: HOL

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Trial Pit

TP108

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-21	2026-01-22

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.10	ES 27			(0.15) 0.15		MADE GROUND: Greyish brown clayey sandy gravel with rare extraneous blaes and ceramic. Sand is fine to coarse. Gravel is fine to coarse angular to subangular of various lithology.
						(0.25) 0.40		MADE GROUND: Orange fine to coarse angular gravel of crushed brick and blaes.
						(0.40) 0.80		MADE GROUND: Multicoulored sandy gravelly subangular boulders of concrete with occasional extraneous plastic. Sand is coarse. Gravel is fine to coarse angular of concrete and brick.
		1.00	ES 28			(0.50) 1.30		MADE GROUND: Dark brown slightly clayey very gravelly fine to coarse sand with frequent extraneous fragments of brick and blaes and rare extraneous fragments of metal, timber and hardened bitumen. Gravel is fine to coarse angular to subangular of various lithology.
		1.50	ES 29			(1.40) 2.70		MADE GROUND: Dark brown very sandy very gravelly clay with frequent extraneous brick and blaes occasional extraneous brick and metal and rare extraneous plastic cobbles of tarmac and concrete and boulders of concrete. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
	▽	3.00	ES 30			(0.50) 3.20		Dark grey silty fine to medium SAND with frequent rootlets and partially decayed vegetation. (Presumed natural)
								End of Trial Pit at 3.20m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Slight hydrocarbon odour 0.80-1.30 m. Moderate hydrocarbon odour 1.30-2.70 m. Groundwater seepage at 2.70 m. Excavated to 0.40 m, then backfilled on 21/01/26. Excavation progressed further with breaker 22/01/26.

Method, Plant, Stability, Dimensions
0.00 - 3.20m TP JCB 3CX
Stable
L = 2.50m
W = 1.00m

Logger
A Todd

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Trial Pit

TP109

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-22	2026-01-22

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(0.20) 0.20		MADE GROUND: Reddish grey sandy fine to coarse angular to subrounded gravel of various lithology with occasional cobbles. Sand is coarse. Cobbles are angular to subangular of various lithology.
		0.30	ES 31			(0.30) 0.50		MADE GROUND: Brown very sandy very gravelly clay with frequent extraneous brick, blaes and ceramic rare extraneous metal, glass, and hardened bitumen. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
		0.80	ES 32			(0.80) 1.30		MADE GROUND: Dark grey sandy very gravelly clay with rare extraneous metal, slag and ash. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
		1.50	ES 33			(1.40) 2.70		Dark grey slightly silty fine to medium SAND with frequent rootlets. (Presumed natural)
								End of Trial Pit at 2.70m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

DRAFT

Remarks
Slight organic odour 1.30-2.70 m.

Method, Plant, Stability, Dimensions
0.00 - 2.70m TP JCB 3CX
Stable
L = 2.00m
W = 1.00m

Logger
A Todd

Checked By: HOL

Trial Pit

TP110

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-21	2026-01-21

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.10	ES 34			(0.20)		MADE GROUND: Brownish grey sandy fine to coarse angular to subangular gravel various lithology with frequent extraneous ceramic occasional extraneous brick fragments and rare extraneous metal and timber. Sand is coarse.
						0.20		
		0.50	ES 35			(0.40)		MADE GROUND: Reddish brown slightly clayey very sandy fine to coarse angular to subangular gravel various lithology with frequent extraneous bricks and brick fragments and occasional concrete and tarmac cobbles. Sand is fine to coarse.
						0.60		
						(0.40)		MADE GROUND: Subangular cubic boulders of concrete and stone blockwork.
		1.10	ES 36			1.00		MADE GROUND: Dark brown and grey very sandy very gravelly clay with frequent bricks and concrete boulders occasional extraneous metal and timer and rare plastic, hardened bitumen and rubber. Sand is fine to coarse.
		1.60	ES 37			(1.30)		
						2.30		*End of Trial Pit at 2.30m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Slight hydrocarbon odour 1.00-2.30 m. Terminated due to difficult digging.

Method, Plant, Stability, Dimensions
0.00 - 2.30m TP JCB 3CX
Stable
L = 2.50m
W = 1.00m

Logger
A Todd

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Trial Pit

TP111

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-21	2026-01-21

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.20	ES 38			(0.50)		MADE GROUND: Brownish grey clayey sandy fine to coarse angular to subangular gravel of various lithology with frequent rootlets occasional extraneous blaes and ceramic.
						0.50		
	▽					(0.20)		MADE GROUND: Orange fine to coarse angular gravel of crushed brick and blaes.
						0.70		
		0.80	ES 39			(0.20)		MADE GROUND: Brown sandy gravelly clay with frequent extraneous blaes and brick fragments. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
						0.90		
		1.00	ES 40			(0.30)		MADE GROUND: Black sandy gravelly clay with rare extraneous fragments of glass. Gravel is fine to coarse angular to subrounded of various lithology.
						1.20		
		1.50	ES 41			(1.50)		MADE GROUND: Mottled brown and dark grey sandy very gravelly clay with frequent bricks and fragments of brick and rare metal, timber, concrete cobbles and boulders, and ash.
								Large boulder sized concrete obstruction, could not be removed from pit. (2.40 - 2.70m)
						2.70		*End of Trial Pit at 2.70m*

DRAFT

Remarks
Moderate hydrocarbon odour 1.20-2.70. Groundwater seepage at 0.70 m.

Method, Plant, Stability, Dimensions
0.00 - 2.70m TP JCB 3CX
Stable
L = 2.50m
W = 1.00m

Logger
A Todd

Checked By: HOL

Trial Pit

TP112

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-21	2026-01-21

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(0.10) 0.10		MADE GROUND: Grey clayey sandy fine to coarse angular to subangular gravel of quarried aggregate with frequent extraneous fragments of blaes and brick. Sand is fine to coarse.
						(0.15) 0.25		MADE GROUND: Orange fine to coarse angular gravel of crushed brick and blaes with abundant whole bricks.
		0.30	ES 42			(0.25) 0.50		MADE GROUND: Dark brown clayey gravelly fine to coarse sand with frequent extraneous fragments of blaes and brick and rare plastic, glass and wood. Gravel is fine to coarse.
	▽	0.60	ES 43			(0.40) 0.90		MADE GROUND: Brown sandy gravelly clay with rare extraneous timber, metal and plastic. Localised pockets of dark grey sandy gravelly clay with remnant vegetation. Sand is fine to coarse. Gravel is fine to coarse angular to subangular of various lithology.
		1.20	ES 44			(2.30)		MADE GROUND: Brownish grey sandy very gravelly clay with frequent extraneous fragments of brick and blaes and rare extraneous metal, plastic, timber, remnant vegetation, ceramic and glass. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
						3.20		*End of Trial Pit at 3.20m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Slight organic odour 0.90-3.20 m.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Stable
L = 2.50m
W = 1.00m

Logger
A Todd

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Trial Pit

TP113

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-22	2026-01-22

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(0.10) 0.10		MADE GROUND: Brownish grey sandy fine to coarse angular to subangular gravel various lithology with frequent extraneous ceramic. Sand is coarse.
						(0.40) 0.50		MADE GROUND: Multi coloured sandy gravelly angular to subangular cobbles of demolition rubble with occasional ceramic. Sand is coarse. Gravel is fine to coarse of demolition rubble.
		0.60	ES 45			(0.30) 0.80		MADE GROUND: Dark brown very sandy very gravelly clay with frequent extraneous brick and occasional extraneous ceramic, plastic and glass.
		1.10	ES 46			(0.70) 1.50		MADE GROUND: Dark grey very sandy very gravelly dark grey clay with frequent extraneous fragments of brick and rare extraneous fragments of tarmac, concrete, ash and slag. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
		2.20	ES 47			(1.20) 2.70		MADE GROUND: Dark grey very sandy very gravelly dark grey clay with frequent extraneous fragments of brick and rare extraneous fragments of tarmac, concrete, ash and slag. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
						(0.30) 3.00		Stiff brown sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subrounded of various lithology.
								End of Trial Pit at 3.00m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Slight hydrocarbon odour 2.00-3.00 m. Moderate groundwater ingress at 2.00 m.

Method, Plant, Stability, Dimensions

Logger

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Trial Pit

TP114

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-22	2026-01-22

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(1.00)		MADE GROUND: Dark brown clayey very gravelly sand with frequent extraneous brick, wood, metal, concrete, and plastic. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
						1.00		
		1.20	ES 48			(0.80)		MADE GROUND: Dark brown heterogenous clayey very gravelly sand with abundant extraneous brick wood metal concrete and plastic. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
						1.80		
		1.85	ES 49			(0.10)		MADE GROUND: Dark grey sandy fine to coarse subangular platy gravel of single lithology. Sand is medium to coarse.
						1.90		
						(0.10)		
						2.00		MADE GROUND: Orange fine to coarse angular gravel of crushed brick and blaes.
						(0.20)		
						2.20		MADE GROUND: Brown sandy gravelly clay with occasional extraneous brick and blaes and rare metal. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
		2.30	ES 50			(0.30)		
						2.50		MADE GROUND: Dark grey slightly sandy slightly gravelly clay with frequent extraneous blaes and partially decayed vegetation. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology.
								End of Trial Pit at 2.50m

Remarks
Excavated into side of stockpile; top of pit ~1.80 m above surrounding ground level.

Method, Plant, Stability, Dimensions
0.00 - 2.50m TP JCB 3CX
Stable
L = 2.00m
W = 1.00m

Logger
A Todd

Checked By: HOL

DRAFT

Trial Pit

TP115

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-01-22	2026-01-22

Client
Beech Group

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
								MADE GROUND: Dark brown clayey gravelly fine to medium sand with frequent roots and occasional extraneous material including brick, plastic, ceramic and timber. Gravel was fine to coarse angular to subrounded of various lithology. (Stockpiled topsoil)
		1.00	ES 51			(2.50)		
						2.50		
		2.60	ES 52			(0.20)		MADE GROUND: Grey sandy fine to coarse angular to subangular gravel. Sand was coarse.
						2.70		
		2.80	ES 53			(0.40)		MADE GROUND: Brown very sandy very gravelly clay with frequent brick occasional wood and rare slag, ash, tarmac and glass.
						3.10		*End of Trial Pit at 3.10m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

DRAFT

Remarks
Excavated into side of stockpile; top of pit ~2.70 m above surrounding ground level.

Method, Plant, Stability, Dimensions
0.00 - 3.10m TP JCB 3CX
Stable
L = 2.00m
W = 1.00m

Logger
A Todd

Checked By: HOL

LandWise
geo-environmental consultants

Key to exploratory hole symbols and abbreviations

SAMPLE TYPES

ACM - Asbestos sample
AMAL - Amalgamated sample
B - Bulk disturbed sample
BLK - Block sample
C - Core sample
CBR - CBR test sample
D - Disturbed sample
ES - Environmental sample
EW - Environmental water sample
G - Gas sample
J - Jar sample
L - Liner sample
TW - Pushed thin wall sample
U - Undisturbed sample
UT - Undisturbed thin wall sample
W - Water sample

IN-SITU TESTS

HV - Hand shear vane
HV(r) - Hand shear vane residual
PID - Photo ionisation detector
PP - Hand penetrometer
SPT - Standard penetration test
SPT(C) - SPT using cone

GROUNDWATER

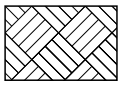

Groundwater strike

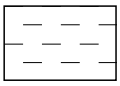

Groundwater rest level

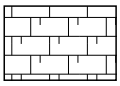
ROTARY CORE DETAILS

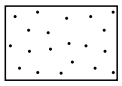
TCR - Total core recovery (%)
SCR - Solid core recovery (%)
RQD - Rock quality designation (%)
FI - Fracture index
NI - Non-intact core
AZCL - Assumed zone of core loss

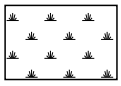
LEGEND

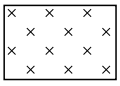

Topsoil


Clay

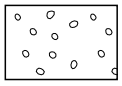

Chalk

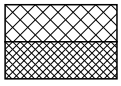

Sand backfill

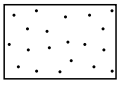

Peat

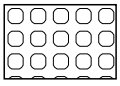

Silt

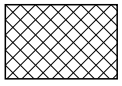

Breccia

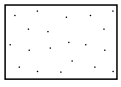

Gravel backfill

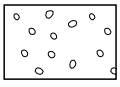

Made ground [cohesive]

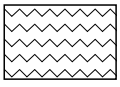

Sand

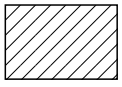

Conglomerate

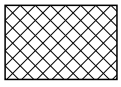

Arisings

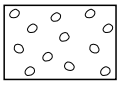

Concrete

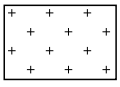

Gravel

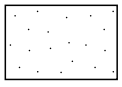

Metamorphic

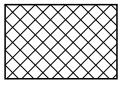

Bentonite

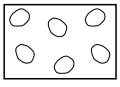

Wood


Cobbles


Igneous

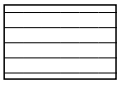

Concrete


Brick

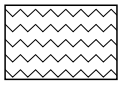

Boulders

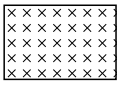

Grout


Bituminous material

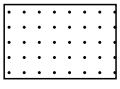

Mudstone


Plain pipe

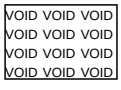

Gypsum


Siltstone

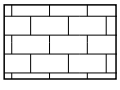

Coal


Sandstone


Slotted pipe



Void


Limestone

Trial Pit

SP01

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-03-31	2026-03-31

Client
GBX Remediation

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.10	ES			(0.40)		TOPSOIL: Soft dark brown very sandy slightly gravelly clay with frequent roots. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of various lithologies.
						0.40		MADE GROUND: Firm reddish brown very sandy gravelly clay with frequent extraneous material including bricks, plastic, ceramics, glass and wood. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology including demolition rubble.
						(1.50)		*Orange high-visibility woven plastic geotextile. (0.40m)*
		1.50 1.50	ES B			1.90		*End of Trial Pit at 1.90m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Strength characterised by engineers visual assessment only.

Method, Plant, Stability, Dimensions
0.00 - 1.90m TP 20T Tracked
Stable
L = 2.00m
W = 0.70m

Logger
A Todd

Trial Pit

SP02

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-04-01	2026-04-01

Client
GBX Remediation

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.10	ES			(0.45)		TOPSOIL: Soft dark brown very sandy slightly gravelly clay with frequent roots and rare glass and blaes. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of various lithologies.
						0.45		MADE GROUND (heterogeneous): Soft to firm reddish brown and soft greyish brown very sandy gravelly clay locally reddish brown clayey gravelly sand with frequent extraneous material including brick, plastic, timber, metal, glass and rare cobble and boulder sized concrete. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology including demolition rubble. *Orange high-visibility woven plastic geotextile. (0.45m)*
		2.20 2.20 2.20	ES B WAC			(2.25)		
						2.70		*End of Trial Pit at 2.70m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Strength characterised by engineers visual assessment only.

Method, Plant, Stability, Dimensions
0.00 - 2.70m TP 20T Tracked
Stable
L = 2.00m
W = 0.70m

Logger
A Todd

Trial Pit

SP03

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-04-01	2026-04-01

Client
GBX Remediation

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.20	ES			(0.40)		TOPSOIL: Soft dark brown very sandy slightly gravelly clay with frequent roots and rare blaes. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of various lithologies.
						0.40		MADE GROUND: Soft to firm grey very sandy gravelly clay with frequent extraneous material including bricks, wood, ceramic, plastic, metal and cobble sized glazed ceramic. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology including demolition rubble.
								Orange high-visibility woven plastic geotextile. (0.40m)
		1.20 1.20	ES B					*Large timber sleeper (>1.00m) partially revovered. Stained black with strong hydrocarbon odour. (1.20m)*
						(2.10)		
						2.50		*End of Trial Pit at 2.50m*

Remarks
Strength characterised by engineers visual assessment only. Strong hydrocarbon odour noted at 1.20 mbgl.

Method, Plant, Stability, Dimensions
0.00 - 2.50m TP 20T Tracked
Stable
L = 2.00m
W = 0.70m

Logger
A Todd

Trial Pit

SP04

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-04-01	2026-04-01

Client
GBX Remediation

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.20	ES			(0.40)		TOPSOIL: Soft dark brown very sandy slightly gravelly clay with frequent roots and rare wood and blaes. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of various lithologies.
						0.40		MADE GROUND (heterogeneous): Dark brown very clayey gravelly sand and soft to firm very sandy gravelly clay with frequent extraneous material including brick, concrete (cobbles and boulders), plastic, old hose pipe, masonry, ceramic, tree roots. Rare pockets soft to firm grey gravelly clay with abundant tree roots. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology including demolition rubble.
		1.00 1.00	ES B					*Orange high-visibility woven plastic geotextile. (0.40m)*
						(2.10)		
						2.50		*End of Trial Pit at 2.50m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Strength characterised by engineers visual assessment only.

Method, Plant, Stability, Dimensions
0.00 - 2.50m TP 20T Tracked
Stable
L = 2.00m
W = 0.70m

Logger
A Todd

Trial Pit

SP05

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-04-01	2026-04-01

Client
GBX Remediation

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.20	ES			(0.40)		TOPSOIL: Soft dark brown very sandy slightly gravelly clay with frequent roots and rare blaes. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of various lithologies.
						0.40		MADE GROUND: Soft to firm greyish brown and reddish brown very sandy gravelly clay with frequent extraneous material including bricks, rope, glass, ceramic, HGV inner tube, concrete (cobbles), plastic and remnant vegetation. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology including demolition rubble. *Orange high-visibility woven plastic geotextile. (0.40m)*
		1.50 1.50 1.50	ES B WAC			(2.30)		
						2.70		*End of Trial Pit at 2.70m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Strength characterised by engineers visual assessment only.

Method, Plant, Stability, Dimensions
0.00 - 2.70m TP 20T Tracked
Stable
L = 2.00m
W = 0.70m

Logger
A Todd

Trial Pit

SP06

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-04-01	2026-04-01

Client
GBX Remediation

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.10	ES			(0.40)		TOPSOIL: Soft dark brown very sandy slightly gravelly clay with frequent roots. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of various lithologies.
						0.40		MADE GROUND (heterogeneous): Soft to firm greyish brown very sandy gravelly clay with abundant extraneous material, greyish brown clayey gravelly sand with frequent to abundant extraneous material, and soft grey slightly sandy clay with abundant roots. Extraneous material included boulder sized concrete, whole bricks, brick fragments, metal, ceramic, tarmac fragments and plastic. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology including demolition rubble.
						(1.30)		*Orange high-visibility woven plastic geotextile. (0.40m)*
		1.20 1.20	ES B					
						1.70		*Hard concrete obstruction.*
								End of Trial Pit at 1.70m

Remarks
Strength characterised by engineers visual assessment only.

Method, Plant, Stability, Dimensions
0.00 - 1.70m TP 20T Tracked
Stable
L = 2.00m
W = 0.70m

Logger
A Todd

Trial Pit

SP07

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-04-01	2026-04-01

Client
GBX Remediation

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.20	ES			(0.40)		TOPSOIL: Soft dark brown very sandy slightly gravelly clay with frequent roots and rare glass and blaes. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of various lithologies.
						0.40		
		0.50 0.50	ES B			(0.60)		MADE GROUND: Soft to firm reddish brown very sandy gravelly clay with frequent extraneous material including brick, ceramic, concrete and wood. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology including demolition rubble. *Orange high-visibility woven plastic geotextile. (0.40m)*
						1.00		
		1.70 1.70	ES B			(1.50)		MADE GROUND: Soft to firm dark grey sandy clay with abundant tree roots and wood (up to boulder sized) and frequent extraneous material including bricks ceramic and plastic.
						2.50		*End of Trial Pit at 2.50m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Strength characterised by engineers visual assessment only.

Method, Plant, Stability, Dimensions
0.00 - 2.50m TP 20T Tracked
Stable
L = 2.00m
W = 0.70m

Logger
A Todd

Trial Pit

SP08

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-04-01	2026-04-01

Client
GBX Remediation

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.20	ES			(0.35)		TOPSOIL: Soft dark brown very sandy slightly gravelly clay with frequent roots and rare glass and blaes. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of various lithologies.
						0.35		MADE GROUND: Soft to firm greyish brown very sandy gravelly clay with frequent extraneous material including concrete (cobbles and boulders), bricks, wire rope, plastic and wood. Localised pockets of grey clay with abundant partially decayed vegetation. Sand was fine to coarse. Gravel was fine to coarse angular to subrounded of various lithologies including demolition rubble.
								Orange high-visibility woven plastic geotextile. (0.35m)
		1.50 1.50 1.50	ES B WAC			(2.25)		
						2.60		*End of Trial Pit at 2.60m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Strength characterised by engineers visual assessment only.

Method, Plant, Stability, Dimensions
0.00 - 2.60m TP 20T Tracked
Stable
L = 2.00m
W = 0.70m

Logger
A Todd

Trial Pit

SP09

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP				1:25

Project Name	Project No.	Start Date	End Date
Jaguar Land Rover, Halewood	LW25-136	2026-03-31	2026-03-31

Client
GBX Remediation

Consultant
LandWise Conulting

Contractor
Thomas Plant

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.20	ES			(0.30)		TOPSOIL: Soft dark brown very sandy slightly gravelly clay with frequent roots. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of various lithologies.
						0.30		
		0.60 0.60 0.60	ES B WAC			(0.70)		MADE GROUND: Firm reddish brown very sandy gravelly clay with frequent extraneous material including concrete (boulders) bricks, plastic, ceramics, glass and wood. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology including demolition rubble. *Orange high-visibility woven plastic geotextile. (0.30m)*
						1.00		
		2.00 2.00	ES B			(1.90)		MADE GROUND: Soft slightly sandy very gravelly clay with frequent whole bricks and occasional partially decayed vegetation. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology including brick fragments.
						2.90		*End of Trial Pit at 2.90m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
Strength characterised by engineers visual assessment only.

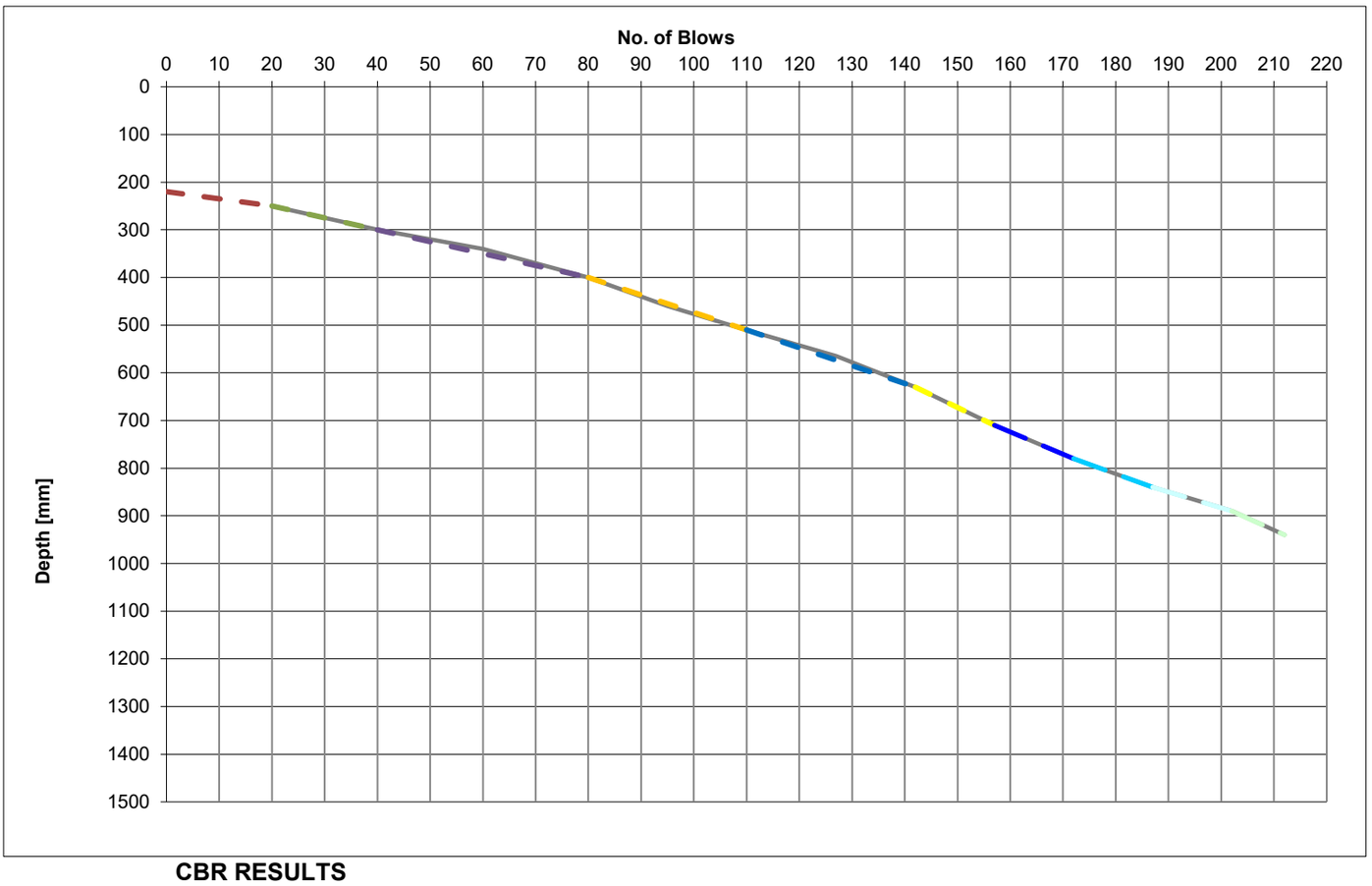
Method, Plant, Stability, Dimensions
0.00 - 2.90m TP 20T Tracked
Stable
L = 2.00m
W = 0.70m

Logger
A Todd

CBR Data Interpretation

Drilling Ltd

Method:	CS 229- Data for pavement assessment Section 6 (Mar 2020)			
Formula:	Log10(CBR)=2.48 - 1.057 Log10(mm/blow)			
Location	CBR 01 - Jaguar Land Rover, Liverpool			
Coordinates	E: 345536.5	N: 38436.491	Level (m AOD):	22.872
Date	19/01/2026			

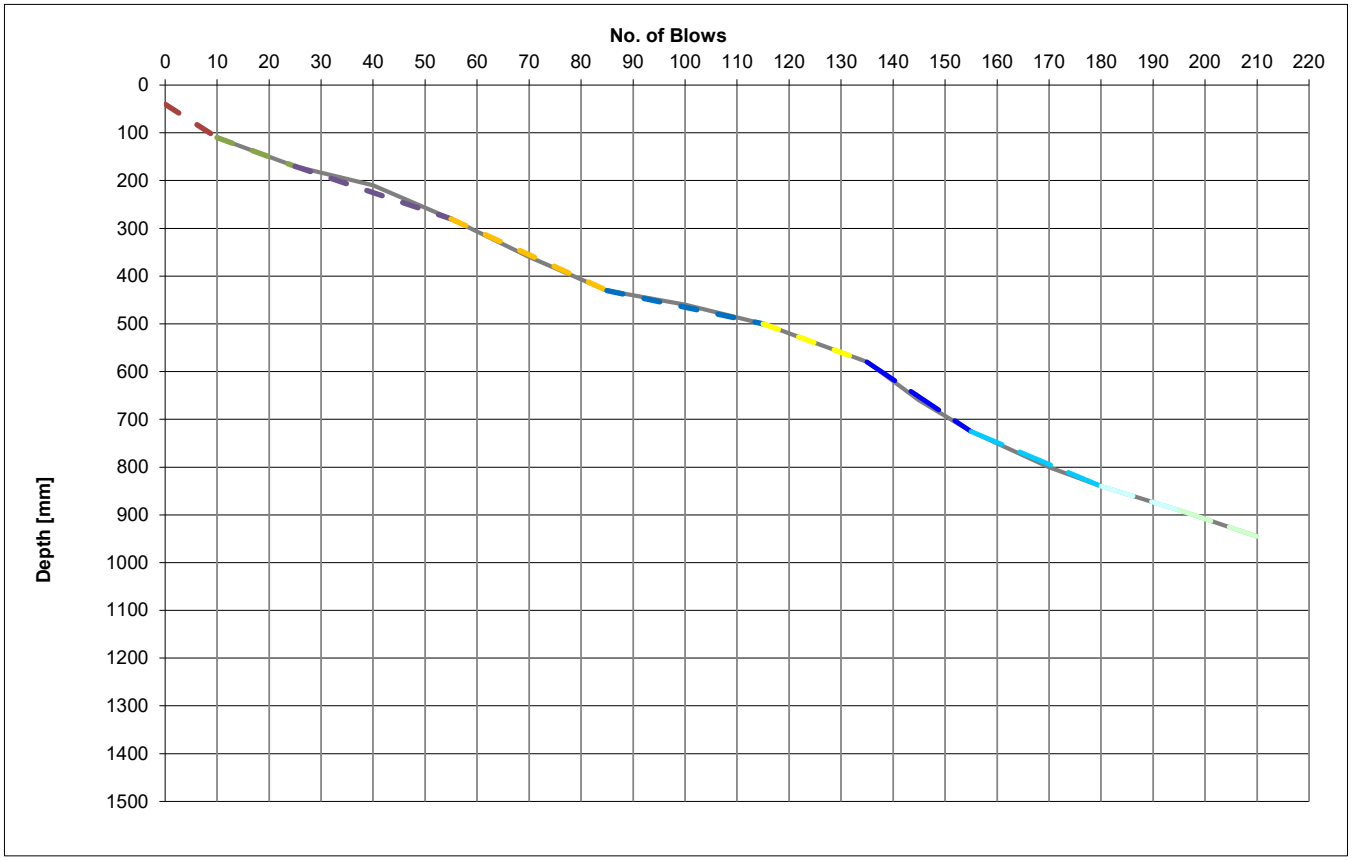


CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 01	0.22	0.25	196.7
CBR 01	0.25	0.30	114.7
CBR 01	0.30	0.40	114.7
CBR 01	0.40	0.51	76.5
CBR 01	0.51	0.63	74.7
CBR 01	0.63	0.71	51.5
CBR 01	0.71	0.78	59.3
CBR 01	0.78	0.84	69.8
CBR 01	0.84	0.89	84.6
CBR 01	0.89	0.94	55.1

CBR Data Interpretation

Method:	CS 229- Data for pavement assessment Section 6 (Mar 2020)
Formula:	Log10(CBR)=2.48 - 1.057 Log10(mm/blow)
Location	CBR 02 - Jaguar Land Rover, Liverpool
Coordinates	E: 345560.319 N: 384363.567 Level (m AOD): 22.882
Date	19/01/2026

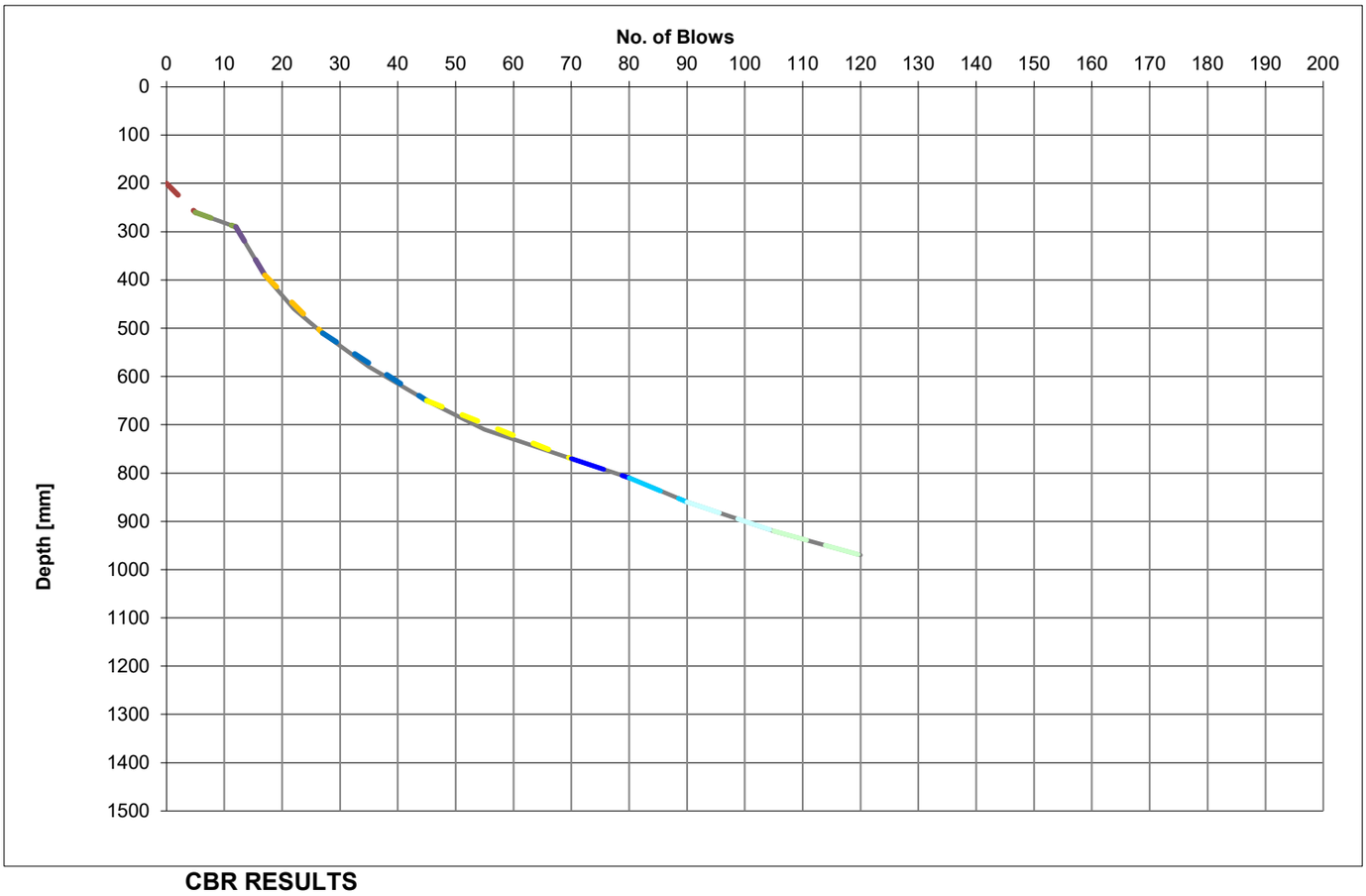


CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 02	0.04	0.11	38.6
CBR 02	0.11	0.17	69.8
CBR 02	0.17	0.28	76.5
CBR 02	0.28	0.43	55.1
CBR 02	0.43	0.50	123.3
CBR 02	0.50	0.58	69.8
CBR 02	0.58	0.73	37.2
CBR 02	0.73	0.84	60.2
CBR 02	0.84	0.89	84.6
CBR 02	0.89	0.95	76.5

CBR Data Interpretation

Method:	CS 229- Data for pavement assessment Section 6 (Mar 2020)
Formula:	Log10(CBR)=2.48 - 1.057 Log10(mm/blow)
Location	CBR 03 - Jaguar Land Rover, Liverpool
Coordinates	E: 345607.293 N: 384376.968 Level (m AOD): 22.282
Date	19/01/2026



CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 03	0.20	0.26	21.8
CBR 03	0.26	0.29	64.9
CBR 03	0.29	0.39	12.7
CBR 03	0.39	0.51	21.8
CBR 03	0.51	0.65	34.5
CBR 03	0.65	0.77	57.5
CBR 03	0.77	0.81	69.8
CBR 03	0.81	0.86	55.1
CBR 03	0.86	0.92	69.8
CBR 03	0.92	0.97	84.6

CBR Data Interpretation

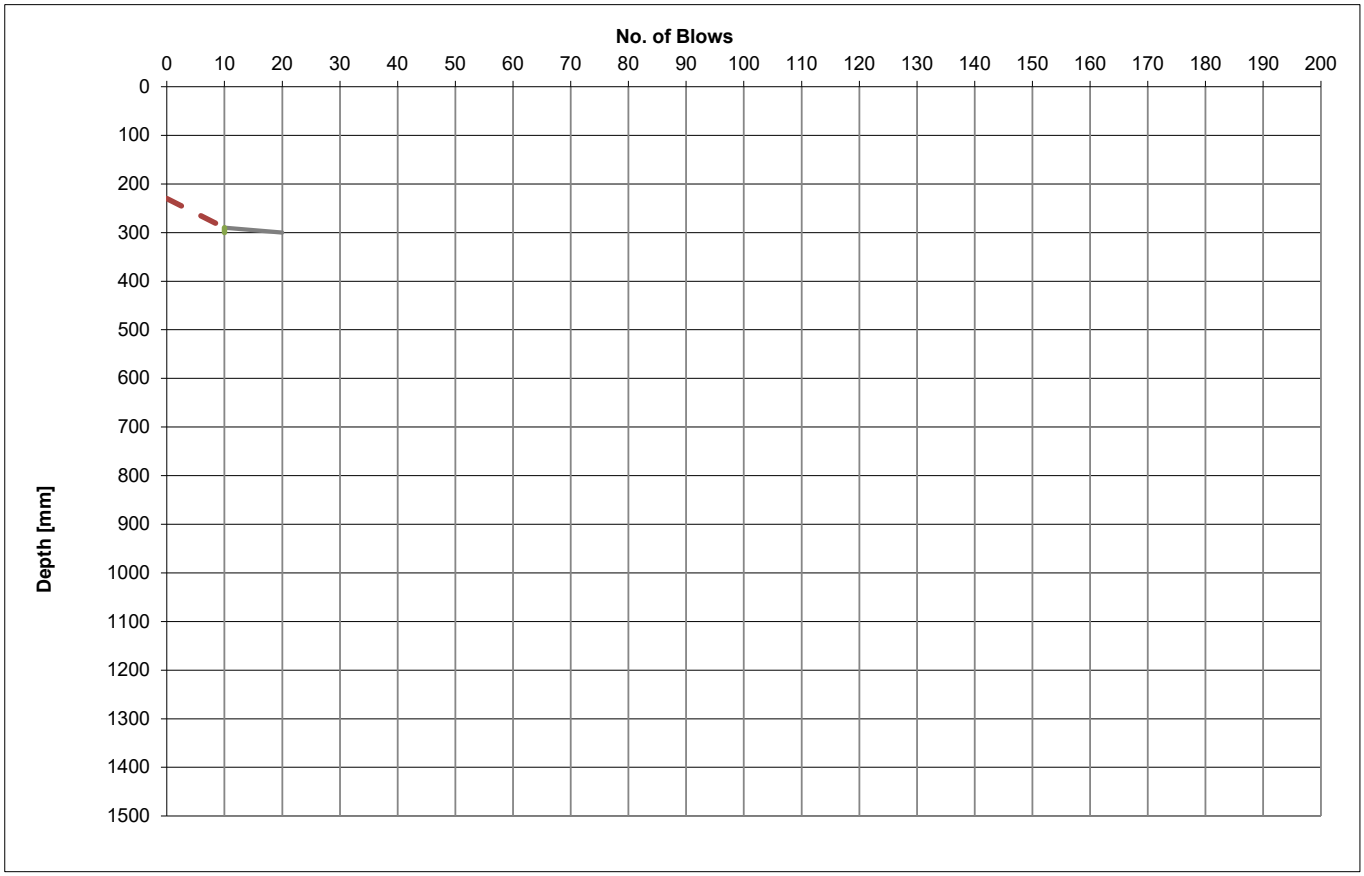
Method: CS 229- Data for pavement assessment Section 6 (Mar 2020)

Formula: Log10(CBR)=2.48 - 1.057 Log10(mm/blow)

Location CBR 04 - Jaguar Land Rover, Liverpool

Coordinates E: 345566.421 N: 384343.672 Level (m AOD): 22.521

Date 19/01/2026



CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 04	0.23	0.29	45.4
CBR 04	0.29	0.30	

CBR Data Interpretation

Drilling Ltd

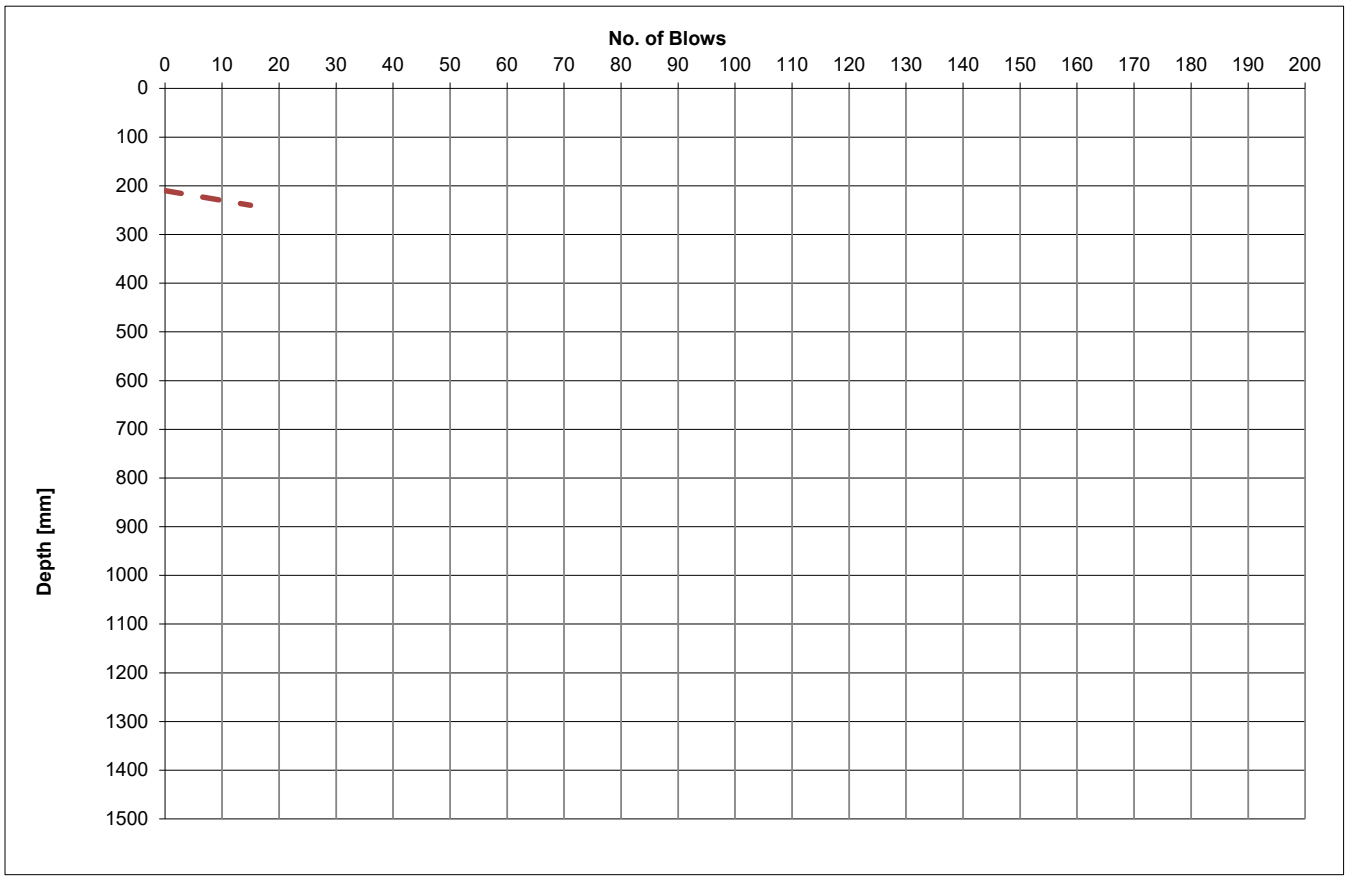
Method: CS 229- Data for pavement assessment Section 6 (Mar 2020)

Formula: Log10(CBR)=2.48 - 1.057 Log10(mm/blow)

Location CBR 04A- Jaguar Land Rover, Liverpool

Coordinates E: 345566.422 N: 384343.673 Level (m AOD): 22.522

Date 22/01/2026

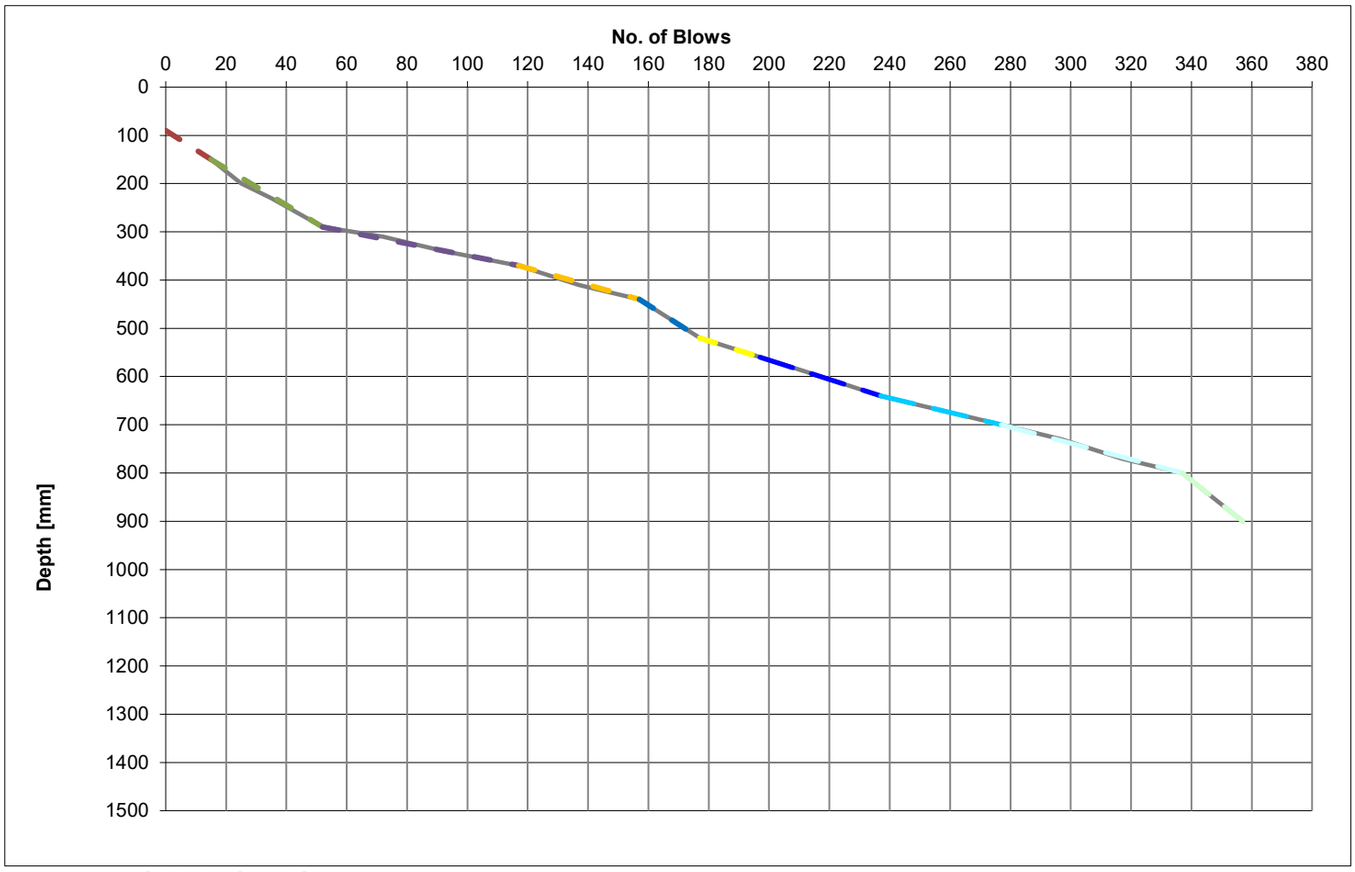


CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 04A	0.21	0.24	145.1

CBR Data Interpretation

Method:	CS 229- Data for pavement assessment Section 6 (Mar 2020)
Formula:	Log10(CBR)=2.48 - 1.057 Log10(mm/blow)
Location	CBR 05 - Jaguar Land Rover, Liverpool
Coordinates	E: 345517.251 N: 384330.627 Level (m AOD): 22.592
Date	19/01/2026

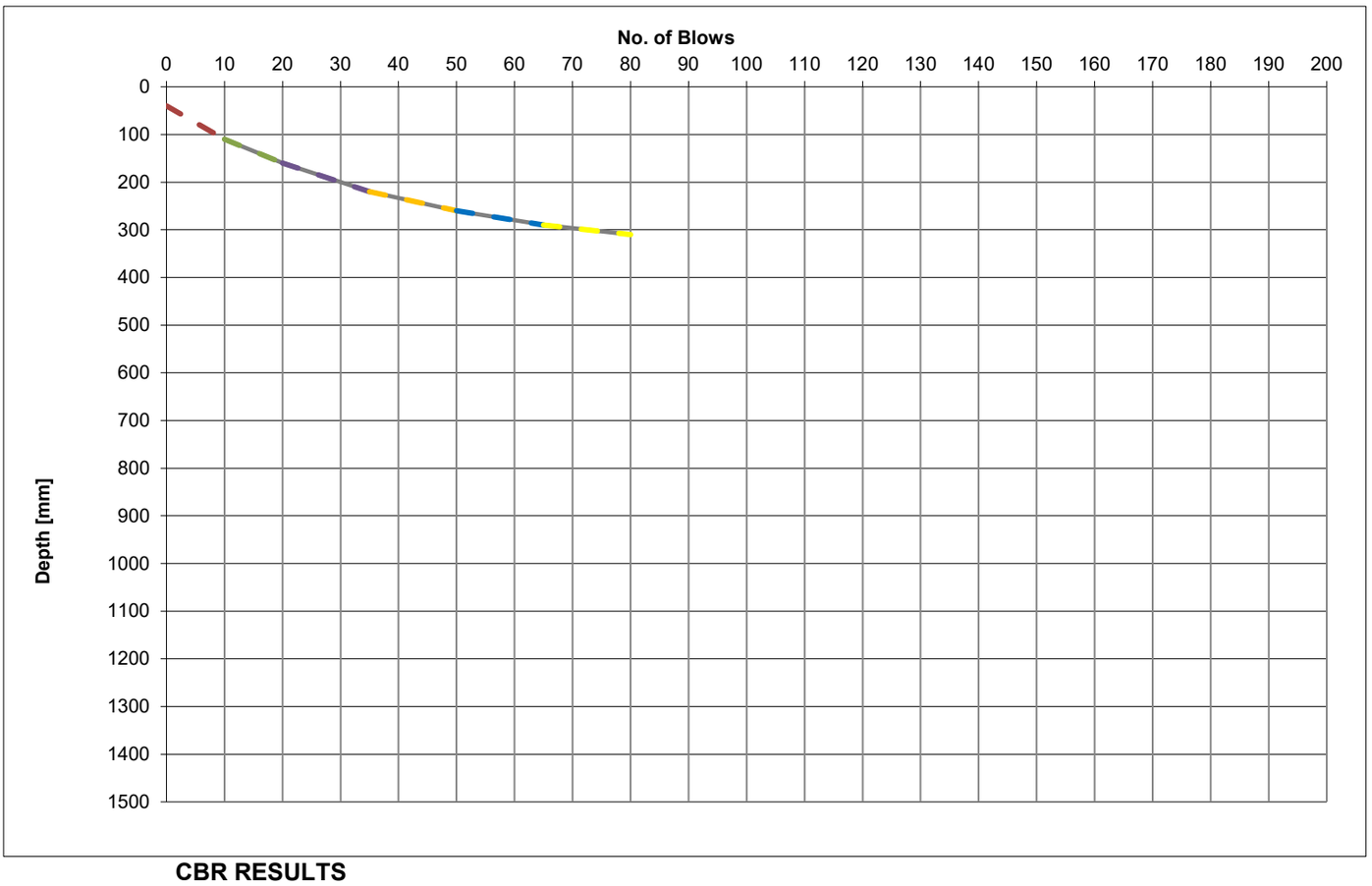


CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 05	0.09	0.15	69.8
CBR 05	0.15	0.29	74.0
CBR 05	0.29	0.37	242.5
CBR 05	0.37	0.44	167.2
CBR 05	0.44	0.52	69.8
CBR 05	0.52	0.56	145.1
CBR 05	0.56	0.64	145.1
CBR 05	0.64	0.70	196.7
CBR 05	0.70	0.80	176.0
CBR 05	0.80	0.90	55.1

CBR Data Interpretation

Method:	CS 229- Data for pavement assessment Section 6 (Mar 2020)
Formula:	Log10(CBR)=2.48 - 1.057 Log10(mm/blow)
Location	CBR 06 - Jaguar Land Rover, Liverpool
Coordinates	E: 345539.636 N: 384312.787 Level (m AOD): 22.408
Date	19/01/2026



CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 06	0.04	0.11	38.6
CBR 06	0.11	0.16	55.1
CBR 06	0.16	0.22	69.8
CBR 06	0.22	0.26	107.1
CBR 06	0.26	0.29	145.1
CBR 06	0.29	0.31	222.8

CBR Data Interpretation

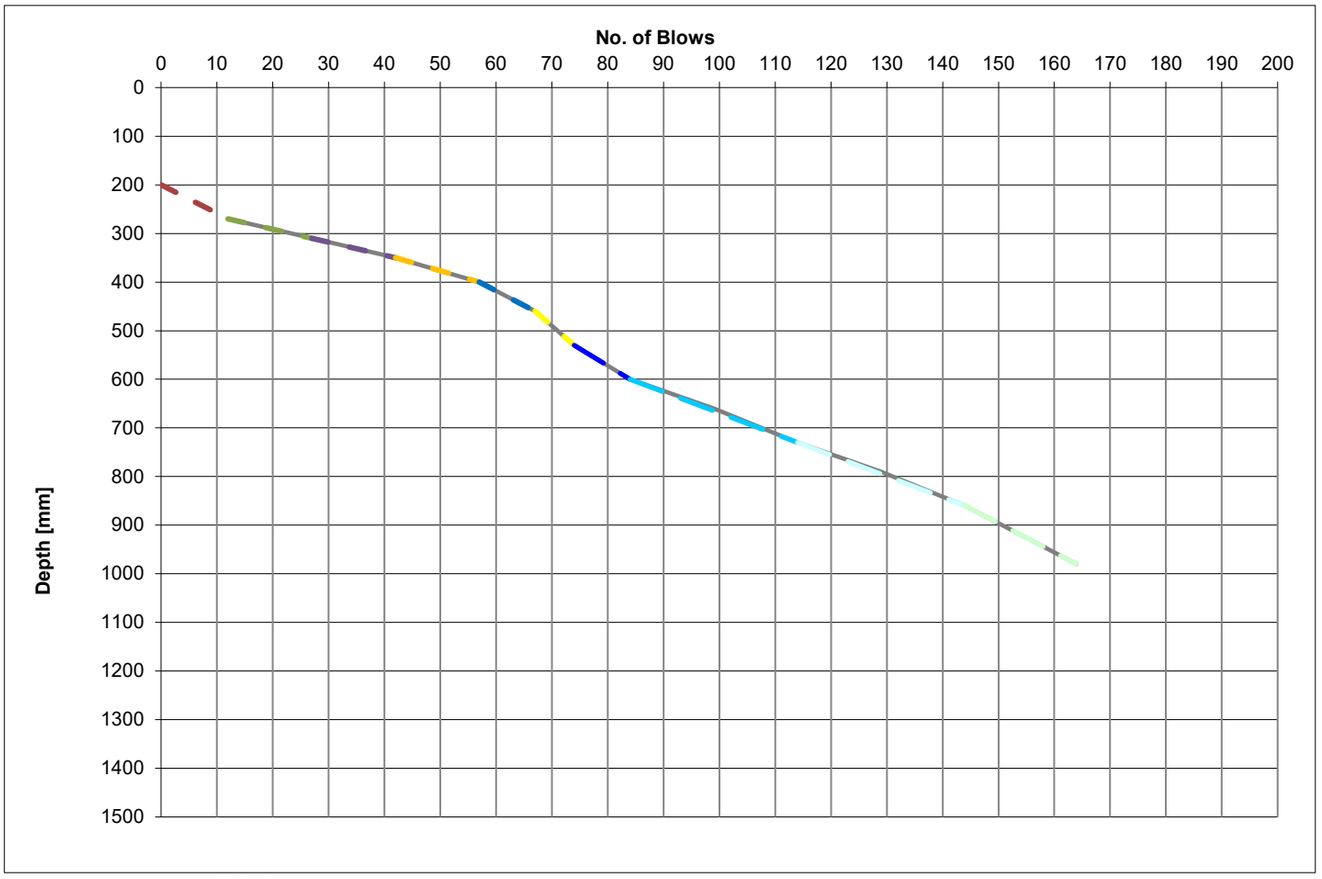
Method: CS 229- Data for pavement assessment Section 6 (Mar 2020)

Formula: Log10(CBR)=2.48 - 1.057 Log10(mm/blow)

Location CBR 06A - Jaguar Land Rover, Liverpool

Coordinates E: 345539.638 N: 384312.789 Level (m AOD): 22.409

Date 19/01/2026



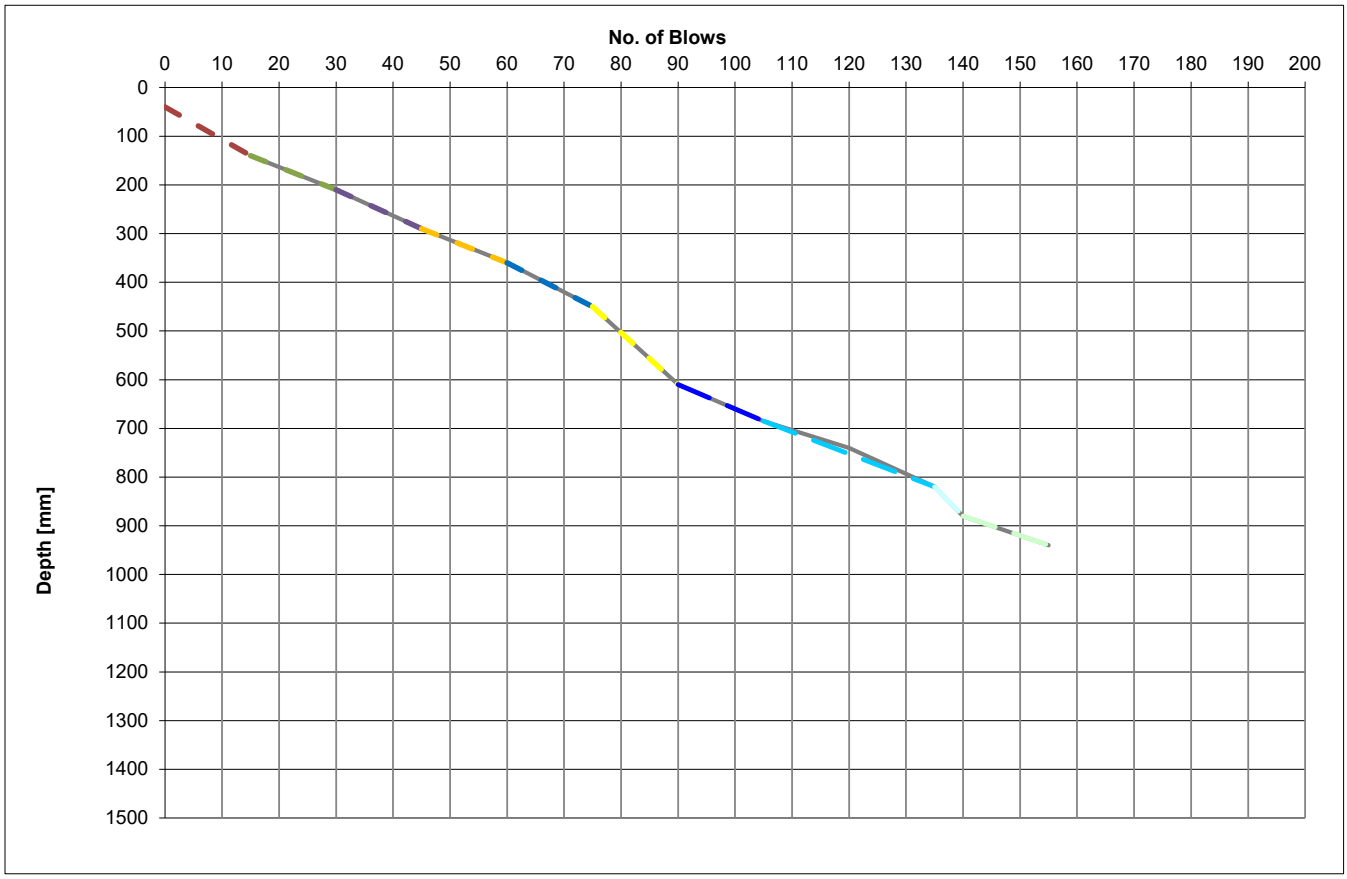
CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 06A	0.20	0.27	46.8
CBR 06A	0.27	0.31	107.1
CBR 06A	0.31	0.35	107.1
CBR 06A	0.35	0.40	84.6
CBR 06A	0.40	0.46	45.4
CBR 06A	0.46	0.53	26.5
CBR 06A	0.53	0.60	38.6
CBR 06A	0.60	0.73	64.1
CBR 06A	0.73	0.86	64.1
CBR 06A	0.86	0.98	45.4

CBR Data Interpretation

Drilling Ltd

Method:	CS 229- Data for pavement assessment Section 6 (Mar 2020)			
Formula:	Log10(CBR)=2.48 - 1.057 Log10(mm/blow)			
Location	CBR 07- Jaguar Land Rover, Liverpool			
Coordinates	E: 345567.646	N: 384318.673	Level (m AOD):	22.345
Date	19/01/2026			

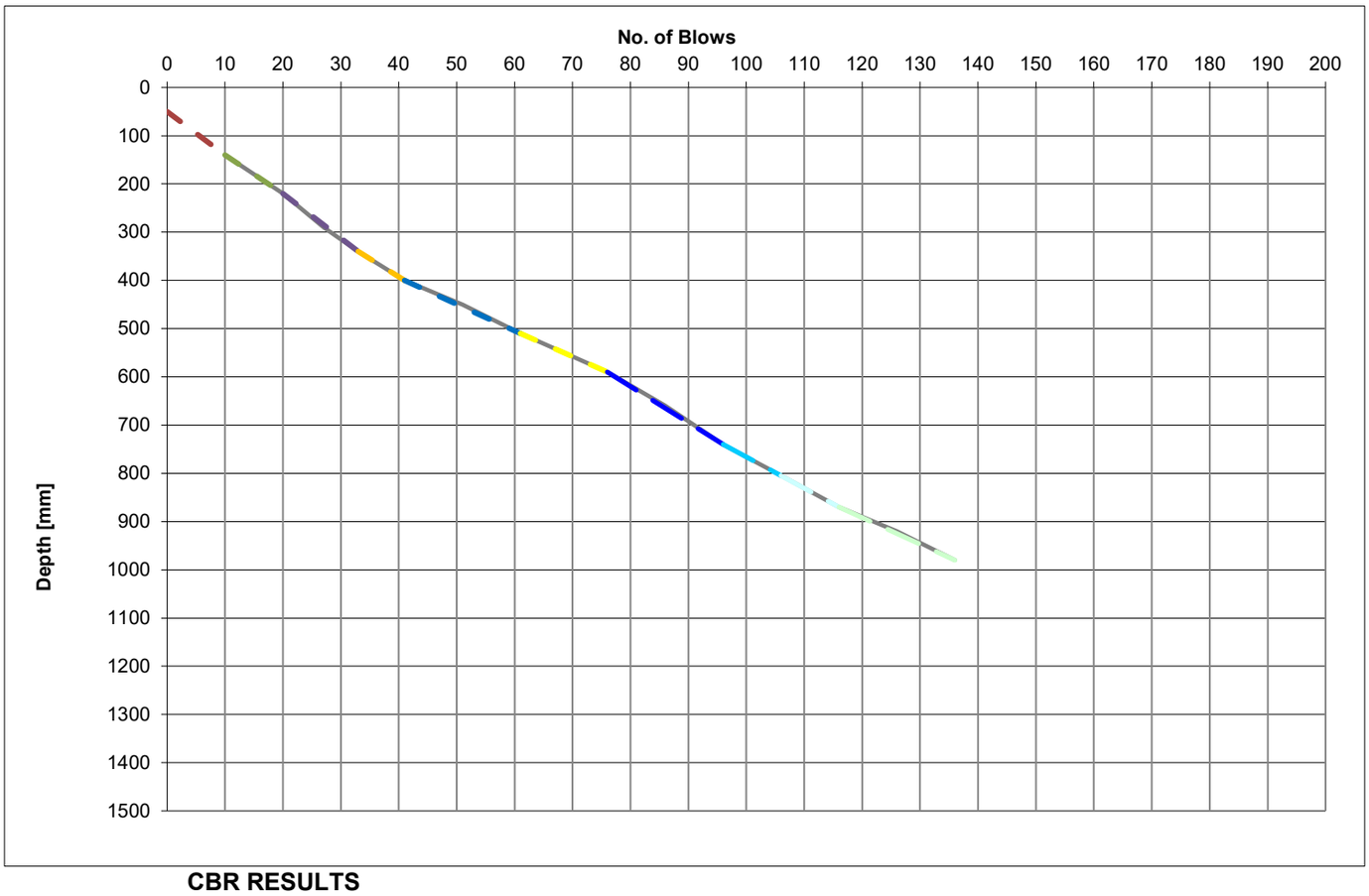


CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 07	0.04	0.14	40.7
CBR 07	0.14	0.21	59.3
CBR 07	0.21	0.29	51.5
CBR 07	0.29	0.36	59.3
CBR 07	0.36	0.45	45.4
CBR 07	0.45	0.61	24.7
CBR 07	0.61	0.69	55.1
CBR 07	0.69	0.82	61.6
CBR 07	0.82	0.88	21.8
CBR 07	0.88	0.94	69.8

CBR Data Interpretation

Method:	CS 229- Data for pavement assessment Section 6 (Mar 2020)			
Formula:	Log10(CBR)=2.48 - 1.057 Log10(mm/blow)			
Location	CBR 08 - Jaguar Landrover, Liverpool			
Coordinates	E: 345602.127	N: 384332.228	Level (m AOD):	22.105
Date	19/01/2026			



CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 08	0.05	0.14	29.6
CBR 08	0.14	0.22	33.5
CBR 08	0.22	0.34	28.8
CBR 08	0.34	0.40	35.9
CBR 08	0.40	0.51	49.8
CBR 08	0.51	0.59	51.5
CBR 08	0.59	0.74	35.9
CBR 08	0.74	0.81	41.8
CBR 08	0.81	0.87	41.8
CBR 08	0.87	0.98	49.8

CBR Data Interpretation

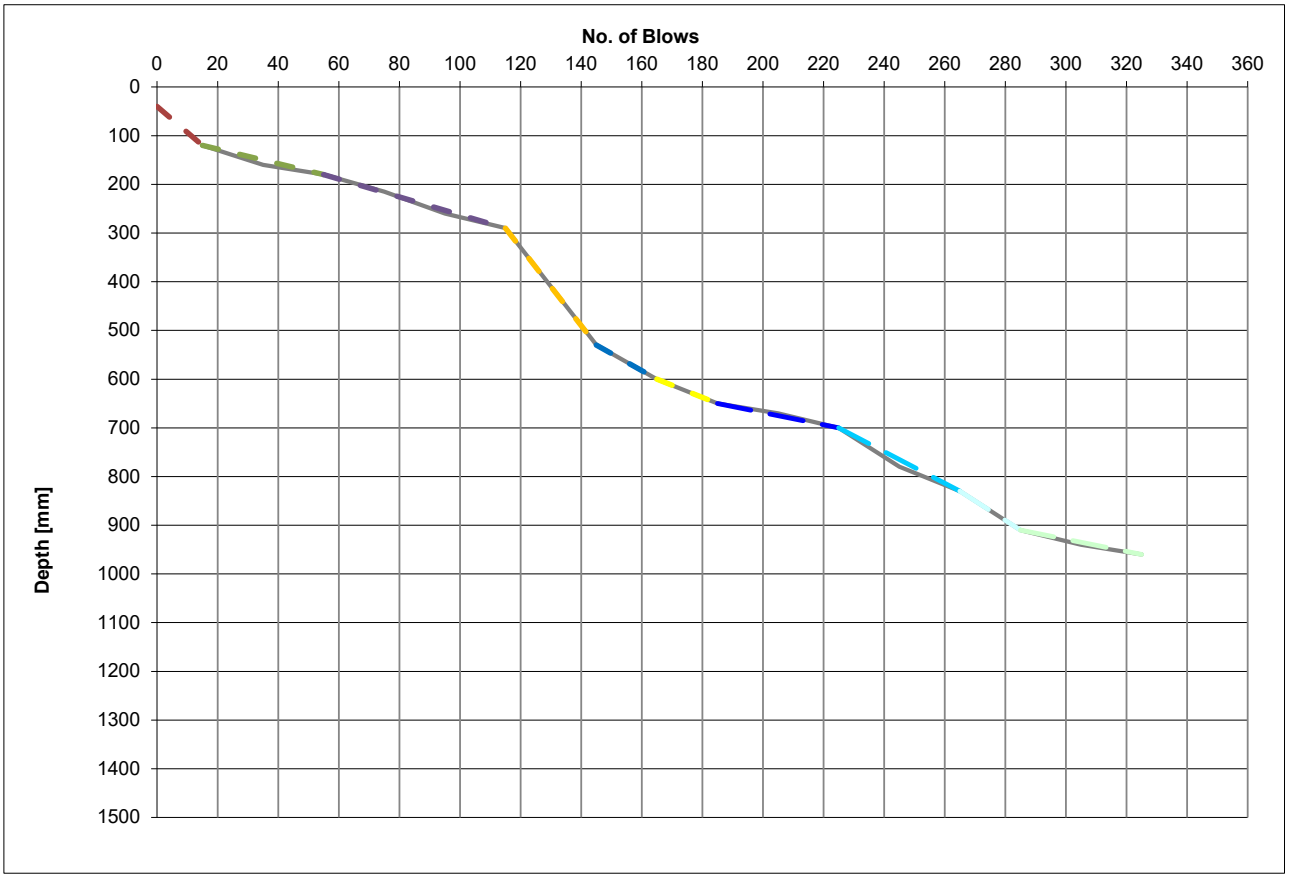
Method: CS 229- Data for pavement assessment Section 6 (Mar 2020)

Formula: Log10(CBR)=2.48 - 1.057 Log10(mm/blow)

Location CBR 09 - Jaguar Land Rover, Liverpool

Coordinates E: 345531.994 N: 384273.794 Level (m AOD): 21.772

Date 01/12/2022



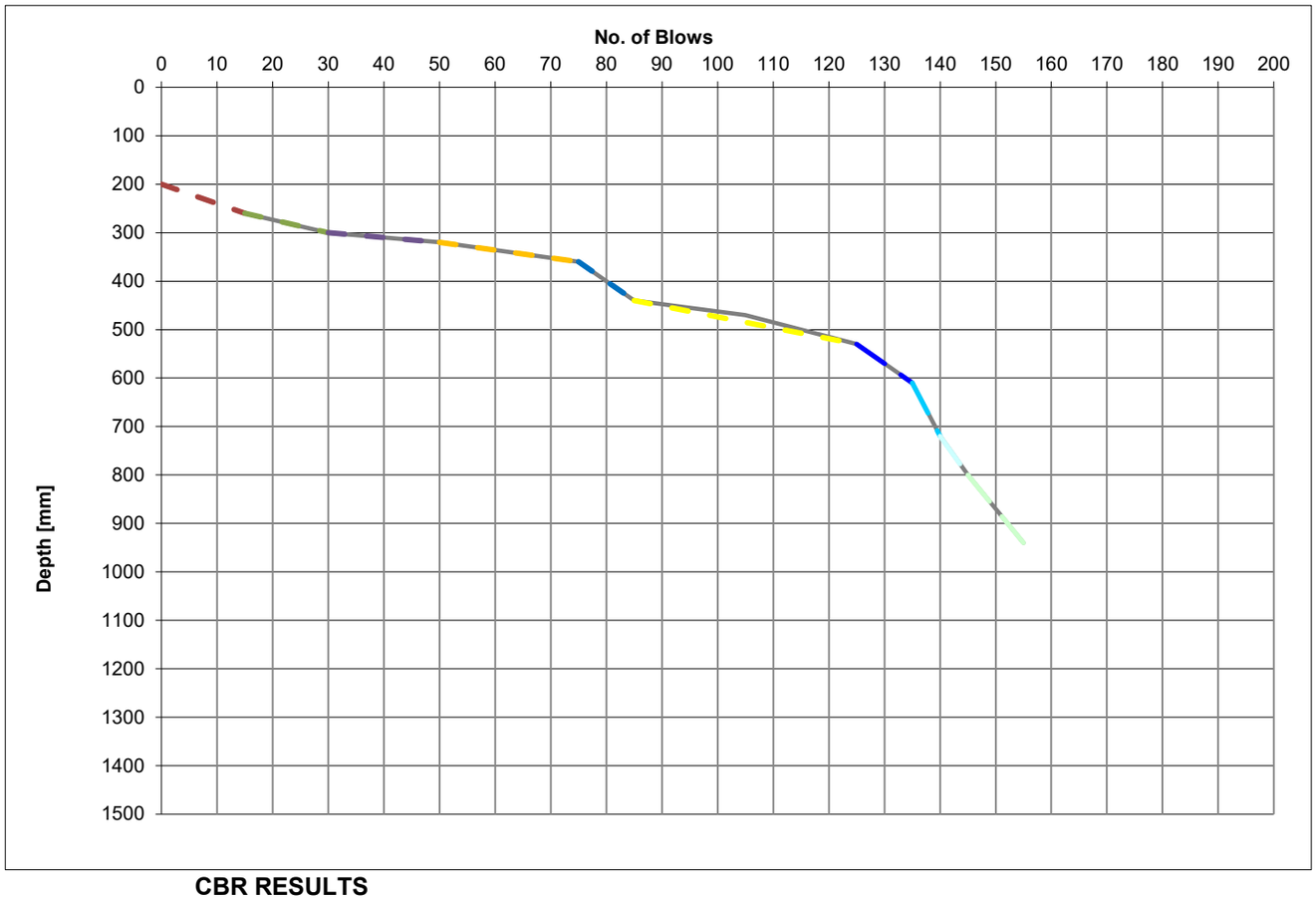
CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 09	0.04	0.12	51.5
CBR 09	0.12	0.18	196.7
CBR 09	0.18	0.29	159.1
CBR 09	0.29	0.53	33.5
CBR 09	0.53	0.60	80.3
CBR 09	0.60	0.65	114.7
CBR 09	0.65	0.70	238.5
CBR 09	0.70	0.83	86.9
CBR 09	0.83	0.91	69.8
CBR 09	0.91	0.96	238.5

CBR Data Interpretation

Drilling Ltd

Method:	CS 229- Data for pavement assessment Section 6 (Mar 2020)
Formula:	Log10(CBR)=2.48 - 1.057 Log10(mm/blow)
Location	CBR 10 - Jaguar Land Rover, Liverpool
Coordinates	E: 345585.519 N: 384282.804 Level (m AOD): 21.752
Date	19/01/2026



CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 10	0.20	0.26	69.8
CBR 10	0.26	0.30	107.1
CBR 10	0.30	0.32	302.0
CBR 10	0.32	0.36	183.8
CBR 10	0.36	0.44	33.5
CBR 10	0.44	0.53	128.2
CBR 10	0.53	0.61	33.5
CBR 10	0.61	0.72	11.5
CBR 10	0.72	0.80	16.1
CBR 10	0.80	0.94	18.6

CBR Data Interpretation

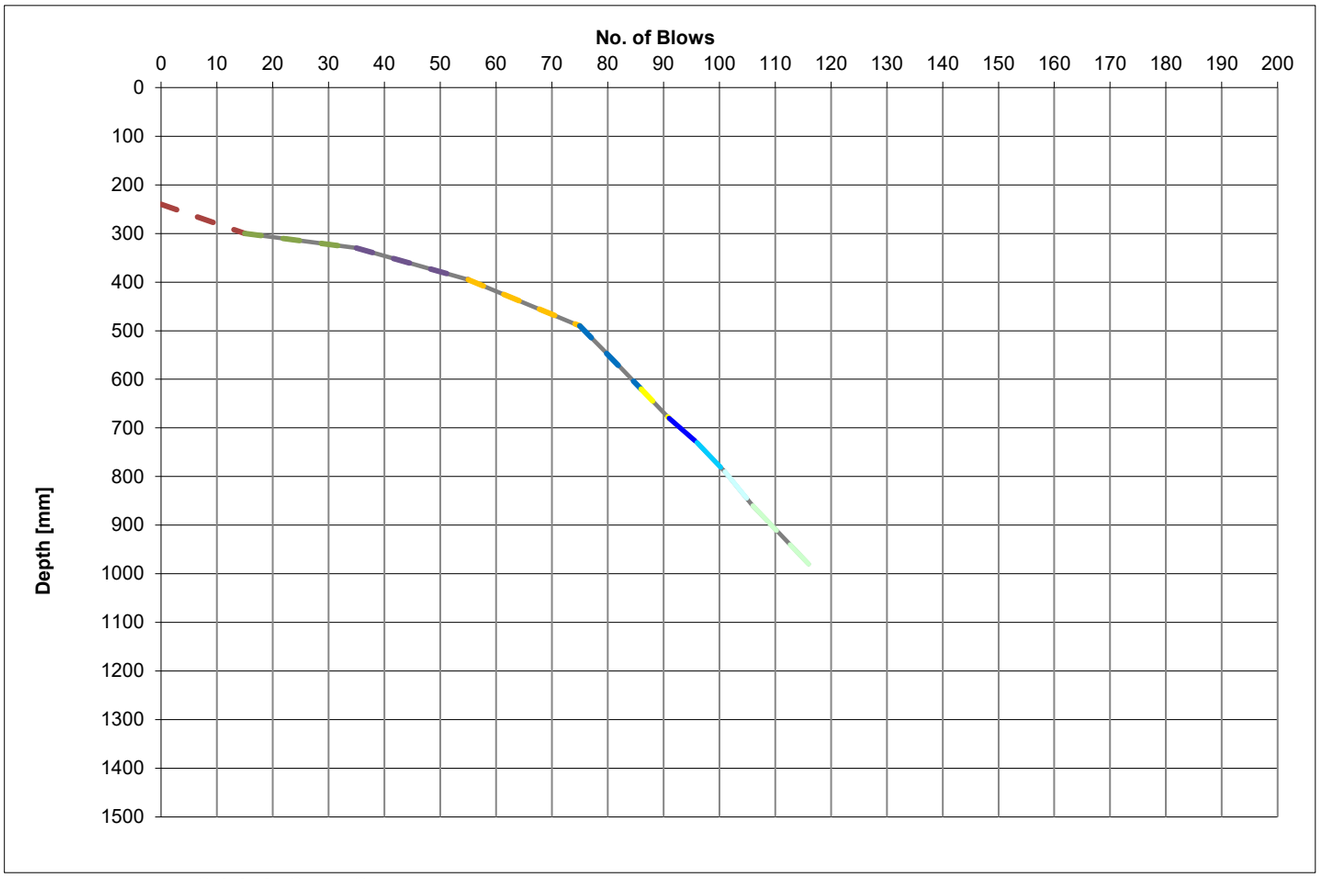
Method: CS 229- Data for pavement assessment Section 6 (Mar 2020)

Formula: Log10(CBR)=2.48 - 1.057 Log10(mm/blow)

Location CBR 11 - Jaguar Land Rover, Liverpool

Coordinates E: 345623.359 N: 384287.005 Level (m AOD): 21.632

Date 19/01/2026



CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 11	0.24	0.30	69.8
CBR 11	0.30	0.33	196.7
CBR 11	0.33	0.40	86.9
CBR 11	0.40	0.49	58.2
CBR 11	0.49	0.62	22.2
CBR 11	0.62	0.68	21.8
CBR 11	0.68	0.73	26.5
CBR 11	0.73	0.79	21.8
CBR 11	0.79	0.86	18.6
CBR 11	0.86	0.98	21.8

CBR Data Interpretation

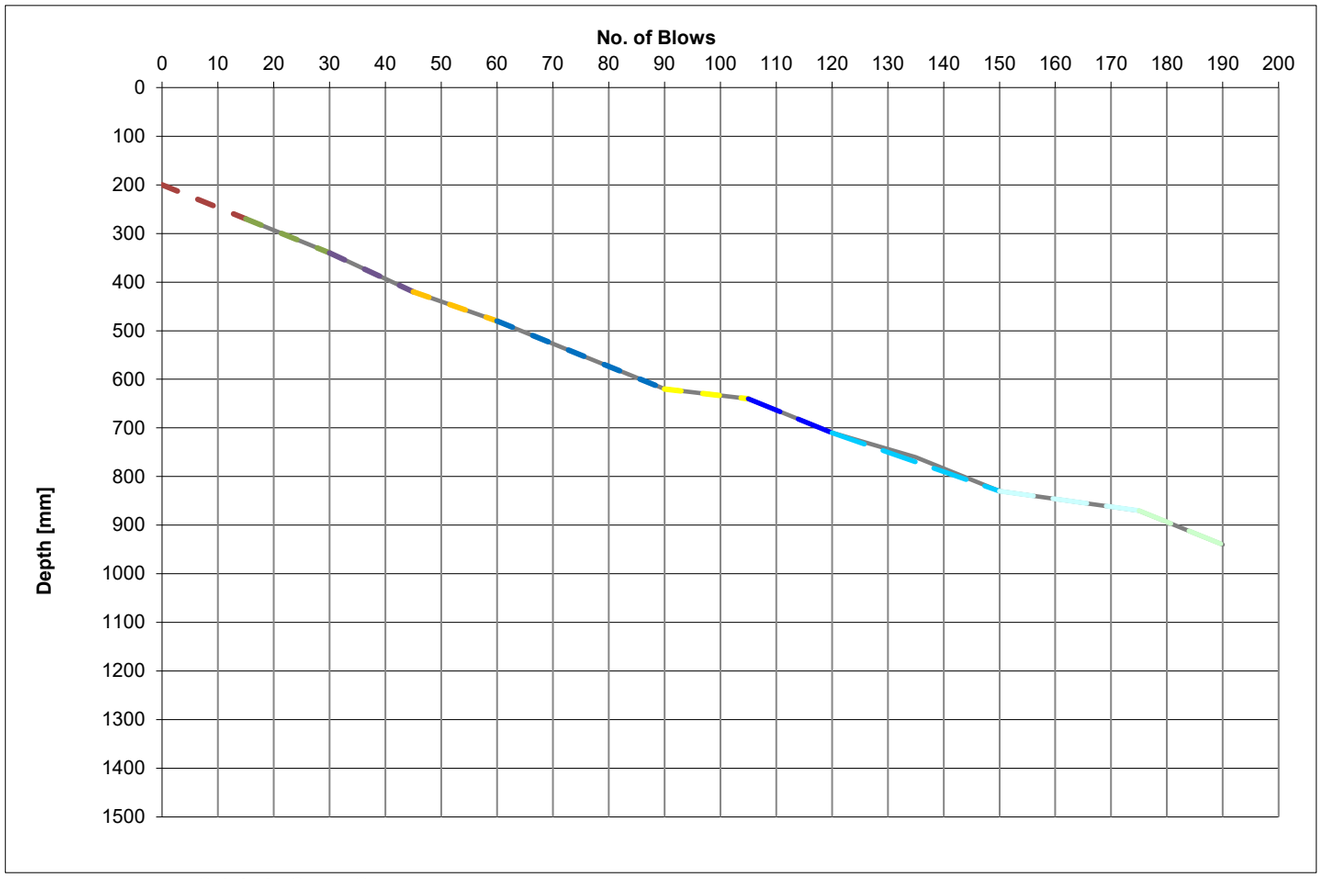
Method: CS 229- Data for pavement assessment Section 6 (Mar 2020)

Formula: Log10(CBR)=2.48 - 1.057 Log10(mm/blow)

Location CBR 12 - Jaguar Land Rover, Liverpool

Coordinates E: 345632.575 N: 384243.143 Level (m AOD): 21.502

Date 19/01/2025

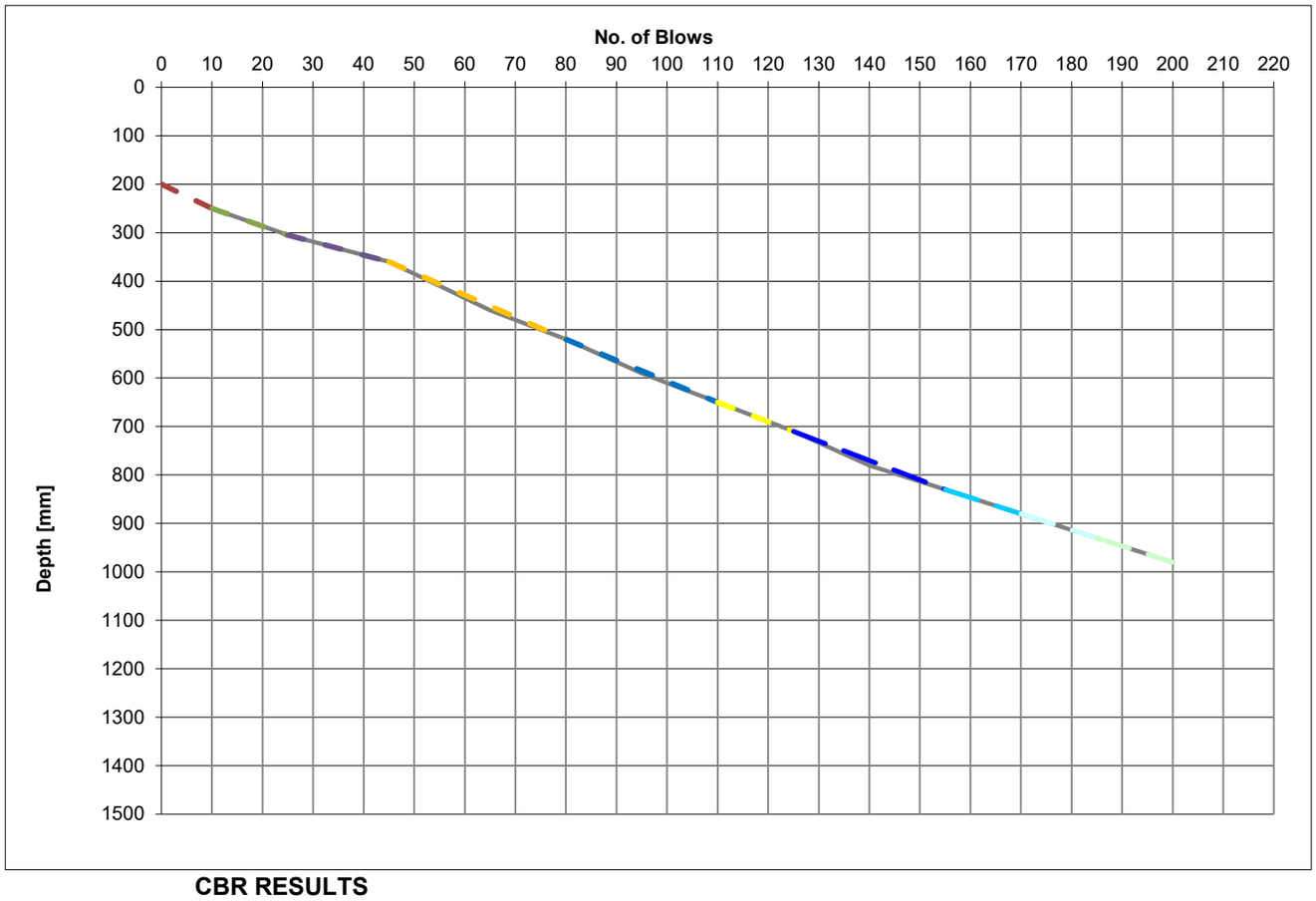


CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 12	0.20	0.27	59.3
CBR 12	0.27	0.34	59.3
CBR 12	0.34	0.42	51.5
CBR 12	0.42	0.48	69.8
CBR 12	0.48	0.62	59.3
CBR 12	0.62	0.64	222.8
CBR 12	0.64	0.71	59.3
CBR 12	0.71	0.83	69.8
CBR 12	0.83	0.87	183.8
CBR 12	0.87	0.94	59.3

CBR Data Interpretation

Method:	CS 229- Data for pavement assessment Section 6 (Mar 2020)
Formula:	Log10(CBR)=2.48 - 1.057 Log10(mm/blow)
Location	CBR 13 - Jaguar Land Rover, Liverpool
Coordinates	E: 345589.221 N: 384244.485 Level (m AOD): 21.845
Date	19/01/2026



CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 13	0.20	0.25	55.1
CBR 13	0.25	0.31	76.5
CBR 13	0.31	0.36	103.7
CBR 13	0.36	0.52	60.6
CBR 13	0.52	0.65	64.1
CBR 13	0.65	0.71	69.8
CBR 13	0.71	0.83	69.8
CBR 13	0.83	0.88	84.6
CBR 13	0.88	0.93	84.6
CBR 13	0.93	0.98	84.6

CBR Data Interpretation

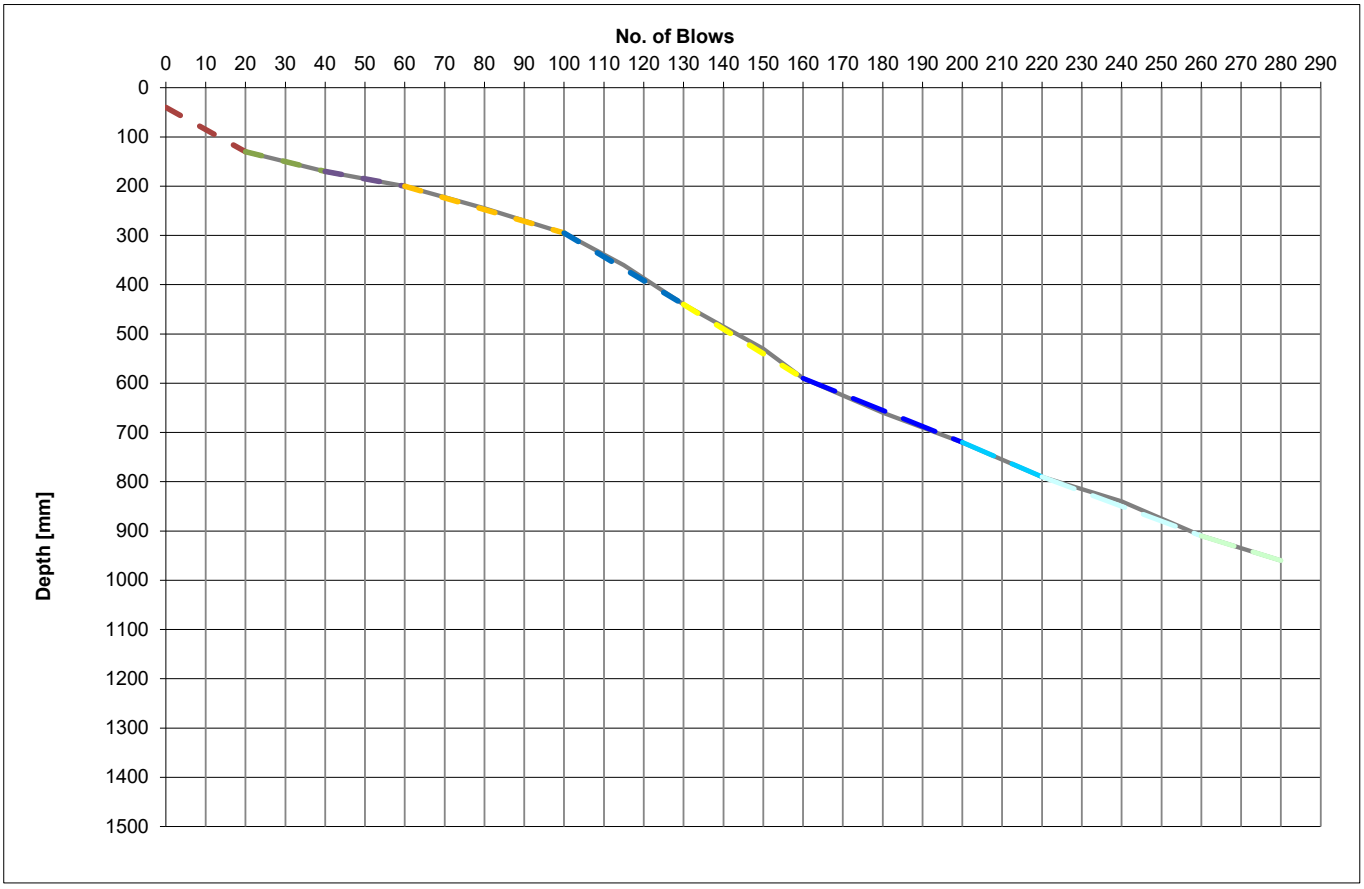
Method: CS 229- Data for pavement assessment Section 6 (Mar 2020)

Formula: Log10(CBR)=2.48 - 1.057 Log10(mm/blow)

Location CBR 14 - Jaguar Landrover, Liverpool

Coordinates E: 345543.807 N: 384239.155 Level (m AOD): 21.634

Date 19/01/2026



CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 14	0.04	0.13	61.6
CBR 14	0.13	0.17	145.1
CBR 14	0.17	0.20	196.7
CBR 14	0.20	0.30	121.0
CBR 14	0.30	0.44	57.1
CBR 14	0.44	0.59	55.1
CBR 14	0.59	0.72	86.9
CBR 14	0.72	0.79	80.3
CBR 14	0.79	0.91	94.6
CBR 14	0.91	0.96	114.7

CBR Data Interpretation

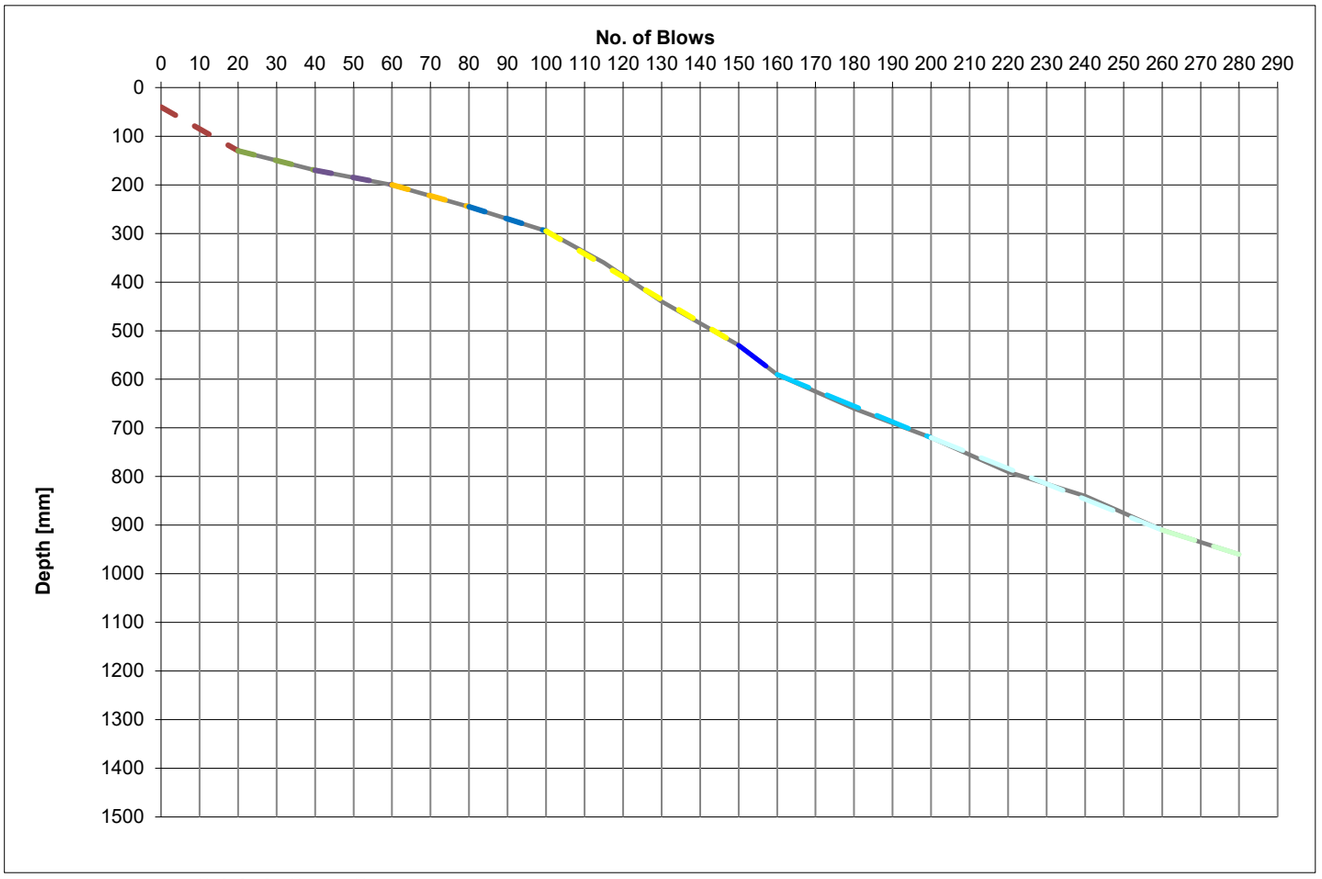
Method: CS 229- Data for pavement assessment Section 6 (Mar 2020)

Formula: Log10(CBR)=2.48 - 1.057 Log10(mm/blow)

Location CBR 15 - Jaguar Land Rover, Liverpool

Coordinates E: 345537.727 N: 384187.775 Level (m AOD): 21.586

Date 20/01/2026



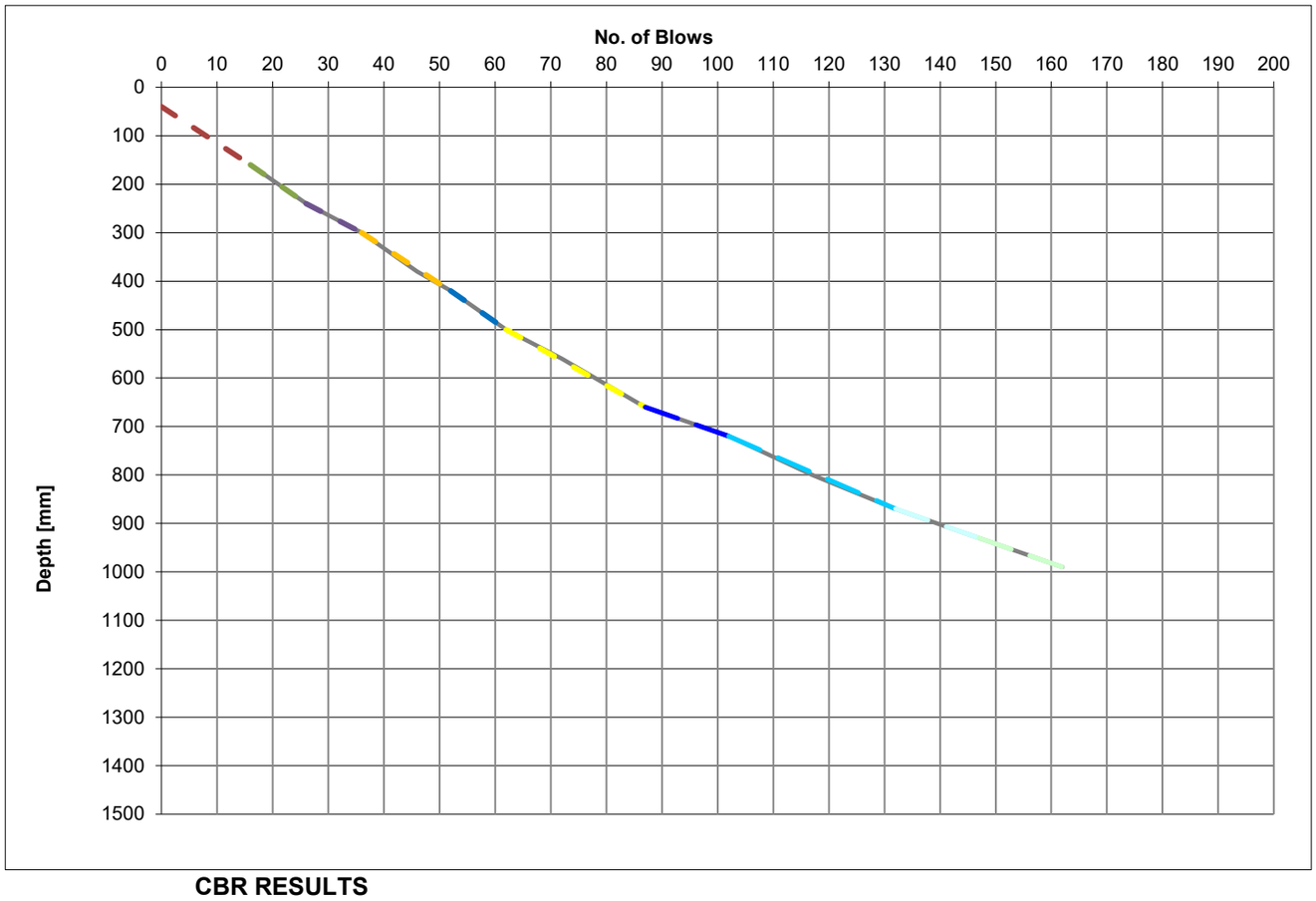
CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 15	0.04	0.13	61.6
CBR 15	0.13	0.17	145.1
CBR 15	0.17	0.20	196.7
CBR 15	0.20	0.25	128.2
CBR 15	0.25	0.30	114.7
CBR 15	0.30	0.53	58.8
CBR 15	0.53	0.59	45.4
CBR 15	0.59	0.72	86.9
CBR 15	0.72	0.91	89.3
CBR 15	0.91	0.96	114.7

CBR Data Interpretation

Drilling Ltd

Method:	CS 229- Data for pavement assessment Section 6 (Mar 2020)
Formula:	Log10(CBR)=2.48 - 1.057 Log10(mm/blow)
Location	CBR 16 - Jaguar Land Rover, Liverpool
Coordinates	E: 345589.577 N: 384212.528 Level (m AOD): 21.807
Date	20/01/2026



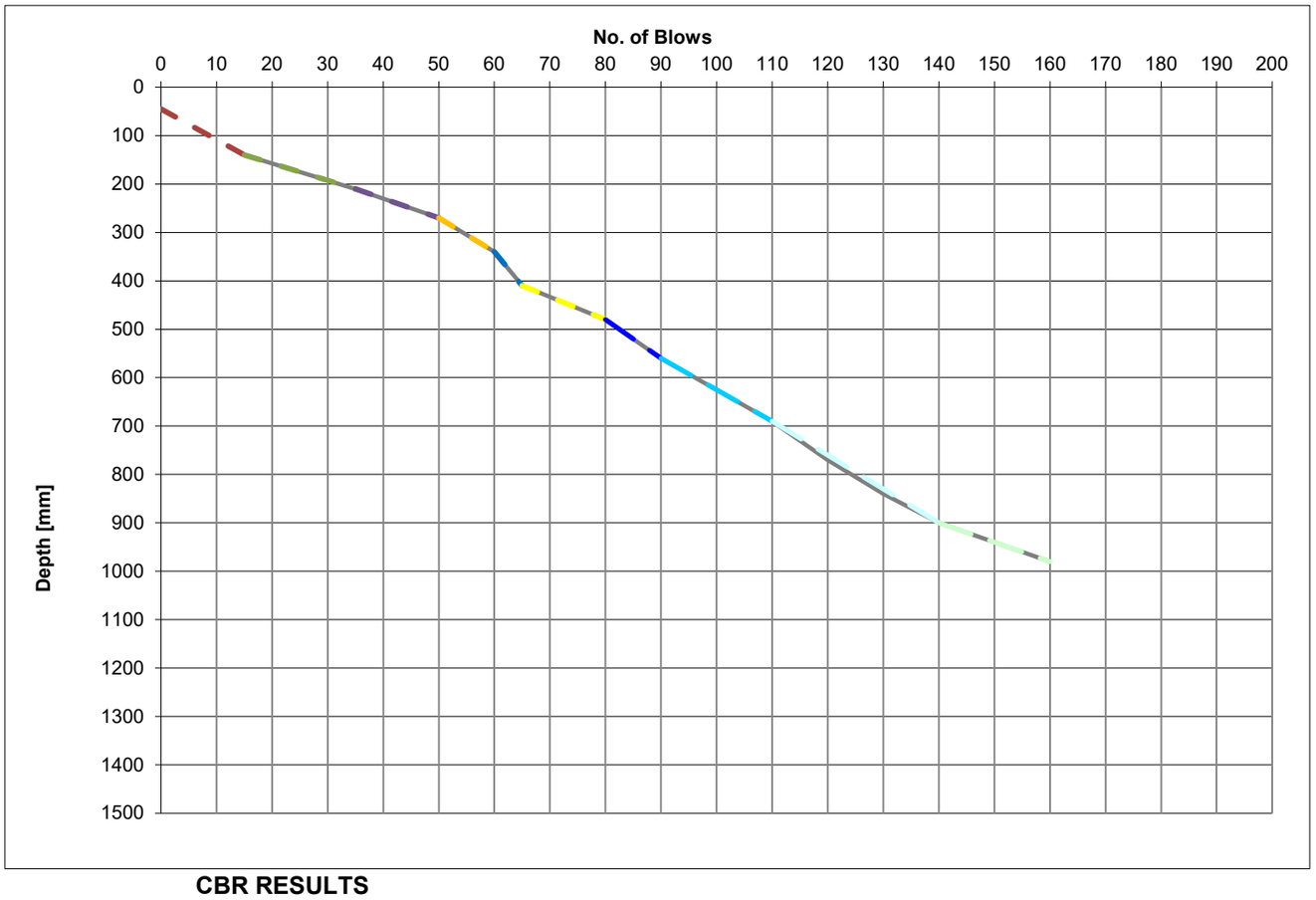
CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 16	0.04	0.16	35.9
CBR 16	0.16	0.24	33.5
CBR 16	0.24	0.30	45.4
CBR 16	0.30	0.42	35.9
CBR 16	0.42	0.50	33.5
CBR 16	0.50	0.66	42.4
CBR 16	0.66	0.72	69.8
CBR 16	0.72	0.87	55.1
CBR 16	0.87	0.93	69.8
CBR 16	0.93	0.99	69.8

CBR Data Interpretation

Drilling Ltd

Method:	CS 229- Data for pavement assessment Section 6 (Mar 2020)
Formula:	Log10(CBR)=2.48 - 1.057 Log10(mm/blow)
Location	CBR 17 - Jaguar Land Rover, Liverpool
Coordinates	E: 345632.862 N: 384191.895 Level (m AOD): 21.429
Date	20/01/2026

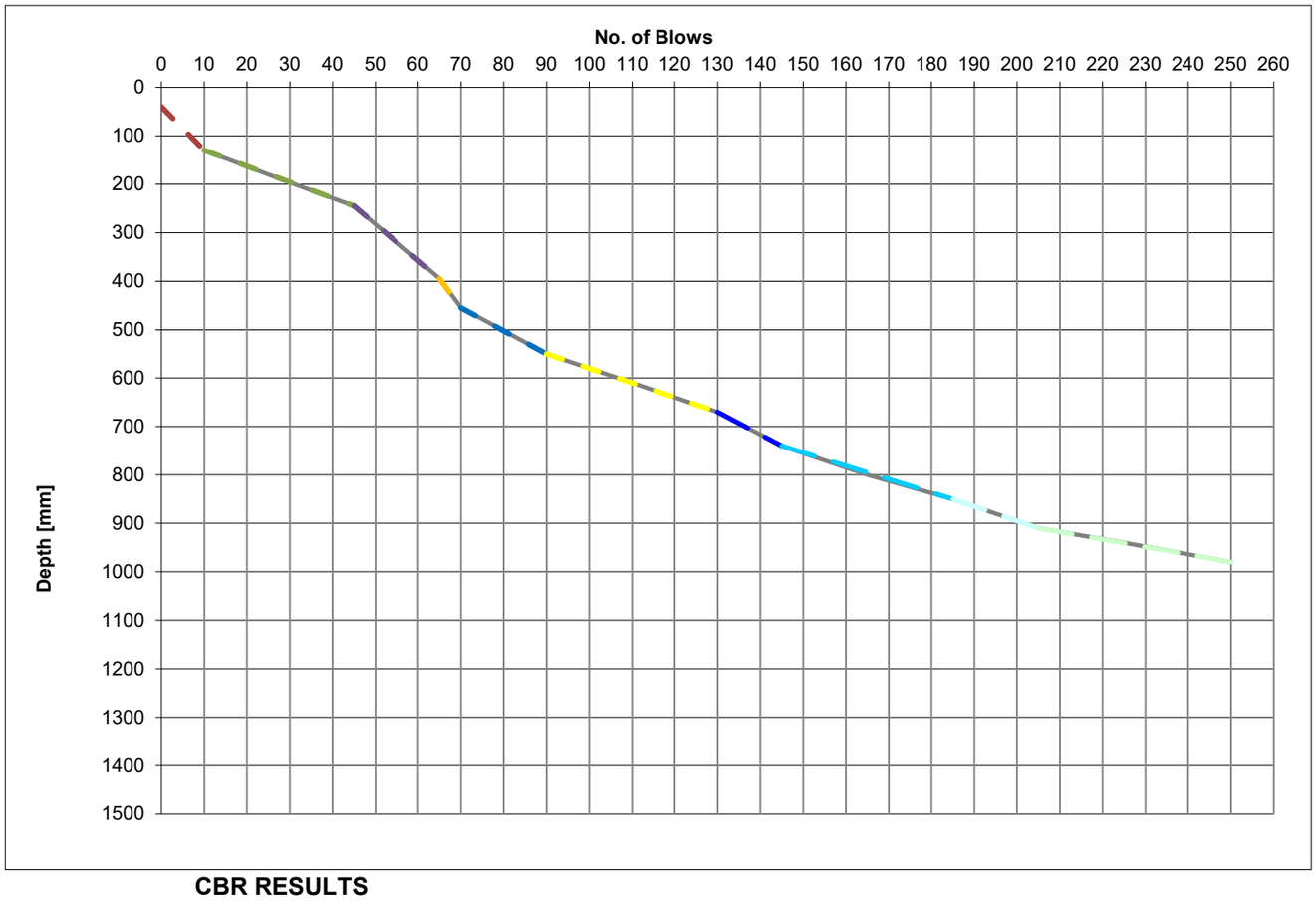


CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 17	0.05	0.14	42.9
CBR 17	0.14	0.21	80.3
CBR 17	0.21	0.27	69.8
CBR 17	0.27	0.34	38.6
CBR 17	0.34	0.41	18.6
CBR 17	0.41	0.48	59.3
CBR 17	0.48	0.56	33.5
CBR 17	0.56	0.69	41.8
CBR 17	0.69	0.90	38.6
CBR 17	0.90	0.98	69.8

CBR Data Interpretation

Method:	CS 229- Data for pavement assessment Section 6 (Mar 2020)
Formula:	Log10(CBR)=2.48 - 1.057 Log10(mm/blow)
Location	CBR 18 - Jaguar Land Rover, Liverpool
Coordinates	E: 345622.258 N: 384156.648 Level (m AOD): 21.465
Date	20/01/2026

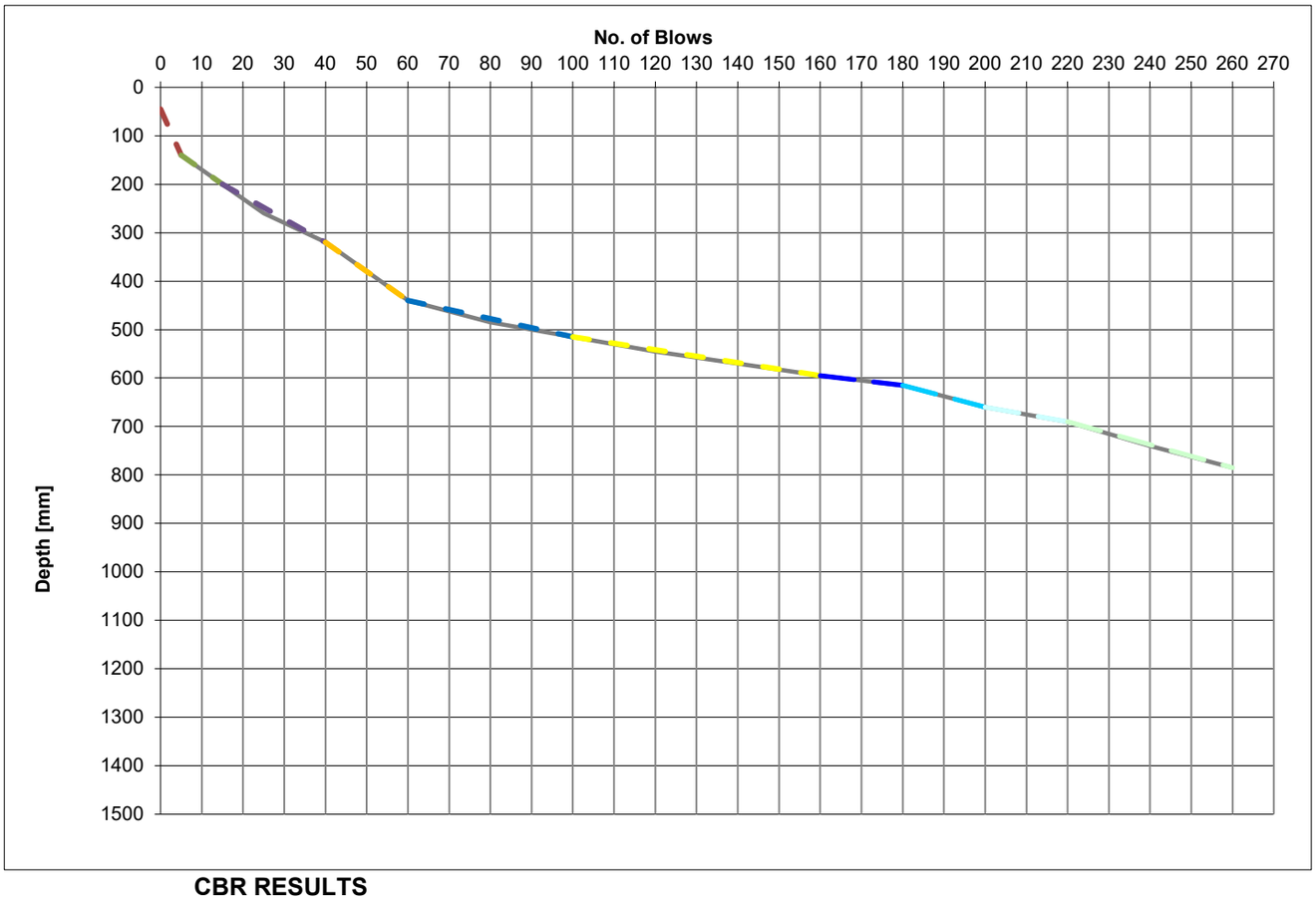


CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 18	0.04	0.13	29.6
CBR 18	0.13	0.25	85.9
CBR 18	0.25	0.40	35.9
CBR 18	0.40	0.46	21.8
CBR 18	0.46	0.55	58.2
CBR 18	0.55	0.67	94.6
CBR 18	0.67	0.74	59.3
CBR 18	0.74	0.85	103.7
CBR 18	0.85	0.91	94.6
CBR 18	0.91	0.98	189.3

CBR Data Interpretation

Method:	CS 229- Data for pavement assessment Section 6 (Mar 2020)			
Formula:	Log10(CBR)=2.48 - 1.057 Log10(mm/blow)			
Location	CBR 19 - Janguar Land Rover, Liverpool			
Coordinates	E: 345574.25	N: 384162.722	Level (m AOD):	21.63
Date	21/01/2026			



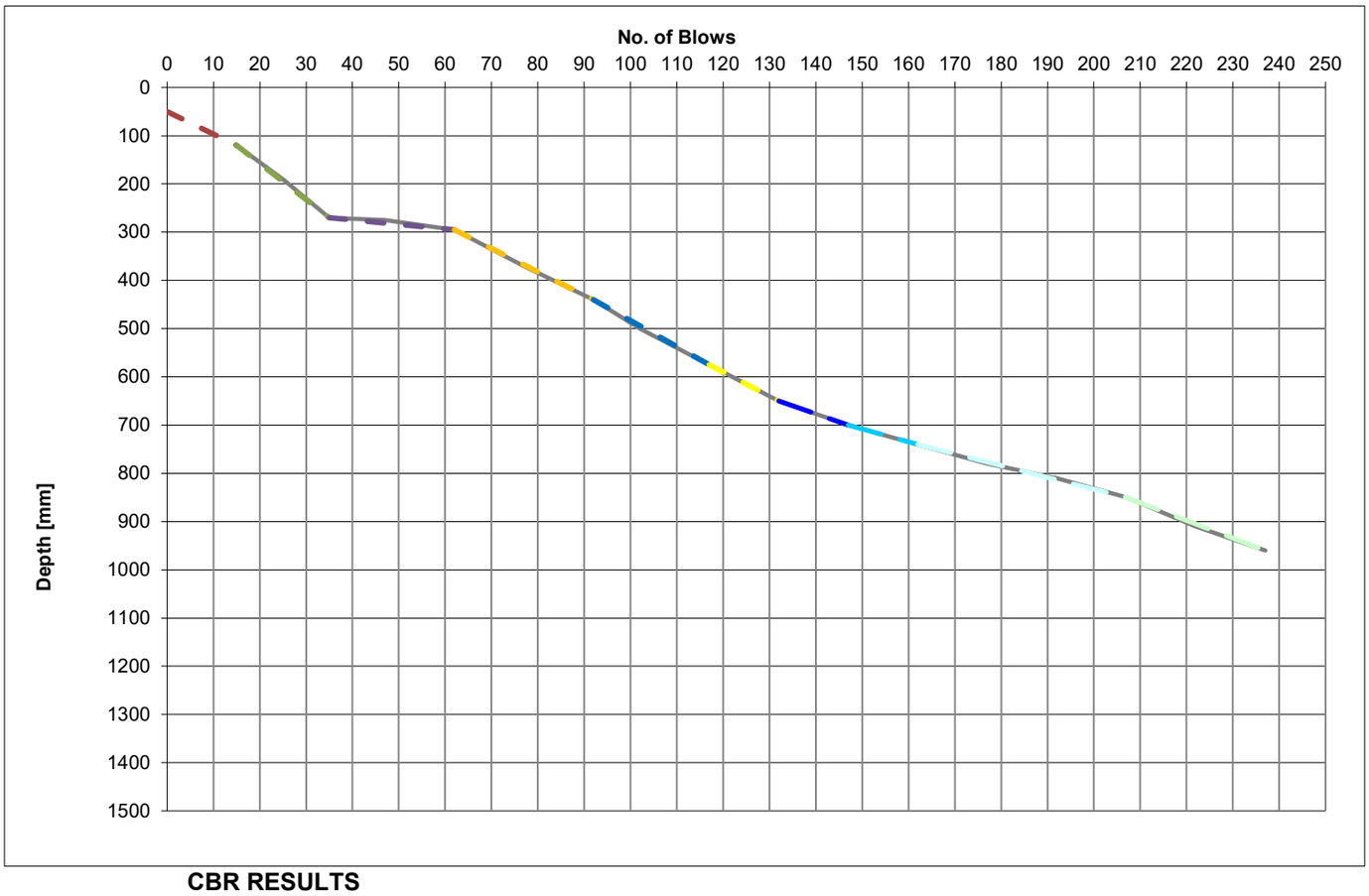
CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 19	0.05	0.14	13.4
CBR 19	0.14	0.20	45.4
CBR 19	0.20	0.32	57.5
CBR 19	0.32	0.44	45.4
CBR 19	0.44	0.52	155.4
CBR 19	0.52	0.60	222.8
CBR 19	0.60	0.62	302.0
CBR 19	0.62	0.66	128.2
CBR 19	0.66	0.69	196.7
CBR 19	0.69	0.79	121.0

CBR Data Interpretation

Drilling Ltd

Method:	CS 229- Data for pavement assessment Section 6 (Mar 2020)			
Formula:	Log10(CBR)=2.48 - 1.057 Log10(mm/blow)			
Location	CBR 20 - Jaguar Land Rover, Liverpool			
Coordinates	E: 345529.517	N: 384161.614	Level (m AOD):	21.552
Date	21/01/2026			



CBR RESULTS

TEST	Depth m		CBR Value
No	From	To	%
CBR 20	0.05	0.12	59.3
CBR 20	0.12	0.27	35.9
CBR 20	0.27	0.30	327.6
CBR 20	0.30	0.44	57.1
CBR 20	0.44	0.58	50.8
CBR 20	0.58	0.65	55.1
CBR 20	0.65	0.70	84.6
CBR 20	0.70	0.74	107.1
CBR 20	0.74	0.85	117.4
CBR 20	0.85	0.96	76.5

LandWise
geo-environmental consultants

Project Number:	LW25-136
Site:	Eastlands, JLR
Date:	16/02/2026
Readings taken by:	HOL

Background Data		
	Weather Conditions	Clear
	Ground Conditions (dry/wet):	Wet
	Air Temperature (°C)	7
	Atmospheric Pressure (mB) (start):	997
	Atmospheric Pressure (mB) (finish):	997
	O2 (%)	
	Time (hh:mm)	11:00

Borehole No.	Interval	Gas													Groundwater		Sampling			PID Results
		Oxygen O_2 (%)		Carbon Dioxide CO_2 (%)		Methane CH_4 (%)		Hydrogen Sulphide H_2S (PPM)		Carbon Monoxide CO (PPM)		Lower Explosive Limit (LEL)	Flow (l/hr)		Wd[3] (mbgl)	DoW[4] (m)	Pr[5]	R[6]	S[7]	
		P[1]	SS[2]	P[1]	SS[2]	P[1]	SS[2]	P[1]	SS[2]	P[1]	SS[2]		P[1]	SS[2]						
BH01															2.32	4.85	6	Yes	Yes	
BH02															0.47	3.03	6	Yes	Yes	
BH03															0.66	2.78	6	Yes	Yes	
BH08															0.80	2.56	6	Yes	Yes	
BH09															1.19	3.82	2	No	No	
BH12															2.70	4.70	3	No	No	
BH17															2.36	3.90	1	No	No	
BH19															DRY	3.67	No	No	No	
BH23															0.72	2.47	1	No	No	
BH25																				

Remarks	BH25 could not be located - abundant standing water
Borehole Damage Record/ Installation Record	All boreholes noted to be in a fully servicable condition
Borehole Condition Statement	Boreholes all in a good condition, and left safe.

Key:
1 – Peak
2 – Steady state
3 – Groundwater depth
4 – Depth of well
5 –Purged well volumes
6 – Recharge (yes/no)
7 – Sampled (yes/no)

Gas Monitor Model:	Serial No:	Recalibration Due:

SA01 — SOAKAWAY TEST RESULT

LandWise geo-environmental consultants

Project Name:	Jarguar Land Rover	Test Duration:	mins
Project No:	LW25-136	Length:	2.00 m
Client:	GBX Remediation	Width:	0.70 m
Date of Test:	19/01/2026	Depth of Pit at Start of Test:	2.20 m
		Depth of Pit at End of Test:	2.20 m
		Porosity of Infill:	100 % (100% if no infill)

First Fill

Time (mins)	Water Level (mBGL)
0	1.31
1	1.31
2	1.31
3	1.31
4	1.31
5	1.31
6	1.31
7	1.31
8	1.31
9	1.31
10	1.31
15	1.32
20	1.32
25	1.32
30	1.32
45	1.32
60	1.32
90	1.32
120	1.32
180	1.32

Test carried out to BRE Digest 365: 2016 - Soakaway Design

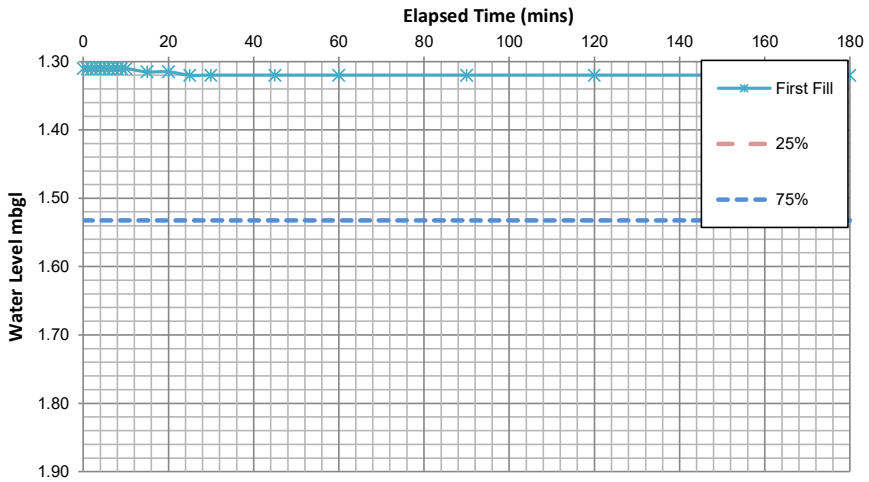
Soil Infiltration Rate = $\frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$

where f = soil infiltration rate, Vp75-25 = volume outflowing between 75% and 25% effective depth (m3)
ap50 = mean surface area (pit sides to 50% effective depth + base) (m2),
tp75-25 = time for outflow between 75% and 25% effective depth (seconds)

Note:

Soil Infiltration Rate = - m/s

Test Zone Material: MADE GROUND: Brown sandy very gravelly clay with frequent extraneous material.



SA02 — SOAKAWAY TEST RESULT

LandWise geo-environmental consultants

Project Name:	Jarguar Land Rover	Test Duration:	mins
Project No:	LW25-136	Length:	2.20 m
Client:	GBX Remediation	Width:	0.70 m
Date of Test:	19/01/2026	Depth of Pit at Start of Test:	2.20 m
		Depth of Pit at End of Test:	2.20 m
		Porosity of Infill:	100 % (100% if no infill)

First Fill	
Time (mins)	**Water Level (mBGL)**
0	1.59
1	1.59
2	1.59
3	1.59
4	1.59
5	1.59
6	1.59
7	1.59
8	1.59
9	1.59
10	1.59
15	1.59
20	1.59
25	1.59
30	1.59
45	1.59
60	1.59
90	1.59
120	1.59
180	1.59

Test carried out to BRE Digest 365: 2016 - Soakaway Design

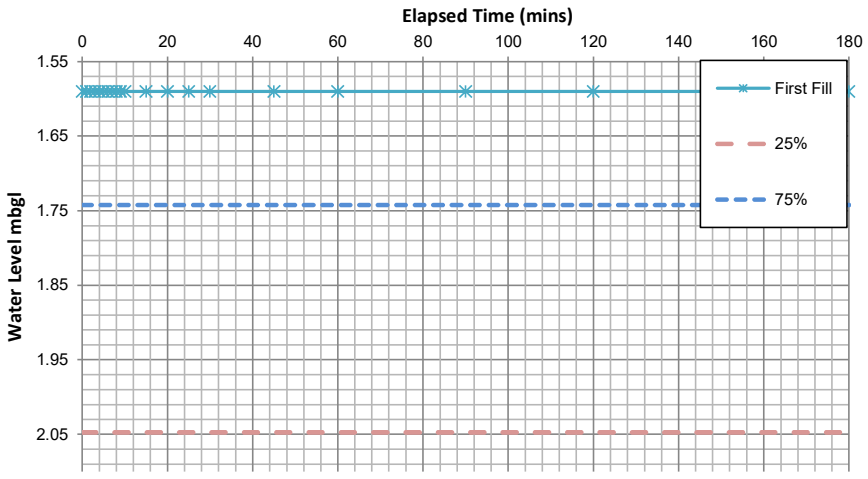
Soil Infiltration Rate = $\frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$

where f = soil infiltration rate, Vp75-25 = volume outflowing between 75% and 25% effective depth (m3)
ap50 = mean surface area (pit sides to 50% effective depth + base) (m2),
tp75-25 = time for outflow between 75% and 25% effective depth (seconds)

Note:

Soil Infiltration Rate = - m/s

Test Zone Material: MADE GROUND: Dark grey sandy very gravelly clay with frequent extraneous material.



SA03 SOAKAWAY TEST RESULT

LandWise geo-environmental consultants

Project Name:	Jarguar Land Rover	Test Duration:	mins
Project No:	LW25-136	Length:	1.80 m
Client:	GBX Remediation	Width:	0.70 m
Date of Test:	19/01/2026	Depth of Pit at Start of Test:	1.94 m
		Depth of Pit at End of Test:	1.94 m
		Porosity of Infill:	100 % (100% if no infill)

First Fill

Time (mins)	Water Level (mBGL)
0	1.38
1	1.39
2	1.40
3	1.41
4	1.41
5	1.42
6	1.42
7	1.43
8	1.43
9	1.44
10	1.44
15	1.45
20	1.46
25	1.47
30	1.48
45	1.51
60	1.54
90	1.57
120	1.60
180	1.64

Test carried out to BRE Digest 365: 2016 - Soakaway Design

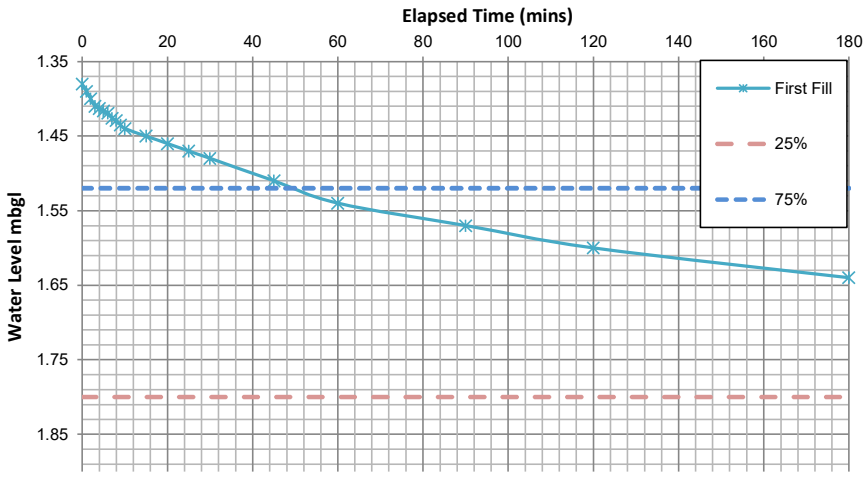
Soil Infiltration Rate = $\frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$

where f = soil infiltration rate, Vp75-25 = volume outflowing between 75% and 25% effective depth (m3)
ap50 = mean surface area (pit sides to 50% effective depth + base) (m2),
tp75-25 = time for outflow between 75% and 25% effective depth (seconds)

Note:

Soil Infiltration Rate = - m/s

Test Zone Material: MADE GROUND: Brown very gravelly clay with occasional extraneous material.



SA04 — SOAKAWAY TEST RESULT

LandWise geo-environmental consultants

Project Name:	Jarguar Land Rover	Test Duration:	45	mins
Project No:	LW25-136	Length:	1.80	m
Client:	GBX Remediation	Width:	0.70	m
Date of Test:	19/01/2026	Depth of Pit at Start of Test:	2.10	m
		Depth of Pit at End of Test:	2.10	m
		Porosity of Infill:	100	% (100% if no infill)

First Fill	
Time (mins)	**Water Level (mBGL)**
0	1.72
1	1.73
2	1.75
3	1.77
4	1.79
5	1.82
6	1.85
7	1.87
8	1.89
9	1.90
10	1.91
15	1.97
20	2.01
25	2.05
30	2.09

Second Fill	
Time (mins)	**Water Level (mBGL)**
0	1.58
1	1.60
2	1.62
3	1.64
4	1.66
5	1.69
6	1.72
7	1.75
8	1.77
9	1.80
10	1.82
15	1.88
20	1.93
25	1.98
30	2.03
45	2.10

Test carried out to BRE Digest 365: 2016 - Soakaway Design

Soil Infiltration Rate = $\frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$

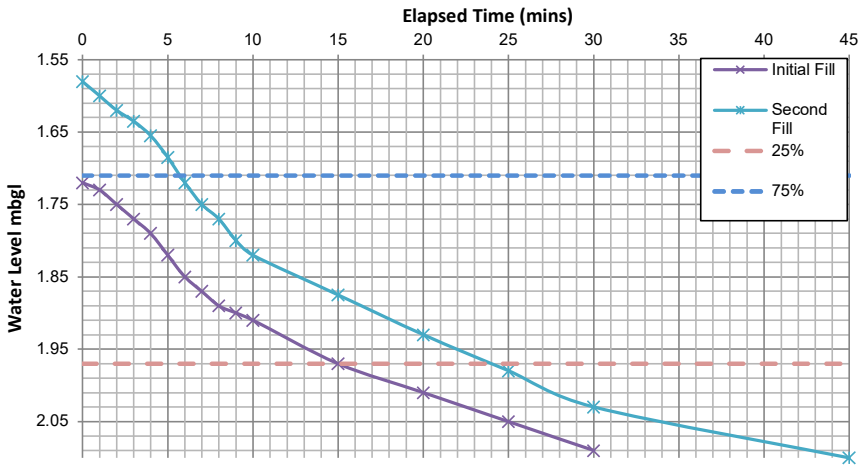
where f = soil infiltration rate, Vp75-25 = volume outflowing between 75% and 25% effective depth (m3)
ap50 = mean surface area (pit sides to 50% effective depth + base) (m2),
tp75-25 = time for outflow between 75% and 25% effective depth (seconds)

Note:

Soil Infiltration Rate = 1.18E-04 m/s

Test Zone Material:

MADE GROUND: Dark grey clayey gravelly fine to coarse sand with frequent extraneous material.



APPENDIX 3 – SOIL TESTING RESULTS

Certificate of Analysis

Certificate Number	26-02041	*Issued:*	10-Feb-26
Client	Landwise Consulting Ltd 43 Buchanan Drive Cambuslang Glasgow G72 8BD		
Our Reference	26-02041		
Client Reference ~	LW25-136		
Order No ~	(not supplied)		
Contract Title ~	LW25-136 Jaguar Landrover, Halewood		
Description	39 Soil samples, 9 Leachate prepared by DETS samples.		
Date Received	29-Jan-26		
Date Started	29-Jan-26		
Date Completed	10-Feb-26		
Test Procedures	Identified by prefix DETSn (details on request).		
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.		

Approved By

Reyhan Irfan
Operations Manager

2139

Sample Deviations present. See Deviation Table Section for details.

Summary of Chemical Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

	Lab No	2633102	2633103	2633104	2633105	2633106	2633107
	Sample ID ~	BH01	BH02	BH03	BH04	BH05	BH06
	Depth ~	0.80	3.00	3.00	0.50	1.00	1.00
	Other ID ~						
	Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampling Date ~	21/01/2026	21/01/2026	20/01/2026	21/01/2026	21/01/2026	21/01/2026
	Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Asbestos Quantification (Gravimetric)	DETSC 1102	0.001	%						
Preparation									
Moisture Content	DETSC 1004	0.1	%	11	15	16	10	9.4	14
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	5.1	6.9	7.3	7.4	7.4	8.8
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.3	0.5	0.8	1.9	0.8	1.1
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	0.2	0.2	0.2	0.1	0.2
Chromium	DETSC 2301#	0.15	mg/kg	19	28	59	26	19	13
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	12	16	600	18	44	97
Lead	DETSC 2301#	0.3	mg/kg	5.2	26	72	47	220	1200
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	0.08	0.18	1.1	0.34
Nickel	DETSC 2301#	1	mg/kg	22	19	13	18	14	10
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	31	39	56	37	71	210
Inorganics									
pH	DETSC 2008#		pH	9.4	10.4	10.4	8.5	9.3	9.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	< 0.5	0.6	1.3	3.6	1.6	2.0
Organic Matter (by calculation)	*	0.1	%	0.7	1.0	2.3	6.1	2.7	3.4
Sulphide	DETSC 2024*	10	mg/kg	16	36	68	24	40	< 10
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.03	0.06	0.10	0.23	0.10	0.43
Petroleum Hydrocarbons									
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35: EH_CU+HS_1D_AL	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	11	< 0.9
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	12	< 0.5
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	21	< 0.6
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	32	< 1.4
Aromatic C5-C35: EH_CU+HS_1D_AR	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	76	< 10
TPH Ali/Aro Total C5-C35: EH_CU+HS_1D_Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	76	< 10

Summary of Chemical Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

			Lab No	2633102	2633103	2633104	2633105	2633106	2633107
			Sample ID ~	BH01	BH02	BH03	BH04	BH05	BH06
			Depth ~	0.80	3.00	3.00	0.50	1.00	1.00
			Other ID ~						
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	21/01/2026	21/01/2026	20/01/2026	21/01/2026	21/01/2026	21/01/2026
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	0.29	14	0.16
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	0.53	0.33	20	0.62
Fluorene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	0.31	0.25	26	0.50
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	1.1	1.2	140	3.3
Anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	0.50	0.45	25	0.83
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	1.1	1.4	82	3.7
Pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	1.1	1.3	91	3.5
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	0.25	0.47	34	1.0
Chrysene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	0.40	0.51	38	1.3
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	0.39	0.50	18	1.6
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	0.23	0.37	11	0.60
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	0.94	1.1	30	1.7
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	0.36	0.60	15	1.0
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	0.39	0.21	2.2	0.16
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	0.19	0.34	10	0.83
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	7.8	9.2	550	21
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	1.4	< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

			Lab No	2633108	2633109	2633110	2633111	2633112	2633113
			Sample ID ~	BH07	BH08	BH09	BH10	BH11	BH12
			Depth ~	3.00	0.50	2.00	3.00	0.50	2.00
			Other ID ~						
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	21/01/2026	21/01/2026	21/01/2026	19/01/2026	19/01/2026	19/01/2026
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Asbestos Quantification (Gravimetric)	DETSC 1102	0.001	%			0.005	0.011		< 0.001
Preparation									
Moisture Content	DETSC 1004	0.1	%	14	9.8	19	15	8.0	15
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	17	5.2	18	45	9.1	11
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	1.7	0.5	1.4	1.7	0.8	2.4
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.1	0.3	1.7	0.2	0.3
Chromium	DETSC 2301#	0.15	mg/kg	48	32	52	80	11	24
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	40	16	42	58	20	25
Lead	DETSC 2301#	0.3	mg/kg	120	120	130	240	27	87
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	0.14	0.76	< 0.05	0.10
Nickel	DETSC 2301#	1	mg/kg	19	10	20	19	13	17
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.4	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	79	45	85	250	43	90
Inorganics									
pH	DETSC 2008#		pH	9.8	10.4	10.5	10.5	11.3	9.5
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.1	< 0.1	< 0.1	0.5	< 0.1	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	2.0	1.9	1.2	2.3	1.1	1.5
Organic Matter (by calculation)	*	0.1	%	3.4	3.2	2.0	3.9	2.0	2.6
Sulphide	DETSC 2024*	10	mg/kg	80	48	72	140	32	76
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.21	0.17	0.22	0.40	0.46	0.21
Petroleum Hydrocarbons									
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	1.5	< 1.2
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	7.0	< 1.5
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	19	< 3.4
Aliphatic C5-C35: EH_CU+HS_1D_AL	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	27	< 10
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35: EH_CU+HS_1D_AR	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro Total C5-C35: EH_CU+HS_1D_Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	27	< 10

Summary of Chemical Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

			Lab No	2633108	2633109	2633110	2633111	2633112	2633113
			Sample ID ~	BH07	BH08	BH09	BH10	BH11	BH12
			Depth ~	3.00	0.50	2.00	3.00	0.50	2.00
			Other ID ~						
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	21/01/2026	21/01/2026	21/01/2026	19/01/2026	19/01/2026	19/01/2026
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.77
Fluorene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.61
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.28	1.8
Anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.39	0.28
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.68	0.61
Pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.47	0.64
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.30	0.51
Chrysene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.22	0.54
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.31	0.28
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.18	0.15
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.61	0.11
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.27	0.26
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.13	0.14
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.15	0.17
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	4.0	6.8
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.4	< 0.3	< 0.3	0.9	0.7	0.4

Summary of Chemical Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

			Lab No	2633114	2633115	2633116	2633117	2633118	2633119
			Sample ID ~	BH13	BH14	BH15	BH16	BH18	BH19
			Depth ~	0.80	0.50	3.00	0.50	0.80	0.50
			Other ID ~						
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	19/01/2026	19/01/2026	19/01/2026	20/01/2026	20/01/2026	21/01/2026
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Asbestos Quantification (Gravimetric)	DETSC 1102	0.001	%						
Preparation									
Moisture Content	DETSC 1004	0.1	%	8.5	8.6	8.8	11	13	14
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	4.1	6.1	7.4	9.8	17	6.7
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.8	0.8	1.0	1.2	1.6	2.0
Cadmium	DETSC 2301#	0.1	mg/kg	0.1	0.5	0.5	0.4	0.4	0.2
Chromium	DETSC 2301#	0.15	mg/kg	7.8	26	41	48	69	58
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	12	20	24	32	86	9.7
Lead	DETSC 2301#	0.3	mg/kg	14	32	36	41	76	28
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	0.06	0.37	< 0.05
Nickel	DETSC 2301#	1	mg/kg	7.7	15	18	19	16	6.2
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	0.7	< 0.5
Zinc	DETSC 2301#	1	mg/kg	31	59	63	77	120	53
Inorganics									
pH	DETSC 2008#		pH	11.2	10.3	10.2	10.3	10.6	11.5
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.1	< 0.1	0.3
Total Organic Carbon	DETSC 2084#	0.5	%	1.0	2.4	2.2	1.6	1.7	1.6
Organic Matter (by calculation)	*	0.1	%	1.7	4.2	3.7	2.8	2.9	2.8
Sulphide	DETSC 2024*	10	mg/kg	52	100	150	64	130	76
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.23	0.22	0.18	0.14	0.18	0.23
Petroleum Hydrocarbons									
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	7.8	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	22	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	9.8	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg	< 3.4	14	98	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35: EH_CU+HS_1D_AL	DETSC 3072*	10	mg/kg	< 10	14	140	< 10	< 10	< 10
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	14	< 0.9	< 0.9	< 0.9
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	27	< 0.5	< 0.5	< 0.5
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	29	< 0.6	< 0.6	< 0.6
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	190	< 1.4	< 1.4	< 1.4
Aromatic C5-C35: EH_CU+HS_1D_AR	DETSC 3072*	10	mg/kg	< 10	< 10	260	< 10	< 10	< 10
TPH Ali/Aro Total C5-C35: EH_CU+HS_1D_Total	DETSC 3072*	10	mg/kg	< 10	14	400	< 10	< 10	< 10

Summary of Chemical Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

			Lab No	2633114	2633115	2633116	2633117	2633118	2633119
			Sample ID ~	BH13	BH14	BH15	BH16	BH18	BH19
			Depth ~	0.80	0.50	3.00	0.50	0.80	0.50
			Other ID ~						
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	19/01/2026	19/01/2026	19/01/2026	20/01/2026	20/01/2026	21/01/2026
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.14	< 0.10
Fluorene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.47	< 0.10
Anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.39	< 0.10
Pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.54	< 0.10
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.24	< 0.10
Chrysene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.49	< 0.10
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.27	< 0.10
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.11	< 0.10
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.18	< 0.10
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.24	< 0.10
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.22	< 0.10
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.22	< 0.10
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	3.4	< 1.6
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.4	< 0.3	< 0.3	< 0.3	0.6	< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

				Lab No	2633120	2633121	2633122	2633123	2633124	2633125
				Sample ID ~	BH20	BH21	BH22	BH23	BH24	BH25
				Depth ~	1.00	0.80	2.50	1.00	0.80	0.80
				Other ID ~						
				Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date ~	21/01/2026	21/01/2026	21/01/2026	21/01/2026	21/01/2026	21/01/2026
				Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Asbestos Quantification (Gravimetric)	DETSC 1102	0.001	%						< 0.001	
Preparation										
Moisture Content	DETSC 1004	0.1	%	15	10	12	16	13	13
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg	7.7	14	6.1	7.0	8.8	6.4
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.8	1.2	0.4	1.0	1.5	1.1
Cadmium	DETSC 2301#	0.1	mg/kg	0.1	0.2	< 0.1	< 0.1	0.2	0.2
Chromium	DETSC 2301#	0.15	mg/kg	26	32	17	11	6.5	230
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	21	26	11	19	62	17
Lead	DETSC 2301#	0.3	mg/kg	19	43	5.7	50	290	21
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.07	< 0.05	0.06	0.28	< 0.05
Nickel	DETSC 2301#	1	mg/kg	21	20	21	11	8.3	10
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.0
Zinc	DETSC 2301#	1	mg/kg	64	64	30	34	100	51
Inorganics										
pH	DETSC 2008#		pH	9.9	10.2	9.0	7.8	8.5	11.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.1	< 0.1	0.1
Total Organic Carbon	DETSC 2084#	0.5	%	0.8	0.8	< 0.5	2.4	3.5	2.0
Organic Matter (by calculation)	*	0.1	%	1.4	1.3	0.8	4.2	6.0	3.5
Sulphide	DETSC 2024*	10	mg/kg	68	80	40	< 10	44	68
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.10	0.12	0.05	0.05	0.11	0.33
Petroleum Hydrocarbons										
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35: EH_CU+HS_1D_AL	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35: EH_CU+HS_1D_AR	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro Total C5-C35: EH_CU+HS_1D_Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10

Summary of Chemical Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

			Lab No	2633120	2633121	2633122	2633123	2633124	2633125
			Sample ID ~	BH20	BH21	BH22	BH23	BH24	BH25
			Depth ~	1.00	0.80	2.50	1.00	0.80	0.80
			Other ID ~						
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	21/01/2026	21/01/2026	21/01/2026	21/01/2026	21/01/2026	21/01/2026
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.24	0.38
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.51
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.49	0.46
Fluorene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.94
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	2.4	10
Anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.89	< 0.10
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	3.6	8.6
Pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	4.0	7.5
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	1.6	3.0
Chrysene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	1.3	2.8
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	1.1	1.9
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.67	1.5
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	2.1	3.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.95	1.9
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.18	0.30
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	0.71	1.3
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	20	45
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	0.4	0.5	< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

				Lab No	2633126	2633127	2633128	2633129	2633130	2633131
				Sample ID ~	TP01	TP02	TP03	TP04	TP05	TP06
				Depth ~	0.50	0.50	0.50	0.40	0.50	0.80
				Other ID ~						
				Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date ~	20/01/2026	20/01/2026	20/01/2026	21/01/2026	21/01/2026	20/01/2026
				Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Asbestos Quantification (Gravimetric)	DETSC 1102	0.001	%	0.002			< 0.001		
Preparation										
Moisture Content	DETSC 1004	0.1	%	11	12	7.0	9.8	12	10
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg	7.7	7.4	5.6	7.1	14	8.6
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	1.2	0.7	1.2	0.9	0.8	0.9
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.1	0.2	0.2	0.5	0.3
Chromium	DETSC 2301#	0.15	mg/kg	22	34	18	45	35	72
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	27	22	22	46	39	25
Lead	DETSC 2301#	0.3	mg/kg	130	29	25	75	100	62
Mercury	DETSC 2325#	0.05	mg/kg	0.13	0.07	< 0.05	0.29	0.17	0.08
Nickel	DETSC 2301#	1	mg/kg	16	15	16	16	22	20
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.9	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	72	37	53	55	140	87
Inorganics										
pH	DETSC 2008#		pH	8.4	8.9	9.8	9.8	8.6	10.2
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.9	0.2	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	2.1	2.1	1.0	0.8	1.5	1.3
Organic Matter (by calculation)	*	0.1	%	3.7	3.7	1.8	1.4	2.6	2.3
Sulphide	DETSC 2024*	10	mg/kg	44	28	52	36	60	76
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.13	0.05	0.12	0.08	0.15	0.31
Petroleum Hydrocarbons										
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	2.4
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	1.5	7.1
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	23	9.7
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	190	30
Aliphatic C5-C35: EH_CU+HS_1D_AL	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	210	49
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	4.5
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	10
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	3.0	25
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	49	48
Aromatic C5-C35: EH_CU+HS_1D_AR	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	52	88
TPH Ali/Aro Total C5-C35: EH_CU+HS_1D_Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	260	140

Summary of Chemical Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

			Lab No	2633126	2633127	2633128	2633129	2633130	2633131
			Sample ID ~	TP01	TP02	TP03	TP04	TP05	TP06
			Depth ~	0.50	0.50	0.50	0.40	0.50	0.80
			Other ID ~						
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	20/01/2026	20/01/2026	20/01/2026	21/01/2026	21/01/2026	20/01/2026
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	0.37	< 0.10	0.20
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	0.79	0.53	0.53
Fluorene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	0.78	1.0	0.57
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	3.2	1.3	1.2
Anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	0.54	0.85	0.27
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	2.3	9.8	1.5
Pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	2.6	9.4	1.6
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	0.97	< 0.10	0.54
Chrysene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	1.6	< 0.10	1.0
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	0.83	< 0.10	0.63
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	0.36	< 0.10	0.26
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	1.2	< 0.10	0.66
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	0.84	< 0.10	0.64
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	0.21	< 0.10	0.17
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	0.67	< 0.10	0.54
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	17	23	10
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

			Lab No	2633132	2633133	2633134	2633135	2633136	2633137
			Sample ID ~	TP07	TP08	TP09	TP10	TP11	TP12
			Depth ~	0.20	1.00	0.80	0.50	0.20	0.60
			Other ID ~						
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	21/01/2026	21/01/2026	21/01/2026	21/01/2026	21/01/2026	21/01/2026
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Asbestos Quantification (Gravimetric)	DETSC 1102	0.001	%						< 0.001
Preparation									
Moisture Content	DETSC 1004	0.1	%	11	12	9.0	14	10	14
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	4.2	8.1	3.3	7.0	1.3	10
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	1.3	0.8	1.4	1.0	1.4	0.8
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	0.4	< 0.1	0.5	< 0.1	0.7
Chromium	DETSC 2301#	0.15	mg/kg	6.1	390	16	52	3.2	63
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	14	36	7.2	27	3.4	70
Lead	DETSC 2301#	0.3	mg/kg	12	54	6.0	77	3.6	140
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.11
Nickel	DETSC 2301#	1	mg/kg	6.8	14	9.3	15	1.9	23
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	2.7	0.7	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	24	93	18	96	13	350
Inorganics									
pH	DETSC 2008#		pH	10.6	11.6	10.8	10.6	11.8	9.2
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	1.0	0.1	< 0.1	< 0.1	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	0.7	2.5	< 0.5	1.7	0.8	5.0
Organic Matter (by calculation)	*	0.1	%	1.2	4.2	0.8	2.9	1.3	8.7
Sulphide	DETSC 2024*	10	mg/kg	40	32	60	36	12	60
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.58	0.49	0.68	0.26	0.35	0.14
Petroleum Hydrocarbons									
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	2.4	< 1.2	1.8
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	12	< 1.5	7.5
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	51	< 3.4	21
Aliphatic C5-C35: EH_CU+HS_1D_AL	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	64	< 10	30
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg	< 0.9	3.2	< 0.9	7.9	< 0.9	< 0.9
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg	< 0.5	4.6	< 0.5	14	< 0.5	< 0.5
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg	< 0.6	13	< 0.6	28	< 0.6	< 0.6
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg	< 1.4	18	< 1.4	120	< 1.4	< 1.4
Aromatic C5-C35: EH_CU+HS_1D_AR	DETSC 3072*	10	mg/kg	< 10	38	< 10	170	< 10	< 10
TPH Ali/Aro Total C5-C35: EH_CU+HS_1D_Total	DETSC 3072*	10	mg/kg	< 10	38	< 10	230	< 10	30

Summary of Chemical Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

			Lab No	2633132	2633133	2633134	2633135	2633136	2633137
			Sample ID ~	TP07	TP08	TP09	TP10	TP11	TP12
			Depth ~	0.20	1.00	0.80	0.50	0.20	0.60
			Other ID ~						
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	21/01/2026	21/01/2026	21/01/2026	21/01/2026	21/01/2026	21/01/2026
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.10	0.48	< 0.10	< 0.10	< 0.10	0.10
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.10	0.18	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.10	0.40	0.51	0.22	< 0.10	0.42
Fluorene	DETSC 3301	0.1	mg/kg	< 0.10	0.45	< 0.10	0.23	< 0.10	0.31
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.10	2.4	2.8	0.66	< 0.10	2.3
Anthracene	DETSC 3301	0.1	mg/kg	< 0.10	0.47	1.1	0.57	< 0.10	1.0
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	2.0	3.5	1.3	< 0.10	7.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.10	1.8	2.7	1.2	< 0.10	7.9
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.10	1.2	0.49	0.55	< 0.10	2.7
Chrysene	DETSC 3301	0.1	mg/kg	< 0.10	1.6	0.84	0.67	< 0.10	2.9
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	1.1	0.87	0.44	< 0.10	2.6
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.10	0.60	0.47	0.38	< 0.10	1.5
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.10	1.1	1.4	1.1	< 0.10	4.2
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.10	1.0	0.53	0.42	< 0.10	2.4
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	0.18	0.10	< 0.10	0.22
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.10	0.89	0.45	0.26	< 0.10	1.8
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	16	16	7.9	< 1.6	37
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

			Lab No	2633138	2633139	2633140
			Sample ID ~	TP13	TP14	TP15
			Depth ~	2.20	1.20	1.00
			Other ID ~			
			Sample Type ~	SOIL	SOIL	SOIL
			Sampling Date ~	21/01/2026	21/01/2026	21/01/2026
			Sampling Time ~	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Asbestos Quantification (Gravimetric)	DETSC 1102	0.001	%	< 0.001	0.002	
Preparation						
Moisture Content	DETSC 1004	0.1	%	12	12	14
Metals						
Arsenic	DETSC 2301#	0.2	mg/kg	4.9	6.4	6.0
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.9	0.7	0.4
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.3	0.2
Chromium	DETSC 2301#	0.15	mg/kg	16	36	18
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	17	31	25
Lead	DETSC 2301#	0.3	mg/kg	53	35	23
Mercury	DETSC 2325#	0.05	mg/kg	0.05	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	12	21	19
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	52	100	53
Inorganics						
pH	DETSC 2008#		pH	10.0	10.1	8.9
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.3	< 0.1	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	1.6	1.8	0.9
Organic Matter (by calculation)	*	0.1	%	2.7	3.1	1.6
Sulphide	DETSC 2024*	10	mg/kg	40	76	< 10
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.09	0.15	0.13
Petroleum Hydrocarbons						
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg	1.8	< 1.2	< 1.2
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	3.8	< 1.5	< 1.5
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg	19	< 3.4	< 3.4
Aliphatic C5-C35: EH_CU+HS_1D_AL	DETSC 3072*	10	mg/kg	25	< 10	< 10
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg	4.1	< 0.9	< 0.9
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg	10	< 0.5	< 0.5
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg	21	< 0.6	< 0.6
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg	44	< 1.4	< 1.4
Aromatic C5-C35: EH_CU+HS_1D_AR	DETSC 3072*	10	mg/kg	79	< 10	< 10
TPH Ali/Aro Total C5-C35: EH_CU+HS_1D_Total	DETSC 3072*	10	mg/kg	100	< 10	< 10

Summary of Chemical Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

			Lab No	2633138	2633139	2633140
			Sample ID ~	TP13	TP14	TP15
			Depth ~	2.20	1.20	1.00
			Other ID ~			
			Sample Type ~	SOIL	SOIL	SOIL
			Sampling Date ~	21/01/2026	21/01/2026	21/01/2026
			Sampling Time ~	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
PAHs						
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10
Acenaphthene	DETSC 3301	0.1	mg/kg	0.99	< 0.10	< 0.10
Fluorene	DETSC 3301	0.1	mg/kg	1.2	< 0.10	< 0.10
Phenanthrene	DETSC 3301	0.1	mg/kg	3.2	< 0.10	< 0.10
Anthracene	DETSC 3301	0.1	mg/kg	0.68	< 0.10	< 0.10
Fluoranthene	DETSC 3301	0.1	mg/kg	2.7	< 0.10	< 0.10
Pyrene	DETSC 3301	0.1	mg/kg	2.1	< 0.10	< 0.10
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.90	< 0.10	< 0.10
Chrysene	DETSC 3301	0.1	mg/kg	1.6	< 0.10	< 0.10
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	0.78	< 0.10	< 0.10
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	0.39	< 0.10	< 0.10
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	0.88	< 0.10	< 0.10
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	0.65	< 0.10	< 0.10
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	0.17	< 0.10	< 0.10
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	0.54	< 0.10	< 0.10
PAH 16 Total	DETSC 3301	1.6	mg/kg	17	< 1.6	< 1.6
Phenols						
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	0.4

Summary of Chemical Analysis
Leachate Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

				Lab No	2633141	2633142	2633143	2633144	2633145	2633146	2633147
				Sample ID ~	BH03	BH04	BH09	BH12	BH14	TP01	TP11
				Depth ~	3.00	0.50	2.00	2.00	0.50	0.50	0.20
				Other ID ~							
				Sample Type ~	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE
				Sampling Date ~	20/01/2026	21/01/2026	21/01/2026	19/01/2026	19/01/2026	20/01/2026	21/01/2026
				Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**								
Preparation											
Leachate 2:1 250g Non-WAC	DETSC 1009*			Y	Y	Y	Y	Y	Y	Y
Metals											
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	3.68	0.59	9.93	4.10	3.26	2.27	9.21
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	0.04	< 0.03	0.09	0.07	0.06	< 0.03	0.09
Calcium, Dissolved	DETSC 2306	0.09	mg/l	11	15	7.7	10	10	12	11
Chromium, Dissolved	DETSC 2306	0.25	ug/l	11.03	0.76	12.03	8.17	5.27	4.84	16.50
Copper, Dissolved	DETSC 2306	0.4	ug/l	8.84	2.11	10.08	6.63	5.04	5.32	12.46
Lead, Dissolved	DETSC 2306	0.09	ug/l	34.48	3.20	36.05	19.29	13.00	19.65	23.84
Magnesium, Dissolved	DETSC 2306	0.02	mg/l	1.9	0.81	2.8	2.1	1.0	1.9	3.1
Mercury, Dissolved (Low Level)	DETSC 2324	0.001	ug/l	< 0.0010	0.0066	0.0023	0.0056	0.0034	0.0060	0.0036
Nickel, Dissolved	DETSC 2306	0.5	ug/l	7.17	< 0.50	8.63	5.29	3.53	3.04	11.30
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.56	0.35	1.36	0.78	0.55	0.38	0.94
Zinc, Dissolved	DETSC 2306	1.3	ug/l	24.17	2.39	33.75	25.34	21.70	16.08	51.00
Inorganics										
Total Hardness as CaCO3	DETSC 2303	0.1	mg/l	35.1	41.3	30.6	34.3	30.1	39.1	41.3
Sulphate as SO4	DETSC 2055	0.1	mg/l	6.3	20	3.7	13	7.4	26	4.8
Sulphide	DETSC 2208	10	ug/l	< 10	< 10	61	39	20	24	78
Phenols										
Total Phenol	DETSC 3451*	0.5	ug/l	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Summary of Chemical Analysis
Leachate Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

			Lab No	2633148	2633149
			Sample ID ~	TP12	TP13
			Depth ~	0.60	2.20
			Other ID ~		
			Sample Type ~	LEACHATE	LEACHATE
			Sampling Date ~	21/01/2026	21/01/2026
			Sampling Time ~	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Preparation					
Leachate 2:1 250g Non-WAC	DETSC 1009*			Y	Y
Metals					
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	2.71	1.85
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	0.07	< 0.03
Calcium, Dissolved	DETSC 2306	0.09	mg/l	8.3	8.7
Chromium, Dissolved	DETSC 2306	0.25	ug/l	5.55	4.27
Copper, Dissolved	DETSC 2306	0.4	ug/l	9.90	5.49
Lead, Dissolved	DETSC 2306	0.09	ug/l	26.82	8.85
Magnesium, Dissolved	DETSC 2306	0.02	mg/l	1.0	1.1
Mercury, Dissolved (Low Level)	DETSC 2324	0.001	ug/l	0.0083	0.0051
Nickel, Dissolved	DETSC 2306	0.5	ug/l	4.79	2.89
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.35	< 0.25
Zinc, Dissolved	DETSC 2306	1.3	ug/l	111.6	22.04
Inorganics					
Total Hardness as CaCO3	DETSC 2303	0.1	mg/l	24.9	26.0
Sulphate as SO4	DETSC 2055	0.1	mg/l	8.7	7.9
Sulphide	DETSC 2208	10	ug/l	26	29
Phenols					
Total Phenol	DETSC 3451*	0.5	ug/l	< 0.50	< 0.50

Summary of Asbestos Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2633102	BH01 0.80	SOIL	NAD	none	Steven Lambert
2633103	BH02 3.00	SOIL	NAD	none	Steven Lambert
2633104	BH03 3.00	SOIL	NAD	none	Steven Lambert
2633105	BH04 0.50	SOIL	NAD	none	Steven Lambert
2633106	BH05 1.00	SOIL	NAD	none	Steven Lambert
2633107	BH06 1.00	SOIL	NAD	none	Steven Lambert
2633108	BH07 3.00	SOIL	NAD	none	Steven Lambert
2633109	BH08 0.50	SOIL	NAD	none	Steven Lambert
2633110	BH09 2.00	SOIL	Chrysotile	Chrysotile present in microscopic insulation	Steven Lambert
2633111	BH10 3.00	SOIL	Chrysotile Amosite	Chrysotile & Amosite present in microscopic insulation	Steven Lambert
2633112	BH11 0.50	SOIL	NAD	none	Steven Lambert
2633113	BH12 2.00	SOIL	Chrysotile	Chrysotile present as fibre bundles	Steven Lambert
2633114	BH13 0.80	SOIL	NAD	none	Steven Lambert
2633115	BH14 0.50	SOIL	NAD	none	Steven Lambert
2633116	BH15 3.00	SOIL	NAD	none	Steven Lambert
2633117	BH16 0.50	SOIL	NAD	none	Steven Lambert
2633118	BH18 0.80	SOIL	NAD	none	Steven Lambert
2633119	BH19 0.50	SOIL	NAD	none	Steven Lambert
2633120	BH20 1.00	SOIL	NAD	none	Steven Lambert
2633121	BH21 0.80	SOIL	NAD	none	Steven Lambert
2633122	BH22 2.50	SOIL	NAD	none	Steven Lambert
2633123	BH23 1.00	SOIL	NAD	none	Steven Lambert
2633124	BH24 0.80	SOIL	Chrysotile	Chrysotile present as fibre bundles	Steven Lambert
2633125	BH25 0.80	SOIL	NAD	none	Steven Lambert
2633126	TP01 0.50	SOIL	Amosite Chrysotile	Amosite & Chrysotile present as fibre bundles	Steven Lambert
2633127	TP02 0.50	SOIL	NAD	none	Steven Lambert
2633128	TP03 0.50	SOIL	NAD	none	Steven Lambert
2633129	TP04 0.40	SOIL	Amosite	Amosite present as fibre bundles	Steven Lambert
2633130	TP05 0.50	SOIL	NAD	none	Steven Lambert
2633131	TP06 0.80	SOIL	NAD	none	Steven Lambert
2633132	TP07 0.20	SOIL	NAD	none	Steven Lambert
2633133	TP08 1.00	SOIL	NAD	none	Steven Lambert
2633134	TP09 0.80	SOIL	NAD	none	Steven Lambert
2633135	TP10 0.50	SOIL	NAD	none	Steven Lambert
2633136	TP11 0.20	SOIL	NAD	none	Steven Lambert
2633137	TP12 0.60	SOIL	Amosite	Amosite present as fibre bundles	Steven Lambert
2633138	TP13 2.20	SOIL	Amosite	Amosite present as fibre bundles	Steven Lambert
2633139	TP14 1.20	SOIL	Chrysotile	Chrysotile present in microscopic bitumen	Steven Lambert
2633140	TP15 1.00	SOIL	NAD	none	Steven Lambert

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples

Summary of Asbestos Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

Lab No	Sample ID	Material Type	Result	Comment*	Analyst

are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

			Lab No	2633110	2633111	2633113
			Sample ID ~	BH09	BH10	BH12
			Depth ~	2.00	3.00	2.00
			Other ID ~			
			Sample Type ~			
			Sampling Date ~	21/01/2026	19/01/2026	19/01/2026
			Sampling Time ~			
Test	**Method**	**LOQ**	**Units**			
Total Mass% Asbestos (a+b+c)	DETSC 1102	< 0.001	Mass %	**0.005**	**0.011**	**< 0.001**
Gravimetric Quantification (a)	DETSC 1102	< 0.001	Mass %	0.005	0.011	na
Detailed Gravimetric Quantification (b)	DETSC 1102	< 0.001	Mass %	na	na	<0.001
Quantification by PCOM (c)	DETSC 1102	< 0.001	Mass %	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	< 0.001	Fibres/g	na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample			g	28.48	391.39	273.59
ACMs present*			type	Insulation	Insulation	
Mass of ACM in sample			g	0.0018	0.0520	
% ACM by mass			%	0.006	0.013	
% asbestos in ACM			%	85	85	
% asbestos in sample			%	0.005	0.011	
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample			Mass %	na	na	na
% Chrysotile bundles in sample			Mass %	na	na	<0.001
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample			Mass %	na	na	na
% Chrysotile fibres in sample			Mass %	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres			Fibres/g	na	na	na
Chrysotile fibres			Fibres/g	na	na	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
denotes deviating sample
The results are based on dry weight.

Summary of Asbestos Quantification Analysis

Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

			Lab No	2633124	2633126	2633129
			Sample ID ~	BH24	TP01	TP04
			Depth ~	0.80	0.50	0.40
			Other ID ~			
			Sample Type ~			
			Sampling Date ~	21/01/2026	20/01/2026	21/01/2026
			Sampling Time ~			
Test	**Method**	**LOQ**	**Units**			
Total Mass% Asbestos (a+b+c)	DETSC 1102	< 0.001	Mass %	**< 0.001**	**0.002**	**< 0.001**
Gravimetric Quantification (a)	DETSC 1102	< 0.001	Mass %	na	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	< 0.001	Mass %	<0.001	0.002	<0.001
Quantification by PCOM (c)	DETSC 1102	< 0.001	Mass %	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	< 0.001	Fibres/g	na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample			g	85.74	589.82	638.69
ACMs present*			type			
Mass of ACM in sample			g			
% ACM by mass			%			
% asbestos in ACM			%			
% asbestos in sample			%			
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample			Mass %	na	<0.001	<0.001
% Chrysotile bundles in sample			Mass %	<0.001	0.001	na
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample			Mass %	na	na	na
% Chrysotile fibres in sample			Mass %	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres			Fibres/g	na	na	na
Chrysotile fibres			Fibres/g	na	na	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
denotes deviating sample
The results are based on dry weight.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 26-02041
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood

Lab No	2633137	2633138	2633139
Sample ID ~	TP12	TP13	TP14
Depth ~	0.60	2.20	1.20
Other ID ~			
Sample Type ~			
Sampling Date ~	21/01/2026	21/01/2026	21/01/2026
Sampling Time ~			

Test	Method	LOQ	Units			
Total Mass% Asbestos (a+b+c)	DETSC 1102	< 0.001	Mass %	**< 0.001**	**< 0.001**	**0.002**
Gravimetric Quantification (a)	DETSC 1102	< 0.001	Mass %	na	na	0.002
Detailed Gravimetric Quantification (b)	DETSC 1102	< 0.001	Mass %	<0.001	<0.001	na
Quantification by PCOM (c)	DETSC 1102	< 0.001	Mass %	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	< 0.001	Fibres/g	na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample			g	659.82	759.89	663.65
ACMs present*			type			Bitumen
Mass of ACM in sample			g			0.1798
% ACM by mass			%			0.027
% asbestos in ACM			%			8
% asbestos in sample			%			0.002
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample			Mass %	<0.001	<0.001	na
% Chrysotile bundles in sample			Mass %	na	na	na
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample			Mass %	na	na	na
% Chrysotile fibres in sample			Mass %	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres			Fibres/g	na	na	na
Chrysotile fibres			Fibres/g	na	na	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
denotes deviating sample
The results are based on dry weight.

Information in Support of the Analytical Results

Our Ref 26-02041
Client Ref ~ LW25-136
Contract ~ LW25-136 Jaguar Landrover, Halewood

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests	Headspace in container for tests
2633102	BH01 0.80 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633103	BH02 3.00 SOIL	21/01/26	GJ 250ml ((Headspace)), GJ 60ml ((Headspace)), PT 1L ((Headspace))	pH + Conductivity (7 days)		BTEX/C5-10, HS
2633104	BH03 3.00 SOIL	20/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633105	BH04 0.50 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633106	BH05 1.00 SOIL	21/01/26	GJ 250ml ((Headspace)), GJ 60ml ((Headspace)), PT 1L ((Headspace))	pH + Conductivity (7 days)		BTEX/C5-10, HS
2633107	BH06 1.00 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633108	BH07 3.00 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633109	BH08 0.50 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633110	BH09 2.00 SOIL	21/01/26	GJ 250ml ((Headspace)), GJ 60ml ((Headspace)), PT 1L ((Headspace))	pH + Conductivity (7 days)		BTEX/C5-10, HS
2633111	BH10 3.00 SOIL	19/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633112	BH11 0.50 SOIL	19/01/26	GJ 250ml ((Headspace)), GJ 60ml ((Headspace))	pH + Conductivity (7 days)		BTEX/C5-10, HS
2633113	BH12 2.00 SOIL	19/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633114	BH13 0.80 SOIL	19/01/26	GJ 250ml ((Headspace)), GJ 60ml ((Headspace)), PT 1L ((Headspace))	pH + Conductivity (7 days)		BTEX/C5-10, HS
2633115	BH14 0.50 SOIL	19/01/26	GJ 250ml ((Headspace)), GJ 60ml ((Headspace)), PT 1L ((Headspace))	pH + Conductivity (7 days)		BTEX/C5-10, HS
2633116	BH15 3.00 SOIL	19/01/26	GJ 250ml ((Headspace)), GJ 60ml ((Headspace)), PT 1L ((Headspace))	pH + Conductivity (7 days)		BTEX/C5-10, HS
2633117	BH16 0.50 SOIL	20/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633118	BH18 0.80 SOIL	20/01/26	GJ 250ml ((Headspace)), GJ 60ml ((Headspace)), PT 1L ((Headspace))	pH + Conductivity (7 days)		BTEX/C5-10, HS
2633119	BH19 0.50 SOIL	21/01/26	GJ 250ml ((Headspace)), GJ 60ml ((Headspace)), PT 1L ((Headspace))	pH + Conductivity (7 days)		BTEX/C5-10, HS
2633120	BH20 1.00 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		

Information in Support of the Analytical Results

Our Ref 26-02041
Client Ref ~ LW25-136
Contract ~ LW25-136 Jaguar Landrover, Halewood

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests	Headspace in container for tests
2633121	BH21 0.80 SOIL	21/01/26	GJ 250ml ((Headspace)), GJ 60ml ((Headspace)), PT 1L ((Headspace))	pH + Conductivity (7 days)		BTEX/C5-10, HS
2633122	BH22 2.50 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633123	BH23 1.00 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633124	BH24 0.80 SOIL	21/01/26	GJ 250ml ((Headspace)), GJ 60ml ((Headspace)), PT 1L ((Headspace))	pH + Conductivity (7 days)		BTEX/C5-10, HS
2633125	BH25 0.80 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633126	TP01 0.50 SOIL	20/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633127	TP02 0.50 SOIL	20/01/26	GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633128	TP03 0.50 SOIL	20/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633129	TP04 0.40 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633130	TP05 0.50 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633131	TP06 0.80 SOIL	20/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633132	TP07 0.20 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633133	TP08 1.00 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633134	TP09 0.80 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633135	TP10 0.50 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633136	TP11 0.20 SOIL	21/01/26	GJ 250ml ((Headspace)), GJ 60ml ((Headspace)), PT 1L ((Headspace))	pH + Conductivity (7 days)		BTEX/C5-10, HS
2633137	TP12 0.60 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633138	TP13 2.20 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633139	TP14 1.20 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633140	TP15 1.00 SOIL	21/01/26	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)		
2633141	BH03 3.00 LEACHATE	20/01/26	GJ 250ml, GJ 60ml, PT 1L	Hardness (7 days), Kone (Sulphide) (7 days)		
2633142	BH04 0.50 LEACHATE	21/01/26	GJ 250ml, GJ 60ml, PT 1L	Hardness (7 days), Kone (Sulphide) (7 days)		
2633143	BH09 2.00 LEACHATE	21/01/26	GJ 250ml, GJ 60ml, PT 1L	Hardness (7 days), Kone (Sulphide) (7 days)		
2633144	BH12 2.00 LEACHATE	19/01/26	GJ 250ml, GJ 60ml, PT 1L	Hardness (7 days), Kone (Sulphide) (7 days)		
2633145	BH14 0.50 LEACHATE	19/01/26	GJ 250ml, GJ 60ml, PT 1L	Hardness (7 days), Kone (Sulphide) (7 days)		

Information in Support of the Analytical Results

Our Ref 26-02041
Client Ref ~ LW25-136
Contract ~ LW25-136 Jaguar Landrover, Halewood

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests	Headspace in container for tests
2633146	TP01 0.50 LEACHATE	20/01/26	GJ 250ml, GJ 60ml, PT 1L	Hardness (7 days), Kone (Sulphide) (7 days)		
2633147	TP11 0.20 LEACHATE	21/01/26	GJ 250ml, GJ 60ml, PT 1L	Hardness (7 days), Kone (Sulphide) (7 days)		
2633148	TP12 0.60 LEACHATE	21/01/26	GJ 250ml, GJ 60ml, PT 1L	Hardness (7 days), Kone (Sulphide) (7 days)		
2633149	TP13 2.20 LEACHATE	21/01/26	GJ 250ml, GJ 60ml, PT 1L	Hardness (7 days), Kone (Sulphide) (7 days)		

Key: G-Glass P-Plastic J-Jar T-Tub

Normec DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 250µm sieve
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Information in Support of the Analytical Results

List of HWOL Acronyms and Operators

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det	Acronym
Aliphatic C5-C6	HS_1D_AL
Aliphatic C6-C8	HS_1D_AL
Aliphatic C8-C10	HS_1D_AL
Aliphatic C10-C12	EH_CU_1D_AL
Aliphatic C12-C16	EH_CU_1D_AL
Aliphatic C16-C21	EH_CU_1D_AL
Aliphatic C21-C35	EH_CU_1D_AL
Aliphatic C5-C35	EH_CU+HS_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic C10-C12	EH_CU_1D_AR
Aromatic C12-C16	EH_CU_1D_AR
Aromatic C16-C21	EH_CU_1D_AR
Aromatic C21-C35	EH_CU_1D_AR
Aromatic C5-C35	EH_CU+HS_1D_AR
TPH Ali/Aro Total C5-C35	EH_CU+HS_1D_Total

Key:

~ Sample details are provided by the client and can affect the validity of the results

***** -not accredited.

-MCERTS (accreditation only applies if report carries the MCERTS logo).

$ -subcontracted.

n/s -not supplied.

I/S -insufficient sample.

U/S -unsuitable sample.

t/f -to follow.

nd -not detected.

End of Report Ver 25.10.03

Certificate of Analysis

Certificate Number	26-08163-1	*Issued:*	20-Apr-26

Client Landwise Consulting Ltd
43 Buchanan Drive
Cambuslang
Glasgow
G72 8BD

Our Reference	26-08163-1
Client Reference ~	LW25-136
Order No ~	(not supplied)
Contract Title ~	LW25-136 Jaguar Landrover, Halewood, Liverpool
Description	20 Soil samples, 8 Leachate prepared by DETS samples.
Date Received	07-Apr-26
Date Started	07-Apr-26
Date Completed	20-Apr-26
Test Procedures	Identified by prefix DETSn (details on request).

Notes **This report supersedes 26-08163; Sample info updated at client request; Sample Dates Updated**

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Reyhan Irfan
Operations Manager

2139

Summary of Chemical Analysis
Soil Samples

Our Ref 26-08163-1
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

			Lab No	2666991	2666992	2666993	2666994	2666995	2666996
			Sample ID ~	SP01	SP01	SP02	SP02	SP03	SP03
			Depth ~	0.10	1.50	0.10	2.20	0.20	1.20
			Other ID ~						
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	31/03/2026	31/03/2026	01/04/2026	01/04/2026	01/04/2026	01/04/2026
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Preparation									
Moisture Content	DETSC 1004	0.1	%				14		
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	8.3	9.7	7.9	9.7	8.3	12
Barium	DETSC 2301#	1.5	mg/kg	95	150	110	140	89	190
Beryllium	DETSC 2301#	0.2	mg/kg	0.5	0.7	0.5	0.6	0.5	1.1
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.4	0.9	0.3	0.7	0.3	1.8
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.1	0.3	0.3	0.2	0.4
Chromium	DETSC 2301#	0.15	mg/kg	25	25	29	25	21	36
Chromium III	DETSC 2301*	0.15	mg/kg	25	25	29	25	21	36
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	31	29	28	34	27	46
Lead	DETSC 2301#	0.3	mg/kg	57	42	37	120	36	140
Mercury	DETSC 2325#	0.05	mg/kg	0.07	0.11	0.08	0.23	0.06	0.20
Nickel	DETSC 2301#	1	mg/kg	21	21	20	20	20	23
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	33	31	41	33	30	68
Zinc	DETSC 2301#	1	mg/kg	79	75	78	98	77	130
Inorganics									
pH	DETSC 2008#		pH		8.6		8.5		8.6
Organic matter	DETSC 2002#	0.1	%		1.0		1.7		2.7
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l		83		67		130
Sulphate as SO4, Total	DETSC 2321#	100	mg/kg		984		677		1750
Petroleum Hydrocarbons									
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg						< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg						< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg						< 0.01
Aliphatic >EC10-EC12: EH_2D_AL	DETSC 3521#	1.5	mg/kg						< 1.50
Aliphatic >EC12-EC16: EH_2D_AL	DETSC 3521#	1.2	mg/kg						< 1.20
Aliphatic >EC16-EC21: EH_2D_AL	DETSC 3521#	1.5	mg/kg						< 1.50
Aliphatic >EC21-EC35: EH_2D_AL	DETSC 3521#	3.4	mg/kg						< 3.40
Aliphatic >EC35-EC40: EH_2D_AL	DETSC 3521*	3.4	mg/kg						< 3.40
Aliphatic >EC40-EC44: EH_2D_AL	DETSC 3521*	3.4	mg/kg						< 3.40
Aliphatic C5-C44: EH_2D+HS_1D_AL	DETSC 3521*	10	mg/kg						< 10.00
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg						< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg						< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg						< 0.01
Aromatic >EC10-EC12: EH_2D_AR	DETSC 3521#	0.9	mg/kg						< 0.90
Aromatic >EC12-EC16: EH_2D_AR	DETSC 3521#	0.5	mg/kg						< 0.50
Aromatic >EC16-EC21: EH_2D_AR	DETSC 3521#	0.6	mg/kg						2.32
Aromatic >EC21-EC35: EH_2D_AR	DETSC 3521#	1.4	mg/kg						10.29
Aromatic >EC35-EC40: EH_2D_AR	DETSC 3521*	1.4	mg/kg						< 1.40

Summary of Chemical Analysis
Soil Samples

Our Ref 26-08163-1
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

	Lab No	2666991	2666992	2666993	2666994	2666995	2666996
	Sample ID ~	SP01	SP01	SP02	SP02	SP03	SP03
	Depth ~	0.10	1.50	0.10	2.20	0.20	1.20
	Other ID ~						
	Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampling Date ~	31/03/2026	31/03/2026	01/04/2026	01/04/2026	01/04/2026	01/04/2026
	Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic >EC40-EC44: EH_2D_AR	DETSC 3521*	1.4	mg/kg						< 1.40
Aromatic C5-C44: EH_2D+HS_1D_AR	DETSC 3521*	10	mg/kg						12.61
TPH Ali/Aro C5-C44: EH_2D+HS_1D_Total	DETSC 3521*	10	mg/kg						12.61

Summary of Chemical Analysis
Soil Samples

Our Ref 26-08163-1
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

			Lab No	2666997	2666998	2666999	2667000	2667001	2667002
			Sample ID ~	SP04	SP04	SP05	SP05	SP06	SP06
			Depth ~	0.20	1.00	0.20	1.50	0.10	1.20
			Other ID ~						
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	01/04/2026	01/04/2026	01/04/2026	01/04/2026	01/04/2026	01/04/2026
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Preparation									
Moisture Content	DETSC 1004	0.1	%				16		
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	8.3	11	7.3	11	7.7	15
Barium	DETSC 2301#	1.5	mg/kg	91	330	89	130	150	140
Beryllium	DETSC 2301#	0.2	mg/kg	0.5	0.8	0.4	0.7	0.6	0.6
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.3	0.8	0.2	0.6	0.2	0.6
Cadmium	DETSC 2301#	0.1	mg/kg	26	0.2	0.3	0.5	0.5	0.3
Chromium	DETSC 2301#	0.15	mg/kg	22	31	25	31	25	27
Chromium III	DETSC 2301*	0.15	mg/kg	22	31	25	31	25	27
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	29	35	30	49	36	81
Lead	DETSC 2301#	0.3	mg/kg	39	64	36	150	44	160
Mercury	DETSC 2325#	0.05	mg/kg	0.06	0.12	0.06	0.41	0.06	0.22
Nickel	DETSC 2301#	1	mg/kg	21	27	19	22	22	22
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	29	42	28	68	32	38
Zinc	DETSC 2301#	1	mg/kg	79	89	79	120	86	100
Inorganics									
pH	DETSC 2008#		pH		9.0		8.4		8.5
Organic matter	DETSC 2002#	0.1	%		3.7		3.9		3.2
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l		53		61		46
Sulphate as SO4, Total	DETSC 2321#	100	mg/kg		1950		601		705
Petroleum Hydrocarbons									
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg						
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg						
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg						
Aliphatic >EC10-EC12: EH_2D_AL	DETSC 3521#	1.5	mg/kg						
Aliphatic >EC12-EC16: EH_2D_AL	DETSC 3521#	1.2	mg/kg						
Aliphatic >EC16-EC21: EH_2D_AL	DETSC 3521#	1.5	mg/kg						
Aliphatic >EC21-EC35: EH_2D_AL	DETSC 3521#	3.4	mg/kg						
Aliphatic >EC35-EC40: EH_2D_AL	DETSC 3521*	3.4	mg/kg						
Aliphatic >EC40-EC44: EH_2D_AL	DETSC 3521*	3.4	mg/kg						
Aliphatic C5-C44: EH_2D+HS_1D_AL	DETSC 3521*	10	mg/kg						
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg						
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg						
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg						
Aromatic >EC10-EC12: EH_2D_AR	DETSC 3521#	0.9	mg/kg						
Aromatic >EC12-EC16: EH_2D_AR	DETSC 3521#	0.5	mg/kg						
Aromatic >EC16-EC21: EH_2D_AR	DETSC 3521#	0.6	mg/kg						
Aromatic >EC21-EC35: EH_2D_AR	DETSC 3521#	1.4	mg/kg						
Aromatic >EC35-EC40: EH_2D_AR	DETSC 3521*	1.4	mg/kg						

Summary of Chemical Analysis
Soil Samples

Our Ref 26-08163-1
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

	Lab No	2666997	2666998	2666999	2667000	2667001	2667002
	Sample ID ~	SP04	SP04	SP05	SP05	SP06	SP06
	Depth ~	0.20	1.00	0.20	1.50	0.10	1.20
	Other ID ~						
	Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampling Date ~	01/04/2026	01/04/2026	01/04/2026	01/04/2026	01/04/2026	01/04/2026
	Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Aromatic >EC40-EC44: EH_2D_AR	DETSC 3521*	1.4	mg/kg				
Aromatic C5-C44: EH_2D+HS_1D_AR	DETSC 3521*	10	mg/kg				
TPH Ali/Aro C5-C44: EH_2D+HS_1D_Total	DETSC 3521*	10	mg/kg				

Summary of Chemical Analysis
Soil Samples

Our Ref 26-08163-1
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

			Lab No	2667003	2667004	2667005	2667006	2667007	2667008
			Sample ID ~	SP07	SP07	SP07	SP08	SP08	SP09
			Depth ~	0.20	0.50	1.70	0.20	1.50	0.20
			Other ID ~						
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	01/04/2026	01/04/2026	01/04/2026	01/04/2026	01/04/2026	31/03/2026
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Preparation									
Moisture Content	DETSC 1004	0.1	%					13	
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	8.8	12	16	8.3	8.7	7.6
Barium	DETSC 2301#	1.5	mg/kg	120	140	160	100	110	94
Beryllium	DETSC 2301#	0.2	mg/kg	0.6	0.7	1.1	0.5	0.5	0.5
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	< 0.2	0.7	1.0	0.4	0.7	0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.3	0.3	0.3	0.4	0.2
Chromium	DETSC 2301#	0.15	mg/kg	29	33	25	26	26	27
Chromium III	DETSC 2301*	0.15	mg/kg	29	33	25	26	26	27
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	34	46	63	32	29	27
Lead	DETSC 2301#	0.3	mg/kg	37	290	120	48	61	29
Mercury	DETSC 2325#	0.05	mg/kg	0.06	0.56	0.80	0.08	0.14	< 0.05
Nickel	DETSC 2301#	1	mg/kg	24	22	29	22	19	22
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	34	51	37	34	40	30
Zinc	DETSC 2301#	1	mg/kg	100	130	150	87	75	63
Inorganics									
pH	DETSC 2008#		pH		9.0	8.3		8.6	
Organic matter	DETSC 2002#	0.1	%		2.5	3.3		2.9	
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l		68	82		49	
Sulphate as SO4, Total	DETSC 2321#	100	mg/kg		682	808		584	
Petroleum Hydrocarbons									
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg						
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg						
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg						
Aliphatic >EC10-EC12: EH_2D_AL	DETSC 3521#	1.5	mg/kg						
Aliphatic >EC12-EC16: EH_2D_AL	DETSC 3521#	1.2	mg/kg						
Aliphatic >EC16-EC21: EH_2D_AL	DETSC 3521#	1.5	mg/kg						
Aliphatic >EC21-EC35: EH_2D_AL	DETSC 3521#	3.4	mg/kg						
Aliphatic >EC35-EC40: EH_2D_AL	DETSC 3521*	3.4	mg/kg						
Aliphatic >EC40-EC44: EH_2D_AL	DETSC 3521*	3.4	mg/kg						
Aliphatic C5-C44: EH_2D+HS_1D_AL	DETSC 3521*	10	mg/kg						
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg						
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg						
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg						
Aromatic >EC10-EC12: EH_2D_AR	DETSC 3521#	0.9	mg/kg						
Aromatic >EC12-EC16: EH_2D_AR	DETSC 3521#	0.5	mg/kg						
Aromatic >EC16-EC21: EH_2D_AR	DETSC 3521#	0.6	mg/kg						
Aromatic >EC21-EC35: EH_2D_AR	DETSC 3521#	1.4	mg/kg						
Aromatic >EC35-EC40: EH_2D_AR	DETSC 3521*	1.4	mg/kg						

Summary of Chemical Analysis
Soil Samples

Our Ref 26-08163-1
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

	Lab No	2667003	2667004	2667005	2667006	2667007	2667008
	Sample ID ~	SP07	SP07	SP07	SP08	SP08	SP09
	Depth ~	0.20	0.50	1.70	0.20	1.50	0.20
	Other ID ~						
	Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampling Date ~	01/04/2026	01/04/2026	01/04/2026	01/04/2026	01/04/2026	31/03/2026
	Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic >EC40-EC44: EH_2D_AR	DETSC 3521*	1.4	mg/kg						
Aromatic C5-C44: EH_2D+HS_1D_AR	DETSC 3521*	10	mg/kg						
TPH Ali/Aro C5-C44: EH_2D+HS_1D_Total	DETSC 3521*	10	mg/kg						

Summary of Chemical Analysis
Soil Samples

Our Ref 26-08163-1
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

Lab No	2667009	2667010
Sample ID ~	SP09	SP09
Depth ~	0.60	2.00
Other ID ~		
Sample Type ~	SOIL	SOIL
Sampling Date ~	31/03/2026	31/03/2026
Sampling Time ~	n/s	n/s

Test	Method	LOD	Units		
Preparation					
Moisture Content	DETSC 1004	0.1	%		14
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	12	8.1
Barium	DETSC 2301#	1.5	mg/kg	160	95
Beryllium	DETSC 2301#	0.2	mg/kg	0.7	0.5
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.5	0.8
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.1
Chromium	DETSC 2301#	0.15	mg/kg	35	32
Chromium III	DETSC 2301*	0.15	mg/kg	35	32
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	36	28
Lead	DETSC 2301#	0.3	mg/kg	110	98
Mercury	DETSC 2325#	0.05	mg/kg	0.26	0.24
Nickel	DETSC 2301#	1	mg/kg	22	18
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	62	35
Zinc	DETSC 2301#	1	mg/kg	110	63
Inorganics					
pH	DETSC 2008#		pH	8.6	8.6
Organic matter	DETSC 2002#	0.1	%	1.0	1.2
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	50	57
Sulphate as SO4, Total	DETSC 2321#	100	mg/kg	497	543
Petroleum Hydrocarbons					
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg		
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg		
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg		
Aliphatic >EC10-EC12: EH_2D_AL	DETSC 3521#	1.5	mg/kg		
Aliphatic >EC12-EC16: EH_2D_AL	DETSC 3521#	1.2	mg/kg		
Aliphatic >EC16-EC21: EH_2D_AL	DETSC 3521#	1.5	mg/kg		
Aliphatic >EC21-EC35: EH_2D_AL	DETSC 3521#	3.4	mg/kg		
Aliphatic >EC35-EC40: EH_2D_AL	DETSC 3521*	3.4	mg/kg		
Aliphatic >EC40-EC44: EH_2D_AL	DETSC 3521*	3.4	mg/kg		
Aliphatic C5-C44: EH_2D+HS_1D_AL	DETSC 3521*	10	mg/kg		
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg		
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg		
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg		
Aromatic >EC10-EC12: EH_2D_AR	DETSC 3521#	0.9	mg/kg		
Aromatic >EC12-EC16: EH_2D_AR	DETSC 3521#	0.5	mg/kg		
Aromatic >EC16-EC21: EH_2D_AR	DETSC 3521#	0.6	mg/kg		
Aromatic >EC21-EC35: EH_2D_AR	DETSC 3521#	1.4	mg/kg		
Aromatic >EC35-EC40: EH_2D_AR	DETSC 3521*	1.4	mg/kg		

Summary of Chemical Analysis
Soil Samples

Our Ref 26-08163-1
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

Lab No	2667009	2667010
Sample ID ~	SP09	SP09
Depth ~	0.60	2.00
Other ID ~		
Sample Type ~	SOIL	SOIL
Sampling Date ~	31/03/2026	31/03/2026
Sampling Time ~	n/s	n/s

Test	Method	LOD	Units		
Aromatic >EC40-EC44: EH_2D_AR	DETSC 3521*	1.4	mg/kg		
Aromatic C5-C44: EH_2D+HS_1D_AR	DETSC 3521*	10	mg/kg		
TPH Ali/Aro C5-C44: EH_2D+HS_1D_Total	DETSC 3521*	10	mg/kg		

Summary of Asbestos Analysis
Soil Samples

Our Ref 26-08163-1
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2666991	SP01 0.10	SOIL	NAD	none	Vicky Convery
2666992	SP01 1.50	SOIL	NAD	none	Vicky Convery
2666993	SP02 0.10	SOIL	NAD	none	Vicky Convery
2666994	SP02 2.20	SOIL	Chrysotile	Chrysotile present as fibre bundles	Vicky Convery
2666995	SP03 0.20	SOIL	NAD	none	Vicky Convery
2666996	SP03 1.20	SOIL	NAD	none	Vicky Convery
2666997	SP04 0.20	SOIL	NAD	none	Vicky Convery
2666998	SP04 1.00	SOIL	NAD	none	Vicky Convery
2666999	SP05 0.20	SOIL	NAD	none	Vicky Convery
2667000	SP05 1.50	SOIL	NAD	none	Vicky Convery
2667001	SP06 0.10	SOIL	NAD	none	Vicky Convery
2667002	SP06 1.20	SOIL	NAD	none	Vicky Convery
2667003	SP07 0.20	SOIL	NAD	none	Vicky Convery
2667004	SP07 0.50	SOIL	Chrysotile	Chrysotile present as fibre bundles	Vicky Convery
2667005	SP07 1.70	SOIL	Amosite	Amosite present as fibre bundles	Vicky Convery
2667006	SP08 0.20	SOIL	NAD	none	Vicky Convery
2667007	SP08 1.50	SOIL	NAD	none	Vicky Convery
2667008	SP09 0.20	SOIL	NAD	none	Vicky Convery
2667009	SP09 0.60	SOIL	NAD	none	Vicky Convery
2667010	SP09 2.00	SOIL	Amosite	Amosite present as fibre bundles	Vicky Convery

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

WASTE ACCEPTANCE CRITERIA TESTING
v20.25.02.03

Our Ref 26-08163
Client Ref LW25-136
Contract Title LW25-136 Jaguar Landrover, Halewood, Liverpool
Sample Id SP02 2.20
Sample Numbers 2666994 2667011 2667012
Date Analysed 16/04/2026

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	3.2	3	5	6
DETSC 2003# Loss On Ignition	%	3.4	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3521* Mineral Oil >C10-C40 + Clean Up	mg/kg	25.0	500	n/a	n/a
DETSC 3303 PAHs	mg/kg	8.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.5	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l		Amount Leached mg/kg		WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
	2:1	8:1	LS2	LS10			
DETSC 2306 Arsenic as As	2.01	3.624	0.004	0.035	0.5	2	25
DETSC 2306 Barium as Ba	10.99	14.94	0.02	0.15	20	100	300
DETSC 2306 Cadmium as Cd	< 0.0300	< 0.0300	< 0.004	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.6994	1.254	< 0.02	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	2.294	4.437	0.005	0.043	2	50	100
DETSC 2306 Mercury as Hg	< 0.0100	0.0168	< 0.0004	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	2.81	5.75	< 0.02	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	0.7151	1.311	< 0.02	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	2.149	5.564	< 0.01	0.053	0.5	10	50
DETSC 2306 Antimony as Sb	2.378	4.339	< 0.01	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	0.3242	0.5145	< 0.006	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	1.6	4.1	0.003	0.039	4	50	200
DETSC 2055 Chloride as Cl	800	850	< 20	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	180	350	0.36	3.38	10	150	500
DETSC 2055 Sulphate as SO4	2900	6900	< 20	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	37000	63000	74	612.2	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 100	< 0.2	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	3600	4900	< 10	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	7.5	7.5
DETSC 2009 Conductivity uS/cm	53.0	89.4
* Temperature*	17.0	17.0

Mass of Sample Kg	0.205
Mass of dry Sample Kg	0.175

Stage 1

Volume of Leachant L2	0.32
Volume of Eluate VE1	0.12

Stage 2

Volume of Leachant L8	1.4
Volume of Eluate VE2	0.625

Disclaimer: *The WAC limit values are provided for guidance only. Normec DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.07

WASTE ACCEPTANCE CRITERIA TESTING
v20.25.02.03

Our Ref 26-08163
Client Ref LW25-136
Contract Title LW25-136 Jaguar Landrover, Halewood, Liverpool
Sample Id SP05 1.50
Sample Numbers 2667000 2667013 2667014
Date Analysed 16/04/2026

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	4.1	3	5	6
DETSC 2003# Loss On Ignition	%	5.9	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3521* Mineral Oil >C10-C40 + Clean Up	mg/kg	< 10	500	n/a	n/a
DETSC 3303 PAHs	mg/kg	1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.4	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l		Amount Leached mg/kg		WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
	2:1	8:1	LS2	LS10			
DETSC 2306 Arsenic as As	1.786	3.984	0.004	0.038	0.5	2	25
DETSC 2306 Barium as Ba	10.99	20.4	0.02	0.2	20	100	300
DETSC 2306 Cadmium as Cd	< 0.0300	< 0.0300	< 0.004	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.6255	1.489	< 0.02	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	2.579	6.068	0.005	0.058	2	50	100
DETSC 2306 Mercury as Hg	< 0.0100	0.0179	< 0.0004	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	2.6	6.31	< 0.02	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	0.875	2.091	< 0.02	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	1.175	3.708	< 0.01	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	1.642	3.665	< 0.01	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.2500	0.5314	< 0.006	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	1.55	4.67	0.003	0.044	4	50	200
DETSC 2055 Chloride as Cl	1000	1700	< 20	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	240	380	0.48	3.7	10	150	500
DETSC 2055 Sulphate as SO4	5400	9100	< 20	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	34000	74000	68	711.4	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 100	< 0.2	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	5000	9000	10	87.1	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	7.3	7.3
DETSC 2009 Conductivity uS/cm	48.3	106.0
* Temperature*	17.0	17.0

Mass of Sample Kg	0.208
Mass of dry Sample Kg	0.175

Stage 1

Volume of Leachant L2	0.317
Volume of Eluate VE1	0.125

Stage 2

Volume of Leachant L8	1.4
Volume of Eluate VE2	0.62

Disclaimer: *The WAC limit values are provided for guidance only. Normec DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.07

WASTE ACCEPTANCE CRITERIA TESTING
v20.25.02.03

Our Ref 26-08163
Client Ref LW25-136
Contract Title LW25-136 Jaguar Landrover, Halewood, Liverpool
Sample Id SP08 1.50
Sample Numbers 2667007 2667015 2667016
Date Analysed 16/04/2026

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	3.0	3	5	6
DETSC 2003# Loss On Ignition	%	4.1	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3521* Mineral Oil >C10-C40 + Clean Up	mg/kg	30.0	500	n/a	n/a
DETSC 3303 PAHs	mg/kg	0.43	100	n/a	n/a
DETSC 2008# pH	pH Units	8.6	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l		Amount Leached mg/kg		WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
	2:1	8:1	LS2	LS10			
DETSC 2306 Arsenic as As	1.76	4.168	0.004	0.04	0.5	2	25
DETSC 2306 Barium as Ba	10.31	18.32	0.02	0.18	20	100	300
DETSC 2306 Cadmium as Cd	< 0.0300	< 0.0300	< 0.004	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	1.281	2.905	< 0.02	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	2.064	5.122	0.004	0.049	2	50	100
DETSC 2306 Mercury as Hg	< 0.0100	0.0145	< 0.0004	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	2.08	5.07	< 0.02	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	1.2	2.994	< 0.02	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.7616	2.128	< 0.01	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.6074	1.427	< 0.01	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.2500	0.4517	< 0.006	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	1.3	4.43	0.003	0.042	4	50	200
DETSC 2055 Chloride as Cl	1300	1400	< 20	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	220	300	0.44	2.95	10	150	500
DETSC 2055 Sulphate as SO4	3800	2900	< 20	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	27000	66000	54	633.3	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 100	< 0.2	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	4400	9300	< 10	89.6	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	7.3	8.0
DETSC 2009 Conductivity uS/cm	38.4	94.1
* Temperature*	17.0	17.0

Mass of Sample Kg	0.202
Mass of dry Sample Kg	0.175

Stage 1

Volume of Leachant L2	0.323
Volume of Eluate VE1	0.12

Stage 2

Volume of Leachant L8	1.4
Volume of Eluate VE2	0.615

Disclaimer: *The WAC limit values are provided for guidance only. Normec DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.07

WASTE ACCEPTANCE CRITERIA TESTING
v20.25.02.03

Our Ref 26-08163
Client Ref LW25-136
Contract Title LW25-136 Jaguar Landrover, Halewood, Liverpool
Sample Id SP09 2.00
Sample Numbers 2667010 2667017 2667018
Date Analysed 16/04/2026

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	2.0	3	5	6
DETSC 2003# Loss On Ignition	%	3.0	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3521* Mineral Oil >C10-C40 + Clean Up	mg/kg	< 10	500	n/a	n/a
DETSC 3303 PAHs	mg/kg	0.28	100	n/a	n/a
DETSC 2008# pH	pH Units	8.6	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l		Amount Leached mg/kg		WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
	2:1	8:1	LS2	LS10			
DETSC 2306 Arsenic as As	1.674	4.015	0.003	0.038	0.5	2	25
DETSC 2306 Barium as Ba	8.53	16.39	< 0.02	0.16	20	100	300
DETSC 2306 Cadmium as Cd	< 0.0300	< 0.0300	< 0.004	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.9296	2.647	< 0.02	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	2.15	5.561	0.004	0.053	2	50	100
DETSC 2306 Mercury as Hg	< 0.0100	0.0197	< 0.0004	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	2.61	6.7	< 0.02	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	0.7097	1.99	< 0.02	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	1.712	5.968	< 0.01	0.057	0.5	10	50
DETSC 2306 Antimony as Sb	1.731	4.101	< 0.01	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.2500	0.6658	< 0.006	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	1.47	5.46	0.003	0.052	4	50	200
DETSC 2055 Chloride as Cl	1400	2200	< 20	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	290	590	0.58	5.69	10	150	500
DETSC 2055 Sulphate as SO4	2100	4000	< 20	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	32000	72000	64	691.4	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 100	< 0.2	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	4500	8400	< 10	81.2	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	7.6	8.0
DETSC 2009 Conductivity uS/cm	45.8	103.0
* Temperature*	17.0	17.0

Mass of Sample Kg	0.203
Mass of dry Sample Kg	0.175

Stage 1

Volume of Leachant L2	0.322
Volume of Eluate VE1	0.125

Stage 2

Volume of Leachant L8	1.4
Volume of Eluate VE2	0.62

Disclaimer: *The WAC limit values are provided for guidance only. Normec DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.07

Information in Support of the Analytical Results

Our Ref 26-08163-1
Client Ref ~ LW25-136
Contract ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2666991	SP01 0.10 SOIL	31/03/26	GJ 250ml, GJ 60ml, PT 1L		
2666992	SP01 1.50 SOIL	31/03/26	GJ 250ml, GJ 60ml, PT 1L		
2666993	SP02 0.10 SOIL	01/04/26	GJ 250ml, GJ 60ml, PT 1L		
2666994	SP02 2.20 SOIL	01/04/26	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2666995	SP03 0.20 SOIL	01/04/26	GJ 250ml, GJ 60ml, PT 1L		
2666996	SP03 1.20 SOIL	01/04/26	GJ 250ml, GJ 60ml, PT 1L		
2666997	SP04 0.20 SOIL	01/04/26	GJ 250ml, GJ 60ml, PT 1L		
2666998	SP04 1.00 SOIL	01/04/26	GJ 250ml, GJ 60ml, PT 1L		
2666999	SP05 0.20 SOIL	01/04/26	GJ 250ml, GJ 60ml, PT 1L		
2667000	SP05 1.50 SOIL	01/04/26	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2667001	SP06 0.10 SOIL	01/04/26	GJ 250ml, GJ 60ml, PT 1L		
2667002	SP06 1.20 SOIL	01/04/26	GJ 250ml, GJ 60ml, PT 1L		
2667003	SP07 0.20 SOIL	01/04/26	GJ 250ml, GJ 60ml, PT 1L		
2667004	SP07 0.50 SOIL	01/04/26	GJ 250ml, GJ 60ml, PT 1L		
2667005	SP07 1.70 SOIL	01/04/26	GJ 250ml, GJ 60ml, PT 1L		
2667006	SP08 0.20 SOIL	01/04/26	GJ 250ml, GJ 60ml, PT 1L		
2667007	SP08 1.50 SOIL	01/04/26	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2667008	SP09 0.20 SOIL	31/03/26	GJ 250ml, GJ 60ml, PT 1L		
2667009	SP09 0.60 SOIL	31/03/26	GJ 250ml, GJ 60ml, PT 1L		
2667010	SP09 2.00 SOIL	31/03/26	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2667011	SP02 2.20 LEACHATE	01/04/24	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2667012	SP02 2.20 LEACHATE	01/04/24	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2667013	SP05 1.50 LEACHATE	01/04/24	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2667014	SP05 1.50 LEACHATE	01/04/24	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2667015	SP08 1.50 LEACHATE	01/04/24	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2667016	SP08 1.50 LEACHATE	01/04/24	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2667017	SP09 2.00 LEACHATE	31/03/26	GJ 250ml x2, GJ 60ml x2, PT 1L x2		

Information in Support of the Analytical Results

Our Ref 26-08163-1
Client Ref ~ LW25-136
Contract ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

2667018	SP09 2.00 LEACHATE	31/03/26	GJ 250ml x2, GJ 60ml x2, PT 1L x2		

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 250µm sieve
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Information in Support of the Analytical Results

List of HWOL Acronyms and Operators

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det	Acronym
Aliphatic C5-C6	HS_1D_AL
Aliphatic C6-C8	HS_1D_AL
Aliphatic C8-C10	HS_1D_AL
Aliphatic >EC10-EC12	EH_2D_AL
Aliphatic >EC12-EC16	EH_2D_AL
Aliphatic >EC16-EC21	EH_2D_AL
Aliphatic >EC21-EC35	EH_2D_AL
Aliphatic >EC35-EC40	EH_2D_AL
Aliphatic >EC40-EC44	EH_2D_AL
Aliphatic C5-C44	EH_2D+HS_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic >EC10-EC12	EH_2D_AR
Aromatic >EC12-EC16	EH_2D_AR
Aromatic >EC16-EC21	EH_2D_AR
Aromatic >EC21-EC35	EH_2D_AR
Aromatic >EC35-EC40	EH_2D_AR
Aromatic >EC40-EC44	EH_2D_AR
Aromatic C5-C44	EH_2D+HS_1D_AR
TPH Ali/Aro C5-C44	EH_2D+HS_1D_Total
Mineral Oil >C10-C40	EH_2D_Total

Key:

~ Sample details are provided by the client and can affect the validity of the results
***** -not accredited.
-MCERTS (accreditation only applies if report carries the MCERTS logo).
$ -subcontracted.
n/s -not supplied.
I/S -insufficient sample.
U/S -unsuitable sample.
t/f -to follow.
nd -not detected.

End of Report Ver 26.03.15

Certificate of Analysis

Certificate Number 26-09343 *Issued:* 23-Apr-26

Client Landwise Consulting Ltd
43 Buchanan Drive
Cambuslang
Glasgow
G72 8BD

Our Reference 26-09343

Client Reference ~ LW25-136

Order No ~ (not supplied)

Contract Title ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

Description 4 Soil samples.

Date Received 07-Apr-26

Date Started 20-Apr-26

Date Completed 23-Apr-26

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Reyhan Irfan
Operations Manager

2139

Summary of Asbestos Analysis

Samples

Our Ref 26-09343
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

Lab No	Sample ID	Sample Location	Material Type	Result	Comment*	Analyst

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 26-09343
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

			Lab No	2673281	2673282	2673283
			Sample ID ~	SP02	SP07	SP07
			Depth ~	2.20	0.50	1.70
			Other ID ~			
			Sample Type ~			
			Sampling Date ~	04/01/2026	04/01/2026	04/01/2026
			Sampling Time ~			
Test	**Method**	**LOQ**	**Units**			
Total Mass% Asbestos (a+b+c)	DETSC 1102	< 0.001	Mass %	**0.003**	**0.004**	**0.002**
Gravimetric Quantification (a)	DETSC 1102	< 0.001	Mass %	na	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	< 0.001	Mass %	0.003	0.004	0.002
Quantification by PCOM (c)	DETSC 1102	< 0.001	Mass %	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	< 0.001	Fibres/g	na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample			g	1074.07	962.83	772.36
ACMs present*			type			
Mass of ACM in sample			g			
% ACM by mass			%			
% asbestos in ACM			%			
% asbestos in sample			%			
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample			Mass %	na	na	0.002
% Chrysotile bundles in sample			Mass %	0.003	0.004	na
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample			Mass %	na	na	na
% Chrysotile fibres in sample			Mass %	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres			Fibres/g	na	na	na
Chrysotile fibres			Fibres/g	na	na	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
denotes deviating sample
The results are based on dry weight.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 26-09343
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

Lab No	2673284
Sample ID ~	SP09
Depth ~	2.00
Other ID ~	
Sample Type ~	
Sampling Date ~	04/01/2026
Sampling Time ~	

Test	Method	LOQ	Units	
Total Mass% Asbestos (a+b+c)	DETSC 1102	< 0.001	Mass %	**0.002**
Gravimetric Quantification (a)	DETSC 1102	< 0.001	Mass %	na
Detailed Gravimetric Quantification (b)	DETSC 1102	< 0.001	Mass %	0.002
Quantification by PCOM (c)	DETSC 1102	< 0.001	Mass %	na
Potentially Respirable Fibres (d)	DETSC 1102	< 0.001	Fibres/g	na
Breakdown of Gravimetric Analysis (a)				
Mass of Sample			g	871.45
ACMs present*			type	
Mass of ACM in sample			g	
% ACM by mass			%	
% asbestos in ACM			%	
% asbestos in sample			%	
Breakdown of Detailed Gravimetric Analysis (b)				
% Amphibole bundles in sample			Mass %	0.002
% Chrysotile bundles in sample			Mass %	na
Breakdown of PCOM Analysis (c)				
% Amphibole fibres in sample			Mass %	na
% Chrysotile fibres in sample			Mass %	na
Breakdown of Potentially Respirable Fibre Analysis (d)				
Amphibole fibres			Fibres/g	na
Chrysotile fibres			Fibres/g	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
denotes deviating sample
The results are based on dry weight.

Information in Support of the Analytical Results

Our Ref 26-09343
Client Ref ~ LW25-136
Contract ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2673281	SP02 2.20 SOIL	04/01/26	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2673282	SP07 0.50 SOIL	04/01/26	GJ 250ml, GJ 60ml, PT 1L		
2673283	SP07 1.70 SOIL	04/01/26	GJ 250ml, GJ 60ml, PT 1L		
2673284	SP09 2.00 SOIL	04/01/26	GJ 250ml x2, GJ 60ml x2, PT 1L x2		

Key: G-Glass P-Plastic J-Jar T-Tub
Normec DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Key:
~ Sample details are provided by the client and can affect the validity of the results
***** -not accredited.
-MCERTS (accreditation only applies if report carries the MCERTS logo).
$ -subcontracted.
n/s -not supplied.
I/S -insufficient sample.
U/S -unsuitable sample.
t/f -to follow.
nd -not detected.

End of Report Ver 26.03.15

APPENDIX 4 – JIWG ASSESSMENT

JIWG

Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Project Reference	5031818
Site Name	Eastlands Car Park, Halewood
Client	JLR
Run by	Ridge
Date	01-Feb-26
Scenario details	Excavation and recompaction of site won materials for a car park.

Decision Support Tool for CAR2012 Work Categories

Stage 1

Hazard Factors

		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Free dispersed fibres/fibre bundles	2
Extent of degradation of ACMs at outset of work	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	Sporadic/random occurrences of visible contamination by ACMs	2
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Very Low quantities - <0.001 to 0.01 %wt/wt	1
Sub-total		**13**

Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs

Hazard ranking Medium

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.
It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

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Version 2, July 2016

Stage 2

Exposure Factors		Score
Anticipated airborne fibre concentration - Control Limit or SALI?	<0.01 fibres/ml	1
Anticipated duration of exposure to asbestos	> 2 hours in a 7 day period and Up to 10 hours in a day (e.g. full time occupational exposure)	4
Activity type and effect on deterioration of ACMs during work	Not low intensity, significant deterioration expected	4
Best description of primary host material matrix (soil/made ground)	Fine Silt and/or Clay	1
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Low	2
Sub-total		**12**
Exposure ranking		Medium
Combined hazard and exposure ranking	**25**	Medium

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Stage 3

Risk Assessment Outputs

Probable Licensing Status	Non-Licensed Work
RPE*	EN149 type FFP3 disposable
Dust Suppression**	Manual/localised dust suppression
Hygiene/Decontamination***	Localised and basic personal decontamination facilities

*Where RPE has to be worn continuously for long periods (e.g. more than 1-hour), then powered RPE may be necessary.
**Reduction in control measures possible if natural mitigation factors are present (e.g. raining, wet ground)
***Guide only; suitability of selected personal hygiene measures may be reviewed on a site/contamination-specific basis

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APPENDIX 5 – WATER TESTING RESULTS AND LANDWISE MODELLING

Interim Report of Analysis

Certificate Number	26-03869	*Issued:*	03-Mar-26

Client Landwise Consulting Ltd
43 Buchanan Drive
Cambuslang
Glasgow
G72 8BD

Our Reference	26-03869
Client Reference ~	LW25-136
Order No ~	(not supplied)
Contract Title ~	LW25-136 Jaguar Landrover, Halewood, Liverpool
Description	4 Groundwater samples.
Date Received	18-Feb-26
Date Started	18-Feb-26

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

2139

Sample Deviations present. See Deviation Table Section for details.

Summary of Chemical Analysis
Water Samples

Our Ref 26-03869
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

			Lab No	2643813	2643814	2643815	2643816
			Sample ID ~	BH01	BH02	BH03	BH08
			Depth ~				
			Other ID ~				
			Sample Type ~	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
			Sampling Date ~	16/02/2026	16/02/2026	16/02/2026	16/02/2026
			Sampling Time ~	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Metals							
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	3.18	21.40	10.24	1.80
Boron, Dissolved	DETSC 2306*	12	ug/l	86.33	82.20	115.3	141.4
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03
Calcium, Dissolved	DETSC 2306	0.09	mg/l	120	110	32	58
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.91	1.31	0.33	1.65
Copper, Dissolved	DETSC 2306	0.4	ug/l	< 0.40	< 0.40	< 0.40	< 0.40
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.21	4.11	2.21	0.36
Magnesium, Dissolved	DETSC 2306	0.02	mg/l	37	3.6	0.89	10
Mercury, Dissolved (Low Level)	DETSC 2324	0.001	ug/l	< 0.0010	0.0047	0.019	0.0014
Nickel, Dissolved	DETSC 2306	0.5	ug/l	3.48	24.29	4.65	1.96
Selenium, Dissolved	DETSC 2306	0.25	ug/l	1.91	3.12	0.61	0.42
Zinc, Dissolved	DETSC 2306	1.3	ug/l	63.52	11.64	41.17	53.53
Inorganics							
pH	DETSC 2008		pH	7.2	9.9	9.8	8.1
Cyanide, Total Low Level	DETSC 2131	0.1	ug/l	2.6	13	11	2.2
Dissolved, Oxygen	DETSC 2048*	0.1	mg/l	3.6	3.2	3.9	3.2
Dissolved Organic Carbon	DETSC 2085	2	mg/l	33	26	89	14
Total Hardness as CaCO3	DETSC 2303	0.1	mg/l	441	297	82.4	187
Sulphate as SO4	DETSC 2055	0.1	mg/l	79	310	29	26
Sulphide	DETSC 2208	10	ug/l	100	27	190	31
Petroleum Hydrocarbons							
Aliphatic C5-C6: HS_1D_AL	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C6-C8: HS_1D_AL	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C8-C10: HS_1D_AL	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072*	1	ug/l	11	< 1.0	< 1.0	< 10.0
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072*	1	ug/l	23	2.5	< 1.0	< 10.0
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072*	1	ug/l	130	16	< 1.0	< 10.0
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072*	1	ug/l	600	99	< 1.0	< 10.0
Aliphatic C5-C35: EH_CU+HS_1D_AL	DETSC 3072*	10	ug/l	< 756.1	< 117.8	< 10	< 40.3
Aromatic C5-C7: HS_1D_AR	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C7-C8: HS_1D_AR	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C8-C10: HS_1D_AR	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072*	1	ug/l	< 1.0	13	10	54
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072*	1	ug/l	< 1.0	13	9.9	160
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072*	1	ug/l	41	15	7.0	130
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072*	1	ug/l	280	43	5.4	140
Aromatic C5-C35: EH_CU+HS_1D_AR	DETSC 3072*	10	ug/l	< 317.6	< 82.8	< 33.0	< 487.7
TPH Ali/Aro Total C5-C35: EH_CU+HS_1D_Total	DETSC 3072*	10	ug/l	< 1073.7	< 200.6	< 33.3	< 528.0
PAHs							
Naphthalene	DETSC 3304	0.05	ug/l	3.1	170	3.5	3.3

Summary of Chemical Analysis
Water Samples

Our Ref 26-03869
Client Ref ~ LW25-136
Contract Title ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

			Lab No	2643813	2643814	2643815	2643816
			Sample ID ~	BH01	BH02	BH03	BH08
			Depth ~				
			Other ID ~				
			Sample Type ~	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
			Sampling Date ~	16/02/2026	16/02/2026	16/02/2026	16/02/2026
			Sampling Time ~	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Acenaphthylene	DETSC 3304	0.01	ug/l	0.28	< 10.00	0.15	0.14
Acenaphthene	DETSC 3304	0.01	ug/l	2.8	120	t/f	t/f
Fluorene	DETSC 3304	0.01	ug/l	2.0	89	2.8	2.6
Phenanthrene	DETSC 3304	0.01	ug/l	6.8	450	3.7	3.3
Anthracene	DETSC 3304	0.01	ug/l	1.6	130	1.7	1.1
Fluoranthene	DETSC 3304	0.01	ug/l	8.1	450	6.6	5.6
Pyrene	DETSC 3304	0.01	ug/l	8.0	410	5.6	4.8
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	4.3	170	1.7	0.90
Chrysene	DETSC 3304	0.01	ug/l	3.4	130	0.96	0.70
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	4.9	220	1.1	0.77
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	2.1	110	0.52	0.38
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	4.2	160	0.99	0.70
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	2.5	110	0.55	0.39
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	0.57	25	0.11	0.09
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	2.6	110	0.46	0.34
PAH Total	DETSC 3304	0.2	ug/l	57	2800	t/f	t/f
Phenols							
Total Phenol	DETSC 3451*	0.5	ug/l	t/f	t/f	t/f	t/f

Information in Support of the Analytical Results

Our Ref 26-03869
Client Ref ~ LW25-136
Contract ~ LW25-136 Jaguar Landrover, Halewood, Liverpool

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2643813	BH01 GROUND WATER	16/02/26	GB 1L, GV, PB 1L	pH/Cond (1 days)	
2643814	BH02 GROUND WATER	16/02/26	GB 1L, GV, PB 1L	pH/Cond (1 days)	
2643815	BH03 GROUND WATER	16/02/26	GB 1L, GV, PB 1L	pH/Cond (1 days)	
2643816	BH08 GROUND WATER	16/02/26	GB 1L, GV, PB 1L	pH/Cond (1 days)	

Key: G-Glass P-Plastic B-Bottle V-Vial

Normec DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Information in Support of the Analytical Results

List of HWOL Acronyms and Operators

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det	Acronym
Aliphatic C5-C6	HS_1D_AL
Aliphatic C6-C8	HS_1D_AL
Aliphatic C8-C10	HS_1D_AL
Aliphatic C10-C12	EH_CU_1D_AL
Aliphatic C12-C16	EH_CU_1D_AL
Aliphatic C16-C21	EH_CU_1D_AL
Aliphatic C21-C35	EH_CU_1D_AL
Aliphatic C5-C35	EH_CU+HS_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic C10-C12	EH_CU_1D_AR
Aromatic C12-C16	EH_CU_1D_AR
Aromatic C16-C21	EH_CU_1D_AR
Aromatic C21-C35	EH_CU_1D_AR
Aromatic C5-C35	EH_CU+HS_1D_AR
TPH Ali/Aro Total C5-C35	EH_CU+HS_1D_Total

Key:

~ Sample details are provided by the client and can affect the validity of the results

***** -not accredited.

-MCERTS (accreditation only applies if report carries the MCERTS logo).

$ -subcontracted.

n/s -not supplied.

I/S -insufficient sample.

U/S -unsuitable sample.

t/f -to follow.

nd -not detected.

End of Report Ver 25.10.03

Metal Bioavailability Assessment Tool (M-BAT)

Back

Calculate

Clear Data

INPUT DATA											RESULTS (Copper)				RESULTS (Zinc)				RESULTS (Mn)				RESULTS (Ni)			
ID	Location	Waterbody	Date	Measured Cu Concentration (dissolved) (µg l-1)	Measured Zn Concentration (dissolved) (µg l-1)	Measured Mn Concentration (dissolved) (µg l-1)	Measured Ni Concentration (dissolved) (µg l-1)	pH	DOC	Ca	Site-specific PNEC Dissolved Copper (µg l-1)	BioF	Bioavailable Copper Concentration (µg l-1)	Risk Characterisation Ratio	Site-specific PNEC Dissolved Zinc (µg l-1)	BioF	Bioavailable Zinc Concentration (µg l-1)	Risk Characterisation Ratio	Site-specific PNEC Dissolved Manganese (µg l-1)	BioF	Bioavailable Manganese Concentration (µg l-1)	Risk Characterisation Ratio	Site-specific PNEC Dissolved Nickel (µg l-1)	BioF	Bioavailable Nickel Concentration (µg l-1)	Risk Characterisation Ratio
1	BH01	Rams Brook	16/02/2026	0.4	63.52		3.48	7.2	3.6	120	15.62	0.06	0.03	0.03	23.29	0.47	10.94	2.77	1033.09	0.12			16.87	0.24	0.83	0.21
2	BH02	Rams Brook	16/02/2026	0.4	11.64		24.29	9.9	3.2	110	4.08	0.24	0.10	0.10	23.30	0.47	5.44	0.50	123.00	1.00			4.90	1.00	24.29	4.96
3	BH03	Rams Brook	16/02/2026	0.4	41.17		4.65	9.8	3.9	32	6.31	0.16	0.06	0.06	24.07	0.46	18.54	1.71	123.00	1.00			8.29	1.00	4.65	0.56
4	BH04	Rams Brook	16/02/2026	0.4	53.53		1.96	8.1	3.2	58	7.84	0.13	0.05	0.05	23.21	0.47	25.11	2.31	123.00	1.00			8.27	0.48	0.95	0.24

Pb Screening Tool 1.0

Back

Calculate

Clear Data

INPUT DATA						RESULTS (Pb)			
ID	Location	Waterbody	Date	Measured Pb Concentration (dissolved) (µg l^{-1})	DOC	Site Specific PNEC Dissolved Pb (µg l^{-1})	BioF	Available Pb (µg l^{-1})	Risk Characterisation Ratio
1	BH02	Rams Brook	16/02/2026	4.11	3.20	3.84	0.31	1.28	1.07
2	BH03	Rams Brook	16/02/2026	2.21	3.90	4.68	0.26	0.57	0.47

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Acenaphthene			
Target Concentration (C_T)	0.00001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Acenaphthene		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.20E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	2.04E+02	days	*Howard et al*
Calculated decay rate	λ	3.40E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient — Kd — l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer — foc — 0.00E+00 — fraction

Organic carbon partition coefficient — Koc — 2.17E+02 — l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species — $K_{oc,n}$ — l/kg

Sorption coefficient for ionised species — $K_{oc,i}$ — l/kg

pH value — pH

acid dissociation constant — pKa

Fraction of organic carbon in aquifer — foc — fraction

Soil water partition coefficient — Kd — 0.00E+00 — l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	ax	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	az	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	ay	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}x)^{2.414}$; az = ax/10, ay = ax/100 are assumed

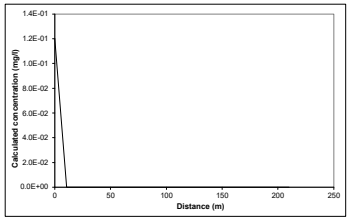
Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	3.40E-03	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	2.97E-97	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**4.04E+95**	

Remedial Targets

Remedial Target		**4.04E+90**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**210**	**m**	
Concentration of contaminant at compliance point	**C_{CED}/C_0**	**2.97E-97**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	**1.2E-01**
10.5	**7.90E-07**
21.0	**1.07E-11**
31.5	**1.65E-16**
42.0	**2.70E-21**
52.5	**4.55E-26**
63.0	**7.82E-31**
73.5	**1.36E-35**
84.0	**2.40E-40**
94.5	**4.26E-45**
105.0	**7.60E-50**
115.5	**1.36E-54**
126.0	**2.46E-59**
136.5	**4.44E-64**
147.0	**8.04E-69**
157.5	**1.46E-73**
168.0	**2.66E-78**
178.5	**4.85E-83**
189.0	**8.87E-88**
199.5	**1.62E-92**
210.0	**2.97E-97**

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Acenephthylene			
Target Concentration (C_T)	0.00001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
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The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Acenephthylene		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	2.80E-04	mg/l	*BH01*
Half life for degradation of contaminant in water	$t_{1/2}$	1.20E+02	days	*Howard et al*
Calculated decay rate	λ	5.78E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	7.68E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	7.68E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	5.70E-02	fraction	*hydraulic gradient calculated between BH01 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.20E+02	m	*Distance between BH01 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.20E+01	m	*see options*
Transverse dispersivity	az	2.20E+00	m	*see options*
Vertical dispersivity	ay	2.20E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	8.95E-05	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	5.78E-03	d^{-1}
Rate of contaminant flow due to retardation	u	8.95E-05	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	6.07E-167	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**4.61E+162**	

Remedial Targets

Remedial Target		**4.61E+157**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**220**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**6.07E-167**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	4.61E+01	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

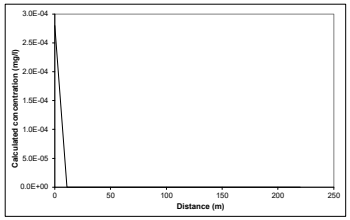
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.20E+01	6.48E+00	m
Transverse dispersivity	**az**	0.00E+00	2.20E+00	6.48E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.20E-01	6.48E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	2.8E-04
11.0	6.47E-13
22.0	3.91E-21
33.0	2.71E-29
44.0	1.99E-37
55.0	1.50E-45
66.0	1.16E-53
77.0	9.10E-62
88.0	7.21E-70
99.0	5.75E-78
110.0	4.61E-86
121.0	3.72E-94
132.0	3.01E-102
143.0	2.45E-110
154.0	1.99E-118
165.0	1.63E-126
176.0	1.33E-134
187.0	1.09E-142
198.0	8.97E-151
209.0	7.38E-159
220.0	6.07E-167

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	aliphatic C10-C12			
Target Concentration (C_T)	0.001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
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It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		aliphatic C10-C12		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

				Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.10E-02	mg/l	*BH01*
Half life for degradation of contaminant in water	$t_{1/2}$	1.02E+02	days	*Howard et al*
Calculated decay rate	λ	6.80E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	7.68E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	7.68E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	5.70E-02	fraction	*hydraulic gradient calculated between BH01*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.20E+02	m	*Distance between BH01 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.20E+01	m	*see options*
Transverse dispersivity	az	2.20E+00	m	*see options*
Vertical dispersivity	ay	2.20E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	8.95E-05	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	6.80E-03	d^{-1}
Rate of contaminant flow due to retardation	u	8.95E-05	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	3.38E-179	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**3.26E+176**	

Remedial Targets

Remedial Target		**3.26E+173**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**220**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**3.38E-179**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient — Kd — l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer — foc — 0.00E+00 — fraction

Organic carbon partition coefficient — Koc — 3.16E+05 — l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species — $K_{oc,n}$ — l/kg

Sorption coefficient for ionised species — $K_{oc,i}$ — l/kg

pH value — pH

acid dissociation constant — pKa

Fraction of organic carbon in aquifer — foc — fraction

Soil water partition coefficient — Kd — 0.00E+00 — l/kg

Define dispersivity (click brown cell and use pull down list)

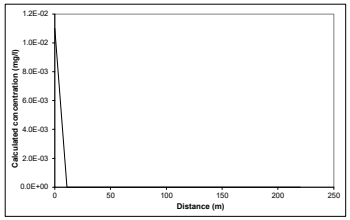
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.20E+01	6.48E+00	m
Transverse dispersivity	**az**	0.00E+00	2.20E+00	6.48E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.20E-01	6.48E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}x)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.1E-02
11.0	5.16E-12
22.0	6.32E-21
33.0	8.90E-30
44.0	1.33E-38
55.0	2.04E-47
66.0	3.20E-56
77.0	5.09E-65
88.0	8.17E-74
99.0	1.32E-82
110.0	2.16E-91
121.0	3.53E-100
132.0	5.80E-109
143.0	9.58E-118
154.0	1.58E-126
165.0	2.63E-135
176.0	4.36E-144
187.0	7.26E-153
198.0	1.21E-161
209.0	2.02E-170
220.0	3.38E-179

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	aliphatic C12-C16			
Target Concentration (C_T)	0.001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		aliphatic C12-C16		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	2.30E-02	mg/l	*BH01*
Half life for degradation of contaminant in water	$t_{1/2}$	4.40E+02	days	*Howard et al*
Calculated decay rate	λ	1.58E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	7.68E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	7.68E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	5.70E-02	fraction	*hydraulic gradient calculated between BH01 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.20E+02	m	*Distance between BH01 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.20E+01	m	*see options*
Transverse dispersivity	az	2.20E+00	m	*see options*
Vertical dispersivity	ay	2.20E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	8.95E-05	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	1.58E-03	d^{-1}
Rate of contaminant flow due to retardation	u	8.95E-05	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	7.13E-87	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**3.23E+84**	

Remedial Targets

Remedial Target		**3.23E+81**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**220**	**m**	
Concentration of contaminant at compliance point	**C_{CED}/C_0**	**7.13E-87**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient — Kd — l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer — foc — 0.00E+00 — fraction

Organic carbon partition coefficient — Koc — 5.01E+06 — l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species — $K_{oc,n}$ — l/kg

Sorption coefficient for ionised species — $K_{oc,i}$ — l/kg

pH value — pH

acid dissociation constant — pKa

Fraction of organic carbon in aquifer — foc — fraction

Soil water partition coefficient — Kd — 0.00E+00 — l/kg

Define dispersivity (click brown cell and use pull down list)

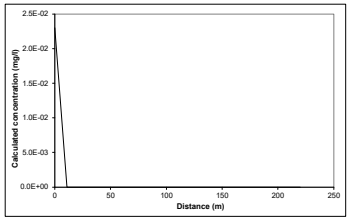
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.20E+01	6.48E+00	m
Transverse dispersivity	**az**	0.00E+00	2.20E+00	6.48E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.20E-01	6.48E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}x)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	2.3E-02
11.0	4.29E-07
22.0	2.10E-11
33.0	1.18E-15
44.0	6.97E-20
55.0	4.27E-24
66.0	2.67E-28
77.0	1.69E-32
88.0	1.08E-36
99.0	6.98E-41
110.0	4.53E-45
121.0	2.95E-49
132.0	1.93E-53
143.0	1.27E-57
154.0	8.37E-62
165.0	5.53E-66
176.0	3.66E-70
187.0	2.42E-74
198.0	1.61E-78
209.0	1.07E-82
220.0	7.13E-87

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	aliphatic C16-C21			
Target Concentration (C_T)	0.001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		aliphatic C16-C21		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.30E-01	mg/l	*BH01*
Half life for degradation of contaminant in water	$t_{1/2}$	5.30E+02	days	*Howard et al*
Calculated decay rate	λ	1.31E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	7.68E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	7.68E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	5.70E-02	fraction	*hydraulic gradient calculated between BH01 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.20E+02	m	*Distance between BH01 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.20E+01	m	*see options*
Transverse dispersivity	az	2.20E+00	m	*see options*
Vertical dispersivity	ay	2.20E-01	m	*see options*

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient — Kd — l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer — foc — 0.00E+00 — fraction

Organic carbon partition coefficient — Koc — 3.98E+08 — l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species — $K_{oc,n}$ — l/kg

Sorption coefficient for ionised species — $K_{oc,i}$ — l/kg

pH value — pH

acid dissociation constant — pKa

Fraction of organic carbon in aquifer — foc — fraction

Soil water partition coefficient — Kd — 0.00E+00 — l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	ax	0.00E+00	2.20E+01	6.48E+00	m
Transverse dispersivity	az	0.00E+00	2.20E+00	6.48E-01	m
Vertical dispersivity	ay	0.00E+00	2.20E-01	6.48E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}x)^{2.414}$; az = ax/10, ay = ax/100 are assumed

Calculated Parameters

	Variable		
Groundwater flow velocity	v	8.95E-05	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	1.31E-03	d^{-1}
Rate of contaminant flow due to retardation	u	8.95E-05	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	1.56E-78	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**8.31E+76**	

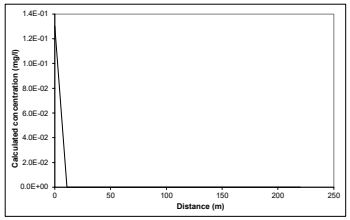
Remedial Targets

Remedial Target		**8.31E+73**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**220**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**1.56E-78**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	**1.3E-01**
11.0	**5.82E-06**
22.0	**6.81E-10**
33.0	**9.14E-14**
44.0	**1.30E-17**
55.0	**1.91E-21**
66.0	**2.85E-25**
77.0	**4.33E-29**
88.0	**6.64E-33**
99.0	**1.03E-36**
110.0	**1.60E-40**
121.0	**2.49E-44**
132.0	**3.91E-48**
143.0	**6.15E-52**
154.0	**9.71E-56**
165.0	**1.54E-59**
176.0	**2.44E-63**
187.0	**3.87E-67**
198.0	**6.16E-71**
209.0	**9.81E-75**
220.0	**1.56E-78**

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	aliphatic C21-C35			
Target Concentration (C_T)	0.001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
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Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		aliphatic C21-C35		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	6.00E-01	mg/l	*BH01*
Half life for degradation of contaminant in water	$t_{1/2}$	7.30E+02	days	*Howard et al*
Calculated decay rate	λ	9.50E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	7.68E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	7.68E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	5.70E-02	fraction	*hydraulic gradient calculated between BH01 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.20E+02	m	*Distance between BH01 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.20E+01	m	*see options*
Transverse dispersivity	az	2.20E+00	m	*see options*
Vertical dispersivity	ay	2.20E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	8.95E-05	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	9.50E-04	d^{-1}
Rate of contaminant flow due to retardation	u	8.95E-05	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	2.34E-66	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**2.56E+65**	

Remedial Targets

Remedial Target		**2.56E+62**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**220**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**2.34E-66**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	3.98E+08	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

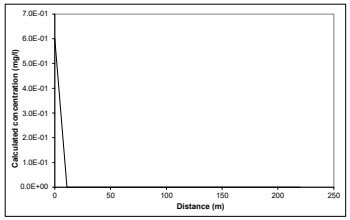
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.20E+01	6.48E+00	m
Transverse dispersivity	**az**	0.00E+00	2.20E+00	6.48E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.20E-01	6.48E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	6.0E-01
11.0	1.01E-04
22.0	4.45E-08
33.0	2.25E-11
44.0	1.20E-14
55.0	6.64E-18
66.0	3.74E-21
77.0	2.14E-24
88.0	1.23E-27
99.0	7.17E-31
110.0	4.19E-34
121.0	2.47E-37
132.0	1.46E-40
143.0	8.62E-44
154.0	5.12E-47
165.0	3.05E-50
176.0	1.82E-53
187.0	1.09E-56
198.0	6.51E-60
209.0	3.90E-63
220.0	2.34E-66

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Anthracene			
Target Concentration (C_T)	0.0001	mg/l	Origin of C_T:	EQS

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Anthracene		from Level 1
Target Concentration	C_T	1.00E-04	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.30E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	9.20E+02	days	*Howard et al*
Calculated decay rate	λ	7.54E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	7.54E-04	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	4.15E-46	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**3.13E+44**	

Remedial Targets

Remedial Target		**3.13E+40**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**210**	**m**
Concentration of contaminant at compliance point	**C_{CED}/C_0**	**4.15E-46**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	3.17E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

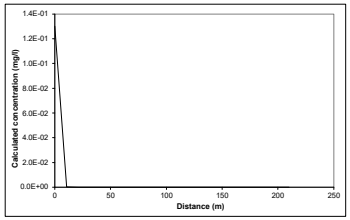
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.3E-01
10.5	3.08E-04
21.0	1.50E-06
31.5	8.30E-09
42.0	4.87E-11
52.5	2.95E-13
63.0	1.82E-15
73.5	1.14E-17
84.0	7.23E-20
94.5	4.61E-22
105.0	2.96E-24
115.5	1.91E-26
126.0	1.23E-28
136.5	8.01E-31
147.0	5.22E-33
157.5	3.41E-35
168.0	2.23E-37
178.5	1.46E-39
189.0	9.59E-42
199.5	6.31E-44
210.0	4.15E-46

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment

Site Name:	**JLR, Halewood, Liverpool**			
Site Address:	**JLR, Halewood, Liverpool**			
Completed by:	**HOL**			
Date:	**03-Mar-26**		**Version:**	**3.2**
Contaminant	**Aromatic C10-C12**			
Target Concentration (C_T)	**0.001**	**mg/l**	**Origin of C_T:**	**LoD**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)	Variable	Value	Unit	Source
Contaminant		Aromatic C10-C12		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: **Simulate vertical dispersion in 1 direction**

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: **Apply degradation rate to pollutants in all phases (e.g. field derived valu**

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	5.40E-02	mg/l	*BH08*
Half life for degradation of contaminant in water	$t_{1/2}$	1.02E+02	days	*Howard et al*
Calculated decay rate	λ	6.80E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.20E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.20E+00	m	BH08 = GW level recorded between 0.80mbgl and rockh
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	8.59E-02	fraction	*hydraulic gradient calculated between BH08 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.40E+02	m	*Distance between BH08 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.40E+01	m	*see options*
Transverse dispersivity	az	2.40E+00	m	*see options*
Vertical dispersivity	ay	2.40E-01	m	*see options*

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	3.16E+03	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.40E+01	6.73E+00	m
Transverse dispersivity	**az**	0.00E+00	2.40E+00	6.73E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.40E-01	6.73E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

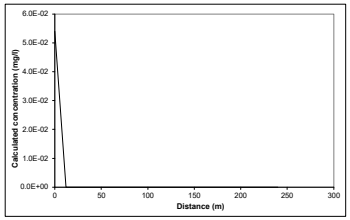
Xu & Eckstein (1995) report ax = $0.83(\log_{10}x)^{2.414}$; az = ax/10, ay = ax/100 are assumed

Calculated Parameters	Variable		
Groundwater flow velocity	v	1.35E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	6.80E-03	d^{-1}
Rate of contaminant flow due to retardation	u	1.35E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	4.95E-152	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.09E+150**	

Remedial Targets

Remedial Target		**1.09E+147**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**240**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**4.95E-152**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	5.4E-02
12.0	5.81E-10
24.0	1.50E-17
36.0	4.42E-25
48.0	1.38E-32
60.0	4.46E-40
72.0	1.47E-47
84.0	4.91E-55
96.0	1.65E-62
108.0	5.62E-70
120.0	1.92E-77
132.0	6.60E-85
144.0	2.28E-92
156.0	7.87E-100
168.0	2.73E-107
180.0	9.49E-115
192.0	3.31E-122
204.0	1.15E-129
216.0	4.03E-137
228.0	1.41E-144
240.0	4.95E-152

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Aromatic C12-C16			
Target Concentration (C_T)	0.001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
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Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Aromatic C12-C16		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.60E-01	mg/l	*BH08*
Half life for degradation of contaminant in water	$t_{1/2}$	4.40E+02	days	*Howard et al*
Calculated decay rate	λ	1.58E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.20E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.20E+00	m	BH08 = GW level recorded between 0.80mbgl and rockh
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	8.59E-02	fraction	*hydraulic gradient calculated between BH08 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.40E+02	m	*Distance between BH08 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.40E+01	m	*see options*
Transverse dispersivity	az	2.40E+00	m	*see options*
Vertical dispersivity	ay	2.40E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.35E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	1.58E-03	d^{-1}
Rate of contaminant flow due to retardation	u	1.35E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	2.87E-73	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**5.58E+71**	

Remedial Targets

Remedial Target		**5.58E+68**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**240**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**2.87E-73**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	6.31E+03	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

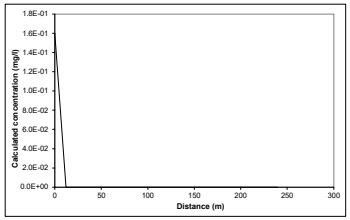
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.40E+01	6.73E+00	m
Transverse dispersivity	**az**	0.00E+00	2.40E+00	6.73E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.40E-01	6.73E-02	m

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}x)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.6E-01
12.0	1.41E-05
24.0	3.00E-09
36.0	7.27E-13
48.0	1.87E-16
60.0	4.95E-20
72.0	1.34E-23
84.0	3.67E-27
96.0	1.02E-30
108.0	2.84E-34
120.0	7.97E-38
132.0	2.25E-41
144.0	6.37E-45
156.0	1.81E-48
168.0	5.16E-52
180.0	1.47E-55
192.0	4.21E-59
204.0	1.21E-62
216.0	3.47E-66
228.0	9.97E-70
240.0	2.87E-73

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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The calculation of equations in this worksheet has been independently checked by Entec (UK) Ltd on behalf of the Environment Agency.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Aromatic C16-C21			
Target Concentration (C_T)	0.001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Aromatic C16-C21		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

				Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.30E-01	mg/l	*BH08*
Half life for degradation of contaminant in water	$t_{1/2}$	5.30E+02	days	*Howard et al*
Calculated decay rate	λ	1.31E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.20E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.20E+00	m	BH08 = GW level recorded between 0.80mbgl and rockh
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	8.59E-02	fraction	*hydraulic gradient calculated between BH08 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.40E+02	m	*Distance between BH08 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.40E+01	m	*see options*
Transverse dispersivity	az	2.40E+00	m	*see options*
Vertical dispersivity	ay	2.40E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.35E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	1.31E-03	d^{-1}
Rate of contaminant flow due to retardation	u	1.35E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	6.69E-67	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.94E+65**	

Remedial Targets

Remedial Target		**1.94E+62**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**240**	**m**	
Concentration of contaminant at compliance point	**C_{CED}/C_0**	**6.69E-67**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	1.58E+04	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

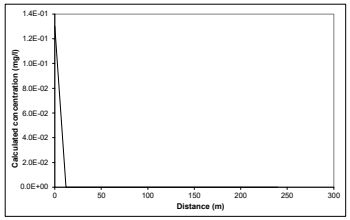
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.40E+01	6.73E+00	m
Transverse dispersivity	**az**	0.00E+00	2.40E+00	6.73E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.40E-01	6.73E-02	m

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}x)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	**1.3E-01**
12.0	**2.42E-05**
24.0	**1.08E-08**
36.0	**5.49E-12**
48.0	**2.97E-15**
60.0	**1.65E-18**
72.0	**9.41E-22**
84.0	**5.43E-25**
96.0	**3.16E-28**
108.0	**1.86E-31**
120.0	**1.10E-34**
132.0	**6.50E-38**
144.0	**3.88E-41**
156.0	**2.32E-44**
168.0	**1.39E-47**
180.0	**8.34E-51**
192.0	**5.02E-54**
204.0	**3.03E-57**
216.0	**1.83E-60**
228.0	**1.10E-63**
240.0	**6.69E-67**

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Aromatic C21-C35			
Target Concentration (C_T)	0.001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
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Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)	Variable	Value	Unit	Source
Contaminant		Aromatic C21-C35		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: **Simulate vertical dispersion in 1 direction**

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: **Apply degradation rate to pollutants in all phases (e.g. field derived valu**

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	2.80E-01	mg/l	*BH08*
Half life for degradation of contaminant in water	$t_{1/2}$	7.30E+02	days	*Howard et al*
Calculated decay rate	λ	9.50E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.20E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.20E+00	m	BH08 = GW level recorded between 0.80mbgl and rockh
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	8.59E-02	fraction	*hydraulic gradient calculated between BH08 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.40E+02	m	*Distance between BH08 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.40E+01	m	*see options*
Transverse dispersivity	az	2.40E+00	m	*see options*
Vertical dispersivity	ay	2.40E-01	m	*see options*

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	1.26E+05	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	ax	0.00E+00	2.40E+01	6.73E+00	m
Transverse dispersivity	az	0.00E+00	2.40E+00	6.73E-01	m
Vertical dispersivity	ay	0.00E+00	2.40E-01	6.73E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

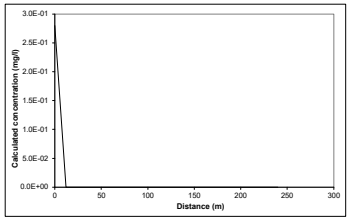
Xu & Eckstein (1995) report ax = $0.83(\log_{10}x)^{2.414}$; az = ax/10, ay = ax/100 are assumed

Calculated Parameters	Variable		
Groundwater flow velocity	v	1.35E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	9.50E-04	d^{-1}
Rate of contaminant flow due to retardation	u	1.35E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	8.97E-57	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**3.12E+55**	

Remedial Targets

Remedial Target		**3.12E+52**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**240**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**8.97E-57**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	2.8E-01
12.0	1.61E-04
24.0	2.21E-07
36.0	3.49E-10
48.0	5.82E-13
60.0	1.00E-15
72.0	1.76E-18
84.0	3.13E-21
96.0	5.63E-24
108.0	1.02E-26
120.0	1.86E-29
132.0	3.41E-32
144.0	6.28E-35
156.0	1.16E-37
168.0	2.15E-40
180.0	3.98E-43
192.0	7.40E-46
204.0	1.38E-48
216.0	2.57E-51
228.0	4.80E-54
240.0	8.97E-57

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Benzo(a)anthracene			
Target Concentration (C_T)	0.00001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Benzo(a)anthracene		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: **Simulate vertical dispersion in 1 direction**

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: **Apply degradation rate to pollutants in all phases (e.g. field derived valu**

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.70E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.36E+03	days	*Howard et al*
Calculated decay rate	λ	5.09E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	5.09E-04	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	6.74E-38	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**2.52E+36**	

Remedial Targets

Remedial Target		**2.52E+31**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**210**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**6.74E-38**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient — Kd — l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer — foc — 0.00E+00 — fraction

Organic carbon partition coefficient — Koc — 1.48E+03 — l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species — $K_{oc,n}$ — l/kg

Sorption coefficient for ionised species — $K_{oc,i}$ — l/kg

pH value — pH

acid dissociation constant — pKa

Fraction of organic carbon in aquifer — foc — fraction

Soil water partition coefficient — Kd — 0.00E+00 — l/kg

Define dispersivity (click brown cell and use pull down list)

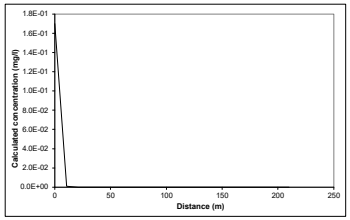
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}x)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	**1.7E-01**
10.5	**1.02E-03**
21.0	**1.26E-05**
31.5	**1.78E-07**
42.0	**2.65E-09**
52.5	**4.07E-11**
63.0	**6.39E-13**
73.5	**1.02E-14**
84.0	**1.63E-16**
94.5	**2.64E-18**
105.0	**4.31E-20**
115.5	**7.05E-22**
126.0	**1.16E-23**
136.5	**1.91E-25**
147.0	**3.16E-27**
157.5	**5.24E-29**
168.0	**8.70E-31**
178.5	**1.45E-32**
189.0	**2.41E-34**
199.5	**4.03E-36**
210.0	**6.74E-38**

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Benzo(a)pyrene			
Target Concentration (C_T)	0.00000017	mg/l	Origin of C_T:	EQS

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Benzo(a)pyrene		from Level 1
Target Concentration	C_T	1.70E-07	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: **Simulate vertical dispersion in 1 direction**

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: **Apply degradation rate to pollutants in all phases (e.g. field derived valu**

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.60E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.06E+03	days	*Howard et al*
Calculated decay rate	λ	6.55E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	6.55E-04	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	6.19E-43	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**2.58E+41**	

Remedial Targets

Remedial Target		**4.39E+34**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**210**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**6.19E-43**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	4.02E+03	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

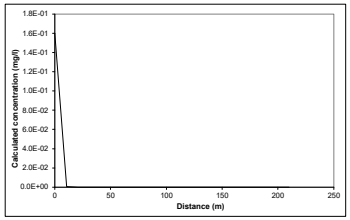
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.6E-01
10.5	5.40E-04
21.0	3.74E-06
31.5	2.96E-08
42.0	2.48E-10
52.5	2.14E-12
63.0	1.89E-14
73.5	1.69E-16
84.0	1.52E-18
94.5	1.38E-20
105.0	1.27E-22
115.5	1.16E-24
126.0	1.07E-26
136.5	9.96E-29
147.0	9.25E-31
157.5	8.61E-33
168.0	8.04E-35
178.5	7.51E-37
189.0	7.03E-39
199.5	6.59E-41
210.0	6.19E-43

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment

Site Name:	**JLR, Halewood, Liverpool**			
Site Address:	**JLR, Halewood, Liverpool**			
Completed by:	**HOL**			
Date:	**03-Mar-26**		**Version:**	**3.2**
Contaminant	**Benzo(b)fluoranthene**			
Target Concentration (C_T)	**0.00000017**	**mg/l**	**Origin of C_T:**	**EQS**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
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It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Benzo(b)fluoranthene		from Level 1
Target Concentration	C_T	1.70E-07	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	2.20E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.22E+03	days	*Howard et al*
Calculated decay rate	λ	5.69E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	5.69E-04	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	6.58E-40	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**3.35E+38**	

Remedial Targets

Remedial Target		**5.69E+31**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**210**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**6.58E-40**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	4.41E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

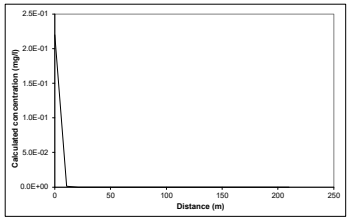
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	2.2E-01
10.5	1.04E-03
21.0	1.00E-05
31.5	1.10E-07
42.0	1.29E-09
52.5	1.55E-11
63.0	1.91E-13
73.5	2.38E-15
84.0	2.99E-17
94.5	3.79E-19
105.0	4.84E-21
115.5	6.21E-23
126.0	7.99E-25
136.5	1.03E-26
147.0	1.34E-28
157.5	1.74E-30
168.0	2.26E-32
178.5	2.94E-34
189.0	3.84E-36
199.5	5.02E-38
210.0	6.58E-40

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Benzo(ghi)perylene			
Target Concentration (C_T)	0.00000017	mg/l	Origin of C_T:	EQS

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Benzo(ghi)perylene		from Level 1
Target Concentration	C_T	1.70E-07	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.10E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.31E+03	days	*Howard et al*
Calculated decay rate	λ	5.28E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	5.28E-04	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	9.35E-39	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.18E+37**	

Remedial Targets

Remedial Target		**2.00E+30**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**210**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**9.35E-39**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	2.32E+01	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

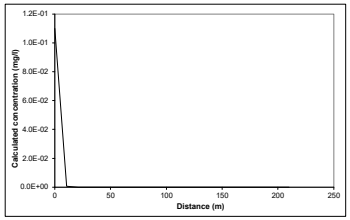
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}x)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.1E-01
10.5	6.12E-04
21.0	6.99E-06
31.5	9.13E-08
42.0	1.26E-09
52.5	1.79E-11
63.0	2.61E-13
73.5	3.84E-15
84.0	5.71E-17
94.5	8.56E-19
105.0	1.29E-20
115.5	1.96E-22
126.0	2.98E-24
136.5	4.55E-26
147.0	6.96E-28
157.5	1.07E-29
168.0	1.64E-31
178.5	2.53E-33
189.0	3.91E-35
199.5	6.04E-37
210.0	9.35E-39

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment

Site Name:	**JLR, Halewood, Liverpool**			
Site Address:	**JLR, Halewood, Liverpool**			
Completed by:	**HOL**			
Date:	**03-Mar-26**		**Version:**	**3.2**
Contaminant	**Benzo(k)fluoranthene**			
Target Concentration (C_T)	**0.00000017**	**mg/l**	**Origin of C_T:**	**EQS**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Benzo(k)fluoranthene		from Level 1
Target Concentration	C_T	1.70E-07	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.10E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	4.27E+03	days	*Howard et al*
Calculated decay rate	λ	1.62E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	1.62E-04	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	7.60E-22	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.45E+20**	

Remedial Targets

Remedial Target		**2.46E+13**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**210**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**7.60E-22**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	1.10E+03	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

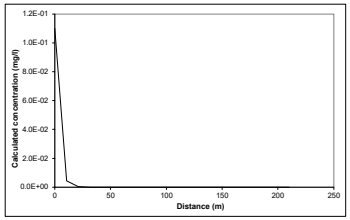
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}x)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.1E-01
10.5	4.29E-03
21.0	3.43E-04
31.5	3.14E-05
42.0	3.04E-06
52.5	3.03E-07
63.0	3.08E-08
73.5	3.18E-09
84.0	3.32E-10
94.5	3.48E-11
105.0	3.68E-12
115.5	3.91E-13
126.0	4.17E-14
136.5	4.46E-15
147.0	4.78E-16
157.5	5.14E-17
168.0	5.54E-18
178.5	5.99E-19
189.0	6.47E-20
199.5	7.01E-21
210.0	7.60E-22

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Chrysene			
Target Concentration (C_T)	0.00001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Chrysene		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

				Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.30E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	2.00E+03	days	*Howard et al*
Calculated decay rate	λ	3.47E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	3.47E-04	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	1.75E-31	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**7.41E+29**	

Remedial Targets

Remedial Target		**7.41E+24**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**210**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**1.75E-31**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	9.92E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

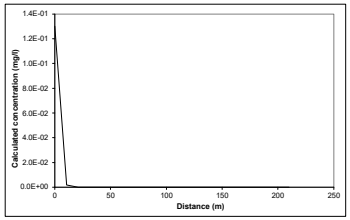
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.3E-01
10.5	1.66E-03
21.0	4.34E-05
31.5	1.30E-06
42.0	4.10E-08
52.5	1.34E-09
63.0	4.45E-11
73.5	1.50E-12
84.0	5.12E-14
94.5	1.76E-15
105.0	6.08E-17
115.5	2.11E-18
126.0	7.36E-20
136.5	2.57E-21
147.0	9.03E-23
157.5	3.18E-24
168.0	1.12E-25
178.5	3.95E-27
189.0	1.40E-28
199.5	4.95E-30
210.0	1.75E-31

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment

Site Name:	**JLR, Halewood, Liverpool**			
Site Address:	**JLR, Halewood, Liverpool**			
Completed by:	**HOL**			
Date:	**03-Mar-26**		**Version:**	**3.2**
Contaminant	**cyanide**			
Target Concentration (C_T)	**0.001**	**mg/l**	**Origin of C_T:**	**EQS**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		cyanide		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.30E-02	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.00E+08	days	*Assumed no decay*
Calculated decay rate	λ	6.93E-09	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	6.93E-09	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	1.03E-03	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.26E+01**	

Remedial Targets

Remedial Target		**1.26E-02**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**210**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**1.03E-03**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

User specified value for partition coefficient

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc		fraction
Organic carbon partition coefficient	Koc		l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

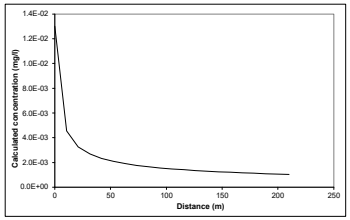
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.3E-02
10.5	4.55E-03
21.0	3.27E-03
31.5	2.68E-03
42.0	2.33E-03
52.5	2.09E-03
63.0	1.90E-03
73.5	1.76E-03
84.0	1.65E-03
94.5	1.56E-03
105.0	1.48E-03
115.5	1.41E-03
126.0	1.35E-03
136.5	1.29E-03
147.0	1.25E-03
157.5	1.20E-03
168.0	1.16E-03
178.5	1.13E-03
189.0	1.09E-03
199.5	1.06E-03
210.0	1.03E-03

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Dibenzo(a,h)anthracene			
Target Concentration (C_T)	0.00001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Dibenzo(a,h)anthracene		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	2.50E-02	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.88E+03	days	*Howard et al*
Calculated decay rate	λ	3.69E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	3.69E-04	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	3.56E-33	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**7.01E+30**	

Remedial Targets

Remedial Target		**7.01E+25**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**210**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**3.56E-33**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	4.41E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

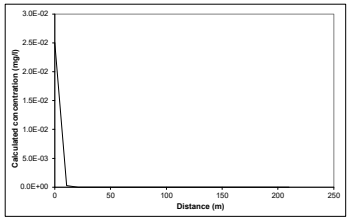
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	2.5E-02
10.5	2.85E-04
21.0	6.66E-06
31.5	1.78E-07
42.0	5.03E-09
52.5	1.47E-10
63.0	4.36E-12
73.5	1.32E-13
84.0	4.01E-15
94.5	1.23E-16
105.0	3.80E-18
115.5	1.18E-19
126.0	3.67E-21
136.5	1.15E-22
147.0	3.60E-24
157.5	1.13E-25
168.0	3.56E-27
178.5	1.12E-28
189.0	3.55E-30
199.5	1.12E-31
210.0	3.56E-33

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment

Site Name:	**JLR, Halewood, Liverpool**			
Site Address:	**JLR, Halewood, Liverpool**			
Completed by:	**HOL**			
Date:	**03-Mar-26**		**Version:**	**3.2**
Contaminant	**Fluoranthene**			
Target Concentration (C_T)	**0.0000063**	**mg/l**	**Origin of C_T:**	**EQS**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
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It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Fluoranthene		from Level 1
Target Concentration	C_T	6.30E-06	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	4.50E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	8.80E+02	days	*Howard et al*
Calculated decay rate	λ	7.88E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	7.88E-04	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	1.35E-46	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**3.33E+45**	

Remedial Targets

Remedial Target		**2.10E+40**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**210**	**m**
Concentration of contaminant at compliance point	**C_{CED}/C_0**	**1.35E-46**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient — Kd — l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer — foc — 0.00E+00 — fraction

Organic carbon partition coefficient — Koc — 5.90E+02 — l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species — $K_{oc,n}$ — l/kg

Sorption coefficient for ionised species — $K_{oc,i}$ — l/kg

pH value — pH

acid dissociation constant — pKa

Fraction of organic carbon in aquifer — foc — fraction

Soil water partition coefficient — Kd — 0.00E+00 — l/kg

Define dispersivity (click brown cell and use pull down list)

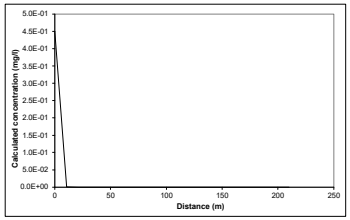
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein	
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00 m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01 m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}x)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	4.5E-01
10.5	9.46E-04
21.0	4.09E-06
31.5	2.02E-08
42.0	1.05E-10
52.5	5.66E-13
63.0	3.11E-15
73.5	1.73E-17
84.0	9.72E-20
94.5	5.51E-22
105.0	3.14E-24
115.5	1.80E-26
126.0	1.03E-28
136.5	5.97E-31
147.0	3.46E-33
157.5	2.01E-35
168.0	1.17E-37
178.5	6.79E-40
189.0	3.96E-42
199.5	2.31E-44
210.0	1.35E-46

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Fluorine			
Target Concentration (C_T)	0.00001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Fluorine		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	8.90E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.20E+02	days	*Howard et al*
Calculated decay rate	λ	5.78E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	5.78E-03	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	9.55E-126	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**9.32E+124**	

Remedial Targets

Remedial Target		**9.32E+119**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**210**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**9.55E-126**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	2.37E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

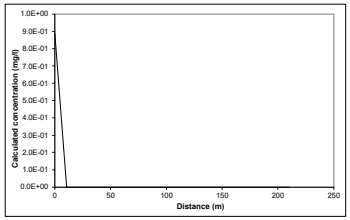
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	8.9E-01
10.5	1.99E-07
21.0	9.18E-14
31.5	4.83E-20
42.0	2.68E-26
52.5	1.54E-32
63.0	9.00E-39
73.5	5.34E-45
84.0	3.20E-51
94.5	1.93E-57
105.0	1.17E-63
115.5	7.16E-70
126.0	4.39E-76
136.5	2.70E-82
147.0	1.67E-88
157.5	1.03E-94
168.0	6.38E-101
178.5	3.96E-107
189.0	2.46E-113
199.5	1.53E-119
210.0	9.55E-126

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment

Site Name:	**JLR, Halewood, Liverpool**			
Site Address:	**JLR, Halewood, Liverpool**			
Completed by:	**HOL**			
Date:	**03-Mar-26**		**Version:**	**3.2**
Contaminant	**Indeno(123)pyrene**			
Target Concentration (C_T)	**0.00000017**	**mg/l**	**Origin of C_T:**	**EQS**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
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Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Indeno(123)pyrene		from Level 1
Target Concentration	C_T	1.70E-07	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

				Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.10E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.46E+03	days	*Howard et al*
Calculated decay rate	λ	4.75E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	4.75E-04	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	8.36E-37	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.32E+35**	

Remedial Targets

Remedial Target		**2.24E+28**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**210**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**8.36E-37**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient — Kd — l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer — foc — 0.00E+00 — fraction

Organic carbon partition coefficient — Koc — 9.23E+01 — l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species — $K_{oc,n}$ — l/kg

Sorption coefficient for ionised species — $K_{oc,i}$ — l/kg

pH value — pH

acid dissociation constant — pKa

Fraction of organic carbon in aquifer — foc — fraction

Soil water partition coefficient — Kd — 0.00E+00 — l/kg

Define dispersivity (click brown cell and use pull down list)

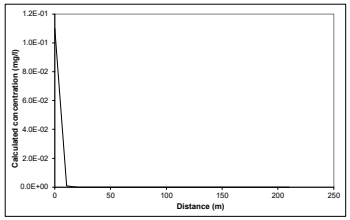
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.1E-01
10.5	7.66E-04
21.0	1.10E-05
31.5	1.79E-07
42.0	3.09E-09
52.5	5.52E-11
63.0	1.00E-12
73.5	1.85E-14
84.0	3.44E-16
94.5	6.46E-18
105.0	1.22E-19
115.5	2.31E-21
126.0	4.41E-23
136.5	8.43E-25
147.0	1.62E-26
157.5	3.11E-28
168.0	5.98E-30
178.5	1.15E-31
189.0	2.23E-33
199.5	4.31E-35
210.0	8.36E-37

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Lead			
Target Concentration (C_T)	0.0012	mg/l	Origin of C_T:	EQS

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
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Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Lead		from Level 1
Target Concentration	C_T	1.20E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

				Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	4.11E-03	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.00E+08	days	*Assumed no decay*
Calculated decay rate	λ	6.93E-09	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*SAND (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-4(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	1.58E+04	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	5.79E+04	fraction
Decay rate used	λ	6.93E-09	d^{-1}
Rate of contaminant flow due to retardation	u	2.49E-09	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	2.48E-35	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.66E+32**	

Remedial Targets

Remedial Target		**1.99E+29**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**210**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**2.48E-35**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

User specified value for partition coefficient

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd	1.58E+04	l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc		fraction
Organic carbon partition coefficient	Koc		l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	1.58E+04	l/kg

Define dispersivity (click brown cell and use pull down list)

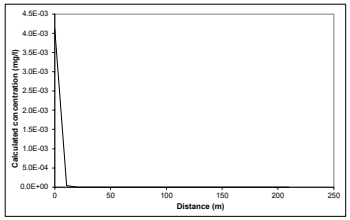
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	4.1E-03
10.5	4.00E-05
21.0	7.98E-07
31.5	1.82E-08
42.0	4.39E-10
52.5	1.09E-11
63.0	2.78E-13
73.5	7.15E-15
84.0	1.86E-16
94.5	4.87E-18
105.0	1.28E-19
115.5	3.40E-21
126.0	9.05E-23
136.5	2.41E-24
147.0	6.46E-26
157.5	1.73E-27
168.0	4.66E-29
178.5	1.26E-30
189.0	3.39E-32
199.5	9.15E-34
210.0	2.48E-35

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Mercury			
Target Concentration (C_T)	0.00007	mg/l	Origin of C_T:	EQS

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Mercury		from Level 1
Target Concentration	C_T	7.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

				Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	2.43E-02	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.00E+08	days	*Assumed no decay*
Calculated decay rate	λ	6.93E-09	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	6.31E+03	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	2.31E+04	fraction
Decay rate used	λ	6.93E-09	d^{-1}
Rate of contaminant flow due to retardation	u	6.25E-09	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	2.44E-22	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**9.97E+19**	

Remedial Targets

Remedial Target		**6.98E+15**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**210**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**2.44E-22**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

User specified value for partition coefficient

Entry if specify partition coefficient (option)

Soil water partition coefficient	Kd	6.31E+03	l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer	foc		fraction
Organic carbon partition coefficient	Koc		l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	6.31E+03	l/kg

Define dispersivity (click brown cell and use pull down list)

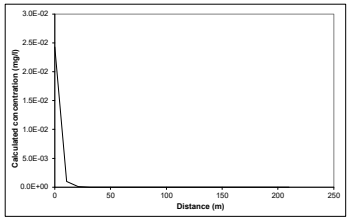
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}x)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	2.4E-02
10.5	9.65E-04
21.0	7.87E-05
31.5	7.33E-06
42.0	7.22E-07
52.5	7.34E-08
63.0	7.61E-09
73.5	8.00E-10
84.0	8.50E-11
94.5	9.09E-12
105.0	9.79E-13
115.5	1.06E-13
126.0	1.15E-14
136.5	1.25E-15
147.0	1.37E-16
157.5	1.50E-17
168.0	1.65E-18
178.5	1.81E-19
189.0	2.00E-20
199.5	2.20E-21
210.0	2.44E-22

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Napthalene			
Target Concentration (C_T)	0.002	mg/l	Origin of C_T:	EQS

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Napthalene		from Level 1
Target Concentration	C_T	2.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.70E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	2.58E+02	days	*Howard et al*
Calculated decay rate	λ	2.69E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	2.69E-03	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	2.14E-86	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**7.95E+84**	

Remedial Targets

Remedial Target		**1.59E+82**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**210**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**2.14E-86**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	4.99E+01	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

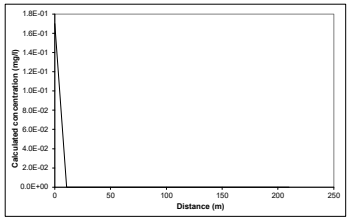
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.7E-01
10.5	3.84E-06
21.0	1.78E-10
31.5	9.44E-15
42.0	5.29E-19
52.5	3.06E-23
63.0	1.80E-27
73.5	1.08E-31
84.0	6.51E-36
94.5	3.96E-40
105.0	2.43E-44
115.5	1.49E-48
126.0	9.22E-53
136.5	5.72E-57
147.0	3.55E-61
157.5	2.21E-65
168.0	1.38E-69
178.5	8.65E-74
189.0	5.42E-78
199.5	3.40E-82
210.0	2.14E-86

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Phenanthrene			
Target Concentration (C_T)	0.00001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Phenanthrene		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	4.50E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	4.02E+02	days	*Howard et al*
Calculated decay rate	λ	1.73E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	1.73E-03	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	6.26E-69	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**7.19E+67**	

Remedial Targets

Remedial Target		**7.19E+62**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**210**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**6.26E-69**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient — Kd — l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer — foc — 0.00E+00 — fraction

Organic carbon partition coefficient — Koc — 4.55E+02 — l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species — $K_{oc,n}$ — l/kg

Sorption coefficient for ionised species — $K_{oc,i}$ — l/kg

pH value — pH

acid dissociation constant — pKa

Fraction of organic carbon in aquifer — foc — fraction

Soil water partition coefficient — Kd — 0.00E+00 — l/kg

Define dispersivity (click brown cell and use pull down list)

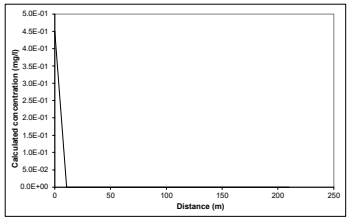
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	4.5E-01
10.5	7.23E-05
21.0	2.39E-08
31.5	9.00E-12
42.0	3.59E-15
52.5	1.48E-18
63.0	6.19E-22
73.5	2.64E-25
84.0	1.13E-28
94.5	4.90E-32
105.0	2.14E-35
115.5	9.35E-39
126.0	4.11E-42
136.5	1.81E-45
147.0	8.02E-49
157.5	3.56E-52
168.0	1.58E-55
178.5	7.04E-59
189.0	3.14E-62
199.5	1.40E-65
210.0	6.26E-69

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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The calculation of equations in this worksheet has been independently checked by Entec (UK) Ltd on behalf of the Environment Agency.

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Liability: The Environment Agency does not promise that the worksheet will provide any particular facilities or functions. You must ensure that the worksheet meets your needs and you remain solely responsible for the competent use of the worksheet. You are entirely responsible for the consequences of any use of the worksheet and the Agency provides no warranty about the fitness for purpose or performance of any part of the worksheet. We do not promise that the media will always be free from defects, computer viruses, software locks or other similar code or that the operation of the worksheet will be uninterrupted or error free. You should carry out all necessary virus checks prior to installing on your computing system.

IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Pyrene			
Target Concentration (C_T)	0.00001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Pyrene		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	4.10E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	3.80E+03	days	*Howard et al*
Calculated decay rate	λ	1.83E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	9.17E-02	fraction	*hydraulic gradient calculated between BH02 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.10E+02	m	*Distance between BH02 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.10E+01	m	*see options*
Transverse dispersivity	az	2.10E+00	m	*see options*
Vertical dispersivity	ay	2.10E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	1.44E-04	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	1.83E-04	d^{-1}
Rate of contaminant flow due to retardation	u	1.44E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	1.50E-22	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**2.73E+21**	

Remedial Targets

Remedial Target		**2.73E+16**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**210**	**m**
Concentration of contaminant at compliance point	**C_{CED}/C_0**	**1.50E-22**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient — Kd — l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer — foc — 0.00E+00 — fraction

Organic carbon partition coefficient — Koc — 6.72E+02 — l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species — $K_{oc,n}$ — l/kg

Sorption coefficient for ionised species — $K_{oc,i}$ — l/kg

pH value — pH

acid dissociation constant — pKa

Fraction of organic carbon in aquifer — foc — fraction

Soil water partition coefficient — Kd — 0.00E+00 — l/kg

Define dispersivity (click brown cell and use pull down list)

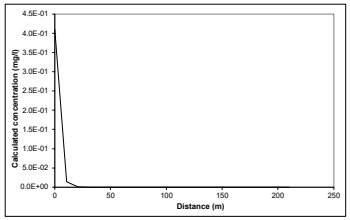
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.10E+01	6.34E+00	m
Transverse dispersivity	**az**	0.00E+00	2.10E+00	6.34E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.10E-01	6.34E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	4.1E-01
10.5	1.38E-02
21.0	9.54E-04
31.5	7.53E-05
42.0	6.29E-06
52.5	5.42E-07
63.0	4.76E-08
73.5	4.24E-09
84.0	3.82E-10
94.5	3.46E-11
105.0	3.16E-12
115.5	2.90E-13
126.0	2.67E-14
136.5	2.46E-15
147.0	2.28E-16
157.5	2.12E-17
168.0	1.97E-18
178.5	1.84E-19
189.0	1.72E-20
199.5	1.61E-21
210.0	1.50E-22

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Zinc			
Target Concentration (C_T)	0.0109	mg/l	Origin of C_T:	EQS

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
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Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Zinc		from Level 1
Target Concentration	C_T	1.09E-02	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: **Simulate vertical dispersion in 1 direction**

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: **Apply degradation rate to pollutants in all phases (e.g. field derived valu**

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	6.35E-02	mg/l	*BH01*
Half life for degradation of contaminant in water	$t_{1/2}$	1.00E+08	days	*Assumed no decay*
Calculated decay rate	λ	6.93E-09	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	7.68E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	7.68E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.01E+00	g/cm^3	*Testing of the made ground soils indicated to be 2.01*
Effective porosity of aquifer	n	5.50E-01	fraction	*Glacial Till (Freeze and Cheery 1979)*
Hydraulic gradient	i	5.70E-02	fraction	*hydraulic gradient calculated between BH01 and Rams Brook*
Hydraulic conductivity of aquifer	K	8.64E-04	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.20E+02	m	*Distance between BH01 and Rams Brook*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	3.07E+04	l/kg	*see options*
Longitudinal dispersivity	ax	2.20E+01	m	*see options*
Transverse dispersivity	az	2.20E+00	m	*see options*
Vertical dispersivity	ay	2.20E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	8.95E-05	m/d
Retardation factor	Rf	1.12E+05	fraction
Decay rate used	λ	6.93E-09	d^{-1}
Rate of contaminant flow due to retardation	u	7.99E-10	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	5.50E-61	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.16E+59**	

Remedial Targets

Remedial Target		**1.26E+57**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**220**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**5.50E-61**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

User specified value for partition coefficient

Entry if specify partition coefficient (option)

Soil water partition coefficient	Kd	3.07E+04	l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc		fraction
Organic carbon partition coefficient	Koc		l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	3.07E+04	l/kg

Define dispersivity (click brown cell and use pull down list)

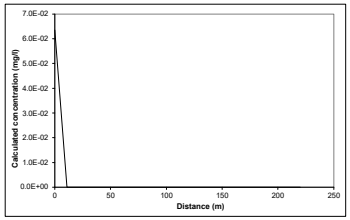
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.20E+01	6.48E+00	m
Transverse dispersivity	**az**	0.00E+00	2.20E+00	6.48E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.20E-01	6.48E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	6.4E-02
11.0	2.22E-05
22.0	2.03E-08
33.0	2.13E-11
44.0	2.37E-14
55.0	2.71E-17
66.0	3.17E-20
77.0	3.76E-23
88.0	4.51E-26
99.0	5.44E-29
110.0	6.61E-32
121.0	8.07E-35
132.0	9.89E-38
143.0	1.22E-40
154.0	1.50E-43
165.0	1.86E-46
176.0	2.30E-49
187.0	2.85E-52
198.0	3.54E-55
209.0	4.41E-58
220.0	5.50E-61

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Acenaphthene			
Target Concentration (C_T)	0.00001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
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Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Acenaphthene		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.20E-01	mg/l	BH02
Half life for degradation of contaminant in water	$t_{1/2}$	2.04E+02	days	Howard et al
Calculated decay rate	λ	3.40E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	Maximum width of site (W-E)
Plume thickness at source	Sy	9.53E-01	m	10% aquifer thickness
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	Sandstone (Freeze and Cheery 1979)
Effective porosity of aquifer	n	2.00E-01	fraction	Sandstone (Freeze and Cheery 1979)
Hydraulic gradient	i	1.00E-02	fraction	Published Merseyside Permo-Triassic sandstone aquifer gradient
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	Sandstone (Freeze and Cheery 1979)
Distance to compliance point	x	2.50E+02	m	as per EA guidance in urban area
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	time variant options only
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	see options
Longitudinal dispersivity	ax	2.50E+01	m	see options
Transverse dispersivity	az	2.50E+00	m	see options
Vertical dispersivity	ay	2.50E-01	m	see options

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	2.17E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	ax	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	az	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	ay	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	3.40E-03	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	4.94E-20	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**2.43E+18**	

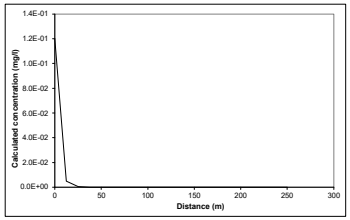
Remedial Targets

Remedial Target		**2.43E+13**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**4.94E-20**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.2E-01
12.5	4.91E-03
25.0	4.85E-04
37.5	5.48E-05
50.0	6.56E-06
62.5	8.10E-07
75.0	1.02E-07
87.5	1.30E-08
100.0	1.68E-09
112.5	2.19E-10
125.0	2.86E-11
137.5	3.76E-12
150.0	4.96E-13
162.5	6.56E-14
175.0	8.71E-15
187.5	1.16E-15
200.0	1.54E-16
212.5	2.06E-17
225.0	2.75E-18
237.5	3.69E-19
250.0	4.94E-20

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Acenaphthylene			
Target Concentration (C_T)	0.00001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
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Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
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The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Acenaphthylene		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	2.80E-04	mg/l	*BH01*
Half life for degradation of contaminant in water	$t_{1/2}$	1.20E+02	days	*Howard et al*
Calculated decay rate	λ	5.78E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	7.68E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	7.68E+00	m	BH01 = GW level recorded between 2.32mbgl and rockh
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	4.61E+01	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	5.78E-03	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	1.40E-28	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**2.01E+24**	

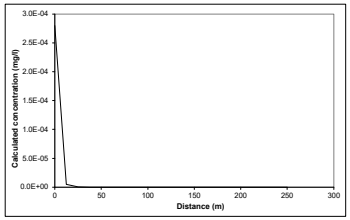
Remedial Targets

Remedial Target		**2.01E+19**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**1.40E-28**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	2.8E-04
12.5	4.77E-06
25.0	2.40E-07
37.5	1.38E-08
50.0	8.46E-10
62.5	5.34E-11
75.0	3.44E-12
87.5	2.25E-13
100.0	1.48E-14
112.5	9.86E-16
125.0	6.60E-17
137.5	4.43E-18
150.0	2.99E-19
162.5	2.03E-20
175.0	1.37E-21
187.5	9.35E-23
200.0	6.37E-24
212.5	4.35E-25
225.0	2.98E-26
237.5	2.04E-27
250.0	1.40E-28

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Aliphatic C10-C12			
Target Concentration (C_T)	0.001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
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The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Aliphatic C10-C12		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	3.10E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.02E+02	days	*Howard et al*
Calculated decay rate	λ	6.80E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	6.80E-03	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	1.46E-27	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**2.12E+26**	

Remedial Targets

Remedial Target		**2.12E+23**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**1.46E-27**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	3.16E+05	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

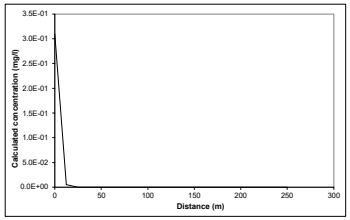
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	m

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	3.1E-01
12.5	5.09E-03
25.0	2.01E-04
37.5	9.12E-06
50.0	4.37E-07
62.5	2.16E-08
75.0	1.09E-09
87.5	5.59E-11
100.0	2.89E-12
112.5	1.51E-13
125.0	7.90E-15
137.5	4.16E-16
150.0	2.20E-17
162.5	1.17E-18
175.0	6.21E-20
187.5	3.31E-21
200.0	1.77E-22
212.5	9.46E-24
225.0	5.07E-25
237.5	2.72E-26
250.0	1.46E-27

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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The calculation of equations in this worksheet has been independently checked by Entec (UK) Ltd on behalf of the Environment Agency.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Aliphatic C16-C21			
Target Concentration (C_T)	0.001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Aliphatic C16-C21		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.30E-01	mg/l	*BH01*
Half life for degradation of contaminant in water	$t_{1/2}$	5.30E+02	days	*Howard et al*
Calculated decay rate	λ	1.31E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	7.68E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	7.68E+00	m	BH01 = GW level recorded between 2.32mbgl and rockh
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	3.98E+08	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	ax	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	az	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	ay	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	1.31E-03	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	7.44E-13	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.75E+11**	

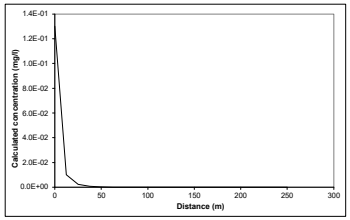
Remedial Targets

Remedial Target		**1.75E+08**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**7.44E-13**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.3E-01
12.5	9.95E-03
25.0	2.25E-03
37.5	5.84E-04
50.0	1.61E-04
62.5	4.56E-05
75.0	1.32E-05
87.5	3.89E-06
100.0	1.15E-06
112.5	3.45E-07
125.0	1.04E-07
137.5	3.14E-08
150.0	9.52E-09
162.5	2.90E-09
175.0	8.85E-10
187.5	2.71E-10
200.0	8.30E-11
212.5	2.55E-11
225.0	7.84E-12
237.5	2.41E-12
250.0	7.44E-13

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Aliphatic C12-C16			
Target Concentration (C_T)	0.001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Aliphatic C12-C16		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	2.30E-01	mg/l	*BH01*
Half life for degradation of contaminant in water	$t_{1/2}$	4.40E+02	days	*Howard et al*
Calculated decay rate	λ	1.58E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	7.68E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	7.68E+00	m	BH01 = GW level recorded between 2.32mbgl and rockh
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	5.01E+06	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	ax	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	az	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	ay	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed

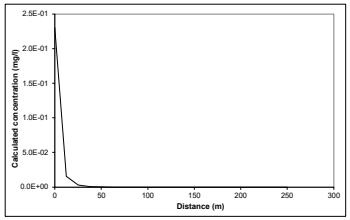
Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	1.58E-03	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	9.36E-14	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**2.46E+12**	

Remedial Targets

Remedial Target		**2.46E+09**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**250**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**9.36E-14**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	2.3E-01
12.5	1.54E-02
25.0	3.06E-03
37.5	6.95E-04
50.0	1.68E-04
62.5	4.17E-05
75.0	1.06E-05
87.5	2.73E-06
100.0	7.09E-07
112.5	1.86E-07
125.0	4.90E-08
137.5	1.30E-08
150.0	3.45E-09
162.5	9.20E-10
175.0	2.46E-10
187.5	6.60E-11
200.0	1.77E-11
212.5	4.77E-12
225.0	1.28E-12
237.5	3.47E-13
250.0	9.36E-14

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Aliphatic C21-C35			
Target Concentration (C_T)	0.001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
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Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Aliphatic C21-C35		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: **Simulate vertical dispersion in 1 direction**

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: **Apply degradation rate to pollutants in all phases (e.g. field derived valu**

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	6.00E-01	mg/l	*BH01*
Half life for degradation of contaminant in water	$t_{1/2}$	7.30E+02	days	*Howard et al*
Calculated decay rate	λ	9.50E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	7.68E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	7.68E+00	m	BH01 = GW level recorded between 2.32mbgl and rockh
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	3.98E+08	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	ax	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	az	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	ay	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}x)^{2.414}$; az = ax/10, ay = ax/100 are assumed

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	9.50E-04	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	1.86E-10	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**3.22E+09**	

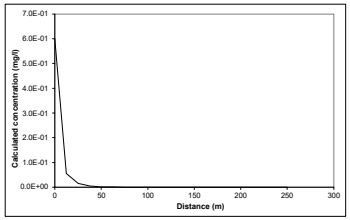
Remedial Targets

Remedial Target		**3.22E+06**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**1.86E-10**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	6.0E-01
12.5	5.61E-02
25.0	1.55E-02
37.5	4.91E-03
50.0	1.65E-03
62.5	5.72E-04
75.0	2.02E-04
87.5	7.25E-05
100.0	2.63E-05
112.5	9.60E-06
125.0	3.53E-06
137.5	1.30E-06
150.0	4.82E-07
162.5	1.79E-07
175.0	6.68E-08
187.5	2.50E-08
200.0	9.34E-09
212.5	3.50E-09
225.0	1.32E-09
237.5	4.95E-10
250.0	1.86E-10

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment

Site Name:	**JLR, Halewood, Liverpool**			
Site Address:	**JLR, Halewood, Liverpool**			
Completed by:	**HOL**			
Date:	**03-Mar-26**		**Version:**	**3.2**
Contaminant	**Anthracene**			
Target Concentration (C_T)	**0.00001**	**mg/l**	**Origin of C_T:**	**LoD**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Anthracene		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.30E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	9.20E+02	days	*Howard et al*
Calculated decay rate	λ	7.54E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	3.17E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	ax	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	az	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	ay	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed

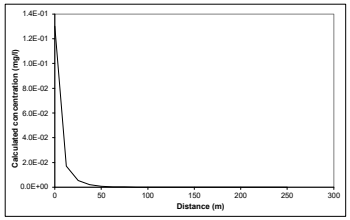
Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	7.54E-04	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	6.07E-10	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**2.14E+08**	

Remedial Targets

Remedial Target		**2.14E+03**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**250**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**6.07E-10**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.3E-01
12.5	1.69E-02
25.0	5.32E-03
37.5	1.91E-03
50.0	7.29E-04
62.5	2.86E-04
75.0	1.15E-04
87.5	4.67E-05
100.0	1.92E-05
112.5	7.93E-06
125.0	3.30E-06
137.5	1.38E-06
150.0	5.79E-07
162.5	2.44E-07
175.0	1.03E-07
187.5	4.36E-08
200.0	1.85E-08
212.5	7.85E-09
225.0	3.34E-09
237.5	1.42E-09
250.0	6.07E-10

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Aromatic C10-C12			
Target Concentration (C_T)	0.001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Aromatic C10-C12		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	5.40E-02	mg/l	*BH08*
Half life for degradation of contaminant in water	$t_{1/2}$	1.02E+02	days	*Howard et al*
Calculated decay rate	λ	6.80E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.20E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.20E+00	m	BH08 = GW level recorded between 0.80mbgl and rockh
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	6.80E-03	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	2.46E-28	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**2.20E+26**	

Remedial Targets

Remedial Target		**2.20E+23**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**250**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**2.46E-28**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	3.16E+03	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

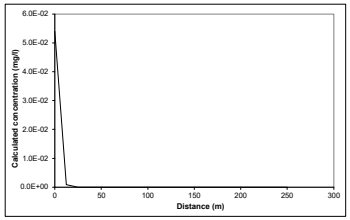
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	5.4E-02
12.5	8.57E-04
25.0	3.39E-05
37.5	1.53E-06
50.0	7.36E-08
62.5	3.64E-09
75.0	1.84E-10
87.5	9.41E-12
100.0	4.87E-13
112.5	2.54E-14
125.0	1.33E-15
137.5	7.00E-17
150.0	3.70E-18
162.5	1.96E-19
175.0	1.04E-20
187.5	5.57E-22
200.0	2.97E-23
212.5	1.59E-24
225.0	8.52E-26
237.5	4.57E-27
250.0	2.46E-28

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Aromatic C12-C16			
Target Concentration (C_T)	0.001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
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It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Aromatic C12-C16		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: **Simulate vertical dispersion in 1 direction**

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: **Apply degradation rate to pollutants in all phases (e.g. field derived valu**

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.60E-01	mg/l	*BH08*
Half life for degradation of contaminant in water	$t_{1/2}$	4.40E+02	days	*Howard et al*
Calculated decay rate	λ	1.58E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.20E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.20E+00	m	BH08 = GW level recorded between 0.80mbgl and rockh
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	1.58E-03	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	7.80E-14	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**2.05E+12**	

Remedial Targets

Remedial Target		**2.05E+09**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**250**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**7.80E-14**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	6.31E+03	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

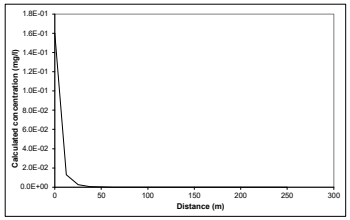
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	**1.6E-01**
12.5	**1.28E-02**
25.0	**2.54E-03**
37.5	**5.78E-04**
50.0	**1.39E-04**
62.5	**3.47E-05**
75.0	**8.81E-06**
87.5	**2.27E-06**
100.0	**5.90E-07**
112.5	**1.55E-07**
125.0	**4.08E-08**
137.5	**1.08E-08**
150.0	**2.87E-09**
162.5	**7.66E-10**
175.0	**2.05E-10**
187.5	**5.49E-11**
200.0	**1.48E-11**
212.5	**3.97E-12**
225.0	**1.07E-12**
237.5	**2.89E-13**
250.0	**7.80E-14**

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Aromatic C16-C21			
Target Concentration (C_T)	0.001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Aromatic C16-C21		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: **Simulate vertical dispersion in 1 direction**

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: **Apply degradation rate to pollutants in all phases (e.g. field derived valu**

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.30E-01	mg/l	*BH08*
Half life for degradation of contaminant in water	$t_{1/2}$	5.30E+02	days	*Howard et al*
Calculated decay rate	λ	1.31E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.20E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.20E+00	m	BH08 = GW level recorded between 0.80mbgl and rockh
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	1.31E-03	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	8.91E-13	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.46E+11**	

Remedial Targets

Remedial Target		**1.46E+08**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**8.91E-13**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	1.58E+04	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

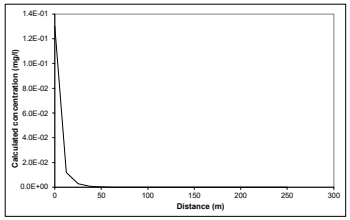
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	m

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.3E-01
12.5	1.18E-02
25.0	2.69E-03
37.5	6.98E-04
50.0	1.92E-04
62.5	5.46E-05
75.0	1.58E-05
87.5	4.65E-06
100.0	1.38E-06
112.5	4.13E-07
125.0	1.24E-07
137.5	3.76E-08
150.0	1.14E-08
162.5	3.47E-09
175.0	1.06E-09
187.5	3.24E-10
200.0	9.94E-11
212.5	3.05E-11
225.0	9.38E-12
237.5	2.89E-12
250.0	8.91E-13

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Aromatic C21-C35			
Target Concentration (C_T)	0.001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Aromatic C21-C35		from Level 1
Target Concentration	C_T	1.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	2.80E-01	mg/l	*BH01*
Half life for degradation of contaminant in water	$t_{1/2}$	7.30E+02	days	*Howard et al*
Calculated decay rate	λ	9.50E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	7.68E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	7.68E+00	m	BH01 = GW level recorded between 2.32mbgl and rockh
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	1.26E+05	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed

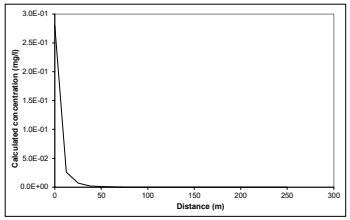
Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	9.50E-04	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	8.69E-11	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**3.22E+09**	

Remedial Targets

Remedial Target		**3.22E+06**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**250**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**8.69E-11**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	2.8E-01
12.5	2.62E-02
25.0	7.22E-03
37.5	2.29E-03
50.0	7.69E-04
62.5	2.67E-04
75.0	9.44E-05
87.5	3.39E-05
100.0	1.23E-05
112.5	4.48E-06
125.0	1.65E-06
137.5	6.07E-07
150.0	2.25E-07
162.5	8.37E-08
175.0	3.12E-08
187.5	1.17E-08
200.0	4.36E-09
212.5	1.64E-09
225.0	6.14E-10
237.5	2.31E-10
250.0	8.69E-11

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Arsenic			
Target Concentration (C_T)	0.1	mg/l	Origin of C_T:	MRV

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
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Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Arsenic		from Level 1
Target Concentration	C_T	1.00E-01	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	2.14E-02	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.00E+08	days	*Assumed no decay*
Calculated decay rate	λ	6.93E-09	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-01	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Glacial till 1X10-6(Freeze and Cheery 197*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	2.51E+03	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-02	m/d
Retardation factor	Rf	2.74E+04	fraction
Decay rate used	λ	6.93E-09	d^{-1}
Rate of contaminant flow due to retardation	u	1.57E-06	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	5.24E-04	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**4.08E+01**	

Remedial Targets

Remedial Target		**4.08E+00**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**250**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**5.24E-04**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

User specified value for partition coefficient

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd	2.51E+03	l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc		fraction
Organic carbon partition coefficient	Koc		l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	2.51E+03	l/kg

Define dispersivity (click brown cell and use pull down list)

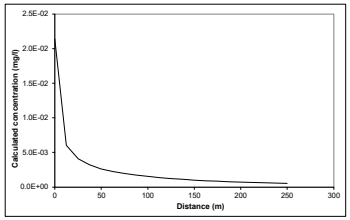
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	2.1E-02
12.5	6.04E-03
25.0	4.11E-03
37.5	3.21E-03
50.0	2.65E-03
62.5	2.26E-03
75.0	1.96E-03
87.5	1.73E-03
100.0	1.54E-03
112.5	1.38E-03
125.0	1.24E-03
137.5	1.13E-03
150.0	1.03E-03
162.5	9.37E-04
175.0	8.58E-04
187.5	7.87E-04
200.0	7.23E-04
212.5	6.66E-04
225.0	6.14E-04
237.5	5.67E-04
250.0	5.24E-04

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Benzo(a)anthracene			
Target Concentration (C_T)	0.00001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Benzo(a)anthracene		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.70E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.36E+03	days	*Howard et al*
Calculated decay rate	λ	5.09E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	5.09E-04	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	2.89E-08	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**5.88E+06**	

Remedial Targets

Remedial Target		**5.88E+01**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**250**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**2.89E-08**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	1.48E+03	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

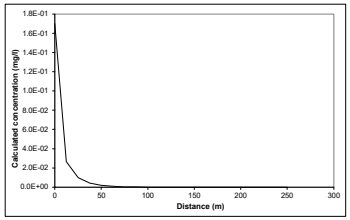
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.7E-01
12.5	2.65E-02
25.0	9.97E-03
37.5	4.29E-03
50.0	1.96E-03
62.5	9.20E-04
75.0	4.41E-04
87.5	2.15E-04
100.0	1.06E-04
112.5	5.23E-05
125.0	2.60E-05
137.5	1.30E-05
150.0	6.55E-06
162.5	3.30E-06
175.0	1.67E-06
187.5	8.45E-07
200.0	4.29E-07
212.5	2.18E-07
225.0	1.11E-07
237.5	5.66E-08
250.0	2.89E-08

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment

Site Name:	**JLR, Halewood, Liverpool**			
Site Address:	**JLR, Halewood, Liverpool**			
Completed by:	**HOL**			
Date:	**03-Mar-26**		**Version:**	**3.2**
Contaminant	**Benzo(a)pyrene**			
Target Concentration (C_T)	**0.0001**	**mg/l**	**Origin of C_T:**	**MRV**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Benzo(a)pyrene		from Level 1
Target Concentration	C_T	1.00E-04	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: **Simulate vertical dispersion in 1 direction**

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: **Apply degradation rate to pollutants in all phases (e.g. field derived valu**

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.60E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.06E+03	days	*Howard et al*
Calculated decay rate	λ	6.55E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	6.55E-04	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	2.95E-09	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**5.42E+07**	

Remedial Targets

Remedial Target		**5.42E+03**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**2.95E-09**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	4.02E+03	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

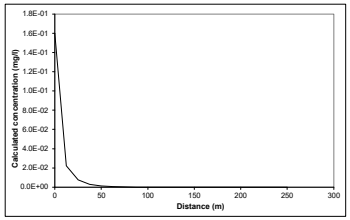
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	**1.6E-01**
12.5	**2.23E-02**
25.0	**7.51E-03**
37.5	**2.89E-03**
50.0	**1.18E-03**
62.5	**4.97E-04**
75.0	**2.13E-04**
87.5	**9.29E-05**
100.0	**4.09E-05**
112.5	**1.81E-05**
125.0	**8.07E-06**
137.5	**3.62E-06**
150.0	**1.63E-06**
162.5	**7.34E-07**
175.0	**3.32E-07**
187.5	**1.50E-07**
200.0	**6.83E-08**
212.5	**3.11E-08**
225.0	**1.42E-08**
237.5	**6.46E-09**
250.0	**2.95E-09**

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment

Site Name:	**JLR, Halewood, Liverpool**			
Site Address:	**JLR, Halewood, Liverpool**			
Completed by:	**HOL**			
Date:	**03-Mar-26**		**Version:**	**3.2**
Contaminant	**Benzo(b)fluoranthene**			
Target Concentration (C_T)	**0.0001**	**mg/l**	**Origin of C_T:**	**MRV**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
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Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Benzo(b)fluoranthene		from Level 1
Target Concentration	C_T	1.00E-04	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	2.20E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.22E+03	days	*Howard et al*
Calculated decay rate	λ	5.69E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	5.69E-04	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	1.46E-08	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.50E+07**	

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	4.41E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed

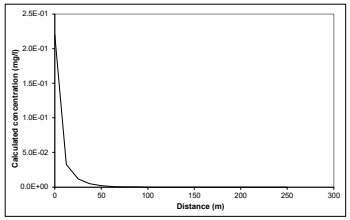
Remedial Targets

Remedial Target		**1.50E+03**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**1.46E-08**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	2.2E-01
12.5	3.27E-02
25.0	1.17E-02
37.5	4.82E-03
50.0	2.10E-03
62.5	9.41E-04
75.0	4.31E-04
87.5	2.00E-04
100.0	9.38E-05
112.5	4.43E-05
125.0	2.11E-05
137.5	1.01E-05
150.0	4.83E-06
162.5	2.32E-06
175.0	1.12E-06
187.5	5.41E-07
200.0	2.62E-07
212.5	1.27E-07
225.0	6.18E-08
237.5	3.00E-08
250.0	1.46E-08

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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The calculation of equations in this worksheet has been independently checked by Entec (UK) Ltd on behalf of the Environment Agency.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Benzo(ghi)perylene			
Target Concentration (C_T)	0.0001	mg/l	Origin of C_T:	MRV

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Benzo(ghi)perylene		from Level 1
Target Concentration	C_T	1.00E-04	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.10E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.31E+03	days	*Howard et al*
Calculated decay rate	λ	5.28E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	5.28E-04	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	1.39E-08	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**7.90E+06**	

Remedial Targets

Remedial Target		**7.90E+02**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**1.39E-08**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	2.32E+01	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

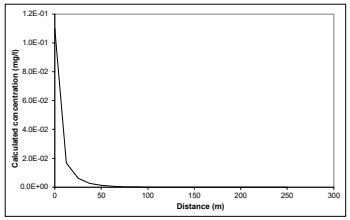
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.1E-01
12.5	1.69E-02
25.0	6.26E-03
37.5	2.66E-03
50.0	1.19E-03
62.5	5.53E-04
75.0	2.61E-04
87.5	1.25E-04
100.0	6.07E-05
112.5	2.96E-05
125.0	1.45E-05
137.5	7.17E-06
150.0	3.55E-06
162.5	1.76E-06
175.0	8.78E-07
187.5	4.38E-07
200.0	2.19E-07
212.5	1.10E-07
225.0	5.51E-08
237.5	2.77E-08
250.0	1.39E-08

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Benzo(k)fluoranthene			
Target Concentration (C_T)	0.0001	mg/l	Origin of C_T:	MRV

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
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The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Benzo(k)fluoranthene		from Level 1
Target Concentration	C_T	1.00E-04	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.10E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	4.27E+03	days	*Howard et al*
Calculated decay rate	λ	1.62E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	1.62E-04	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	2.00E-05	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**5.51E+03**	

Remedial Targets

Remedial Target		**5.51E-01**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**2.00E-05**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient — Kd — l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer — foc — 0.00E+00 — fraction

Organic carbon partition coefficient — Koc — 1.10E+03 — l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species — $K_{oc,n}$ — l/kg

Sorption coefficient for ionised species — $K_{oc,i}$ — l/kg

pH value — pH

acid dissociation constant — pKa

Fraction of organic carbon in aquifer — foc — fraction

Soil water partition coefficient — Kd — 0.00E+00 — l/kg

Define dispersivity (click brown cell and use pull down list)

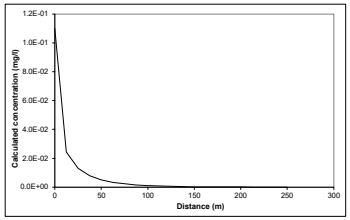
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.1E-01
12.5	2.43E-02
25.0	1.29E-02
37.5	7.90E-03
50.0	5.10E-03
62.5	3.40E-03
75.0	2.31E-03
87.5	1.59E-03
100.0	1.11E-03
112.5	7.80E-04
125.0	5.50E-04
137.5	3.90E-04
150.0	2.78E-04
162.5	1.99E-04
175.0	1.42E-04
187.5	1.02E-04
200.0	7.34E-05
212.5	5.29E-05
225.0	3.82E-05
237.5	2.76E-05
250.0	2.00E-05

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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The calculation of equations in this worksheet has been independently checked by Entec (UK) Ltd on behalf of the Environment Agency.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment

Site Name:	**JLR, Halewood, Liverpool**			
Site Address:	**JLR, Halewood, Liverpool**			
Completed by:	**HOL**			
Date:	**03-Mar-26**		**Version:**	**3.2**
Contaminant	**Chrysene**			
Target Concentration (C_T)	**0.00001**	**mg/l**	**Origin of C_T:**	**LoD**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Chrysene		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.30E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	2.00E+03	days	*Howard et al*
Calculated decay rate	λ	3.47E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	3.47E-04	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	3.86E-07	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**3.37E+05**	

Remedial Targets

Remedial Target		**3.37E+00**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**250**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**3.86E-07**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	9.92E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

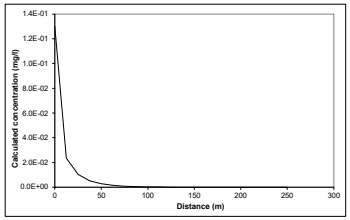
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	m

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.3E-01
12.5	2.34E-02
25.0	1.01E-02
37.5	5.04E-03
50.0	2.65E-03
62.5	1.44E-03
75.0	7.96E-04
87.5	4.47E-04
100.0	2.53E-04
112.5	1.45E-04
125.0	8.32E-05
137.5	4.80E-05
150.0	2.78E-05
162.5	1.62E-05
175.0	9.44E-06
187.5	5.52E-06
200.0	3.23E-06
212.5	1.90E-06
225.0	1.11E-06
237.5	6.55E-07
250.0	3.86E-07

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Dibenzo(ah)anthracene			
Target Concentration (C_T)	0.00001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu) | Variable | Value | Unit | Source

Contaminant		Dibenzo(ah)anthracene		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

				Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	2.50E-02	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.88E+03	days	*Howard et al*
Calculated decay rate	λ	3.69E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters | Variable

Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	3.69E-04	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	4.85E-08	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**5.15E+05**	

Remedial Targets

Remedial Target		**5.15E+00**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**250**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**4.85E-08**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	4.41E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

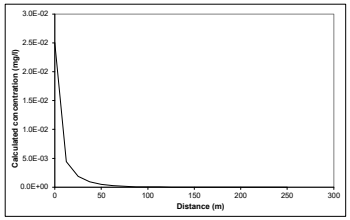
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	m

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	**2.5E-02**
12.5	**4.40E-03**
25.0	**1.87E-03**
37.5	**9.09E-04**
50.0	**4.68E-04**
62.5	**2.49E-04**
75.0	**1.35E-04**
87.5	**7.41E-05**
100.0	**4.11E-05**
112.5	**2.30E-05**
125.0	**1.29E-05**
137.5	**7.32E-06**
150.0	**4.15E-06**
162.5	**2.36E-06**
175.0	**1.35E-06**
187.5	**7.72E-07**
200.0	**4.43E-07**
212.5	**2.54E-07**
225.0	**1.46E-07**
237.5	**8.42E-08**
250.0	**4.85E-08**

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment

Site Name:	**JLR, Halewood, Liverpool**			
Site Address:	**JLR, Halewood, Liverpool**			
Completed by:	**HOL**			
Date:	**03-Mar-26**		**Version:**	**3.2**
Contaminant	**Fluoranthene**			
Target Concentration (C_T)	**0.0001**	**mg/l**	**Origin of C_T:**	**MRV**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
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It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Fluoranthene		from Level 1
Target Concentration	C_T	1.00E-04	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	4.50E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	8.80E+02	days	*Howard et al*
Calculated decay rate	λ	7.88E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	7.88E-04	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	1.33E-09	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**3.39E+08**	

Remedial Targets

Remedial Target		**3.39E+04**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**1.33E-09**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	5.90E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

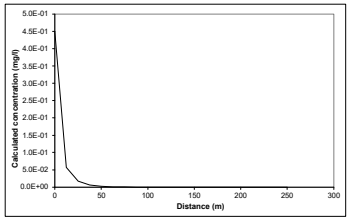
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	m

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	4.5E-01
12.5	5.73E-02
25.0	1.76E-02
37.5	6.18E-03
50.0	2.30E-03
62.5	8.84E-04
75.0	3.46E-04
87.5	1.38E-04
100.0	5.52E-05
112.5	2.23E-05
125.0	9.08E-06
137.5	3.71E-06
150.0	1.52E-06
162.5	6.27E-07
175.0	2.59E-07
187.5	1.07E-07
200.0	4.43E-08
212.5	1.84E-08
225.0	7.65E-09
237.5	3.19E-09
250.0	1.33E-09

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Fluorine			
Target Concentration (C_T)	0.00001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Fluorine		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	8.90E-02	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.20E+02	days	*Howard et al*
Calculated decay rate	λ	5.78E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	5.78E-03	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	5.51E-26	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.62E+24**	

Remedial Targets

Remedial Target		**1.62E+19**	**mg/l**	For comparison with measured groundwater concentration.
Domenico - Steady state				
Distance to compliance point		**250**	**m**	
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**5.51E-26**	**mg/l**	Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	2.37E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

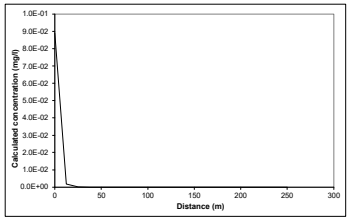
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	m

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	8.9E-02
12.5	1.86E-03
25.0	9.41E-05
37.5	5.44E-06
50.0	3.33E-07
62.5	2.10E-08
75.0	1.36E-09
87.5	8.86E-11
100.0	5.84E-12
112.5	3.89E-13
125.0	2.60E-14
137.5	1.75E-15
150.0	1.18E-16
162.5	7.98E-18
175.0	5.42E-19
187.5	3.69E-20
200.0	2.51E-21
212.5	1.72E-22
225.0	1.17E-23
237.5	8.03E-25
250.0	5.51E-26

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment

Site Name:	**JLR, Halewood, Liverpool**			
Site Address:	**JLR, Halewood, Liverpool**			
Completed by:	**HOL**			
Date:	**03-Mar-26**		**Version:**	**3.2**
Contaminant	**Indeno(123)pyrene**			
Target Concentration (C_T)	**0.0001**	**mg/l**	**Origin of C_T:**	**MRV**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
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Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Indeno(123)pyrene		from Level 1
Target Concentration	C_T	1.00E-04	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: **Simulate vertical dispersion in 1 direction**

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: **Apply degradation rate to pollutants in all phases (e.g. field derived valu**

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.10E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.46E+03	days	*Howard et al*
Calculated decay rate	λ	4.75E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	4.75E-04	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	3.29E-08	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**3.34E+06**	

Remedial Targets

Remedial Target		**3.34E+02**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**3.29E-08**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	9.23E+01	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

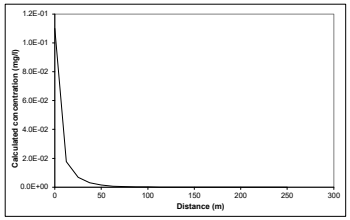
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	m

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.1E-01
12.5	1.76E-02
25.0	6.82E-03
37.5	3.02E-03
50.0	1.42E-03
62.5	6.85E-04
75.0	3.38E-04
87.5	1.69E-04
100.0	8.56E-05
112.5	4.36E-05
125.0	2.23E-05
137.5	1.15E-05
150.0	5.95E-06
162.5	3.08E-06
175.0	1.60E-06
187.5	8.35E-07
200.0	4.36E-07
212.5	2.28E-07
225.0	1.19E-07
237.5	6.27E-08
250.0	3.29E-08

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Napthalene			
Target Concentration (C_T)	0.0001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
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The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Nickel			
Target Concentration (C_T)	0.2	mg/l	Origin of C_T:	MRV

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Nickel		from Level 1
Target Concentration	C_T	2.00E-01	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	2.43E-02	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.00E+08	days	*Assumed no decay*
Calculated decay rate	λ	6.93E-09	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-01	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	5.63E+03	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-02	m/d
Retardation factor	Rf	6.15E+04	fraction
Decay rate used	λ	6.93E-09	d^{-1}
Rate of contaminant flow due to retardation	u	7.02E-07	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	2.09E-04	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.16E+02**	

Select Method for deriving Partition Co-efficient (using pull down menu)

User specified value for partition coefficient

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd	5.63E+03	l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc		fraction
Organic carbon partition coefficient	Koc		l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	5.63E+03	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	m

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed

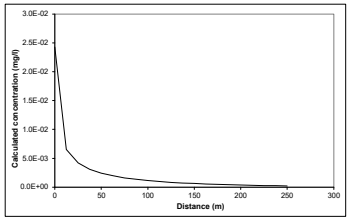
Remedial Targets

Remedial Target		**2.33E+01**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**2.09E-04**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	2.4E-02
12.5	6.51E-03
25.0	4.21E-03
37.5	3.11E-03
50.0	2.44E-03
62.5	1.97E-03
75.0	1.63E-03
87.5	1.36E-03
100.0	1.15E-03
112.5	9.77E-04
125.0	8.36E-04
137.5	7.19E-04
150.0	6.21E-04
162.5	5.38E-04
175.0	4.68E-04
187.5	4.07E-04
200.0	3.55E-04
212.5	3.10E-04
225.0	2.72E-04
237.5	2.38E-04
250.0	2.09E-04

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Phenanthrene			
Target Concentration (C_T)	0.00001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Phenanthrene		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	4.50E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	4.02E+02	days	*Howard et al*
Calculated decay rate	λ	1.73E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	1.73E-03	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	5.62E-14	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**8.00E+12**	

Remedial Targets

Remedial Target		**8.00E+07**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**5.62E-14**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	4.55E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

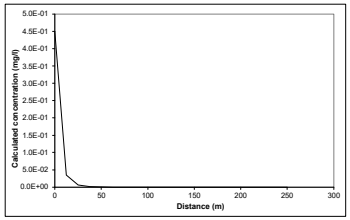
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	m

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	4.5E-01
12.5	3.46E-02
25.0	6.43E-03
37.5	1.37E-03
50.0	3.07E-04
62.5	7.13E-05
75.0	1.69E-05
87.5	4.05E-06
100.0	9.83E-07
112.5	2.40E-07
125.0	5.91E-08
137.5	1.46E-08
150.0	3.62E-09
162.5	9.01E-10
175.0	2.25E-10
187.5	5.62E-11
200.0	1.41E-11
212.5	3.53E-12
225.0	8.87E-13
237.5	2.23E-13
250.0	5.62E-14

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Pyrene			
Target Concentration (C_T)	0.00001	mg/l	Origin of C_T:	LoD

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Pyrene		from Level 1
Target Concentration	C_T	1.00E-05	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	4.10E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	3.80E+03	days	*Howard et al*
Calculated decay rate	λ	1.83E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	1.83E-04	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	4.40E-05	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**9.32E+03**	

Remedial Targets

Remedial Target		**9.32E-02**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**4.40E-05**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	6.72E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

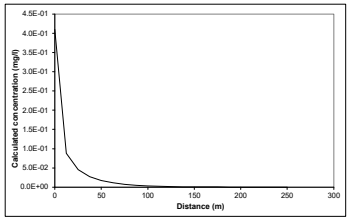
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	4.1E-01
12.5	8.83E-02
25.0	4.58E-02
37.5	2.72E-02
50.0	1.71E-02
62.5	1.11E-02
75.0	7.36E-03
87.5	4.95E-03
100.0	3.35E-03
112.5	2.29E-03
125.0	1.58E-03
137.5	1.09E-03
150.0	7.56E-04
162.5	5.26E-04
175.0	3.67E-04
187.5	2.57E-04
200.0	1.80E-04
212.5	1.26E-04
225.0	8.87E-05
237.5	6.24E-05
250.0	4.40E-05

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions)

Details to be completed for each assessment				
Site Name:	JLR, Halewood, Liverpool			
Site Address:	JLR, Halewood, Liverpool			
Completed by:	HOL			
Date:	03-Mar-26		Version:	3.2
Contaminant	Sulphate			
Target Concentration (C_T)	0.25	mg/l	Origin of C_T:	MRV

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
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Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Sulphate		from Level 1
Target Concentration	C_T	2.50E-01	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	3.10E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	1.00E+08	days	*Assumed no decay*
Calculated decay rate	λ	6.93E-09	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	2.14E+01	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable	
Groundwater flow velocity	v	4.32E-03 m/d
Retardation factor	Rf	2.35E+02 fraction
Decay rate used	λ	6.93E-09 d^{-1}
Rate of contaminant flow due to retardation	u	1.84E-05 m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	1.88E-02 mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.65E+01**

Remedial Targets

Remedial Target		**4.12E+00**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**1.88E-02**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

User specified value for partition coefficient

Entry if specify partition coefficient (option)

Soil water partition coefficient — Kd — 2.14E+01 l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer — foc — fraction

Organic carbon partition coefficient — Koc — l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species — $K_{oc,n}$ — l/kg

Sorption coefficient for ionised species — $K_{oc,i}$ — l/kg

pH value — pH

acid dissociation constant — pKa

Fraction of organic carbon in aquifer — foc — fraction

Soil water partition coefficient — Kd — 2.14E+01 l/kg

Define dispersivity (click brown cell and use pull down list)

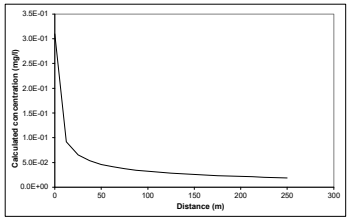
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	m

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	3.1E-01
12.5	9.16E-02
25.0	6.53E-02
37.5	5.33E-02
50.0	4.60E-02
62.5	4.10E-02
75.0	3.73E-02
87.5	3.44E-02
100.0	3.20E-02
112.5	3.00E-02
125.0	2.84E-02
137.5	2.69E-02
150.0	2.56E-02
162.5	2.45E-02
175.0	2.34E-02
187.5	2.25E-02
200.0	2.16E-02
212.5	2.09E-02
225.0	2.01E-02
237.5	1.94E-02
250.0	1.88E-02

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		Napthalene		from Level 1
Target Concentration	C_T	1.00E-04	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants: Apply degradation rate to pollutants in all phases (e.g. field derived valu

	Variable	Value	Unit	Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	1.70E-01	mg/l	*BH02*
Half life for degradation of contaminant in water	$t_{1/2}$	2.58E+02	days	*Howard et al*
Calculated decay rate	λ	2.69E-03	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	1.65E+02	m	*Maximum width of site (W-E)*
Plume thickness at source	Sy	9.53E-01	m	*10% aquifer thickness*
Saturated aquifer thickness	da	9.53E+00	m	GW level recorded between 0.47mbgl and rockhead lev
Bulk density of aquifer materials	ρ	2.19E+00	g/cm^3	*Sandstone (Freeze and Cheery 1979)*
Effective porosity of aquifer	n	2.00E-01	fraction	*Sandstone (Freeze and Cheery 1979)*
Hydraulic gradient	i	1.00E-02	fraction	*Published Merseyside Permo-Triassic sandstone aquifer gradient*
Hydraulic conductivity of aquifer	K	8.64E-02	m/d	*Sandstone (Freeze and Cheery 1979)*
Distance to compliance point	x	2.50E+02	m	*as per EA guidance in urban area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	0.00E+00	l/kg	*see options*
Longitudinal dispersivity	ax	2.50E+01	m	*see options*
Transverse dispersivity	az	2.50E+00	m	*see options*
Vertical dispersivity	ay	2.50E-01	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.32E-03	m/d
Retardation factor	Rf	1.00E+00	fraction
Decay rate used	λ	2.69E-03	d^{-1}
Rate of contaminant flow due to retardation	u	4.32E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	9.19E-18	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.85E+16**	

Remedial Targets

Remedial Target		**1.85E+12**	**mg/l**
Domenico - Steady state			
Distance to compliance point		**250**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**9.19E-18**	**mg/l**

For comparison with measured groundwater concentration.

Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target.
The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	0.00E+00	fraction
Organic carbon partition coefficient	Koc	4.99E+01	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	0.00E+00	l/kg

Define dispersivity (click brown cell and use pull down list)

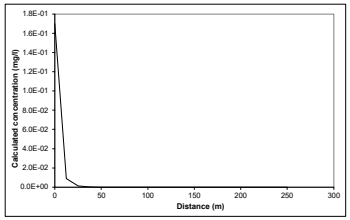
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	2.50E+01	6.86E+00	m
Transverse dispersivity	**az**	0.00E+00	2.50E+00	6.86E-01	m
Vertical dispersivity	**ay**	0.00E+00	2.50E-01	6.86E-02	

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 *x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = $0.83(\log_{10}X)^{2.414}$; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	JLR, Halewood, Liverpool
Completed by:	HOL
Date:	########
Version:	3.2

Calculated concentrations for distance-concentration graph

Domenico - Steady state
From calculation sheet

Distance	Concentration
	mg/l
0	1.7E-01
12.5	8.88E-03
25.0	1.12E-03
37.5	1.61E-04
50.0	2.46E-05
62.5	3.88E-06
75.0	6.25E-07
87.5	1.02E-07
100.0	1.68E-08
112.5	2.78E-09
125.0	4.64E-10
137.5	7.79E-11
150.0	1.31E-11
162.5	2.21E-12
175.0	3.75E-13
187.5	6.37E-14
200.0	1.08E-14
212.5	1.84E-15
225.0	3.15E-16
237.5	5.38E-17
250.0	9.19E-18

APPENDIX 6 – HAZWASTE OUTPUT CERTIFICATES

Waste Classification Report

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

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

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

JF56U-96H4B-S883V

This Waste Classification Report contains user defined substances. See Appendix A for details.

Report is invalid if pages are removed.

Job name

5031818 - Eastlands Car Park, Halewood

Description/Comments

Lab File: 26-02041

Project

5031818

Site

Eastlands Car Park, Halewood

Classified by

Name:
Max Smeeth
Date:
23 Feb 2026 13:13 GMT
Telephone:
07824692661

Company:
Ridge & Partners LLP
Ridge and Partners LLP
1 Royal Court
Kings Worthy
SO23 7TW

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

HazWasteOnline™ Certification: CERTIFIED

Course	Date
Hazardous Waste Classification	09 Feb 2023
Most recent 3 year Refresher	02 Dec 2025

Next 3 year Refresher due by Dec 2028

Purpose of classification

2 - Material Characterisation

Address of the waste

East Rd, Speke, Liverpool **Post Code** L24 9LE

SIC for the process giving rise to the waste

Description of industry/producer giving rise to the waste

Proposed car park development.

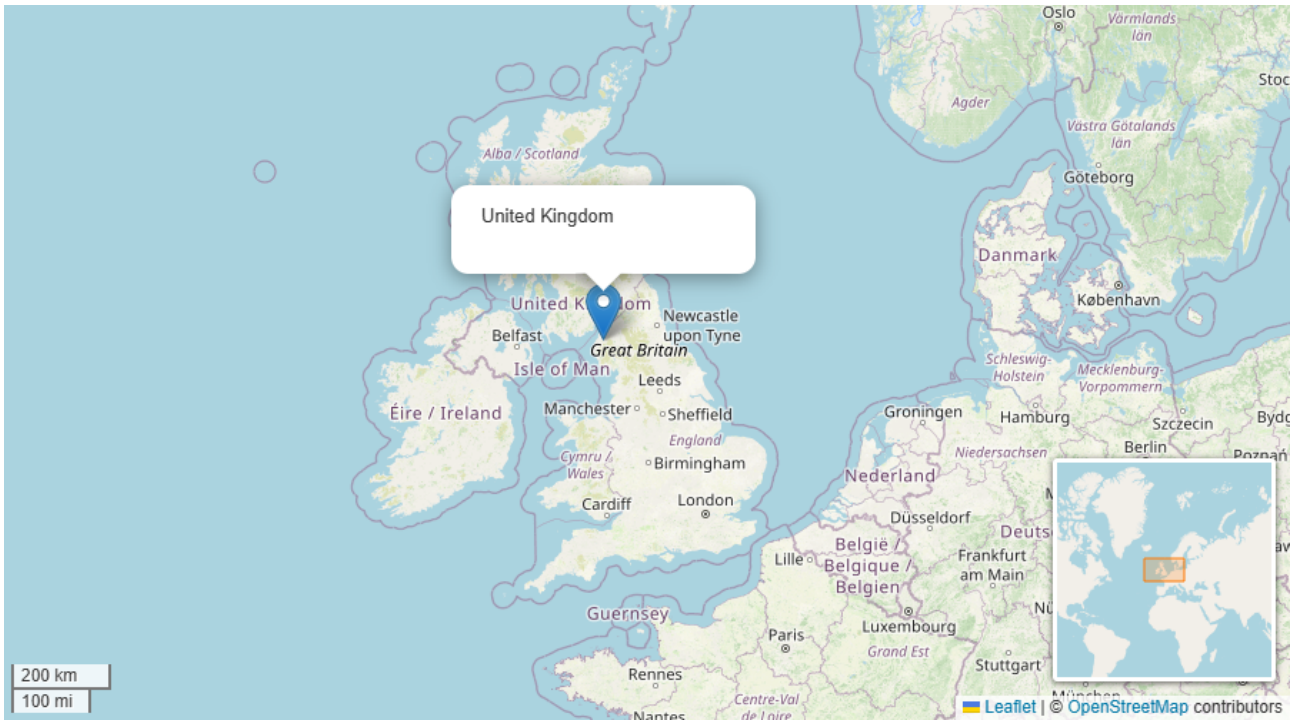
Description of the specific process, sub-process and/or activity that created the waste

Construction waste.

Description of the waste

Granular made ground was encountered in the near surface across the site. This comprised ash, brick concrete, tarmac, timber, metal and pieces of asbestos. Cohesive made ground was generally present beneath the granular material, with similar anthropogenic inclusions.

Waste Location



Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	BH01/0.80/2026-01-21		Non Hazardous		4
2	BH02/3.00/2026-01-21		Non Hazardous		6
3	BH03/3.00/2026-01-20		Non Hazardous		8
4	BH04/0.50/2026-01-21		Non Hazardous		10
5	BH05/1.00/2026-01-21		Non Hazardous		12
6	BH06/1.00/2026-01-21		Non Hazardous		14
7	BH07/3.00/2026-01-21		Non Hazardous		16
8	BH08/0.50/2026-01-21		Non Hazardous		18
9	BH09/2.00/2026-01-21		Non Hazardous		20
10	BH10/3.00/2026-01-19		Non Hazardous		22
11	BH11/0.50/2026-01-19		Non Hazardous		24
12	BH12/2.00/2026-01-19		Non Hazardous		26
13	BH13/0.80/2026-01-19		Non Hazardous		28
14	BH14/0.50/2026-01-19		Non Hazardous		30
15	BH15/3.00/2026-01-19		Non Hazardous		32
16	BH16/0.50/2026-01-20		Non Hazardous		34
17	BH18/0.80/2026-01-20		Non Hazardous		36
18	BH19/0.50/2026-01-21		Hazardous	HP 8	38
19	BH20/1.00/2026-01-21		Non Hazardous		40
20	BH21/0.80/2026-01-21		Non Hazardous		42
21	BH22/2.50/2026-01-21		Non Hazardous		44
22	BH23/1.00/2026-01-21		Non Hazardous		46
23	BH24/0.80/2026-01-21		Non Hazardous		48
24	BH25/0.80/2026-01-21		Non Hazardous		50
25	TP01/0.50/2026-01-20		Non Hazardous		52
26	TP02/0.50/2026-01-20		Non Hazardous		54
27	TP03/0.50/2026-01-20		Non Hazardous		56
28	TP04/0.40/2026-01-21		Non Hazardous		58
29	TP05/0.50/2026-01-21		Non Hazardous		60
30	TP06/0.80/2026-01-20		Non Hazardous		62
31	TP07/0.20/2026-01-21		Non Hazardous		64
32	TP08/1.00/2026-01-21		Hazardous	HP 8	66
33	TP09/0.80/2026-01-21		Non Hazardous		69
34	TP10/0.50/2026-01-21		Non Hazardous		71

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
35	TP11/0.20/2026-01-21		Hazardous	HP 8	73
36	TP12/0.60/2026-01-21		Non Hazardous		75
37	TP13/2.20/2026-01-21		Non Hazardous		78
38	TP14/1.20/2026-01-21		Non Hazardous		81
39	TP15/1.00/2026-01-21		Non Hazardous		83

Related documents

#	Name	Description
1	26-02041.hwol	DETS North .hwol file used to populate the Job
2	Example worst case waste stream template: 17 05 04 or 17 05 03 *	waste stream template used to create this Job

Report

Created by: Max Smeeth

Created date: 23 Feb 2026 13:13 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	85
Appendix B: Rationale for selection of metal species	86
Appendix C: Version	87

Classification of sample: BH01/0.80/2026-01-21

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

Sample details

Sample name:
BH01/0.80/2026-01-21
Moisture content:
11%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				5.1 mg/kg	1.895	8.599 mg/kg	0.00086 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.3 mg/kg	5.719	1.527 mg/kg	0.000153 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		<0.1 mg/kg	1.855	<0.185 mg/kg	<0.0000185 %		<**LOD**
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		19 mg/kg	1.462	24.715 mg/kg	0.00247 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		12 mg/kg	3.929	41.962 mg/kg	0.0042 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	5.2 mg/kg	1.57	7.265 mg/kg	0.000463 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		22 mg/kg	5.358	104.916 mg/kg	0.0105 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		31 mg/kg	2.774	76.539 mg/kg	0.00765 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		9.4 pH		9.4 pH	9.4 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
21		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
22		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
31		Total Organic Carbon				<5000	mg/kg		<5000	mg/kg	<0.5 %		<**LOD**
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	0.0263 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH02/3.00/2026-01-21

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

Sample details

Sample name:
BH02/3.00/2026-01-21
Moisture content:
15%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				6.9 mg/kg	1.895	11.111 mg/kg	0.00111 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.5 mg/kg	5.719	2.431 mg/kg	0.000243 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.315 mg/kg	0.0000315 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		28 mg/kg	1.462	34.785 mg/kg	0.00348 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		16 mg/kg	3.929	53.435 mg/kg	0.00534 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	26 mg/kg	1.57	34.695 mg/kg	0.00221 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		19 mg/kg	5.358	86.537 mg/kg	0.00865 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		39 mg/kg	2.774	91.963 mg/kg	0.0092 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		10.4 pH		10.4 pH	10.4 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
21		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
22		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
31		Total Organic Carbon				6000	mg/kg		5100	mg/kg	0.51 %	✓	
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	0.54 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH03/3.00/2026-01-20

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

Sample details

Sample name:
BH03/3.00/2026-01-20
Moisture content:
16%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				7.3 mg/kg	1.895	11.617 mg/kg	0.00116 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.8 mg/kg	5.719	3.843 mg/kg	0.000384 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.312 mg/kg	0.0000312 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		59 mg/kg	1.462	72.435 mg/kg	0.00724 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		600 mg/kg	3.929	1980.243 mg/kg	0.198 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	72 mg/kg	1.57	94.947 mg/kg	0.00605 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.08 mg/kg	1.353	0.091 mg/kg	0.0000091 %	✓	
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		13 mg/kg	5.358	58.513 mg/kg	0.00585 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		56 mg/kg	2.774	130.496 mg/kg	0.013 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.1 mg/kg	1.884	0.158 mg/kg	0.0000158 %	✓	
14	pH			PH		10.4 pH		10.4 pH	10.4 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				0.53	mg/kg		0.445	mg/kg	0.0000445 %	✓	
			201-469-6	83-32-9									
18		fluorene				0.31	mg/kg		0.26	mg/kg	0.000026 %	✓	
			201-695-5	86-73-7									
19		phenanthrene				1.1	mg/kg		0.924	mg/kg	0.0000924 %	✓	
			201-581-5	85-01-8									
20		anthracene				0.5	mg/kg		0.42	mg/kg	0.000042 %	✓	
			204-371-1	120-12-7									
21		fluoranthene				1.1	mg/kg		0.924	mg/kg	0.0000924 %	✓	
			205-912-4	206-44-0									
22		pyrene				1.1	mg/kg		0.924	mg/kg	0.0000924 %	✓	
			204-927-3	129-00-0									
23		benzo[a]anthracene				0.25	mg/kg		0.21	mg/kg	0.000021 %	✓	
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				0.4	mg/kg		0.336	mg/kg	0.0000336 %	✓	
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				0.39	mg/kg		0.328	mg/kg	0.0000328 %	✓	
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.23	mg/kg		0.193	mg/kg	0.0000193 %	✓	
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				0.94	mg/kg		0.79	mg/kg	0.000079 %	✓	
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				0.36	mg/kg		0.302	mg/kg	0.0000302 %	✓	
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				0.39	mg/kg		0.328	mg/kg	0.0000328 %	✓	
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				0.19	mg/kg		0.16	mg/kg	0.000016 %	✓	
			205-883-8	191-24-2									
31		Total Organic Carbon				13000	mg/kg		10920	mg/kg	1.092 %	✓	
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	1.324 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH04/0.50/2026-01-21

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

Sample details

Sample name:
BH04/0.50/2026-01-21
Moisture content:
10%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				7.4 mg/kg	1.895	12.618 mg/kg	0.00126 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.9 mg/kg	5.719	9.78 mg/kg	0.000978 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.334 mg/kg	0.0000334 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		26 mg/kg	1.462	34.2 mg/kg	0.00342 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		18 mg/kg	3.929	63.651 mg/kg	0.00637 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	47 mg/kg	1.57	66.407 mg/kg	0.00423 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.18 mg/kg	1.353	0.219 mg/kg	0.0000219 %	✓	
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		18 mg/kg	5.358	86.805 mg/kg	0.00868 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		37 mg/kg	2.774	92.379 mg/kg	0.00924 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		8.5 pH		8.5 pH	8.5 pH		

#		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		naphthalene				0.29	mg/kg		0.261	mg/kg	0.0000261 %	✓	
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				0.33	mg/kg		0.297	mg/kg	0.0000297 %	✓	
			201-469-6	83-32-9									
18		fluorene				0.25	mg/kg		0.225	mg/kg	0.0000225 %	✓	
			201-695-5	86-73-7									
19		phenanthrene				1.2	mg/kg		1.08	mg/kg	0.000108 %	✓	
			201-581-5	85-01-8									
20		anthracene				0.45	mg/kg		0.405	mg/kg	0.0000405 %	✓	
			204-371-1	120-12-7									
21		fluoranthene				1.4	mg/kg		1.26	mg/kg	0.000126 %	✓	
			205-912-4	206-44-0									
22		pyrene				1.3	mg/kg		1.17	mg/kg	0.000117 %	✓	
			204-927-3	129-00-0									
23		benzo[a]anthracene				0.47	mg/kg		0.423	mg/kg	0.0000423 %	✓	
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				0.51	mg/kg		0.459	mg/kg	0.0000459 %	✓	
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				0.5	mg/kg		0.45	mg/kg	0.000045 %	✓	
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.37	mg/kg		0.333	mg/kg	0.0000333 %	✓	
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				1.1	mg/kg		0.99	mg/kg	0.000099 %	✓	
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				0.6	mg/kg		0.54	mg/kg	0.000054 %	✓	
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				0.21	mg/kg		0.189	mg/kg	0.0000189 %	✓	
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				0.34	mg/kg		0.306	mg/kg	0.0000306 %	✓	
			205-883-8	191-24-2									
31		Total Organic Carbon				36000	mg/kg		32400	mg/kg	3.24 %	✓	
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	3.275 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH05/1.00/2026-01-21

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

Sample details

Sample name:
BH05/1.00/2026-01-21
Moisture content:
9.4%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 9.4% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				7.4 mg/kg	1.895	12.702 mg/kg	0.00127 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.8 mg/kg	5.719	4.145 mg/kg	0.000415 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.1 mg/kg	1.855	0.168 mg/kg	0.0000168 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		19 mg/kg	1.462	25.159 mg/kg	0.00252 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		44 mg/kg	3.929	156.628 mg/kg	0.0157 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	220 mg/kg	1.57	312.912 mg/kg	0.0199 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		1.1 mg/kg	1.353	1.349 mg/kg	0.000135 %	✓	
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		14 mg/kg	5.358	67.965 mg/kg	0.0068 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		71 mg/kg	2.774	178.45 mg/kg	0.0178 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		76 mg/kg		68.856 mg/kg	0.00689 %	✓	
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		9.3 pH		9.3 pH	9.3 pH		

#		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		naphthalene				14	mg/kg		12.684	mg/kg	0.00127 %	✓	
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
			205-917-1	208-96-8									
17		acenaphthene				20	mg/kg		18.12	mg/kg	0.00181 %	✓	
			201-469-6	83-32-9									
18		fluorene				26	mg/kg		23.556	mg/kg	0.00236 %	✓	
			201-695-5	86-73-7									
19		phenanthrene				140	mg/kg		126.84	mg/kg	0.0127 %	✓	
			201-581-5	85-01-8									
20		anthracene				25	mg/kg		22.65	mg/kg	0.00226 %	✓	
			204-371-1	120-12-7									
21		fluoranthene				82	mg/kg		74.292	mg/kg	0.00743 %	✓	
			205-912-4	206-44-0									
22		pyrene				91	mg/kg		82.446	mg/kg	0.00824 %	✓	
			204-927-3	129-00-0									
23		benzo[a]anthracene				34	mg/kg		30.804	mg/kg	0.00308 %	✓	
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				38	mg/kg		34.428	mg/kg	0.00344 %	✓	
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				18	mg/kg		16.308	mg/kg	0.00163 %	✓	
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				11	mg/kg		9.966	mg/kg	0.000997 %	✓	
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				30	mg/kg		27.18	mg/kg	0.00272 %	✓	
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				15	mg/kg		13.59	mg/kg	0.00136 %	✓	
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				2.2	mg/kg		1.993	mg/kg	0.000199 %	✓	
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				10	mg/kg		9.06	mg/kg	0.000906 %	✓	
			205-883-8	191-24-2									
31		Total Organic Carbon				16000	mg/kg		14496	mg/kg	1.45 %	✓	
				TOC									
32		monohydric phenols				1.4	mg/kg		1.268	mg/kg	0.000127 %	✓	
				P1186									
										Total:	1.572 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
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 concentration of: 12500 mg/kg (1.25%) because: No evident free draining liquid phase. Limit values determined in accordance with WM3 (1st edition v1.2.GB) worked example for the determination of HP3.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00689%)

Classification of sample: BH06/1.00/2026-01-21

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

Sample details

Sample name:
BH06/1.00/2026-01-21
Moisture content:
14%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				8.8 mg/kg	1.895	14.338 mg/kg	0.00143 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.1 mg/kg	5.719	5.41 mg/kg	0.000541 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.319 mg/kg	0.0000319 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		13 mg/kg	1.462	16.34 mg/kg	0.00163 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		97 mg/kg	3.929	327.762 mg/kg	0.0328 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	1200 mg/kg	1.57	1620.132 mg/kg	0.103 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.34 mg/kg	1.353	0.396 mg/kg	0.0000396 %	✓	
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		10 mg/kg	5.358	46.082 mg/kg	0.00461 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		210 mg/kg	2.774	501.011 mg/kg	0.0501 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		9 pH		9 pH	9pH		

#		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		naphthalene				0.16	mg/kg		0.138	mg/kg	0.0000138 %	✓	
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				0.62	mg/kg		0.533	mg/kg	0.0000533 %	✓	
			201-469-6	83-32-9									
18		fluorene				0.5	mg/kg		0.43	mg/kg	0.000043 %	✓	
			201-695-5	86-73-7									
19		phenanthrene				3.3	mg/kg		2.838	mg/kg	0.000284 %	✓	
			201-581-5	85-01-8									
20		anthracene				0.83	mg/kg		0.714	mg/kg	0.0000714 %	✓	
			204-371-1	120-12-7									
21		fluoranthene				3.7	mg/kg		3.182	mg/kg	0.000318 %	✓	
			205-912-4	206-44-0									
22		pyrene				3.5	mg/kg		3.01	mg/kg	0.000301 %	✓	
			204-927-3	129-00-0									
23		benzo[a]anthracene				1	mg/kg		0.86	mg/kg	0.000086 %	✓	
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				1.3	mg/kg		1.118	mg/kg	0.000112 %	✓	
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				1.6	mg/kg		1.376	mg/kg	0.000138 %	✓	
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.6	mg/kg		0.516	mg/kg	0.0000516 %	✓	
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				1.7	mg/kg		1.462	mg/kg	0.000146 %	✓	
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				1	mg/kg		0.86	mg/kg	0.000086 %	✓	
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				0.16	mg/kg		0.138	mg/kg	0.0000138 %	✓	
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				0.83	mg/kg		0.714	mg/kg	0.0000714 %	✓	
			205-883-8	191-24-2									
31		Total Organic Carbon				20000	mg/kg		17200	mg/kg	1.72 %	✓	
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	1.916 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH07/3.00/2026-01-21

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

Sample details

Sample name:
BH07/3.00/2026-01-21
Moisture content:
14%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				17 mg/kg	1.895	27.698 mg/kg	0.00277 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.7 mg/kg	5.719	8.361 mg/kg	0.000836 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.478 mg/kg	0.0000478 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		48 mg/kg	1.462	60.333 mg/kg	0.00603 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		40 mg/kg	3.929	135.159 mg/kg	0.0135 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	120 mg/kg	1.57	162.013 mg/kg	0.0103 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		19 mg/kg	5.358	87.555 mg/kg	0.00876 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		79 mg/kg	2.774	188.476 mg/kg	0.0188 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.1 mg/kg	1.884	0.162 mg/kg	0.0000162 %	✓	
14	pH			PH		9.8 pH		9.8 pH	9.8 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
21		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
22		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
31		Total Organic Carbon				20000	mg/kg		17200	mg/kg	1.72 %	✓	
				TOC									
32		monohydric phenols				0.4	mg/kg		0.344	mg/kg	0.0000344 %	✓	
				P1186									
										Total:	1.781 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH08/0.50/2026-01-21

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

Sample details

Sample name:
BH08/0.50/2026-01-21
Moisture content:
9.8%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 9.8% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				5.2 mg/kg	1.895	8.886 mg/kg	0.000889 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.5 mg/kg	5.719	2.579 mg/kg	0.000258 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.1 mg/kg	1.855	0.167 mg/kg	0.0000167 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		32 mg/kg	1.462	42.186 mg/kg	0.00422 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		16 mg/kg	3.929	56.704 mg/kg	0.00567 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	120 mg/kg	1.57	169.926 mg/kg	0.0108 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		10 mg/kg	5.358	48.332 mg/kg	0.00483 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		45 mg/kg	2.774	112.603 mg/kg	0.0113 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		10.4 pH		10.4 pH	10.4 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
21		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
22		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
31		Total Organic Carbon				19000	mg/kg		17138	mg/kg	1.714 %	✓	
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	1.752 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH09/2.00/2026-01-21

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

Sample details

Sample name:
BH09/2.00/2026-01-21
Moisture content:
19%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 19% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		0.005 %		0.004 %	0.00405 %	✓	
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		Yes					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				18 mg/kg	1.895	27.622 mg/kg	0.00276 %	✓	
4	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.4 mg/kg	5.719	6.486 mg/kg	0.000649 %	✓	
5	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.451 mg/kg	0.0000451 %	✓	
6	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		52 mg/kg	1.462	61.561 mg/kg	0.00616 %	✓	
7	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
8	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		42 mg/kg	3.929	133.666 mg/kg	0.0134 %	✓	
9	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	130 mg/kg	1.57	165.31 mg/kg	0.0105 %	✓	
10	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.14 mg/kg	1.353	0.153 mg/kg	0.0000153 %	✓	
11	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		20 mg/kg	5.358	86.805 mg/kg	0.00868 %	✓	
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		85 mg/kg	2.774	191 mg/kg	0.0191 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
15		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<**LOD**
16		pH			PH		10.5	pH		10.5	pH	10.5 pH		
17		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
18		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
19		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
20		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
21		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
22		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
23		fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
24		pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
25		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
26		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
27		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
28		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
29		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
30		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
31		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
32		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
33		Total Organic Carbon			TOC		12000	mg/kg		9720	mg/kg	0.972 %	✓	
34		monohydric phenols			P1186		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
35		Asbestos Identification			P1887		50	mg/kg		40.5	mg/kg	0.00405 %	✓	
											Total:	1.041 %		

Key

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

Classification of sample: BH10/3.00/2026-01-19

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

Sample details

Sample name:
BH10/3.00/2026-01-19
Moisture content:
15%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		0.011 %		0.0093 %	0.00935 %	✓	
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		Yes					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				45 mg/kg	1.895	72.466 mg/kg	0.00725 %	✓	
4	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.7 mg/kg	5.719	8.264 mg/kg	0.000826 %	✓	
5	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		1.7 mg/kg	1.855	2.68 mg/kg	0.000268 %	✓	
6	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		80 mg/kg	1.462	99.386 mg/kg	0.00994 %	✓	
7	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
8	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		58 mg/kg	3.929	193.702 mg/kg	0.0194 %	✓	
9	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	240 mg/kg	1.57	320.259 mg/kg	0.0204 %	✓	
10	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.76 mg/kg	1.353	0.874 mg/kg	0.0000874 %	✓	
11	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		19 mg/kg	5.358	86.537 mg/kg	0.00865 %	✓	
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		1.4 mg/kg	2.554	3.039 mg/kg	0.000304 %	✓	
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		250 mg/kg	2.774	589.506 mg/kg	0.059 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
15		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.5	mg/kg	1.884	0.801	mg/kg	0.0000801 %	✓	
16		pH			PH		10.5	pH		10.5	pH	10.5 pH		
17		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
18		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
19		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
20		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
21		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
22		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
23		fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
24		pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
25		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
26		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
27		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
28		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
29		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
30		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
31		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
32		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
33		Total Organic Carbon			TOC		23000	mg/kg		19550	mg/kg	1.955 %	✓	
34		monohydric phenols			P1186		0.9	mg/kg		0.765	mg/kg	0.0000765 %	✓	
35		Asbestos Identification			P1887		110	mg/kg		93.5	mg/kg	0.00935 %	✓	
											Total:	2.1 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH11/0.50/2026-01-19

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

Sample details

Sample name:
BH11/0.50/2026-01-19
Moisture content:
8%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 8% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				9.1 mg/kg	1.895	15.861 mg/kg	0.00159 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.8 mg/kg	5.719	4.209 mg/kg	0.000421 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.341 mg/kg	0.0000341 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		11 mg/kg	1.462	14.791 mg/kg	0.00148 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<LOD
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		20 mg/kg	3.929	72.295 mg/kg	0.00723 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	27 mg/kg	1.57	38.996 mg/kg	0.00248 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<LOD
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		13 mg/kg	5.358	64.085 mg/kg	0.00641 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<LOD
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		43 mg/kg	2.774	109.745 mg/kg	0.011 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		27 mg/kg		24.84 mg/kg	0.00248 %	✓	
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<LOD
14	pH			PH		11.3 pH		11.3 pH	11.3 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19		phenanthrene				0.28	mg/kg		0.258	mg/kg	0.0000258 %	✓	
			201-581-5	85-01-8									
20		anthracene				0.39	mg/kg		0.359	mg/kg	0.0000359 %	✓	
			204-371-1	120-12-7									
21		fluoranthene				0.68	mg/kg		0.626	mg/kg	0.0000626 %	✓	
			205-912-4	206-44-0									
22		pyrene				0.47	mg/kg		0.432	mg/kg	0.0000432 %	✓	
			204-927-3	129-00-0									
23		benzo[a]anthracene				0.3	mg/kg		0.276	mg/kg	0.0000276 %	✓	
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				0.22	mg/kg		0.202	mg/kg	0.0000202 %	✓	
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				0.31	mg/kg		0.285	mg/kg	0.0000285 %	✓	
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.18	mg/kg		0.166	mg/kg	0.0000166 %	✓	
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				0.61	mg/kg		0.561	mg/kg	0.0000561 %	✓	
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				0.27	mg/kg		0.248	mg/kg	0.0000248 %	✓	
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				0.13	mg/kg		0.12	mg/kg	0.000012 %	✓	
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				0.15	mg/kg		0.138	mg/kg	0.0000138 %	✓	
			205-883-8	191-24-2									
31		Total Organic Carbon				11000	mg/kg		10120	mg/kg	1.012 %	✓	
				TOC									
32		monohydric phenols				0.7	mg/kg		0.644	mg/kg	0.0000644 %	✓	
				P1186									
										Total:	1.046 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
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 concentration of: 12500 mg/kg (1.25%) because: No evident free draining liquid phase. Limit values determined in accordance with WM3 (1st edition v1.2.GB) worked example for the determination of HP3.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00248%)

Classification of sample: BH12/2.00/2026-01-19

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

Sample details

Sample name:
BH12/2.00/2026-01-19
Moisture content:
15%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<0.001 %		<0.001 %	<0.001 %		<LOD
2		asbestos fibres detected (Yes/No)			ACM_FIBRES		Yes					
3		arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				11 mg/kg	1.895	17.714 mg/kg	0.00177 %	✓	
4		boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		2.4 mg/kg	5.719	11.667 mg/kg	0.00117 %	✓	
5		cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.473 mg/kg	0.0000473 %	✓	
6		chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		24 mg/kg	1.462	29.816 mg/kg	0.00298 %	✓	
7		chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<LOD
8		copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		25 mg/kg	3.929	83.492 mg/kg	0.00835 %	✓	
9		lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	87 mg/kg	1.57	116.094 mg/kg	0.0074 %	✓	
10		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1 mg/kg	1.353	0.115 mg/kg	0.0000115 %	✓	
11		nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		17 mg/kg	5.358	77.428 mg/kg	0.00774 %	✓	
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<LOD
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		90 mg/kg	2.774	212.222 mg/kg	0.0212 %	✓	

#		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		TPH (C6 to C40) petroleum group		TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
15		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<**LOD**
		006-007-00-5											
16		pH		PH		9.5	pH		9.5	pH	9.5 pH		
17		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
18		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
19		acenaphthene				0.77	mg/kg		0.655	mg/kg	0.0000655 %	✓	
			201-469-6	83-32-9									
20		fluorene				0.61	mg/kg		0.519	mg/kg	0.0000519 %	✓	
			201-695-5	86-73-7									
21		phenanthrene				1.8	mg/kg		1.53	mg/kg	0.000153 %	✓	
			201-581-5	85-01-8									
22		anthracene				0.28	mg/kg		0.238	mg/kg	0.0000238 %	✓	
			204-371-1	120-12-7									
23		fluoranthene				0.61	mg/kg		0.519	mg/kg	0.0000519 %	✓	
			205-912-4	206-44-0									
24		pyrene				0.64	mg/kg		0.544	mg/kg	0.0000544 %	✓	
			204-927-3	129-00-0									
25		benzo[a]anthracene				0.51	mg/kg		0.434	mg/kg	0.0000433 %	✓	
		601-033-00-9	200-280-6	56-55-3									
26		chrysene				0.54	mg/kg		0.459	mg/kg	0.0000459 %	✓	
		601-048-00-0	205-923-4	218-01-9									
27		benzo[b]fluoranthene				0.28	mg/kg		0.238	mg/kg	0.0000238 %	✓	
		601-034-00-4	205-911-9	205-99-2									
28		benzo[k]fluoranthene				0.15	mg/kg		0.128	mg/kg	0.0000128 %	✓	
		601-036-00-5	205-916-6	207-08-9									
29		benzo[a]pyrene; benzo[def]chrysene				0.11	mg/kg		0.0935	mg/kg	0.00000935 %	✓	
		601-032-00-3	200-028-5	50-32-8									
30		indeno[123-cd]pyrene				0.26	mg/kg		0.221	mg/kg	0.0000221 %	✓	
			205-893-2	193-39-5									
31		dibenz[a,h]anthracene				0.14	mg/kg		0.119	mg/kg	0.0000119 %	✓	
		601-041-00-2	200-181-8	53-70-3									
32		benzo[ghi]perylene				0.17	mg/kg		0.145	mg/kg	0.0000145 %	✓	
			205-883-8	191-24-2									
33		Total Organic Carbon		TOC		15000	mg/kg		12750	mg/kg	1.275 %	✓	
34		monohydric phenols		P1186		0.4	mg/kg		0.34	mg/kg	0.000034 %	✓	
35		Asbestos Identification		P1887		<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
										Total:	1.326 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH13/0.80/2026-01-19

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

Sample details

Sample name:
BH13/0.80/2026-01-19
Moisture content:
8.5%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 8.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				4.1 mg/kg	1.895	7.107 mg/kg	0.000711 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.8 mg/kg	5.719	4.186 mg/kg	0.000419 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.1 mg/kg	1.855	0.17 mg/kg	0.000017 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		7.8 mg/kg	1.462	10.431 mg/kg	0.00104 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<LOD
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		12 mg/kg	3.929	43.141 mg/kg	0.00431 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	14 mg/kg	1.57	20.11 mg/kg	0.00128 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<LOD
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		7.7 mg/kg	5.358	37.752 mg/kg	0.00378 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<LOD
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		31 mg/kg	2.774	78.689 mg/kg	0.00787 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<LOD
14	pH			PH		11.2 pH		11.2 pH	11.2 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
21		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
22		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
31		Total Organic Carbon				10000	mg/kg		9150	mg/kg	0.915 %	✓	
				TOC									
32		monohydric phenols				0.4	mg/kg		0.366	mg/kg	0.0000366 %	✓	
				P1186									
										Total:	0.934 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH14/0.50/2026-01-19

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

Sample details

Sample name:
BH14/0.50/2026-01-19
Moisture content:
8.6%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 8.6% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				6.1 mg/kg	1.895	10.563 mg/kg	0.00106 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.8 mg/kg	5.719	4.182 mg/kg	0.000418 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.5 mg/kg	1.855	0.848 mg/kg	0.0000848 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		26 mg/kg	1.462	34.732 mg/kg	0.00347 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		20 mg/kg	3.929	71.823 mg/kg	0.00718 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	32 mg/kg	1.57	45.916 mg/kg	0.00292 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		15 mg/kg	5.358	73.463 mg/kg	0.00735 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		59 mg/kg	2.774	149.599 mg/kg	0.015 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		14 mg/kg		12.796 mg/kg	0.00128 %	✓	
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		10.3 pH		10.3 pH	10.3 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
17		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
19		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
21		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
22		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
31		Total Organic Carbon				24000	mg/kg		21936	mg/kg	2.194 %	✓	
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
				P1186									
										Total:	2.232 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
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 concentration of: 12500 mg/kg (1.25%) because: No evident free draining liquid phase. Limit values determined in accordance with WM3 (1st edition v1.2.GB) worked example for the determination of HP3.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00128%)

Classification of sample: BH15/3.00/2026-01-19

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

Sample details

Sample name:
BH15/3.00/2026-01-19
Moisture content:
8.8%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 8.8% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				7.4 mg/kg	1.895	12.786 mg/kg	0.00128 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1 mg/kg	5.719	5.216 mg/kg	0.000522 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.5 mg/kg	1.855	0.846 mg/kg	0.0000846 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		41 mg/kg	1.462	54.65 mg/kg	0.00547 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		24 mg/kg	3.929	85.999 mg/kg	0.0086 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	36 mg/kg	1.57	51.543 mg/kg	0.00328 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		18 mg/kg	5.358	87.962 mg/kg	0.0088 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		63 mg/kg	2.774	159.391 mg/kg	0.0159 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		400 mg/kg		364.8 mg/kg	0.0365 %	✓	
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		10.2 pH		10.2 pH	10.2 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
17		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
19		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
21		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
22		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
31		Total Organic Carbon				22000	mg/kg		20064	mg/kg	2.006 %	✓	
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
				P1186									
										Total:	2.087 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
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 concentration of: 12500 mg/kg (1.25%) because: No evident free draining liquid phase. Limit values determined in accordance with WM3 (1st edition v1.2.GB) worked example for the determination of HP3.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0365%)

Classification of sample: BH16/0.50/2026-01-20

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

Sample details

Sample name:
BH16/0.50/2026-01-20
Moisture content:
11%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				9.8 mg/kg	1.895	16.524 mg/kg	0.00165 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.2 mg/kg	5.719	6.108 mg/kg	0.000611 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.4 mg/kg	1.855	0.66 mg/kg	0.000066 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		48 mg/kg	1.462	62.438 mg/kg	0.00624 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		32 mg/kg	3.929	111.899 mg/kg	0.0112 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	41 mg/kg	1.57	57.285 mg/kg	0.00365 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.06 mg/kg	1.353	0.0723 mg/kg	0.00000723 %	✓	
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		19 mg/kg	5.358	90.609 mg/kg	0.00906 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		77 mg/kg	2.774	190.112 mg/kg	0.019 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.1 mg/kg	1.884	0.168 mg/kg	0.0000168 %	✓	
14	pH			PH		10.3 pH		10.3 pH	10.3 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
21		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
22		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
31		Total Organic Carbon				16000	mg/kg		14240	mg/kg	1.424 %	✓	
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	1.476 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH18/0.80/2026-01-20

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

Sample details

Sample name:
BH18/0.80/2026-01-20
Moisture content:
13%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				17 mg/kg	1.895	28.02 mg/kg	0.0028 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.6 mg/kg	5.719	7.961 mg/kg	0.000796 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.4 mg/kg	1.855	0.645 mg/kg	0.0000645 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		69 mg/kg	1.462	87.737 mg/kg	0.00877 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		86 mg/kg	3.929	293.972 mg/kg	0.0294 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	76 mg/kg	1.57	103.802 mg/kg	0.00661 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.37 mg/kg	1.353	0.436 mg/kg	0.0000436 %	✓	
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		16 mg/kg	5.358	74.588 mg/kg	0.00746 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.7 mg/kg	2.554	1.555 mg/kg	0.000156 %	✓	
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		120 mg/kg	2.774	289.621 mg/kg	0.029 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		10.6 pH		10.6 pH	10.6 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				0.14	mg/kg		0.122	mg/kg	0.0000122 %	✓	
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19		phenanthrene				0.47	mg/kg		0.409	mg/kg	0.0000409 %	✓	
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
21		fluoranthene				0.39	mg/kg		0.339	mg/kg	0.0000339 %	✓	
			205-912-4	206-44-0									
22		pyrene				0.54	mg/kg		0.47	mg/kg	0.000047 %	✓	
			204-927-3	129-00-0									
23		benzo[a]anthracene				0.24	mg/kg		0.209	mg/kg	0.0000209 %	✓	
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				0.49	mg/kg		0.426	mg/kg	0.0000426 %	✓	
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				0.27	mg/kg		0.235	mg/kg	0.0000235 %	✓	
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.11	mg/kg		0.0957	mg/kg	0.00000957 %	✓	
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				0.18	mg/kg		0.157	mg/kg	0.0000157 %	✓	
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				0.24	mg/kg		0.209	mg/kg	0.0000209 %	✓	
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				0.22	mg/kg		0.191	mg/kg	0.0000191 %	✓	
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				0.22	mg/kg		0.191	mg/kg	0.0000191 %	✓	
			205-883-8	191-24-2									
31		Total Organic Carbon				17000	mg/kg		14790	mg/kg	1.479 %	✓	
				TOC									
32		monohydric phenols				0.6	mg/kg		0.522	mg/kg	0.0000522 %	✓	
				P1186									
										Total:	1.564 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH19/0.50/2026-01-21

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

Sample details

Sample name:
BH19/0.50/2026-01-21
Moisture content:
14%
(wet weight correction)

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

Hazard properties

HP 8: Corrosive "waste which on application can cause skin corrosion"

pH; pH "Assumed to be irritant/corrosive because of pH value"

Because of determinand:

pH (conc.: 11.5 pH)

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				6.7 mg/kg	1.895	10.916 mg/kg	0.00109 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		2 mg/kg	5.719	9.837 mg/kg	0.000984 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.319 mg/kg	0.0000319 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		58 mg/kg	1.462	72.902 mg/kg	0.00729 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		9.7 mg/kg	3.929	32.776 mg/kg	0.00328 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	28 mg/kg	1.57	37.803 mg/kg	0.00241 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		6.2 mg/kg	5.358	28.571 mg/kg	0.00286 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		53 mg/kg	2.774	126.446 mg/kg	0.0126 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
13		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.3	mg/kg	1.884	0.486	mg/kg	0.0000486 %	✓	
14		pH			PH		11.5	pH		11.5	pH	11.5 pH		
15		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
16		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
17		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
18		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
19		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
20		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
21		fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
22		pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
23		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
24		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
25		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
26		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
27		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
28		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
29		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
30		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
31		Total Organic Carbon			TOC		16000	mg/kg		13760	mg/kg	1.376 %	✓	
32		monohydric phenols			P1186		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
											Total:	1.407 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH20/1.00/2026-01-21

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

Sample details

Sample name:
BH20/1.00/2026-01-21
Moisture content:
15%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				7.7 mg/kg	1.895	12.4 mg/kg	0.00124 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.8 mg/kg	5.719	3.889 mg/kg	0.000389 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.1 mg/kg	1.855	0.158 mg/kg	0.0000158 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		26 mg/kg	1.462	32.3 mg/kg	0.00323 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		21 mg/kg	3.929	70.134 mg/kg	0.00701 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	19 mg/kg	1.57	25.354 mg/kg	0.00161 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		21 mg/kg	5.358	95.646 mg/kg	0.00956 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		64 mg/kg	2.774	150.914 mg/kg	0.0151 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		9.9 pH		9.9 pH	9.9 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16	●	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17	●	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
18	●	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19	●	phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
20	●	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
21	●	fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
22	●	pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
28	●	indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30	●	benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
31		Total Organic Carbon				8000	mg/kg		6800	mg/kg	0.68 %	✓	
				TOC									
32	●	monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	0.718 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH21/0.80/2026-01-21

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

Sample details

Sample name:
BH21/0.80/2026-01-21
Moisture content:
10%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				14 mg/kg	1.895	23.871 mg/kg	0.00239 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.2 mg/kg	5.719	6.177 mg/kg	0.000618 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.334 mg/kg	0.0000334 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		32 mg/kg	1.462	42.093 mg/kg	0.00421 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		26 mg/kg	3.929	91.94 mg/kg	0.00919 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	43 mg/kg	1.57	60.755 mg/kg	0.00387 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.07 mg/kg	1.353	0.0853 mg/kg	0.00000853 %	✓	
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		20 mg/kg	5.358	96.45 mg/kg	0.00964 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		64 mg/kg	2.774	159.791 mg/kg	0.016 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		10.2 pH		10.2 pH	10.2 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
21		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
22		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
31		Total Organic Carbon				8000	mg/kg		7200	mg/kg	0.72 %	✓	
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	0.766 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH22/2.50/2026-01-21

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

Sample details

Sample name:
BH22/2.50/2026-01-21
Moisture content:
12%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				6.1 mg/kg	1.895	10.17 mg/kg	0.00102 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.4 mg/kg	5.719	2.013 mg/kg	0.000201 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		<0.1 mg/kg	1.855	<0.185 mg/kg	<0.0000185 %		<**LOD**
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		17 mg/kg	1.462	21.865 mg/kg	0.00219 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		11 mg/kg	3.929	38.033 mg/kg	0.0038 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	5.7 mg/kg	1.57	7.875 mg/kg	0.000502 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		21 mg/kg	5.358	99.022 mg/kg	0.0099 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		30 mg/kg	2.774	73.237 mg/kg	0.00732 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		9 pH		9 pH	9pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
21		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
22		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
31		Total Organic Carbon				<5000	mg/kg		<5000	mg/kg	<0.5 %		<**LOD**
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	0.0249 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH23/1.00/2026-01-21

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

Sample details

Sample name:
BH23/1.00/2026-01-21
Moisture content:
16%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				7 mg/kg	1.895	11.14 mg/kg	0.00111 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1 mg/kg	5.719	4.804 mg/kg	0.00048 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		<0.1 mg/kg	1.855	<0.185 mg/kg	<0.0000185 %		<**LOD**
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		11 mg/kg	1.462	13.505 mg/kg	0.00135 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		19 mg/kg	3.929	62.708 mg/kg	0.00627 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	50 mg/kg	1.57	65.936 mg/kg	0.0042 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.06 mg/kg	1.353	0.0682 mg/kg	0.00000682 %	✓	
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		11 mg/kg	5.358	49.511 mg/kg	0.00495 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		34 mg/kg	2.774	79.23 mg/kg	0.00792 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.1 mg/kg	1.884	0.158 mg/kg	0.0000158 %	✓	
14	pH			PH		7.8 pH		7.8 pH	7.8 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
21		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
22		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
31		Total Organic Carbon				24000	mg/kg		20160	mg/kg	2.016 %	✓	
				TOC									
32		monohydric phenols				0.4	mg/kg		0.336	mg/kg	0.0000336 %	✓	
				P1186									
										Total:	2.042 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH24/0.80/2026-01-21

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

Sample details

Sample name:
BH24/0.80/2026-01-21
Moisture content:
13%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<0.001 %		<0.001 %	<0.001 %		<**LOD**
2		asbestos fibres detected (Yes/No)			ACM_FIBRES		Yes					
3		arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				8.8 mg/kg	1.895	14.504 mg/kg	0.00145 %	✓	
4		boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.5 mg/kg	5.719	7.464 mg/kg	0.000746 %	✓	
5		cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.323 mg/kg	0.0000323 %	✓	
6		chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		6.5 mg/kg	1.462	8.265 mg/kg	0.000827 %	✓	
7		chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
8		copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		62 mg/kg	3.929	211.933 mg/kg	0.0212 %	✓	
9		lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	290 mg/kg	1.57	396.085 mg/kg	0.0252 %	✓	
10		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.28 mg/kg	1.353	0.33 mg/kg	0.000033 %	✓	
11		nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		8.3 mg/kg	5.358	38.692 mg/kg	0.00387 %	✓	
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		100 mg/kg	2.774	241.351 mg/kg	0.0241 %	✓	

#		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		TPH (C6 to C40) petroleum group		TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
15		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<**LOD**
		006-007-00-5											
16		pH		PH		8.5	pH		8.5	pH	8.5 pH		
17		naphthalene				0.24	mg/kg		0.209	mg/kg	0.0000209 %	✓	
		601-052-00-2	202-049-5	91-20-3									
18		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
19		acenaphthene				0.49	mg/kg		0.426	mg/kg	0.0000426 %	✓	
			201-469-6	83-32-9									
20		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
21		phenanthrene				2.4	mg/kg		2.088	mg/kg	0.000209 %	✓	
			201-581-5	85-01-8									
22		anthracene				0.89	mg/kg		0.774	mg/kg	0.0000774 %	✓	
			204-371-1	120-12-7									
23		fluoranthene				3.6	mg/kg		3.132	mg/kg	0.000313 %	✓	
			205-912-4	206-44-0									
24		pyrene				4	mg/kg		3.48	mg/kg	0.000348 %	✓	
			204-927-3	129-00-0									
25		benzo[a]anthracene				1.6	mg/kg		1.392	mg/kg	0.000139 %	✓	
		601-033-00-9	200-280-6	56-55-3									
26		chrysene				1.3	mg/kg		1.131	mg/kg	0.000113 %	✓	
		601-048-00-0	205-923-4	218-01-9									
27		benzo[b]fluoranthene				1.1	mg/kg		0.957	mg/kg	0.0000957 %	✓	
		601-034-00-4	205-911-9	205-99-2									
28		benzo[k]fluoranthene				0.67	mg/kg		0.583	mg/kg	0.0000583 %	✓	
		601-036-00-5	205-916-6	207-08-9									
29		benzo[a]pyrene; benzo[def]chrysene				2.1	mg/kg		1.827	mg/kg	0.000183 %	✓	
		601-032-00-3	200-028-5	50-32-8									
30		indeno[123-cd]pyrene				0.95	mg/kg		0.826	mg/kg	0.0000826 %	✓	
			205-893-2	193-39-5									
31		dibenz[a,h]anthracene				0.18	mg/kg		0.157	mg/kg	0.0000157 %	✓	
		601-041-00-2	200-181-8	53-70-3									
32		benzo[ghi]perylene				0.71	mg/kg		0.618	mg/kg	0.0000618 %	✓	
			205-883-8	191-24-2									
33		Total Organic Carbon		TOC		35000	mg/kg		30450	mg/kg	3.045 %	✓	
34		monohydric phenols		P1186		0.5	mg/kg		0.435	mg/kg	0.0000435 %	✓	
35		Asbestos Identification		P1887		<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
										Total:	3.124 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH25/0.80/2026-01-21

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

Sample details

Sample name:
BH25/0.80/2026-01-21
Moisture content:
13%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				6.4 mg/kg	1.895	10.549 mg/kg	0.00105 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.1 mg/kg	5.719	5.473 mg/kg	0.000547 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.323 mg/kg	0.0000323 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		230 mg/kg	1.462	292.457 mg/kg	0.0292 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		17 mg/kg	3.929	58.111 mg/kg	0.00581 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	21 mg/kg	1.57	28.682 mg/kg	0.00183 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		10 mg/kg	5.358	46.617 mg/kg	0.00466 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		1 mg/kg	2.554	2.222 mg/kg	0.000222 %	✓	
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		51 mg/kg	2.774	123.089 mg/kg	0.0123 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.1 mg/kg	1.884	0.164 mg/kg	0.0000164 %	✓	
14	pH			PH		11.3 pH		11.3 pH	11.3 pH		

#		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		naphthalene				0.38	mg/kg		0.331	mg/kg	0.0000331 %	✓	
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				0.51	mg/kg		0.444	mg/kg	0.0000444 %	✓	
			205-917-1	208-96-8									
17		acenaphthene				0.46	mg/kg		0.4	mg/kg	0.00004 %	✓	
			201-469-6	83-32-9									
18		fluorene				0.94	mg/kg		0.818	mg/kg	0.0000818 %	✓	
			201-695-5	86-73-7									
19		phenanthrene				10	mg/kg		8.7	mg/kg	0.00087 %	✓	
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
21		fluoranthene				8.6	mg/kg		7.482	mg/kg	0.000748 %	✓	
			205-912-4	206-44-0									
22		pyrene				7.5	mg/kg		6.525	mg/kg	0.000653 %	✓	
			204-927-3	129-00-0									
23		benzo[a]anthracene				3	mg/kg		2.61	mg/kg	0.000261 %	✓	
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				2.8	mg/kg		2.436	mg/kg	0.000244 %	✓	
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				1.9	mg/kg		1.653	mg/kg	0.000165 %	✓	
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				1.5	mg/kg		1.305	mg/kg	0.000131 %	✓	
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				3.1	mg/kg		2.697	mg/kg	0.00027 %	✓	
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				1.9	mg/kg		1.653	mg/kg	0.000165 %	✓	
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				0.3	mg/kg		0.261	mg/kg	0.0000261 %	✓	
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				1.3	mg/kg		1.131	mg/kg	0.000113 %	✓	
			205-883-8	191-24-2									
31		Total Organic Carbon				20000	mg/kg		17400	mg/kg	1.74 %	✓	
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	1.8 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP01/0.50/2026-01-20

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

Sample details

Sample name:
TP01/0.50/2026-01-20
Moisture content:
11%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		0.002 %		0.0017 %	0.00178 %	✓	
2		asbestos fibres detected (Yes/No)			ACM_FIBRES		Yes					
3		arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				7.7 mg/kg	1.895	12.983 mg/kg	0.0013 %	✓	
4		boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.2 mg/kg	5.719	6.108 mg/kg	0.000611 %	✓	
5		cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.495 mg/kg	0.0000495 %	✓	
6		chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		22 mg/kg	1.462	28.617 mg/kg	0.00286 %	✓	
7		chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
8		copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		27 mg/kg	3.929	94.415 mg/kg	0.00944 %	✓	
9		lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	130 mg/kg	1.57	181.637 mg/kg	0.0116 %	✓	
10		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.13 mg/kg	1.353	0.157 mg/kg	0.0000157 %	✓	
11		nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		16 mg/kg	5.358	76.302 mg/kg	0.00763 %	✓	
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		72 mg/kg	2.774	177.767 mg/kg	0.0178 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
15		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<**LOD**
16		pH			PH		8.4	pH		8.4	pH	8.4 pH		
17		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
18		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
19		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
20		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
21		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
22		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
23		fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
24		pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
25		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
26		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
27		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
28		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
29		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
30		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
31		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
32		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
33		Total Organic Carbon			TOC		21000	mg/kg		18690	mg/kg	1.869 %	✓	
34		monohydric phenols			P1186		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
35		Asbestos Identification			P1887		20	mg/kg		17.8	mg/kg	0.00178 %	✓	
											Total:	1.924 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP02/0.50/2026-01-20

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

Sample details

Sample name:
TP02/0.50/2026-01-20
Moisture content:
12%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				7.4 mg/kg	1.895	12.337 mg/kg	0.00123 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.7 mg/kg	5.719	3.523 mg/kg	0.000352 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.1 mg/kg	1.855	0.163 mg/kg	0.0000163 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		34 mg/kg	1.462	43.73 mg/kg	0.00437 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		22 mg/kg	3.929	76.066 mg/kg	0.00761 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	29 mg/kg	1.57	40.064 mg/kg	0.00255 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.07 mg/kg	1.353	0.0834 mg/kg	0.00000834 %	✓	
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		15 mg/kg	5.358	70.73 mg/kg	0.00707 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		37 mg/kg	2.774	90.326 mg/kg	0.00903 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		8.9 pH		8.9 pH	8.9 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
21		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
22		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
31		Total Organic Carbon				21000	mg/kg		18480	mg/kg	1.848 %	✓	
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	1.88 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP03/0.50/2026-01-20

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

Sample details

Sample name:
TP03/0.50/2026-01-20
Moisture content:
7%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 7% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				5.6 mg/kg	1.895	9.867 mg/kg	0.000987 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.2 mg/kg	5.719	6.383 mg/kg	0.000638 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.345 mg/kg	0.0000345 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		18 mg/kg	1.462	24.466 mg/kg	0.00245 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<LOD
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		22 mg/kg	3.929	80.388 mg/kg	0.00804 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	25 mg/kg	1.57	36.5 mg/kg	0.00232 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<LOD
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		16 mg/kg	5.358	79.732 mg/kg	0.00797 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<LOD
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		53 mg/kg	2.774	136.738 mg/kg	0.0137 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<LOD
14	pH			PH		9.8 pH		9.8 pH	9.8 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
21		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
22		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
31		Total Organic Carbon				10000	mg/kg		9300	mg/kg	0.93 %	✓	
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	0.966 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP04/0.40/2026-01-21

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

Sample details

Sample name:
TP04/0.40/2026-01-21
Moisture content:
9.8%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 9.8% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<0.001 %		<0.001 %	<0.001 %		<**LOD**
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		Yes					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				7.1 mg/kg	1.895	12.133 mg/kg	0.00121 %	✓	
4	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.9 mg/kg	5.719	4.643 mg/kg	0.000464 %	✓	
5	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.335 mg/kg	0.0000335 %	✓	
6	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		45 mg/kg	1.462	59.325 mg/kg	0.00593 %	✓	
7	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
8	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		46 mg/kg	3.929	163.024 mg/kg	0.0163 %	✓	
9	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	75 mg/kg	1.57	106.203 mg/kg	0.00677 %	✓	
10	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.29 mg/kg	1.353	0.354 mg/kg	0.0000354 %	✓	
11	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		16 mg/kg	5.358	77.331 mg/kg	0.00773 %	✓	
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.9 mg/kg	2.554	2.073 mg/kg	0.000207 %	✓	
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		55 mg/kg	2.774	137.625 mg/kg	0.0138 %	✓	

#		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		TPH (C6 to C40) petroleum group		TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
15		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				0.9	mg/kg	1.884	1.529	mg/kg	0.000153 %	✓	
		006-007-00-5											
16		pH		PH		9.8	pH		9.8	pH	9.8 pH		
17		naphthalene				0.37	mg/kg		0.334	mg/kg	0.0000334 %	✓	
		601-052-00-2	202-049-5	91-20-3									
18		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
19		acenaphthene				0.79	mg/kg		0.713	mg/kg	0.0000713 %	✓	
			201-469-6	83-32-9									
20		fluorene				0.78	mg/kg		0.704	mg/kg	0.0000704 %	✓	
			201-695-5	86-73-7									
21		phenanthrene				3.2	mg/kg		2.886	mg/kg	0.000289 %	✓	
			201-581-5	85-01-8									
22		anthracene				0.54	mg/kg		0.487	mg/kg	0.0000487 %	✓	
			204-371-1	120-12-7									
23		fluoranthene				2.3	mg/kg		2.075	mg/kg	0.000207 %	✓	
			205-912-4	206-44-0									
24		pyrene				2.6	mg/kg		2.345	mg/kg	0.000235 %	✓	
			204-927-3	129-00-0									
25		benzo[a]anthracene				0.97	mg/kg		0.875	mg/kg	0.0000875 %	✓	
		601-033-00-9	200-280-6	56-55-3									
26		chrysene				1.6	mg/kg		1.443	mg/kg	0.000144 %	✓	
		601-048-00-0	205-923-4	218-01-9									
27		benzo[b]fluoranthene				0.83	mg/kg		0.749	mg/kg	0.0000749 %	✓	
		601-034-00-4	205-911-9	205-99-2									
28		benzo[k]fluoranthene				0.36	mg/kg		0.325	mg/kg	0.0000325 %	✓	
		601-036-00-5	205-916-6	207-08-9									
29		benzo[a]pyrene; benzo[def]chrysene				1.2	mg/kg		1.082	mg/kg	0.000108 %	✓	
		601-032-00-3	200-028-5	50-32-8									
30		indeno[123-cd]pyrene				0.84	mg/kg		0.758	mg/kg	0.0000758 %	✓	
			205-893-2	193-39-5									
31		dibenz[a,h]anthracene				0.21	mg/kg		0.189	mg/kg	0.0000189 %	✓	
		601-041-00-2	200-181-8	53-70-3									
32		benzo[ghi]perylene				0.67	mg/kg		0.604	mg/kg	0.0000604 %	✓	
			205-883-8	191-24-2									
33		Total Organic Carbon		TOC		8000	mg/kg		7216	mg/kg	0.722 %	✓	
34		monohydric phenols		P1186		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
35		Asbestos Identification		P1887		<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
										Total:	0.776 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP05/0.50/2026-01-21

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

Sample details

Sample name:
TP05/0.50/2026-01-21
Moisture content:
12%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				14 mg/kg	1.895	23.341 mg/kg	0.00233 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.8 mg/kg	5.719	4.026 mg/kg	0.000403 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.5 mg/kg	1.855	0.816 mg/kg	0.0000816 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		35 mg/kg	1.462	45.016 mg/kg	0.0045 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		39 mg/kg	3.929	134.845 mg/kg	0.0135 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	100 mg/kg	1.57	138.151 mg/kg	0.0088 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.17 mg/kg	1.353	0.202 mg/kg	0.0000202 %	✓	
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		22 mg/kg	5.358	103.737 mg/kg	0.0104 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		140 mg/kg	2.774	341.775 mg/kg	0.0342 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		260 mg/kg		228.8 mg/kg	0.0229 %	✓	
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.2 mg/kg	1.884	0.332 mg/kg	0.0000332 %	✓	
14	pH			PH		8.6 pH		8.6 pH	8.6 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				0.53	mg/kg		0.466	mg/kg	0.0000466 %	✓	
			201-469-6	83-32-9									
18		fluorene				1	mg/kg		0.88	mg/kg	0.000088 %	✓	
			201-695-5	86-73-7									
19		phenanthrene				1.3	mg/kg		1.144	mg/kg	0.000114 %	✓	
			201-581-5	85-01-8									
20		anthracene				0.85	mg/kg		0.748	mg/kg	0.0000748 %	✓	
			204-371-1	120-12-7									
21		fluoranthene				9.8	mg/kg		8.624	mg/kg	0.000862 %	✓	
			205-912-4	206-44-0									
22		pyrene				9.4	mg/kg		8.272	mg/kg	0.000827 %	✓	
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
31		Total Organic Carbon				15000	mg/kg		13200	mg/kg	1.32 %	✓	
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	1.419 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
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 concentration of: 12500 mg/kg (1.25%) because: No evident free draining liquid phase. Limit values determined in accordance with WM3 (1st edition v1.2.GB) worked example for the determination of HP3.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0229%)

Classification of sample: TP06/0.80/2026-01-20

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

Sample details

Sample name:
TP06/0.80/2026-01-20
Moisture content:
10%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				8.6 mg/kg	1.895	14.664 mg/kg	0.00147 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.9 mg/kg	5.719	4.633 mg/kg	0.000463 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.501 mg/kg	0.0000501 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		72 mg/kg	1.462	94.709 mg/kg	0.00947 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		25 mg/kg	3.929	88.404 mg/kg	0.00884 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	62 mg/kg	1.57	87.6 mg/kg	0.00558 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.08 mg/kg	1.353	0.0975 mg/kg	0.00000975 %	✓	
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		20 mg/kg	5.358	96.45 mg/kg	0.00964 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		87 mg/kg	2.774	217.216 mg/kg	0.0217 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		140 mg/kg		126 mg/kg	0.0126 %	✓	
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		10.2 pH		10.2 pH	10.2 pH		

#		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		naphthalene				0.2	mg/kg		0.18	mg/kg	0.000018 %	✓	
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				0.53	mg/kg		0.477	mg/kg	0.0000477 %	✓	
			201-469-6	83-32-9									
18		fluorene				0.57	mg/kg		0.513	mg/kg	0.0000513 %	✓	
			201-695-5	86-73-7									
19		phenanthrene				1.2	mg/kg		1.08	mg/kg	0.000108 %	✓	
			201-581-5	85-01-8									
20		anthracene				0.27	mg/kg		0.243	mg/kg	0.0000243 %	✓	
			204-371-1	120-12-7									
21		fluoranthene				1.5	mg/kg		1.35	mg/kg	0.000135 %	✓	
			205-912-4	206-44-0									
22		pyrene				1.6	mg/kg		1.44	mg/kg	0.000144 %	✓	
			204-927-3	129-00-0									
23		benzo[a]anthracene				0.54	mg/kg		0.486	mg/kg	0.0000486 %	✓	
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				1	mg/kg		0.9	mg/kg	0.00009 %	✓	
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				0.63	mg/kg		0.567	mg/kg	0.0000567 %	✓	
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.26	mg/kg		0.234	mg/kg	0.0000234 %	✓	
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				0.66	mg/kg		0.594	mg/kg	0.0000594 %	✓	
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				0.64	mg/kg		0.576	mg/kg	0.0000576 %	✓	
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				0.17	mg/kg		0.153	mg/kg	0.0000153 %	✓	
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				0.54	mg/kg		0.486	mg/kg	0.0000486 %	✓	
			205-883-8	191-24-2									
31		Total Organic Carbon				13000	mg/kg		11700	mg/kg	1.17 %	✓	
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	1.241 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
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 concentration of: 12500 mg/kg (1.25%) because: No evident free draining liquid phase. Limit values determined in accordance with WM3 (1st edition v1.2.GB) worked example for the determination of HP3.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0126%)

Classification of sample: TP07/0.20/2026-01-21

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

Sample details

Sample name:
TP07/0.20/2026-01-21
Moisture content:
11%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				4.2 mg/kg	1.895	7.082 mg/kg	0.000708 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.3 mg/kg	5.719	6.617 mg/kg	0.000662 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		<0.1 mg/kg	1.855	<0.185 mg/kg	<0.0000185 %		<**LOD**
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		6.1 mg/kg	1.462	7.935 mg/kg	0.000793 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		14 mg/kg	3.929	48.956 mg/kg	0.0049 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	12 mg/kg	1.57	16.766 mg/kg	0.00107 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		6.8 mg/kg	5.358	32.429 mg/kg	0.00324 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		24 mg/kg	2.774	59.256 mg/kg	0.00593 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		10.6 pH		10.6 pH	10.6 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
18		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
20		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
21		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
22		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
28		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
31		Total Organic Carbon				7000	mg/kg		6230	mg/kg	0.623 %	✓	
				TOC									
32		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	0.64 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP08/1.00/2026-01-21

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

Sample details

Sample name:
TP08/1.00/2026-01-21
Moisture content:
12%
(wet weight correction)

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

Hazard properties

HP 8: Corrosive "waste which on application can cause skin corrosion"

pH; pH "Assumed to be irritant/corrosive because of pH value"

Because of determinand:

pH (conc.: 11.6 pH)

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				8.1 mg/kg	1.895	13.504 mg/kg	0.00135 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.8 mg/kg	5.719	4.026 mg/kg	0.000403 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.4 mg/kg	1.855	0.653 mg/kg	0.0000653 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		390 mg/kg	1.462	501.606 mg/kg	0.0502 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		36 mg/kg	3.929	124.472 mg/kg	0.0124 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	54 mg/kg	1.57	74.601 mg/kg	0.00475 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		14 mg/kg	5.358	66.014 mg/kg	0.0066 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		2.7 mg/kg	2.554	6.068 mg/kg	0.000607 %	✓	
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		93 mg/kg	2.774	227.036 mg/kg	0.0227 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		38 mg/kg		33.44 mg/kg	0.00334 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
13		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	1.658	mg/kg	0.000166 %	✓	
14		pH			PH		11.6	pH		11.6	pH	11.6 pH		
15		naphthalene	601-052-00-2	202-049-5	91-20-3		0.48	mg/kg		0.422	mg/kg	0.0000422 %	✓	
16		acenaphthylene		205-917-1	208-96-8		0.18	mg/kg		0.158	mg/kg	0.0000158 %	✓	
17		acenaphthene		201-469-6	83-32-9		0.4	mg/kg		0.352	mg/kg	0.0000352 %	✓	
18		fluorene		201-695-5	86-73-7		0.45	mg/kg		0.396	mg/kg	0.0000396 %	✓	
19		phenanthrene		201-581-5	85-01-8		2.4	mg/kg		2.112	mg/kg	0.000211 %	✓	
20		anthracene		204-371-1	120-12-7		0.47	mg/kg		0.414	mg/kg	0.0000414 %	✓	
21		fluoranthene		205-912-4	206-44-0		2	mg/kg		1.76	mg/kg	0.000176 %	✓	
22		pyrene		204-927-3	129-00-0		1.8	mg/kg		1.584	mg/kg	0.000158 %	✓	
23		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.2	mg/kg		1.056	mg/kg	0.000106 %	✓	
24		chrysene	601-048-00-0	205-923-4	218-01-9		1.6	mg/kg		1.408	mg/kg	0.000141 %	✓	
25		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.1	mg/kg		0.968	mg/kg	0.0000968 %	✓	
26		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.6	mg/kg		0.528	mg/kg	0.0000528 %	✓	
27		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.1	mg/kg		0.968	mg/kg	0.0000968 %	✓	
28		indeno[123-cd]pyrene		205-893-2	193-39-5		1	mg/kg		0.88	mg/kg	0.000088 %	✓	
29		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
30		benzo[ghi]perylene		205-883-8	191-24-2		0.89	mg/kg		0.783	mg/kg	0.0000783 %	✓	
31		Total Organic Carbon			TOC		25000	mg/kg		22000	mg/kg	2.2 %	✓	
32		monohydric phenols			P1186		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
											Total:	2.304 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
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 concentration of: 12500 mg/kg (1.25%) because: No evident free draining liquid phase. Limit values determined in accordance with WM3 (1st edition v1.2.GB) worked example for the determination of HP3.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00334%)

Classification of sample: TP09/0.80/2026-01-21

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

Sample details

Sample name:
TP09/0.80/2026-01-21
Moisture content:
9%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 9% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				3.3 mg/kg	1.895	5.689 mg/kg	0.000569 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.4 mg/kg	5.719	7.286 mg/kg	0.000729 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		<0.1 mg/kg	1.855	<0.185 mg/kg	<0.0000185 %		<**LOD**
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		16 mg/kg	1.462	21.28 mg/kg	0.00213 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		7.2 mg/kg	3.929	25.743 mg/kg	0.00257 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	6 mg/kg	1.57	8.572 mg/kg	0.000546 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		9.3 mg/kg	5.358	45.347 mg/kg	0.00453 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.7 mg/kg	2.554	1.627 mg/kg	0.000163 %	✓	
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		18 mg/kg	2.774	45.441 mg/kg	0.00454 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.1 mg/kg	1.884	0.171 mg/kg	0.0000171 %	✓	
14	pH			PH		10.8 pH		10.8 pH	10.8 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
16	●	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
17	●	acenaphthene				0.51	mg/kg		0.464	mg/kg	0.0000464 %	✓	
			201-469-6	83-32-9									
18	●	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
19	●	phenanthrene				2.8	mg/kg		2.548	mg/kg	0.000255 %	✓	
			201-581-5	85-01-8									
20	●	anthracene				1.1	mg/kg		1.001	mg/kg	0.0001 %	✓	
			204-371-1	120-12-7									
21	●	fluoranthene				3.5	mg/kg		3.185	mg/kg	0.000319 %	✓	
			205-912-4	206-44-0									
22	●	pyrene				2.7	mg/kg		2.457	mg/kg	0.000246 %	✓	
			204-927-3	129-00-0									
23		benzo[a]anthracene				0.49	mg/kg		0.446	mg/kg	0.0000446 %	✓	
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				0.84	mg/kg		0.764	mg/kg	0.0000764 %	✓	
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				0.87	mg/kg		0.792	mg/kg	0.0000792 %	✓	
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.47	mg/kg		0.428	mg/kg	0.0000428 %	✓	
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				1.4	mg/kg		1.274	mg/kg	0.000127 %	✓	
		601-032-00-3	200-028-5	50-32-8									
28	●	indeno[123-cd]pyrene				0.53	mg/kg		0.482	mg/kg	0.0000482 %	✓	
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				0.18	mg/kg		0.164	mg/kg	0.0000164 %	✓	
		601-041-00-2	200-181-8	53-70-3									
30	●	benzo[ghi]perylene				0.45	mg/kg		0.41	mg/kg	0.000041 %	✓	
			205-883-8	191-24-2									
31	👤	Total Organic Carbon				<5000	mg/kg		<5000	mg/kg	<0.5 %		<**LOD**
				TOC									
32	●	monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	0.0172 %		

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)
👤	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP10/0.50/2026-01-21

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

Sample details

Sample name:
TP10/0.50/2026-01-21
Moisture content:
14%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				7	mg/kg	1.895	11.405	mg/kg	0.00114 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1	mg/kg	5.719	4.919	mg/kg	0.000492 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.5	mg/kg	1.855	0.797	mg/kg	0.0000797 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		52	mg/kg	1.462	65.361	mg/kg	0.00654 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1	mg/kg	2.27	<2.27	mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		27	mg/kg	3.929	91.233	mg/kg	0.00912 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	77	mg/kg	1.57	103.958	mg/kg	0.00662 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05	mg/kg	1.353	<0.0677	mg/kg	<0.00000677 %		<**LOD**
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		15	mg/kg	5.358	69.122	mg/kg	0.00691 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		96	mg/kg	2.774	229.034	mg/kg	0.0229 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		230	mg/kg		197.8	mg/kg	0.0198 %	✓	
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<**LOD**
14	pH			PH		10.6	pH		10.6	pH	10.6 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
16	●	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
17	●	acenaphthene				0.22	mg/kg		0.189	mg/kg	0.0000189 %	✓	
			201-469-6	83-32-9									
18	●	fluorene				0.23	mg/kg		0.198	mg/kg	0.0000198 %	✓	
			201-695-5	86-73-7									
19	●	phenanthrene				0.66	mg/kg		0.568	mg/kg	0.0000568 %	✓	
			201-581-5	85-01-8									
20	●	anthracene				0.57	mg/kg		0.49	mg/kg	0.000049 %	✓	
			204-371-1	120-12-7									
21	●	fluoranthene				1.3	mg/kg		1.118	mg/kg	0.000112 %	✓	
			205-912-4	206-44-0									
22	●	pyrene				1.2	mg/kg		1.032	mg/kg	0.000103 %	✓	
			204-927-3	129-00-0									
23		benzo[a]anthracene				0.55	mg/kg		0.473	mg/kg	0.0000473 %	✓	
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				0.67	mg/kg		0.576	mg/kg	0.0000576 %	✓	
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				0.44	mg/kg		0.378	mg/kg	0.0000378 %	✓	
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				0.38	mg/kg		0.327	mg/kg	0.0000327 %	✓	
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				1.1	mg/kg		0.946	mg/kg	0.0000946 %	✓	
		601-032-00-3	200-028-5	50-32-8									
28	●	indeno[123-cd]pyrene				0.42	mg/kg		0.361	mg/kg	0.0000361 %	✓	
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				0.1	mg/kg		0.086	mg/kg	0.0000086 %	✓	
		601-041-00-2	200-181-8	53-70-3									
30	●	benzo[ghi]perylene				0.26	mg/kg		0.224	mg/kg	0.0000224 %	✓	
			205-883-8	191-24-2									
31		Total Organic Carbon				17000	mg/kg		14620	mg/kg	1.462 %	✓	
				TOC									
32	●	monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
				P1186									
										Total:	1.536 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
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 concentration of: 12500 mg/kg (1.25%) because: No evident free draining liquid phase. Limit values determined in accordance with WM3 (1st edition v1.2.GB) worked example for the determination of HP3.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0198%)

Classification of sample: TP11/0.20/2026-01-21

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

Sample details

Sample name:
TP11/0.20/2026-01-21
Moisture content:
10%
(wet weight correction)

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

Hazard properties

HP 8: Corrosive "waste which on application can cause skin corrosion"

pH; pH "Assumed to be irritant/corrosive because of pH value"

Because of determinand:

pH (conc.: 11.8 pH)

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				1.3 mg/kg	1.895	2.217 mg/kg	0.000222 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.4 mg/kg	5.719	7.206 mg/kg	0.000721 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		<0.1 mg/kg	1.855	<0.185 mg/kg	<0.0000185 %		<**LOD**
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		3.2 mg/kg	1.462	4.209 mg/kg	0.000421 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		3.4 mg/kg	3.929	12.023 mg/kg	0.0012 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	3.6 mg/kg	1.57	5.086 mg/kg	0.000324 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		1.9 mg/kg	5.358	9.163 mg/kg	0.000916 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		13 mg/kg	2.774	32.458 mg/kg	0.00325 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
13		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<**LOD**
14		pH			PH		11.8	pH		11.8	pH	11.8 pH		
15		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
16		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
17		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
18		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
19		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
20		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
21		fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
22		pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
23		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
24		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
25		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
26		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
27		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
28		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
29		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
30		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
31		Total Organic Carbon			TOC		8000	mg/kg		7200	mg/kg	0.72 %	✓	
32		monohydric phenols			P1186		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
											Total:	0.727 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP12/0.60/2026-01-21

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

Sample details

Sample name:
TP12/0.60/2026-01-21
Moisture content:
14%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<0.001 %		<0.001 %	<0.001 %		<**LOD**
2		asbestos fibres detected (Yes/No)			ACM_FIBRES		Yes					
3		arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				10 mg/kg	1.895	16.293 mg/kg	0.00163 %	✓	
4		boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.8 mg/kg	5.719	3.935 mg/kg	0.000393 %	✓	
5		cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.7 mg/kg	1.855	1.116 mg/kg	0.000112 %	✓	
6		chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		63 mg/kg	1.462	79.187 mg/kg	0.00792 %	✓	
7		chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
8		copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		70 mg/kg	3.929	236.529 mg/kg	0.0237 %	✓	
9		lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	140 mg/kg	1.57	189.015 mg/kg	0.012 %	✓	
10		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.11 mg/kg	1.353	0.128 mg/kg	0.0000128 %	✓	
11		nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		23 mg/kg	5.358	105.987 mg/kg	0.0106 %	✓	
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		350 mg/kg	2.774	835.018 mg/kg	0.0835 %	✓	

#		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		TPH (C6 to C40) petroleum group		TPH		30	mg/kg		25.8	mg/kg	0.00258 %	✓	
15		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<**LOD**
		006-007-00-5											
16		pH		PH		9.2	pH		9.2	pH	9.2 pH		
17		naphthalene				0.1	mg/kg		0.086	mg/kg	0.0000086 %	✓	
		601-052-00-2	202-049-5	91-20-3									
18		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
19		acenaphthene				0.42	mg/kg		0.361	mg/kg	0.0000361 %	✓	
			201-469-6	83-32-9									
20		fluorene				0.31	mg/kg		0.267	mg/kg	0.0000267 %	✓	
			201-695-5	86-73-7									
21		phenanthrene				2.3	mg/kg		1.978	mg/kg	0.000198 %	✓	
			201-581-5	85-01-8									
22		anthracene				1	mg/kg		0.86	mg/kg	0.000086 %	✓	
			204-371-1	120-12-7									
23		fluoranthene				7.1	mg/kg		6.106	mg/kg	0.000611 %	✓	
			205-912-4	206-44-0									
24		pyrene				7.9	mg/kg		6.794	mg/kg	0.000679 %	✓	
			204-927-3	129-00-0									
25		benzo[a]anthracene				2.7	mg/kg		2.322	mg/kg	0.000232 %	✓	
		601-033-00-9	200-280-6	56-55-3									
26		chrysene				2.9	mg/kg		2.494	mg/kg	0.000249 %	✓	
		601-048-00-0	205-923-4	218-01-9									
27		benzo[b]fluoranthene				2.6	mg/kg		2.236	mg/kg	0.000224 %	✓	
		601-034-00-4	205-911-9	205-99-2									
28		benzo[k]fluoranthene				1.5	mg/kg		1.29	mg/kg	0.000129 %	✓	
		601-036-00-5	205-916-6	207-08-9									
29		benzo[a]pyrene; benzo[def]chrysene				4.2	mg/kg		3.612	mg/kg	0.000361 %	✓	
		601-032-00-3	200-028-5	50-32-8									
30		indeno[123-cd]pyrene				2.4	mg/kg		2.064	mg/kg	0.000206 %	✓	
			205-893-2	193-39-5									
31		dibenz[a,h]anthracene				0.22	mg/kg		0.189	mg/kg	0.0000189 %	✓	
		601-041-00-2	200-181-8	53-70-3									
32		benzo[ghi]perylene				1.8	mg/kg		1.548	mg/kg	0.000155 %	✓	
			205-883-8	191-24-2									
33		Total Organic Carbon		TOC		50000	mg/kg		43000	mg/kg	4.3 %	✓	
34		monohydric phenols		P1186		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
35		Asbestos Identification		P1887		<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
										Total:	4.446 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
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 concentration of: 12500 mg/kg (1.25%) because: No evident free draining liquid phase. Limit values determined in accordance with WM3 (1st edition v1.2.GB) worked example for the determination of HP3.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00258%)

Classification of sample: TP13/2.20/2026-01-21

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

Sample details

Sample name:
TP13/2.20/2026-01-21
Moisture content:
12%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<0.001 %		<0.001 %	<0.001 %		<**LOD**
2		asbestos fibres detected (Yes/No)			ACM_FIBRES		Yes					
3		arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				4.9 mg/kg	1.895	8.169 mg/kg	0.000817 %	✓	
4		boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.9 mg/kg	5.719	4.53 mg/kg	0.000453 %	✓	
5		cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.49 mg/kg	0.000049 %	✓	
6		chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		16 mg/kg	1.462	20.579 mg/kg	0.00206 %	✓	
7		chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
8		copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		17 mg/kg	3.929	58.779 mg/kg	0.00588 %	✓	
9		lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	53 mg/kg	1.57	73.22 mg/kg	0.00466 %	✓	
10		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.05 mg/kg	1.353	0.0596 mg/kg	0.00000596 %	✓	
11		nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		12 mg/kg	5.358	56.584 mg/kg	0.00566 %	✓	
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		52 mg/kg	2.774	126.945 mg/kg	0.0127 %	✓	

#		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		TPH (C6 to C40) petroleum group		TPH		100	mg/kg		88	mg/kg	0.0088 %	✓	
15		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				0.3	mg/kg	1.884	0.497	mg/kg	0.0000497 %	✓	
		006-007-00-5											
16		pH		PH		10	pH		10	pH	10pH		
17		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
18		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
19		acenaphthene				0.99	mg/kg		0.871	mg/kg	0.0000871 %	✓	
			201-469-6	83-32-9									
20		fluorene				1.2	mg/kg		1.056	mg/kg	0.000106 %	✓	
			201-695-5	86-73-7									
21		phenanthrene				3.2	mg/kg		2.816	mg/kg	0.000282 %	✓	
			201-581-5	85-01-8									
22		anthracene				0.68	mg/kg		0.598	mg/kg	0.0000598 %	✓	
			204-371-1	120-12-7									
23		fluoranthene				2.7	mg/kg		2.376	mg/kg	0.000238 %	✓	
			205-912-4	206-44-0									
24		pyrene				2.1	mg/kg		1.848	mg/kg	0.000185 %	✓	
			204-927-3	129-00-0									
25		benzo[a]anthracene				0.9	mg/kg		0.792	mg/kg	0.0000792 %	✓	
		601-033-00-9	200-280-6	56-55-3									
26		chrysene				1.6	mg/kg		1.408	mg/kg	0.000141 %	✓	
		601-048-00-0	205-923-4	218-01-9									
27		benzo[b]fluoranthene				0.78	mg/kg		0.686	mg/kg	0.0000686 %	✓	
		601-034-00-4	205-911-9	205-99-2									
28		benzo[k]fluoranthene				0.39	mg/kg		0.343	mg/kg	0.0000343 %	✓	
		601-036-00-5	205-916-6	207-08-9									
29		benzo[a]pyrene; benzo[def]chrysene				0.88	mg/kg		0.774	mg/kg	0.0000774 %	✓	
		601-032-00-3	200-028-5	50-32-8									
30		indeno[123-cd]pyrene				0.65	mg/kg		0.572	mg/kg	0.0000572 %	✓	
			205-893-2	193-39-5									
31		dibenz[a,h]anthracene				0.17	mg/kg		0.15	mg/kg	0.000015 %	✓	
		601-041-00-2	200-181-8	53-70-3									
32		benzo[ghi]perylene				0.54	mg/kg		0.475	mg/kg	0.0000475 %	✓	
			205-883-8	191-24-2									
33		Total Organic Carbon		TOC		16000	mg/kg		14080	mg/kg	1.408 %	✓	
34		monohydric phenols		P1186		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
35		Asbestos Identification		P1887		<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
										Total:	1.451 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
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 concentration of: 12500 mg/kg (1.25%) because: No evident free draining liquid phase. Limit values determined in accordance with WM3 (1st edition v1.2.GB) worked example for the determination of HP3.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0088%)

Classification of sample: TP14/1.20/2026-01-21

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

Sample details

Sample name:
TP14/1.20/2026-01-21
Moisture content:
12%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		0.002 %		0.0017 %	0.00176 %	✓	
2		asbestos fibres detected (Yes/No)			ACM_FIBRES		Yes					
3		arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				6.4 mg/kg	1.895	10.67 mg/kg	0.00107 %	✓	
4		boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.7 mg/kg	5.719	3.523 mg/kg	0.000352 %	✓	
5		cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.49 mg/kg	0.000049 %	✓	
6		chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		36 mg/kg	1.462	46.302 mg/kg	0.00463 %	✓	
7		chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<LOD
8		copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		31 mg/kg	3.929	107.185 mg/kg	0.0107 %	✓	
9		lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	35 mg/kg	1.57	48.353 mg/kg	0.00308 %	✓	
10		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<LOD
11		nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		21 mg/kg	5.358	99.022 mg/kg	0.0099 %	✓	
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<LOD
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		100 mg/kg	2.774	244.125 mg/kg	0.0244 %	✓	

#		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		TPH (C6 to C40) petroleum group		TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<LOD
		006-007-00-5											
16		pH		PH		10.1	pH		10.1	pH	10.1 pH		
17		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
18		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
19		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
20		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
21		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
22		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
23		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
24		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
25		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
26		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
27		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
28		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
29		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
30		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
31		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
32		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
33		Total Organic Carbon		TOC		18000	mg/kg		15840	mg/kg	1.584 %	✓	
34		monohydric phenols		P1186		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
35		Asbestos Identification		P1887		20	mg/kg		17.6	mg/kg	0.00176 %	✓	
										Total:	1.642 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP15/1.00/2026-01-21

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

Sample details

Sample name:
TP15/1.00/2026-01-21
Moisture content:
14%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				6 mg/kg	1.895	9.776 mg/kg	0.000978 %	✓	
2	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.4 mg/kg	5.719	1.967 mg/kg	0.000197 %	✓	
3	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.319 mg/kg	0.0000319 %	✓	
4	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		18 mg/kg	1.462	22.625 mg/kg	0.00226 %	✓	
5	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<LOD
6	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		25 mg/kg	3.929	84.475 mg/kg	0.00845 %	✓	
7	lead { lead di(acetate) }	082-005-00-8	206-104-4	301-04-2	1	23 mg/kg	1.57	31.053 mg/kg	0.00198 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<LOD
9	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		19 mg/kg	5.358	87.555 mg/kg	0.00876 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<LOD
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		53 mg/kg	2.774	126.446 mg/kg	0.0126 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
13	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<LOD
14	pH			PH		8.9 pH		8.9 pH	8.9 pH		

#		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		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
16	•	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
17	•	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
18	•	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
19	•	phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
20	•	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
21	•	fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
22	•	pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
23		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
24		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
25		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
26		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
27		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
28	•	indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
29		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
30	•	benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
31		Total Organic Carbon				9000	mg/kg		7740	mg/kg	0.774 %	✓	
				TOC									
32	•	monohydric phenols				0.4	mg/kg		0.344	mg/kg	0.0000344 %	✓	
				P1186									
										Total:	0.809 %		

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)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
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

lead di(acetate) (EC Number: 206-104-4, CAS Number: 301-04-2)

GB MCL index number: 082-005-00-8
Description/Comments: 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

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

Description/Comments: Unknown Oil

Hazard statements taken from WM3 1st Edition 2015
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

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.

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

Total Organic Carbon (CAS Number: TOC)

Description/Comments:
Data source: Lab files
Data source date: 23 Feb 2026
Hazard Statements: None.

monohydric phenols (CAS Number: P1186)

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xylenols (604-001-00-2, 604-004-00-9, 604-006-00-X)
Data source: CLP combined data
Data source date: 26 Mar 2019
Hazard Statements: Muta. 2; H341 , Acute Tox. 3; H331 , Acute Tox. 3; H311 , Acute Tox. 3; H301 , STOT RE 2; H373 , Skin Corr. 1B; H314 , Skin Corr. 1B; H314 >= 3 % , Skin Irrit. 2; H315 1 <= conc. < 3 % , Eye Irrit. 2; H319 1 <= conc. < 3 % , Aquatic Chronic 2; H411

asbestos fibres detected (Yes/No) (CAS Number: ACM_FIBRES)

Description/Comments: not classified, information only
Data source: N/A
Data source date: 15 Jan 2020
Hazard Statements: None.

Asbestos Identification (CAS Number: P1887)

Description/Comments:
Data source: Lab files
Data source date: 23 Feb 2026
Hazard Statements: None.

Appendix B: Rationale for selection of metal species

arsenic {arsenic acid and its salts with the exception of those specified elsewhere in this Annex}

Worst case CLP species based on hazard statements/molecular weight and conversion factor for arsenic acid H3AsO4. (edit as required)

boron {boric acid; [1] boric acid; [2]}

Reasonable worst case CLP species based on hazard statements/molecular weight and assuming water is or has been present. (edit as required)

cadmium {cadmium sulfate}

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

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

There isn't enough Cr(VI) to make hazardous levels of the Metal chromate

chromium in Cr(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

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

copper {copper sulphate pentahydrate}

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

lead {lead di(acetate)}

There isn't enough Cr(VI) to make hazardous levels of the Metal chromate. Most suitable compound selected.

mercury {mercury dichloride}

Reasonable worst case CLP species based on hazard statements/molecular weight and assuming no evidence for the use of explosives. (edit as required)

nickel {nickel dibromate}

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

selenium {nickel selenate}

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

zinc {zinc chromate}

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

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

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

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2026.26.6955.12551 (26 Jan 2026)
HazWasteOnline Database: 2026.27.6959.12557 (27 Jan 2026)

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
GB MCL List v6.0 - version 6.0 of 15th February 2025
GB MCL List v7.0 - version 7.0 of 23rd September 2025

Waste Classification Report

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

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

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

0DLOO-PUWCH-YDPO7

Report is invalid if pages are removed.

Job name

Eastlands, Jaguar Land Rover, Liverpool

Description/Comments

Project

Eastlands, Jaguar Land Rover, Liverpool

Site

Eastlands, Jaguar Land Rover, Liverpool

Classified by

Name:
Hugh O Leary
Date:
24 Apr 2026 10:46 GMT
Telephone:
07342938690

Company:
LandWise Consulting Ltd
Cambuslang
Glasgow
G72 8BD

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

HazWasteOnline™ Certification: **CERTIFIED**

Course	Date
Hazardous Waste Classification	04 Dec 2025

Next 3 year Refresher due by Dec 2028

Purpose of classification

2 - Material Characterisation

Address of the waste

Shanks Way, Barrhead **Post Code** G781SP

SIC for the process giving rise to the waste

41201 Construction of commercial buildings

Description of industry/producer giving rise to the waste

Car manufacturing and land development

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

Car manufacturing and waste soils from the development of other sites within the Halewood Facility

Description of the waste

Very sandy gravelly clay locally reddish brown clayey gravelly sand with frequent extraneous material including brick, plastic, timber, metal, glass and rare cobble and boulder sized concrete. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithology including demolition rubble.
Very sandy gravelly clay with frequent extraneous material including bricks, plastic, ceramics, glass and wood. Sand is fine to coarse.
very sandy gravelly clay locally reddish brown clayey gravelly sand with frequent extraneous material including brick, plastic, timber, metal, glass and rare cobble and boulder sized concrete. Sand is fine to coarse

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	SP01	0.1	Non Hazardous		3
2	SP01[2]	1.5	Non Hazardous		5
3	SP02	0.1	Non Hazardous		7
4	SP02[2]	2.2	Non Hazardous		9
5	SP03	0.2	Non Hazardous		11
6	SP03[2]	1.2	Non Hazardous		13
7	SP04	0.2	Non Hazardous		15
8	SP04[2]	1	Non Hazardous		17
9	SP05	0.2	Non Hazardous		19
10	SP05[2]	1.5	Non Hazardous		21
11	SP06	0.1	Non Hazardous		23
12	SP06[2]	1.2	Non Hazardous		25
13	SP07	0.2	Non Hazardous		27
14	SP07[2]	0.5	Non Hazardous		29
15	SP07[3]	1.7	Non Hazardous		31
16	SP08	0.2	Non Hazardous		33
17	SP08[2]	1.5	Non Hazardous		35
18	SP09	0.2	Non Hazardous		37
19	SP09[2]	0.6	Non Hazardous		39
20	SP09[3]	2	Non Hazardous		41

Related documents

#	Name	Description
1	Example worst case waste stream template: 17 05 04 or 17 05 03 *	waste stream template used to create this Job

Report

Created by: Hugh O Leary

Created date: 24 Apr 2026 10:46 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	43
Appendix B: Rationale for selection of metal species	43
Appendix C: Version	44

Classification of sample: SP01

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

Sample details

Sample name:
SP01
Sample Depth:
0.1 m

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

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				8.3 mg/kg	1.895	15.725 mg/kg	0.00157 %		
4	barium { barium oxide }		215-127-9	1304-28-5		95 mg/kg	1.117	106.068 mg/kg	0.0106 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.5 mg/kg	8.868	4.434 mg/kg	0.000443 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.4 mg/kg	5.719	2.288 mg/kg	0.000229 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.556 mg/kg	0.0000556 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25 mg/kg	1.462	36.539 mg/kg	0.00365 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				25 mg/kg	2.27	56.75 mg/kg	0.00568 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		31 mg/kg	3.929	121.801 mg/kg	0.0122 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	57 mg/kg	1.56	88.909 mg/kg	0.0057 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.07 mg/kg	1.353	0.0947 mg/kg	0.00000947 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		21 mg/kg	5.358	112.525 mg/kg	0.0113 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				33 mg/kg	1.785	58.911 mg/kg	0.00589 %		
		023-001-00-8	215-239-8	1314-62-1							
16		zinc { zinc chromate }				79 mg/kg	2.774	219.158 mg/kg	0.0219 %		
		024-007-00-3	236-878-9	13530-65-9							
17		confirm TPH has NOT arisen from diesel or petrol				☑					
				TPH_CONFIRM							
								Total:	0.0792 %		

Key

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

Classification of sample: SP01[2]

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

Sample details

Sample name:
SP01[2]
Sample Depth:
1.5 m

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

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				9.7 mg/kg	1.895	18.377 mg/kg	0.00184 %		
4	barium { barium oxide }		215-127-9	1304-28-5		150 mg/kg	1.117	167.476 mg/kg	0.0167 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.7 mg/kg	8.868	6.208 mg/kg	0.000621 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.9 mg/kg	5.719	5.147 mg/kg	0.000515 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.1 mg/kg	1.855	0.185 mg/kg	0.0000185 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25 mg/kg	1.462	36.539 mg/kg	0.00365 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				25 mg/kg	2.27	56.75 mg/kg	0.00568 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		29 mg/kg	3.929	113.943 mg/kg	0.0114 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	42 mg/kg	1.56	65.512 mg/kg	0.0042 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.11 mg/kg	1.353	0.149 mg/kg	0.0000149 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		21 mg/kg	5.358	112.525 mg/kg	0.0113 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		**<LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				31	mg/kg	1.785	55.341	mg/kg	0.00553 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				75	mg/kg	2.774	208.061	mg/kg	0.0208 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
18		pH				8.6	pH		8.6	pH	8.6 pH		
				PH									
										Total:	0.0823 %		

Key

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

Classification of sample: SP02

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

Sample details

Sample name:
SP02
Sample Depth:
0.1 m

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

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				7.9 mg/kg	1.895	14.967 mg/kg	0.0015 %		
4	barium { barium oxide }		215-127-9	1304-28-5		110 mg/kg	1.117	122.816 mg/kg	0.0123 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.5 mg/kg	8.868	4.434 mg/kg	0.000443 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.3 mg/kg	5.719	1.716 mg/kg	0.000172 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.556 mg/kg	0.0000556 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		29 mg/kg	1.462	42.385 mg/kg	0.00424 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				29 mg/kg	2.27	65.83 mg/kg	0.00658 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		28 mg/kg	3.929	110.013 mg/kg	0.011 %		
11	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 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.08 mg/kg	1.353	0.108 mg/kg	0.0000108 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		20 mg/kg	5.358	107.166 mg/kg	0.0107 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				41	mg/kg	1.785	73.193	mg/kg	0.00732 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				78	mg/kg	2.774	216.383	mg/kg	0.0216 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
										Total:	0.0797 %		

Key

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

Classification of sample: SP02[2]

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

Sample details

Sample name:
SP02[2]
Sample Depth:
2.2 m
Moisture content:
14%
(no correction)

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

Hazard properties

None identified

Determinands

Moisture content: 14% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		0.003 %		0.003 %	0.003 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		Yes					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				9.7 mg/kg	1.895	18.377 mg/kg	0.00184 %		
4	barium { barium oxide }		215-127-9	1304-28-5		140 mg/kg	1.117	156.311 mg/kg	0.0156 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.6 mg/kg	8.868	5.321 mg/kg	0.000532 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.7 mg/kg	5.719	4.003 mg/kg	0.0004 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.556 mg/kg	0.0000556 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25 mg/kg	1.462	36.539 mg/kg	0.00365 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				25 mg/kg	2.27	56.75 mg/kg	0.00568 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		34 mg/kg	3.929	133.588 mg/kg	0.0134 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	120 mg/kg	1.56	187.178 mg/kg	0.012 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.23 mg/kg	1.353	0.311 mg/kg	0.0000311 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		20 mg/kg	5.358	107.166 mg/kg	0.0107 %		

#		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		selenium { nickel selenate }				<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<**LOD**
		028-031-00-5	239-125-2	15060-62-5									
15		vanadium { divanadium pentaoxide; vanadium pentoxide }				33	mg/kg	1.785	58.911	mg/kg	0.00589 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				98	mg/kg	2.774	271.866	mg/kg	0.0272 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
18		pH				8.5	pH		8.5	pH	8.5 pH		
				PH									
										Total:	0.1 %		

Key

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

Classification of sample: SP03

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

Sample details

Sample name:
SP03
Sample Depth:
0.2 m

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

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				8.3 mg/kg	1.895	15.725 mg/kg	0.00157 %		
4	barium { barium oxide }		215-127-9	1304-28-5		89 mg/kg	1.117	99.369 mg/kg	0.00994 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.5 mg/kg	8.868	4.434 mg/kg	0.000443 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.3 mg/kg	5.719	1.716 mg/kg	0.000172 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.371 mg/kg	0.0000371 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		21 mg/kg	1.462	30.693 mg/kg	0.00307 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				21 mg/kg	2.27	47.67 mg/kg	0.00477 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		27 mg/kg	3.929	106.084 mg/kg	0.0106 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	36 mg/kg	1.56	56.153 mg/kg	0.0036 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.06 mg/kg	1.353	0.0812 mg/kg	0.00000812 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		20 mg/kg	5.358	107.166 mg/kg	0.0107 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		**<LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				30	mg/kg	1.785	53.556	mg/kg	0.00536 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				77	mg/kg	2.774	213.609	mg/kg	0.0214 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
										Total:	0.0717 %		

Key

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

Classification of sample: SP03[2]

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

Sample details

Sample name:
SP03[2]
Sample Depth:
1.2 m

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

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				12 mg/kg	1.895	22.734 mg/kg	0.00227 %		
4	barium { barium oxide }		215-127-9	1304-28-5		190 mg/kg	1.117	212.136 mg/kg	0.0212 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				1.1 mg/kg	8.868	9.755 mg/kg	0.000975 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1.8 mg/kg	5.719	10.295 mg/kg	0.00103 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.4 mg/kg	1.855	0.742 mg/kg	0.0000742 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		36 mg/kg	1.462	52.616 mg/kg	0.00526 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				36 mg/kg	2.27	81.72 mg/kg	0.00817 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		46 mg/kg	3.929	180.736 mg/kg	0.0181 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	140 mg/kg	1.56	218.374 mg/kg	0.014 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.2 mg/kg	1.353	0.271 mg/kg	0.0000271 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		23 mg/kg	5.358	123.241 mg/kg	0.0123 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				68	mg/kg	1.785	121.393	mg/kg	0.0121 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				130	mg/kg	2.774	360.639	mg/kg	0.0361 %		
		024-007-00-3	236-878-9	13530-65-9									
17		TPH (C6 to C40) petroleum group				12.61	mg/kg		12.61	mg/kg	0.00126 %		
				TPH									
18		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
19		pH				8.6	pH		8.6	pH	8.6 pH		
				PH									
										Total:	0.133 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
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 concentration of: 100 mg/kg (0.01%) because: 12.61mg//kg across two aromatic fractions (C16-C35) was recorded. We do not consider 12.61mg/kg of a heavy end hydrocarbon to be flammable especially considering moisture content and the fact that the soils are proposed to be excavated, transported and dumped which will lead to a further reduction (air stripping)

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00126%)

Classification of sample: SP04

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

Sample details

Sample name:
SP04
Sample Depth:
0.2 m

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

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				8.3 mg/kg	1.895	15.725 mg/kg	0.00157 %		
4	barium { barium oxide }		215-127-9	1304-28-5		91 mg/kg	1.117	101.602 mg/kg	0.0102 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.5 mg/kg	8.868	4.434 mg/kg	0.000443 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.3 mg/kg	5.719	1.716 mg/kg	0.000172 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		26 mg/kg	1.855	48.219 mg/kg	0.00482 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		22 mg/kg	1.462	32.154 mg/kg	0.00322 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				22 mg/kg	2.27	49.94 mg/kg	0.00499 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		29 mg/kg	3.929	113.943 mg/kg	0.0114 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	39 mg/kg	1.56	60.833 mg/kg	0.0039 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.06 mg/kg	1.353	0.0812 mg/kg	0.00000812 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		21 mg/kg	5.358	112.525 mg/kg	0.0113 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				29	mg/kg	1.785	51.77	mg/kg	0.00518 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				79	mg/kg	2.774	219.158	mg/kg	0.0219 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
										Total:	0.079 %		

Key

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

Classification of sample: SP04[2]

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

Sample details

Sample name:
SP04[2]

Sample Depth:
1 m

LoW Code:

Chapter:
17: Construction and Demolition Wastes (including excavated soil from contaminated sites)

Entry:
17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				11 mg/kg	1.895	20.84 mg/kg	0.00208 %		
4	barium { barium oxide }		215-127-9	1304-28-5		330 mg/kg	1.117	368.447 mg/kg	0.0368 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.8 mg/kg	8.868	7.094 mg/kg	0.000709 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.8 mg/kg	5.719	4.575 mg/kg	0.000458 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.371 mg/kg	0.0000371 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		31 mg/kg	1.462	45.308 mg/kg	0.00453 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				31 mg/kg	2.27	70.37 mg/kg	0.00704 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		35 mg/kg	3.929	137.517 mg/kg	0.0138 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	64 mg/kg	1.56	99.828 mg/kg	0.0064 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.12 mg/kg	1.353	0.162 mg/kg	0.0000162 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		27 mg/kg	5.358	144.675 mg/kg	0.0145 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		**<LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				42	mg/kg	1.785	74.978	mg/kg	0.0075 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				89	mg/kg	2.774	246.899	mg/kg	0.0247 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
18		pH				9	pH		9	pH	9pH		
				PH									
										Total:	0.119 %		

Key

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

Classification of sample: SP05

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

Sample details

Sample name:
SP05
Sample Depth:
0.2 m

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

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				7.3 mg/kg	1.895	13.83 mg/kg	0.00138 %		
4	barium { barium oxide }		215-127-9	1304-28-5		89 mg/kg	1.117	99.369 mg/kg	0.00994 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.4 mg/kg	8.868	3.547 mg/kg	0.000355 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.2 mg/kg	5.719	1.144 mg/kg	0.000114 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.556 mg/kg	0.0000556 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25 mg/kg	1.462	36.539 mg/kg	0.00365 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				25 mg/kg	2.27	56.75 mg/kg	0.00568 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		30 mg/kg	3.929	117.872 mg/kg	0.0118 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	36 mg/kg	1.56	56.153 mg/kg	0.0036 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.06 mg/kg	1.353	0.0812 mg/kg	0.00000812 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		19 mg/kg	5.358	101.808 mg/kg	0.0102 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		**<LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				28 mg/kg	1.785	49.985 mg/kg	0.005 %		
		023-001-00-8	215-239-8	1314-62-1							
16		zinc { zinc chromate }				79 mg/kg	2.774	219.158 mg/kg	0.0219 %		
		024-007-00-3	236-878-9	13530-65-9							
17		confirm TPH has NOT arisen from diesel or petrol				☑					
				TPH_CONFIRM							
								Total:	0.0737 %		

Key

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

Classification of sample: SP05[2]

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

Sample details

Sample name:
SP05[2]
Sample Depth:
1.5 m
Moisture content:
16%
(no correction)

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

Hazard properties

None identified

Determinands

Moisture content: 16% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				11 mg/kg	1.895	20.84 mg/kg	0.00208 %		
4	barium { barium oxide }		215-127-9	1304-28-5		130 mg/kg	1.117	145.146 mg/kg	0.0145 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.7 mg/kg	8.868	6.208 mg/kg	0.000621 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.6 mg/kg	5.719	3.432 mg/kg	0.000343 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.5 mg/kg	1.855	0.927 mg/kg	0.0000927 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		31 mg/kg	1.462	45.308 mg/kg	0.00453 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				31 mg/kg	2.27	70.37 mg/kg	0.00704 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		49 mg/kg	3.929	192.524 mg/kg	0.0193 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	150 mg/kg	1.56	233.972 mg/kg	0.015 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.41 mg/kg	1.353	0.555 mg/kg	0.0000555 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		22 mg/kg	5.358	117.883 mg/kg	0.0118 %		

#		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		selenium { nickel selenate }				<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<**LOD**
		028-031-00-5	239-125-2	15060-62-5									
15		vanadium { divanadium pentaoxide; vanadium pentoxide }				68	mg/kg	1.785	121.393	mg/kg	0.0121 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				120	mg/kg	2.774	332.898	mg/kg	0.0333 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
18		pH				8.4	pH		8.4	pH	8.4 pH		
				PH									
										Total:	0.121 %		

Key

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

Classification of sample: SP06

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

Sample details

Sample name:
SP06
Sample Depth:
0.1 m

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

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				7.7 mg/kg	1.895	14.588 mg/kg	0.00146 %		
4	barium { barium oxide }		215-127-9	1304-28-5		150 mg/kg	1.117	167.476 mg/kg	0.0167 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.6 mg/kg	8.868	5.321 mg/kg	0.000532 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.2 mg/kg	5.719	1.144 mg/kg	0.000114 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.5 mg/kg	1.855	0.927 mg/kg	0.0000927 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25 mg/kg	1.462	36.539 mg/kg	0.00365 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				25 mg/kg	2.27	56.75 mg/kg	0.00568 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		36 mg/kg	3.929	141.446 mg/kg	0.0141 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	44 mg/kg	1.56	68.632 mg/kg	0.0044 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.06 mg/kg	1.353	0.0812 mg/kg	0.00000812 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		22 mg/kg	5.358	117.883 mg/kg	0.0118 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		**<LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				32	mg/kg	1.785	57.126	mg/kg	0.00571 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				86	mg/kg	2.774	238.577	mg/kg	0.0239 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
										Total:	0.0882 %		

Key

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

Classification of sample: SP06[2]

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

Sample details

Sample name:
SP06[2]
Sample Depth:
1.2 m

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

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				15 mg/kg	1.895	28.418 mg/kg	0.00284 %		
4	barium { barium oxide }		215-127-9	1304-28-5		140 mg/kg	1.117	156.311 mg/kg	0.0156 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.6 mg/kg	8.868	5.321 mg/kg	0.000532 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.6 mg/kg	5.719	3.432 mg/kg	0.000343 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.556 mg/kg	0.0000556 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		27 mg/kg	1.462	39.462 mg/kg	0.00395 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				27 mg/kg	2.27	61.29 mg/kg	0.00613 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		81 mg/kg	3.929	318.253 mg/kg	0.0318 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	160 mg/kg	1.56	249.57 mg/kg	0.016 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.22 mg/kg	1.353	0.298 mg/kg	0.0000298 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		22 mg/kg	5.358	117.883 mg/kg	0.0118 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				38	mg/kg	1.785	67.837	mg/kg	0.00678 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				100	mg/kg	2.774	277.415	mg/kg	0.0277 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
18		pH				8.5	pH		8.5	pH	8.5 pH		
				PH									
										Total:	0.124 %		

Key

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

Classification of sample: SP07

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

Sample details

Sample name:
SP07
Sample Depth:
0.2 m

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

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				8.8 mg/kg	1.895	16.672 mg/kg	0.00167 %		
4	barium { barium oxide }		215-127-9	1304-28-5		120 mg/kg	1.117	133.981 mg/kg	0.0134 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.6 mg/kg	8.868	5.321 mg/kg	0.000532 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		<0.2 mg/kg	5.719	<1.144 mg/kg	<0.000114 %		**<LOD**
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.556 mg/kg	0.0000556 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		29 mg/kg	1.462	42.385 mg/kg	0.00424 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				29 mg/kg	2.27	65.83 mg/kg	0.00658 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		34 mg/kg	3.929	133.588 mg/kg	0.0134 %		
11	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 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.06 mg/kg	1.353	0.0812 mg/kg	0.00000812 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		24 mg/kg	5.358	128.6 mg/kg	0.0129 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		**<LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				34	mg/kg	1.785	60.696	mg/kg	0.00607 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				100	mg/kg	2.774	277.415	mg/kg	0.0277 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
										Total:	0.0902 %		

Key

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

Classification of sample: SP07[2]

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

Sample details

Sample name:
SP07[2]
Sample Depth:
0.5 m

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

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		0.004 %		0.004 %	0.004 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		Yes					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				12 mg/kg	1.895	22.734 mg/kg	0.00227 %		
4	barium { barium oxide }		215-127-9	1304-28-5		140 mg/kg	1.117	156.311 mg/kg	0.0156 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.7 mg/kg	8.868	6.208 mg/kg	0.000621 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.7 mg/kg	5.719	4.003 mg/kg	0.0004 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.556 mg/kg	0.0000556 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		33 mg/kg	1.462	48.231 mg/kg	0.00482 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				33 mg/kg	2.27	74.91 mg/kg	0.00749 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		46 mg/kg	3.929	180.736 mg/kg	0.0181 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	290 mg/kg	1.56	452.346 mg/kg	0.029 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.56 mg/kg	1.353	0.758 mg/kg	0.0000758 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		22 mg/kg	5.358	117.883 mg/kg	0.0118 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		**<LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				51	mg/kg	1.785	91.044	mg/kg	0.0091 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				130	mg/kg	2.774	360.639	mg/kg	0.0361 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
18		pH				9	pH		9	pH	9pH		
				PH									
										Total:	0.139 %		

Key

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

Classification of sample: SP07[3]

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

Sample details

Sample name:
SP07[3]
Sample Depth:
1.7 m

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

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		0.002 %		0.002 %	0.002 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		Yes					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				16 mg/kg	1.895	30.312 mg/kg	0.00303 %		
4	barium { barium oxide }		215-127-9	1304-28-5		160 mg/kg	1.117	178.641 mg/kg	0.0179 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				1.1 mg/kg	8.868	9.755 mg/kg	0.000975 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		1 mg/kg	5.719	5.719 mg/kg	0.000572 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.556 mg/kg	0.0000556 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25 mg/kg	1.462	36.539 mg/kg	0.00365 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				25 mg/kg	2.27	56.75 mg/kg	0.00568 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		63 mg/kg	3.929	247.53 mg/kg	0.0248 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	120 mg/kg	1.56	187.178 mg/kg	0.012 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.8 mg/kg	1.353	1.083 mg/kg	0.000108 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		29 mg/kg	5.358	155.391 mg/kg	0.0155 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				37	mg/kg	1.785	66.052	mg/kg	0.00661 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				150	mg/kg	2.774	416.122	mg/kg	0.0416 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
18		pH				8.3	pH		8.3	pH	8.3 pH		
				PH									
										Total:	0.134 %		

Key

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

Classification of sample: SP08

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

Sample details

Sample name:
SP08
Sample Depth:
0.2 m

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

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				8.3 mg/kg	1.895	15.725 mg/kg	0.00157 %		
4	barium { barium oxide }		215-127-9	1304-28-5		100 mg/kg	1.117	111.651 mg/kg	0.0112 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.5 mg/kg	8.868	4.434 mg/kg	0.000443 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.4 mg/kg	5.719	2.288 mg/kg	0.000229 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.3 mg/kg	1.855	0.556 mg/kg	0.0000556 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		26 mg/kg	1.462	38 mg/kg	0.0038 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				26 mg/kg	2.27	59.02 mg/kg	0.0059 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		32 mg/kg	3.929	125.73 mg/kg	0.0126 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	48 mg/kg	1.56	74.871 mg/kg	0.0048 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.08 mg/kg	1.353	0.108 mg/kg	0.0000108 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		22 mg/kg	5.358	117.883 mg/kg	0.0118 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		**<LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				34	mg/kg	1.785	60.696	mg/kg	0.00607 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				87	mg/kg	2.774	241.351	mg/kg	0.0241 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
										Total:	0.0826 %		

Key

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

Classification of sample: SP08[2]

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

Sample details

Sample name:
SP08[2]
Sample Depth:
1.5 m
Moisture content:
13%
(no correction)

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

Hazard properties

None identified

Determinands

Moisture content: 13% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2		asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3		arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				8.7 mg/kg	1.895	16.482 mg/kg	0.00165 %		
4		barium { barium oxide }		215-127-9	1304-28-5		110 mg/kg	1.117	122.816 mg/kg	0.0123 %		
5		beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.5 mg/kg	8.868	4.434 mg/kg	0.000443 %		
6		boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.7 mg/kg	5.719	4.003 mg/kg	0.0004 %		
7		cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.4 mg/kg	1.855	0.742 mg/kg	0.0000742 %		
8		chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		26 mg/kg	1.462	38 mg/kg	0.0038 %		
9		chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				26 mg/kg	2.27	59.02 mg/kg	0.0059 %		
10		copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		29 mg/kg	3.929	113.943 mg/kg	0.0114 %		
11		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	61 mg/kg	1.56	95.149 mg/kg	0.0061 %		
12		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.14 mg/kg	1.353	0.189 mg/kg	0.0000189 %		
13		nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		19 mg/kg	5.358	101.808 mg/kg	0.0102 %		

#		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		selenium { nickel selenate }				<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<**LOD**
		028-031-00-5	239-125-2	15060-62-5									
15		vanadium { divanadium pentaoxide; vanadium pentoxide }				40	mg/kg	1.785	71.407	mg/kg	0.00714 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				75	mg/kg	2.774	208.061	mg/kg	0.0208 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
18		pH				8.6	pH		8.6	pH	8.6 pH		
				PH									
										Total:	0.0802 %		

Key

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

Classification of sample: SP09

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

Sample details

Sample name:
SP09
Sample Depth:
0.2 m

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

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				7.6 mg/kg	1.895	14.398 mg/kg	0.00144 %		
4	barium { barium oxide }		215-127-9	1304-28-5		94 mg/kg	1.117	104.952 mg/kg	0.0105 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.5 mg/kg	8.868	4.434 mg/kg	0.000443 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.2 mg/kg	5.719	1.144 mg/kg	0.000114 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.371 mg/kg	0.0000371 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		27 mg/kg	1.462	39.462 mg/kg	0.00395 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				27 mg/kg	2.27	61.29 mg/kg	0.00613 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		27 mg/kg	3.929	106.084 mg/kg	0.0106 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	29 mg/kg	1.56	45.235 mg/kg	0.0029 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		22 mg/kg	5.358	117.883 mg/kg	0.0118 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				30 mg/kg	1.785	53.556 mg/kg	0.00536 %		
		023-001-00-8	215-239-8	1314-62-1							
16		zinc { zinc chromate }				63 mg/kg	2.774	174.771 mg/kg	0.0175 %		
		024-007-00-3	236-878-9	13530-65-9							
17		confirm TPH has NOT arisen from diesel or petrol				☑					
				TPH_CONFIRM							
								Total:	0.0707 %		

Key

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

Classification of sample: SP09[2]

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

Sample details

Sample name:
SP09[2]
Sample Depth:
0.6 m

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

Hazard properties

None identified

Determinands

Moisture content: None

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		1.0e-05 %		1.0e-05 %	0.00001 %		
2	asbestos fibres detected (Yes/No)			ACM_FIBRES		No					
3	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				12 mg/kg	1.895	22.734 mg/kg	0.00227 %		
4	barium { barium oxide }		215-127-9	1304-28-5		160 mg/kg	1.117	178.641 mg/kg	0.0179 %		
5	beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.7 mg/kg	8.868	6.208 mg/kg	0.000621 %		
6	boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.5 mg/kg	5.719	2.86 mg/kg	0.000286 %		
7	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.2 mg/kg	1.855	0.371 mg/kg	0.0000371 %		
8	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		35 mg/kg	1.462	51.154 mg/kg	0.00512 %		
9	chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				35 mg/kg	2.27	79.45 mg/kg	0.00795 %		
10	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		36 mg/kg	3.929	141.446 mg/kg	0.0141 %		
11	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	110 mg/kg	1.56	171.58 mg/kg	0.011 %		
12	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.26 mg/kg	1.353	0.352 mg/kg	0.0000352 %		
13	nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		22 mg/kg	5.358	117.883 mg/kg	0.0118 %		
14	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		**<LOD**

#		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		vanadium { divanadium pentaoxide; vanadium pentoxide }				62	mg/kg	1.785	110.681	mg/kg	0.0111 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				110	mg/kg	2.774	305.156	mg/kg	0.0305 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
18		pH				8.6	pH		8.6	pH	8.6 pH		
				PH									
										Total:	0.113 %		

Key

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

Classification of sample: SP09[3]

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

Sample details

Sample name:
SP09[3]
Sample Depth:
2 m
Moisture content:
14%
(no correction)

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

Hazard properties

None identified

Determinands

Moisture content: 14% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		0.002 %		0.002 %	0.002 %		
2		asbestos fibres detected (Yes/No)			ACM_FIBRES		Yes					
3		arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }	033-005-00-1				8.1 mg/kg	1.895	15.346 mg/kg	0.00153 %		
4		barium { barium oxide }		215-127-9	1304-28-5		95 mg/kg	1.117	106.068 mg/kg	0.0106 %		
5		beryllium { beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex }	004-002-00-2				0.5 mg/kg	8.868	4.434 mg/kg	0.000443 %		
6		boron { boric acid; [1] boric acid; [2] }	005-007-00-2	233-139-2 [1] 234-343-4 [2]	10043-35-3 [1] 11113-50-1 [2]		0.8 mg/kg	5.719	4.575 mg/kg	0.000458 %		
7		cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.1 mg/kg	1.855	0.185 mg/kg	0.0000185 %		
8		chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		32 mg/kg	1.462	46.77 mg/kg	0.00468 %		
9		chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				32 mg/kg	2.27	72.64 mg/kg	0.00726 %		
10		copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		28 mg/kg	3.929	110.013 mg/kg	0.011 %		
11		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	98 mg/kg	1.56	152.862 mg/kg	0.0098 %		
12		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.24 mg/kg	1.353	0.325 mg/kg	0.0000325 %		
13		nickel { nickel dibromate }	028-053-00-5	238-596-1	14550-87-9		18 mg/kg	5.358	96.45 mg/kg	0.00964 %		

#		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		selenium { nickel selenate }				<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<**LOD**
		028-031-00-5	239-125-2	15060-62-5									
15		vanadium { divanadium pentaoxide; vanadium pentoxide }				35	mg/kg	1.785	62.481	mg/kg	0.00625 %		
		023-001-00-8	215-239-8	1314-62-1									
16		zinc { zinc chromate }				63	mg/kg	2.774	174.771	mg/kg	0.0175 %		
		024-007-00-3	236-878-9	13530-65-9									
17		confirm TPH has NOT arisen from diesel or petrol				☑							
				TPH_CONFIRM									
18		pH				8.6	pH		8.6	pH	8.6 pH		
				PH									
										Total:	0.0812 %		

Key

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

Appendix A: Classifier defined and non GB MCL determinands

asbestos fibres detected (Yes/No) (CAS Number: ACM_FIBRES)

Description/Comments: not classified, information only
Data source: N/A
Data source date: 15 Jan 2020
Hazard Statements: None.

barium oxide (EC Number: 215-127-9, CAS Number: 1304-28-5)

Description/Comments: Data from ECHA's C&L Inventory Database, Sigma Aldrich SDS dated 6/2/20
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/88825
Data source date: 02 Apr 2020
Hazard Statements: Acute Tox. 3; H301 , Skin Corr. 1B; H314 , Eye Dam. 1; H318 , Acute Tox. 1; H332

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

confirm TPH has NOT arisen from diesel or petrol (CAS Number: TPH_CONFIRM)

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

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

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

Description/Comments: Unknown Oil

Hazard statements taken from WM3 1st Edition 2015
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 acid and its salts with the exception of those specified elsewhere in this Annex}

Worst case CLP species based on hazard statements/molecular weight and conversion factor for arsenic acid H3AsO4. (edit as required)

barium {barium oxide}

Specific chromium compound not known

beryllium {beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex}

Worst case CLP species based on hazard statements/molecular weight and conversion factor for beryllium chloride. (edit as required)

boron {boric acid; [1] boric acid; [2]}

Reasonable worst case CLP species based on hazard statements/molecular weight and assuming water is or has been present. (edit as required)

cadmium {cadmium sulfate}

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

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

Specific chromium compound not known

chromium in Cr(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

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

copper {copper sulphate pentahydrate}

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

lead {lead chromate}

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

mercury {mercury dichloride}

Reasonable worst case CLP species based on hazard statements/molecular weight and assuming no evidence for the use of explosives. (edit as required)

nickel {nickel dibromate}

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

selenium {nickel selenate}

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

vanadium {divanadium pentaoxide; vanadium pentoxide}

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

zinc {zinc chromate}

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

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2026.83.7020.12656 (25 Mar 2026)
HazWasteOnline Database: 2026.83.7020.12656 (25 Mar 2026)

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
GB MCL List v6.0 - version 6.0 of 15th February 2025
GB MCL List v7.0 - version 7.0 of 23rd September 2025

APPENDIX 7 – GEOTECHNCAL TESTING CERTIFICATE

LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Certificate No : **26/173 - 02-1**

To : **Hugh O' Leary**

Client : **LandWise Consulting Ltd.**
43 Buchanan Drive
Cambuslang
Glasgow
G72 8BD

LABORATORY TESTING OF SOIL

Introduction

We refer to samples taken from Jaguar Landrover, Halewood, Eastlands, Liverpool and delivered to our laboratory on 07th April 2026.

Material & Source

Sample Reference	:	See Report Plates
Sampled By	:	Client
Sampling Certificate	:	Not Supplied
Location	:	See Report Plates
Description	:	See Page 2
Date Sampled	:	Not Supplied
Date Tested	:	07th April 2026 Onwards
Source	:	LW25-136 - Jaguar Landrover, Halewood, Eastlands, Liverpool

Test Results

As Detailed On Page 2 to Page 25 inclusive

Comments

The results contained in this report relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Remarks

Approved for Issue

T McLelland (Director)

Date 21/04/2026

UKAS TESTING
2643

TRIAL PIT	SAMPLE	DEPTH (m)	SAMPLE DESCRIPTION
SP01	B	1.50	Brown very gravelly very sandy CLAY with root fibres and cobbles. Gravel is fine to coarse.
SP02	B	2.20	Brown very gravelly very sandy CLAY with brick fragments and root fibres. Gravel is fine to coarse.
SP03	B	1.20	Brown very gravelly very sandy CLAY with brick fragments, root fibres and cobbles. Gravel is fine to coarse.
SP04	B	1.00	Brown very gravelly very sandy CLAY with brick fragments and root fibres. Gravel is fine to coarse.
SP05	B	1.50	Brown very gravelly very sandy CLAY with root fibres and cobbles. Gravel is fine to coarse.
SP06	B	1.20	Brown very gravelly very sandy CLAY with root fibres. Gravel is fine to coarse.
SP07	B	0.50	Brown very gravelly very sandy CLAY with root fibres. Gravel is fine to coarse.
SP07	B	1.70	Brown very gravelly very sandy CLAY with root fibres and black staining. Gravel is fine to coarse.
SP08	B	1.50	Brown very gravelly very sandy CLAY with root fibres. Gravel is fine to coarse.
SP09	B	0.60	Brown very gravelly very sandy CLAY with root fibres. Gravel is fine to coarse.
SP09	B	2.00	Brown very gravelly very sandy CLAY with root fibres. Gravel is fine to coarse.

SUMMARY OF SAMPLE DESCRIPTIONS

MATtest Limited
materials testing & consultancy

TRIAL PIT	SAMPLE	DEPTH (m)	WATER CONTENT (%)
SP01	B	1.50	18.2
SP02	B	2.20	21.0
SP03	B	1.20	17.7
SP04	B	1.00	21.3
SP05	B	1.50	23.3
SP06	B	1.20	14.3
SP07	B	0.50	16.9
SP07	B	1.70	26.8
SP08	B	1.50	21.2
SP09	B	0.60	15.8
SP09	B	2.00	18.0

BS EN ISO 17892-1 : 2014 + A1 : 2022
BS 1377-2 : 2022

SUMMARY OF WATER CONTENT TEST RESULTS

Borehole	SP01
Sample	B
Depth (m)	1.50



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	96	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	96	-	-	**2C, 7F,**	
50.0	96	-	-		
37.5	95	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	92	-	-		
20.0	89	-	-		
14.0	88	-	-		
10.0	86	-	-	**PERCENTAGE SOIL TYPES**	
6.3	82	-	-		
5.0	80	-	-		
3.350	77	-	-		
2.000	74	-	-		
1.180	71	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	68	-	-		
0.600	67	-	-		
0.425	64	-	-		
0.300	59	-	-		
0.200	51	-	-		
0.150	48	-	-		
0.063	41	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
/	41	33	22	4

D10	D60	Specification
0.063	0.325	
UNIFORMITY COEFFICIENT	**5**	-

Remarks

₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	SP02
Sample	B
Depth (m)	2.20



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**2C, 7A, 7E, 7F, 7I,**	
50.0	100	-	-		
37.5	99	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	96	-	-		
20.0	91	-	-		
14.0	87	-	-		
10.0	82	-	-	**PERCENTAGE SOIL TYPES**	
6.3	77	-	-		
5.0	76	-	-		
3.350	73	-	-		
2.000	70	-	-		
1.180	68	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	66	-	-		
0.600	65	-	-		
0.425	62	-	-		
0.300	57	-	-		
0.200	48	-	-		
0.150	44	-	-		
0.063	38	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
/	38	32	30	0

D10	D60	Specification
0.063	0.375	
UNIFORMITY COEFFICIENT	**6**	-

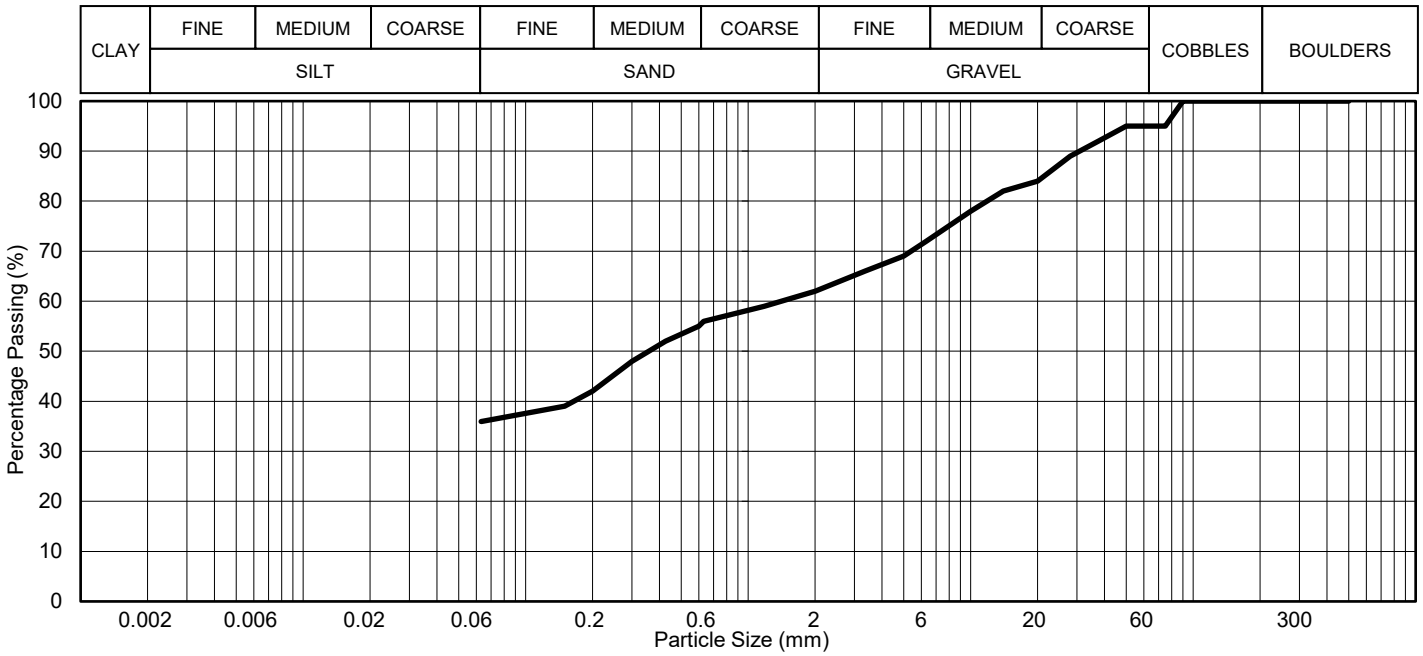
Remarks

₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	SP03
Sample	B
Depth (m)	1.20



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	95	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	95	-	-	**2C, 7F,**	
50.0	95	-	-		
37.5	92	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	89	-	-		
20.0	84	-	-		
14.0	82	-	-		
10.0	78	-	-	**PERCENTAGE SOIL TYPES**	
6.3	72	-	-		
5.0	69	-	-		
3.350	66	-	-		
2.000	62	-	-		
1.180	59	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	56	-	-		
0.600	55	-	-		
0.425	52	-	-		
0.300	48	-	-		
0.200	42	-	-		
0.150	39	-	-		
0.063	36	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
/	36	26	33	5

D10	D60	Specification
0.063	1.453	
UNIFORMITY COEFFICIENT	**23**	-

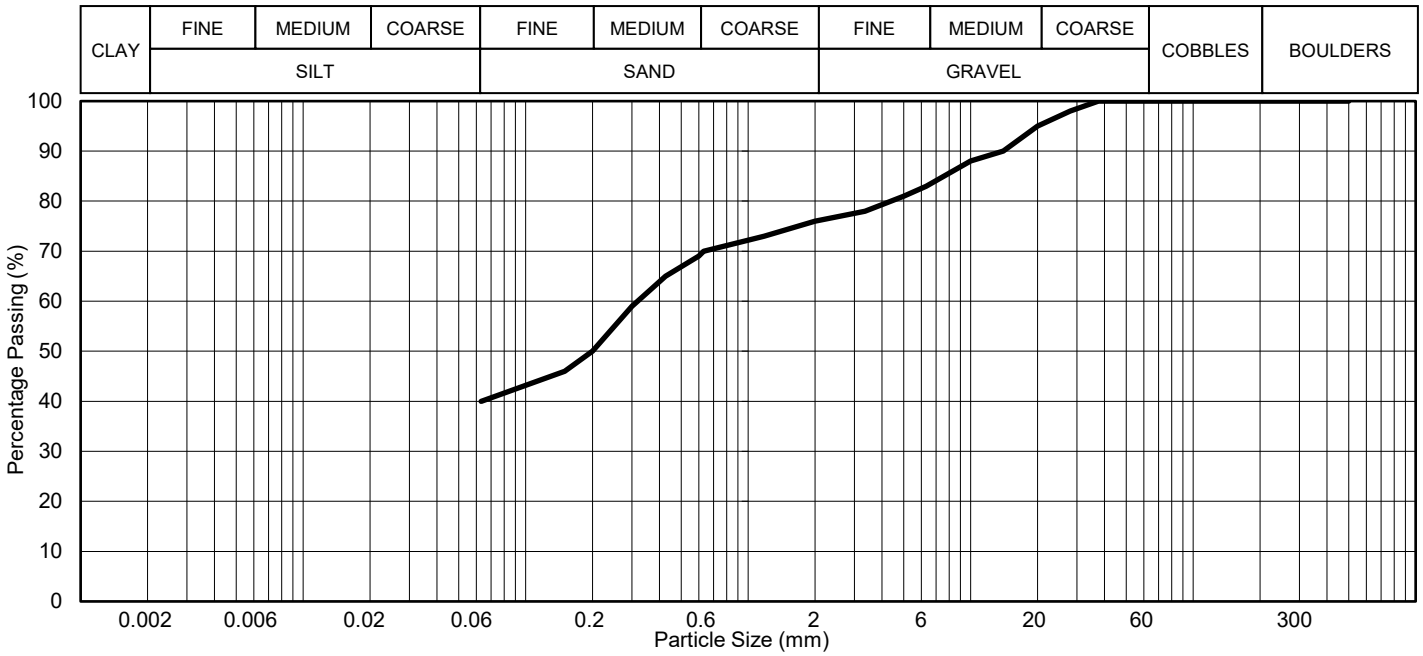
Remarks

₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	SP04
Sample	B
Depth (m)	1.00



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**2C, 7A, 7E, 7F, 7I,**	
50.0	100	-	-		
37.5	100	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	98	-	-		
20.0	95	-	-		
14.0	90	-	-		
10.0	88	-	-	**PERCENTAGE SOIL TYPES**	
6.3	83	-	-		
5.0	81	-	-		
3.350	78	-	-		
2.000	76	-	-		
1.180	73	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	70	-	-		
0.600	69	-	-		
0.425	65	-	-		
0.300	59	-	-		
0.200	50	-	-		
0.150	46	-	-		
0.063	40	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
/	40	36	24	0

D10	D60	Specification
0.063	0.321	
UNIFORMITY COEFFICIENT	**5**	-

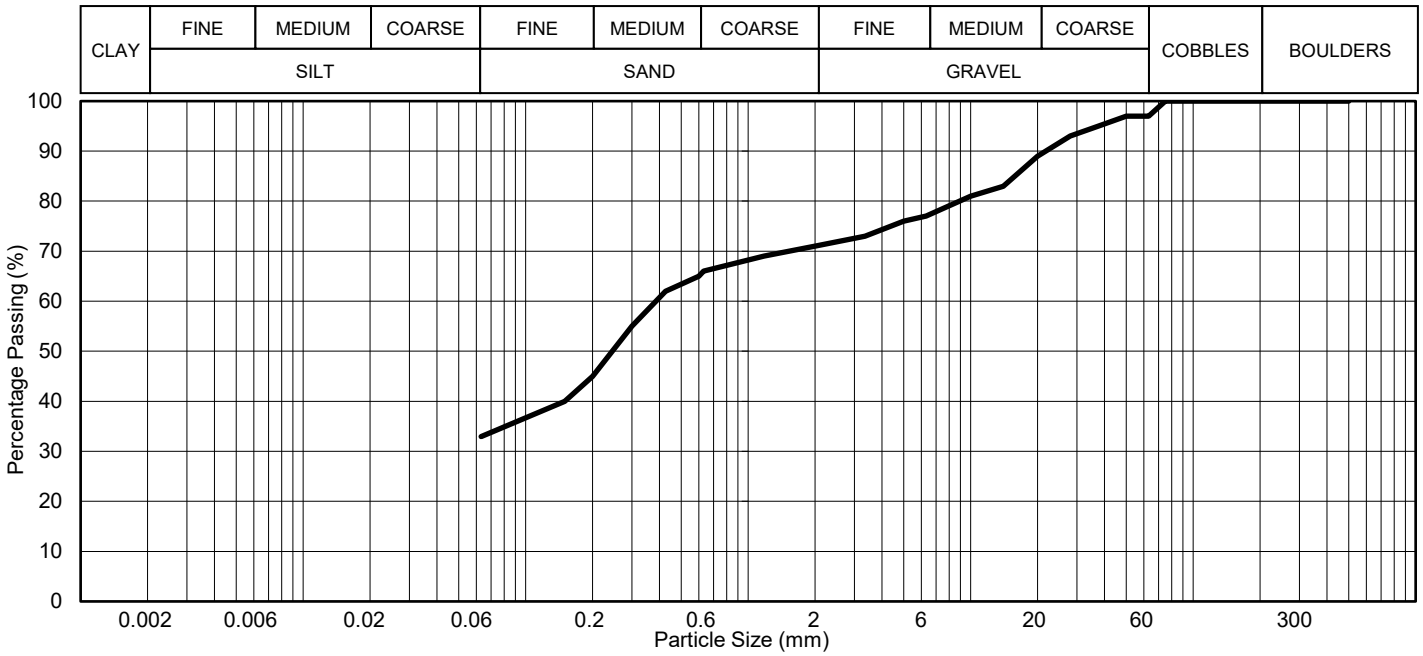
Remarks

₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	SP05
Sample	B
Depth (m)	1.50



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	97	-	-	**2C, 7A, 7F,**	
50.0	97	-	-		
37.5	95	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	93	-	-		
20.0	89	-	-		
14.0	83	-	-		
10.0	81	-	-	**PERCENTAGE SOIL TYPES**	
6.3	77	-	-		
5.0	76	-	-		
3.350	73	-	-		
2.000	71	-	-		
1.180	69	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	66	-	-		
0.600	65	-	-		
0.425	62	-	-		
0.300	55	-	-		
0.200	45	-	-		
0.150	40	-	-		
0.063	33	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
/	33	38	26	3

D10	D60	Specification
0.063	0.389	
UNIFORMITY COEFFICIENT	**6**	-

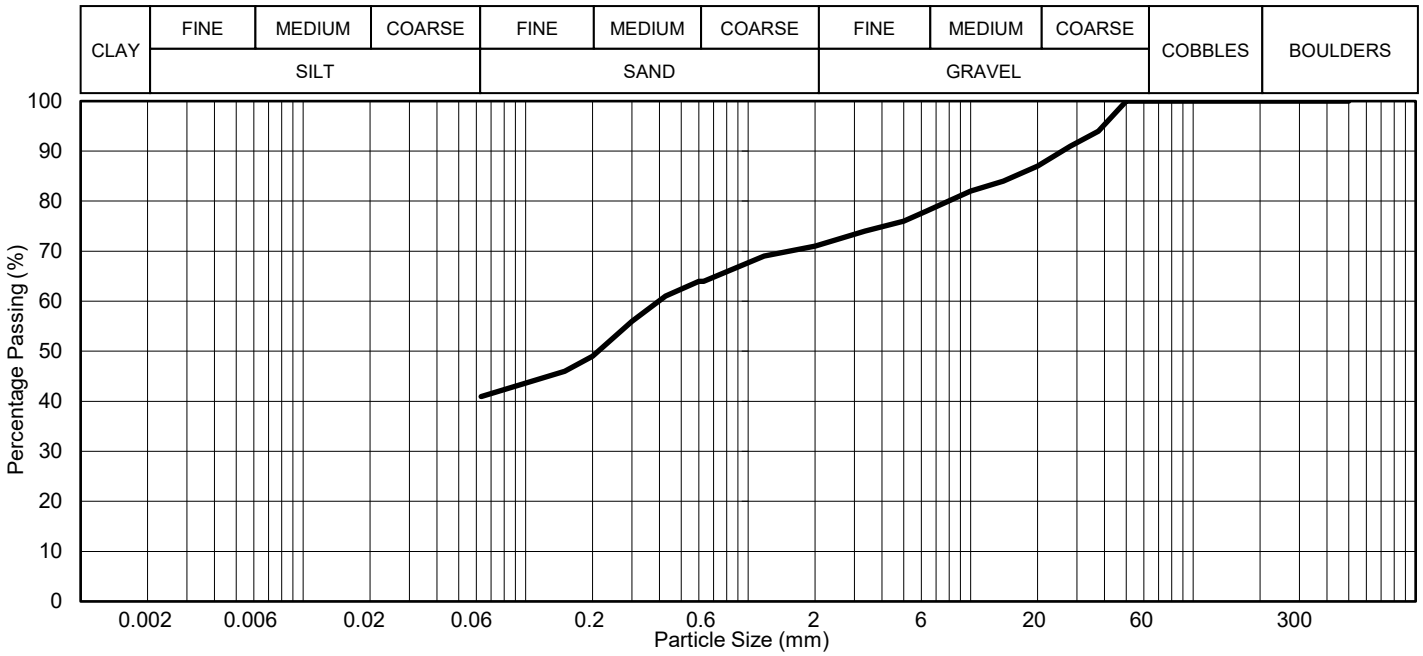
Remarks

₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	SP06
Sample	B
Depth (m)	1.20



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**2C, 7A, 7F,**	
50.0	100	-	-		
37.5	94	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	91	-	-		
20.0	87	-	-		
14.0	84	-	-		
10.0	82	-	-	**PERCENTAGE SOIL TYPES**	
6.3	78	-	-		
5.0	76	-	-		
3.350	74	-	-		
2.000	71	-	-		
1.180	69	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	64	-	-		
0.600	64	-	-		
0.425	61	-	-		
0.300	56	-	-		
0.200	49	-	-		
0.150	46	-	-		
0.063	41	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
/	41	30	29	0

D10	D60	Specification
0.063	0.400	
UNIFORMITY COEFFICIENT	**6**	-

Remarks

₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	SP07
Sample	B
Depth (m)	0.50



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**2C, 7A, 7F,**	
50.0	97	-	-		
37.5	96	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	93	-	-		
20.0	89	-	-		
14.0	87	-	-		
10.0	84	-	-	**PERCENTAGE SOIL TYPES**	
6.3	80	-	-	**CLAY** / **SILT Ŧ** / **SAND** / **GRAVEL** / **COBBLES**	
5.0	78	-	-		
3.350	76	-	-	/ 38 35 27 0	
2.000	73	-	-		
1.180	70	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	67	-	-	**D10** / **D60** / **Specification**	
0.600	66	-	-		
0.425	63	-	-	0.063 / 0.363	
0.300	57	-	-	**UNIFORMITY COEFFICIENT 6** / -	
0.200	48	-	-		
0.150	44	-	-		
0.063	38	-	-		

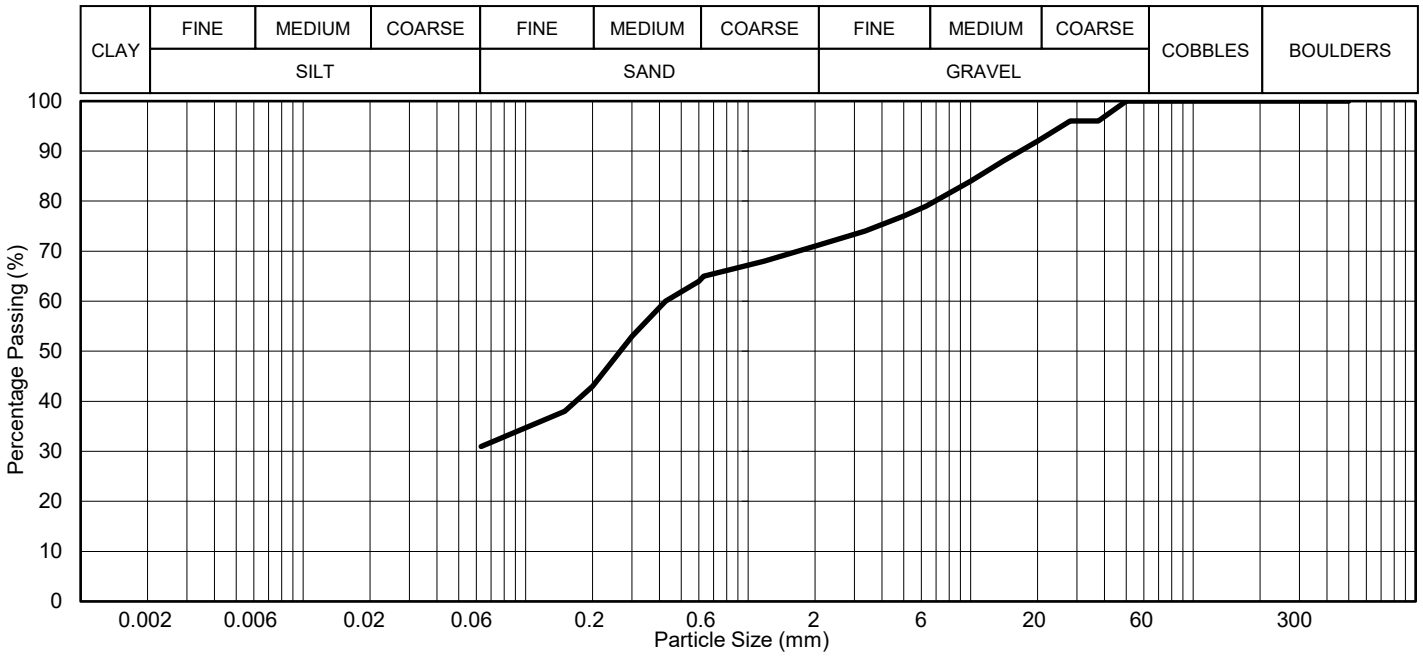
Remarks

Ŧ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	SP07
Sample	B
Depth (m)	1.70



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**2C, 7A, 7E, 7F, 7I,**	
50.0	100	-	-		
37.5	96	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	96	-	-		
20.0	92	-	-		
14.0	88	-	-		
10.0	84	-	-	**PERCENTAGE SOIL TYPES**	
6.3	79	-	-	**CLAY** / **SILT Ŧ** / **SAND** / **GRAVEL** / **COBBLES**	
5.0	77	-	-		
3.350	74	-	-	/ 31 40 29 0	
2.000	71	-	-		
1.180	68	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	65	-	-	**D10** / **D60** / **Specification**	
0.600	64	-	-		
0.425	60	-	-	0.063 / 0.425	
0.300	53	-	-	**UNIFORMITY COEFFICIENT** 7 / -	
0.200	43	-	-		
0.150	38	-	-		
0.063	31	-	-		

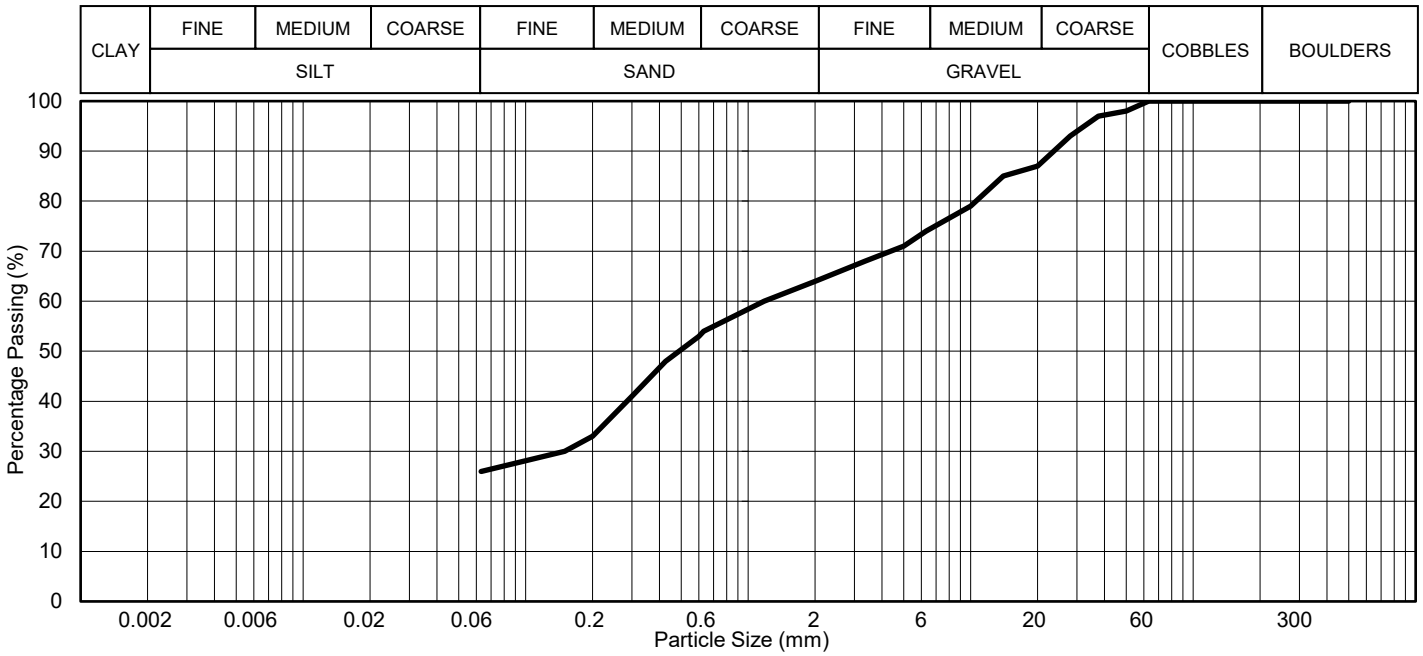
Remarks

Ŧ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	SP08
Sample	B
Depth (m)	1.50



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**2C, 7A, 7F,**	
50.0	98	-	-		
37.5	97	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	93	-	-		
20.0	87	-	-		
14.0	85	-	-		
10.0	79	-	-	**PERCENTAGE SOIL TYPES**	
6.3	74	-	-		
5.0	71	-	-		
3.350	68	-	-		
2.000	64	-	-		
1.180	60	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	54	-	-		
0.600	53	-	-		
0.425	48	-	-		
0.300	41	-	-		
0.200	33	-	-		
0.150	30	-	-		
0.063	26	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
/	26	38	36	0

D10	D60	Specification
0.063	1.180	
UNIFORMITY COEFFICIENT 19		-

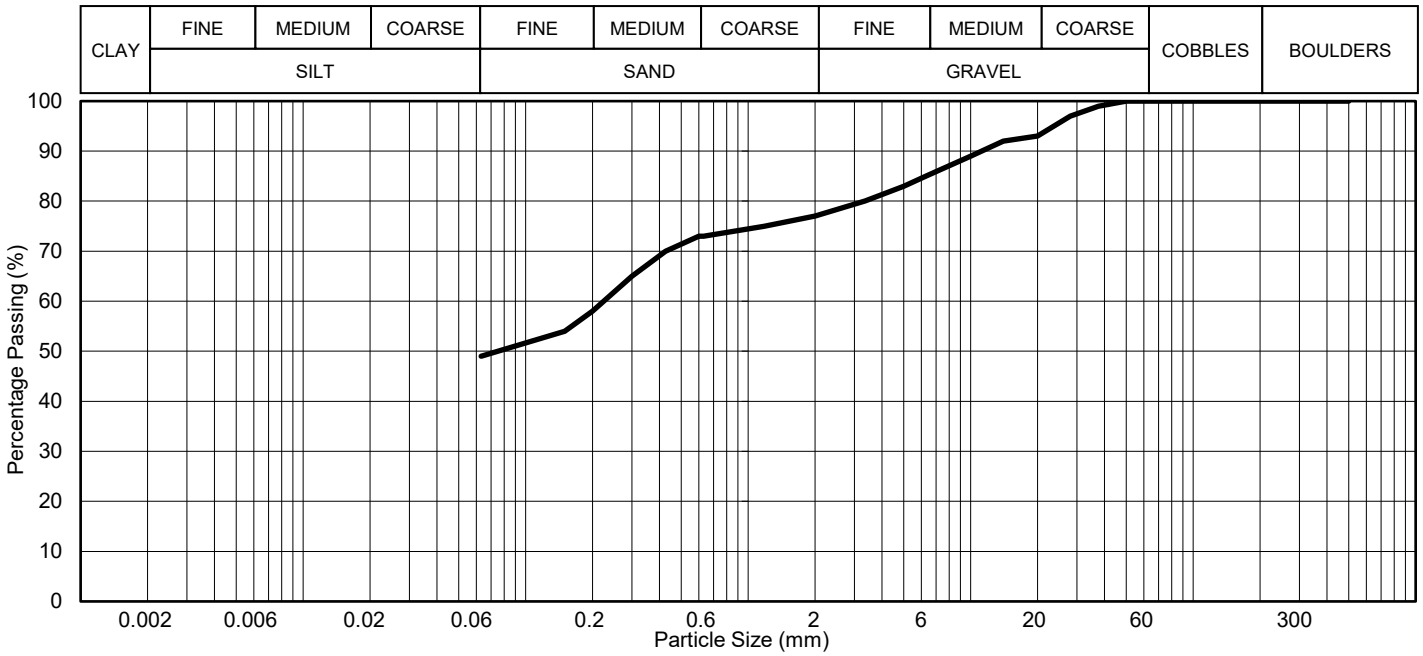
Remarks

₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	SP09
Sample	B
Depth (m)	0.60



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**2C, 7A, 7E, 7I,**	
50.0	100	-	-		
37.5	99	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	97	-	-		
20.0	93	-	-		
14.0	92	-	-		
10.0	89	-	-	**PERCENTAGE SOIL TYPES**	
6.3	85	-	-		
5.0	83	-	-		
3.350	80	-	-		
2.000	77	-	-		
1.180	75	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	73	-	-		
0.600	73	-	-		
0.425	70	-	-		
0.300	65	-	-		
0.200	58	-	-		
0.150	54	-	-		
0.063	49	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
/	49	28	23	0

D10	D60	Specification
0.063	0.229	
UNIFORMITY COEFFICIENT	**4**	-

Remarks

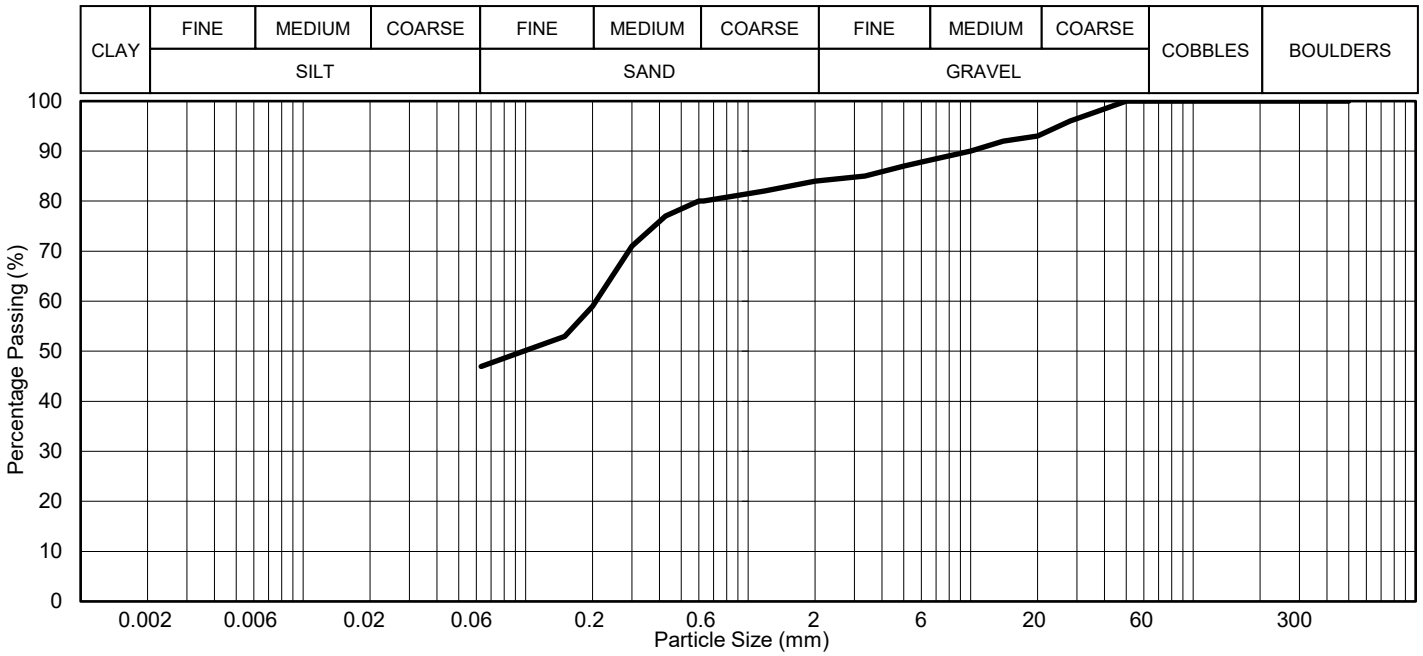
₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

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Borehole	SP09
Sample	B
Depth (m)	2.00



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**2A & 2B, 7A, 7E, 7I,**	
50.0	100	-	-		
37.5	98	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	96	-	-		
20.0	93	-	-		
14.0	92	-	-		
10.0	90	-	-	**PERCENTAGE SOIL TYPES**	
6.3	88	-	-		
5.0	87	-	-		
3.350	85	-	-		
2.000	84	-	-		
1.180	82	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	80	-	-		
0.600	80	-	-		
0.425	77	-	-		
0.300	71	-	-		
0.200	59	-	-		
0.150	53	-	-		
0.063	47	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
/	47	37	16	0

D10	D60	Specification
0.063	0.208	
UNIFORMITY COEFFICIENT	**3**	-

Remarks

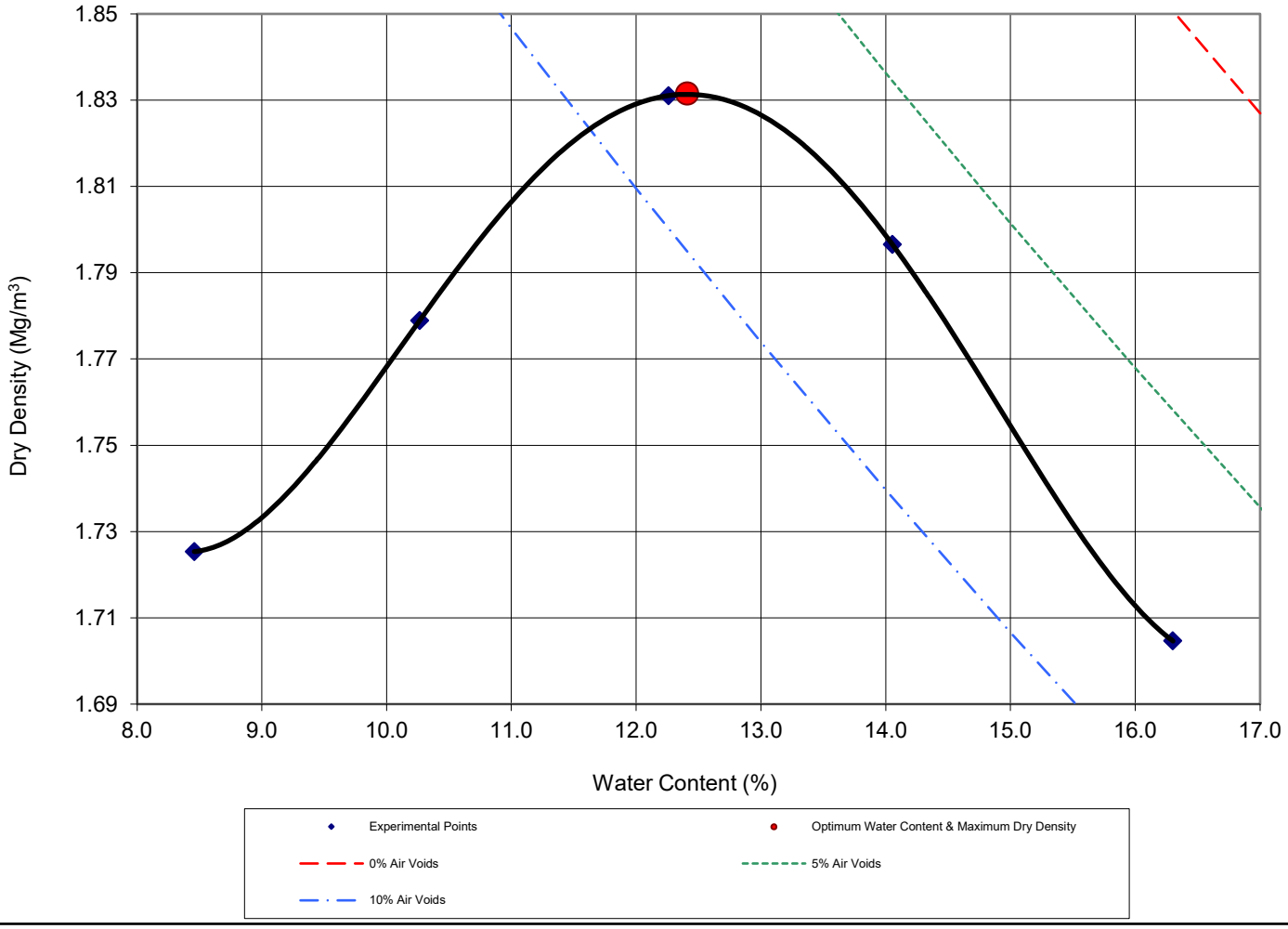
₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

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Water Content / Dry Density Experimental Points



Test Method	:	Clause 11.6: 4.5kg rammer, 5 layers, 62 blows/layer
Preparation Method	:	Separate samples
% Passing 37.5mm	:	95
% Passing 20mm	:	89
Grading Zone	:	4
Particle Density	:	2.65 Mg/m^3 (Assumed)

Experimental Points	
Water Content (%)	Dry Density (Mg/m^3)
8.5	1.73
10.3	1.78
12.3	1.83
14.1	1.80
16.3	1.70

Optimum Water Content (%)	**Maximum Dry Density (Mg/m^3)**
12	**1.83**

Remarks

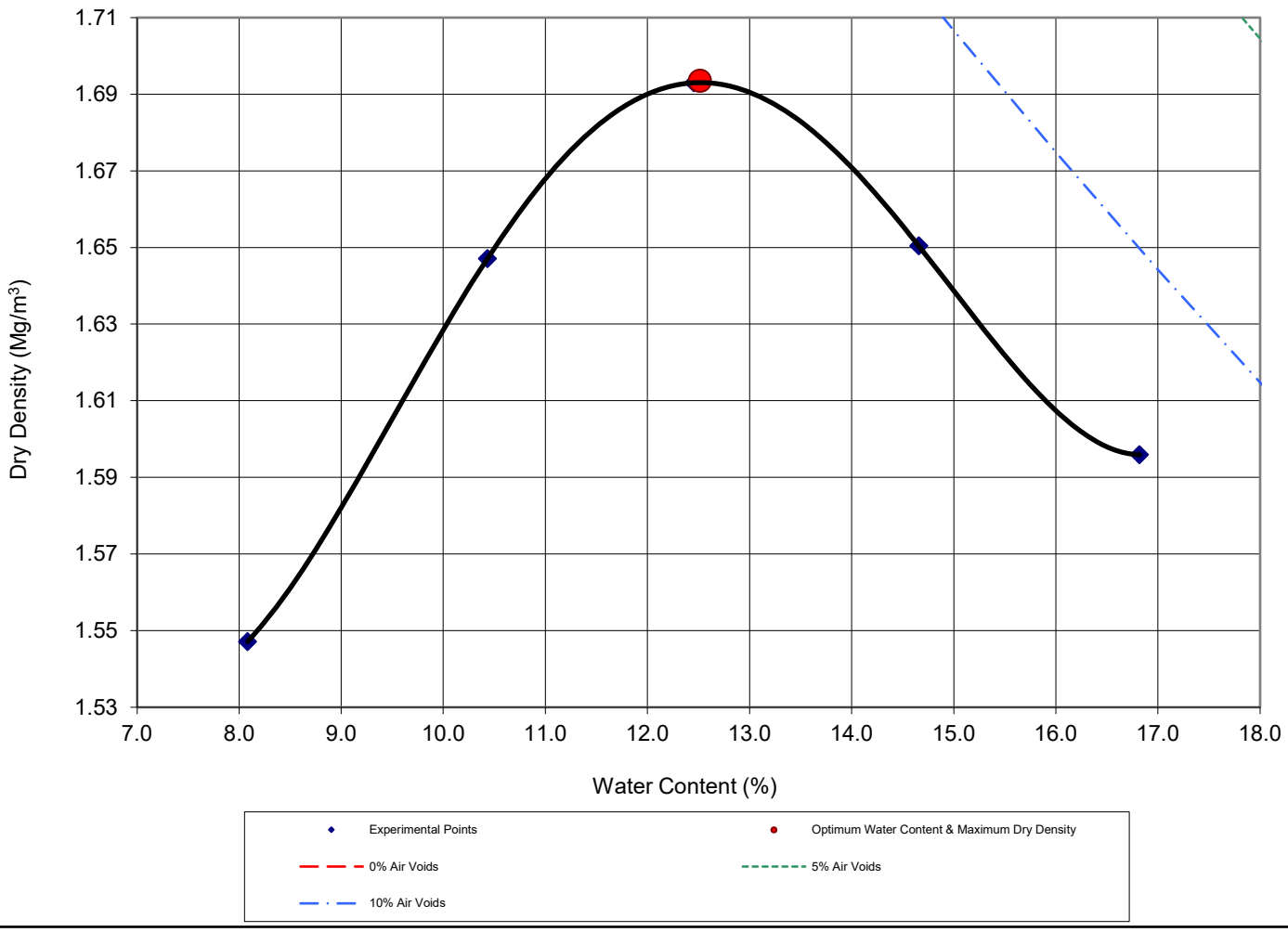
Borehole :	SP01
Sample :	B
Depth (m) :	1.50

Tested in accordance with BS 1377 - 2 : 2022

DETERMINATION OF WATER CONTENT / DRY DENSITY RELATIONSHIP

MATtest Limited
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Water Content / Dry Density Experimental Points



Test Method	:	Clause 11.6: 4.5kg rammer, 5 layers, 62 blows/layer
Preparation Method	:	Separate samples
% Passing 37.5mm	:	99
% Passing 20mm	:	91
Grading Zone	:	4
Particle Density	:	2.65 Mg/m^3 (Assumed)

Experimental Points	
Water Content (%)	Dry Density (Mg/m^3)
8.1	1.55
10.4	1.65
12.5	1.69
14.7	1.65
16.8	1.60

Optimum Water Content (%)	**Maximum Dry Density (Mg/m^3)**
13	**1.69**

Remarks

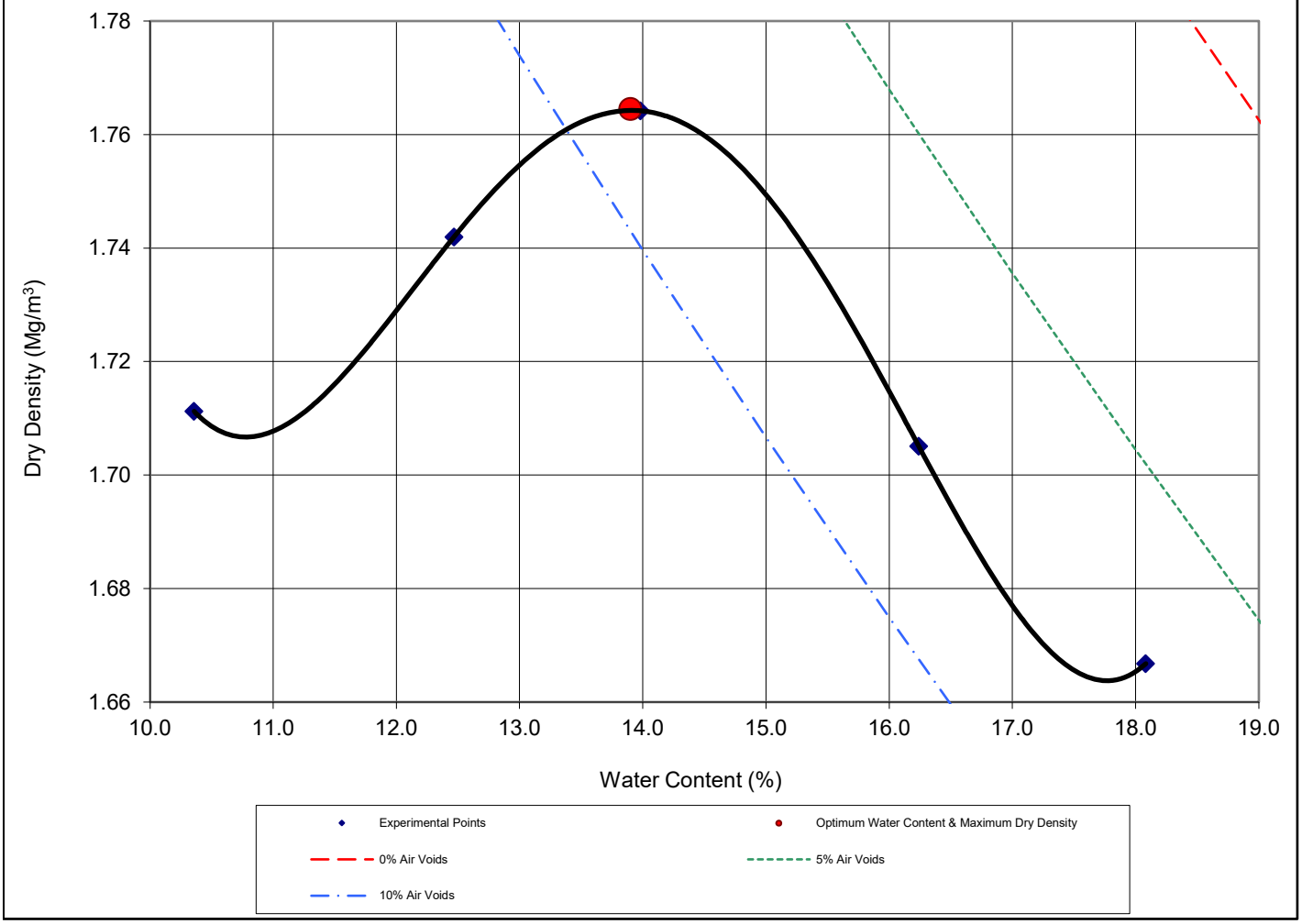
Borehole :	SP02
Sample :	B
Depth (m) :	2.20

Tested in accordance with BS 1377 - 2 : 2022

DETERMINATION OF WATER CONTENT / DRY DENSITY RELATIONSHIP

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Water Content / Dry Density Experimental Points



Test Method	:	Clause 11.6: 4.5kg rammer, 5 layers, 62 blows/layer
Preparation Method	:	Separate samples
% Passing 37.5mm	:	92
% Passing 20mm	:	84
Grading Zone	:	5
Particle Density	:	2.65 Mg/m^3 (Assumed)

Experimental Points	
Water Content (%)	Dry Density (Mg/m^3)
10.4	1.71
12.5	1.74
14.0	1.76
16.2	1.71
18.1	1.67

Optimum Water Content (%)	**Maximum Dry Density (Mg/m^3)**
14	**1.76**

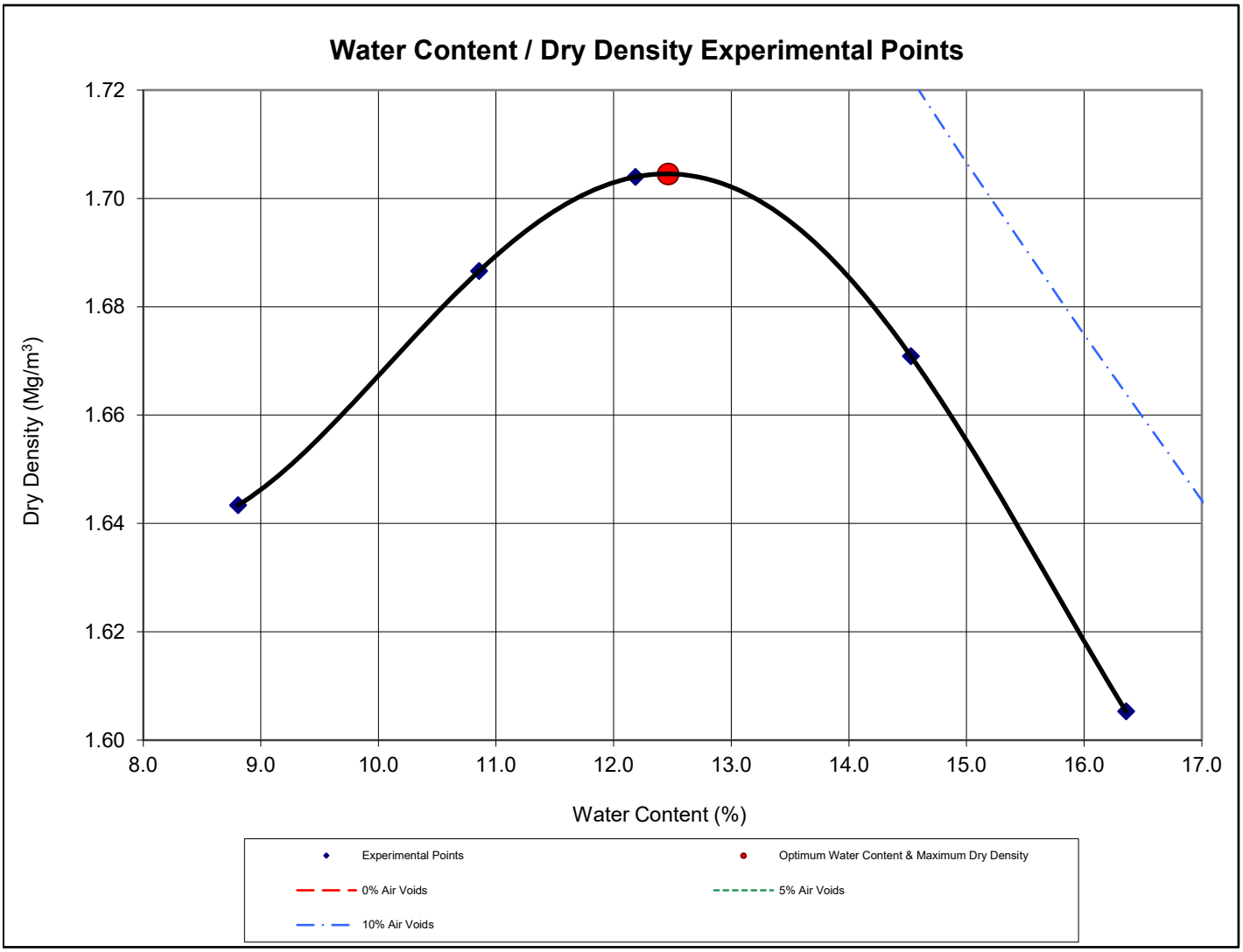
Remarks

Borehole :	SP03
Sample :	B
Depth (m) :	1.20

Tested in accordance with BS 1377 - 2 : 2022

DETERMINATION OF WATER CONTENT / DRY DENSITY RELATIONSHIP

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Test Method	:	Clause 11.5: 4.5kg rammer, 5 layers, 27 blows/layer
Preparation Method	:	Separate samples
% Passing 37.5mm	:	100
% Passing 20mm	:	95
Grading Zone	:	2
Particle Density	:	2.65 Mg/m^3 (Assumed)

Experimental Points	
Water Content (%)	Dry Density (Mg/m^3)
8.8	1.64
10.9	1.69
12.2	1.70
14.5	1.67
16.4	1.61

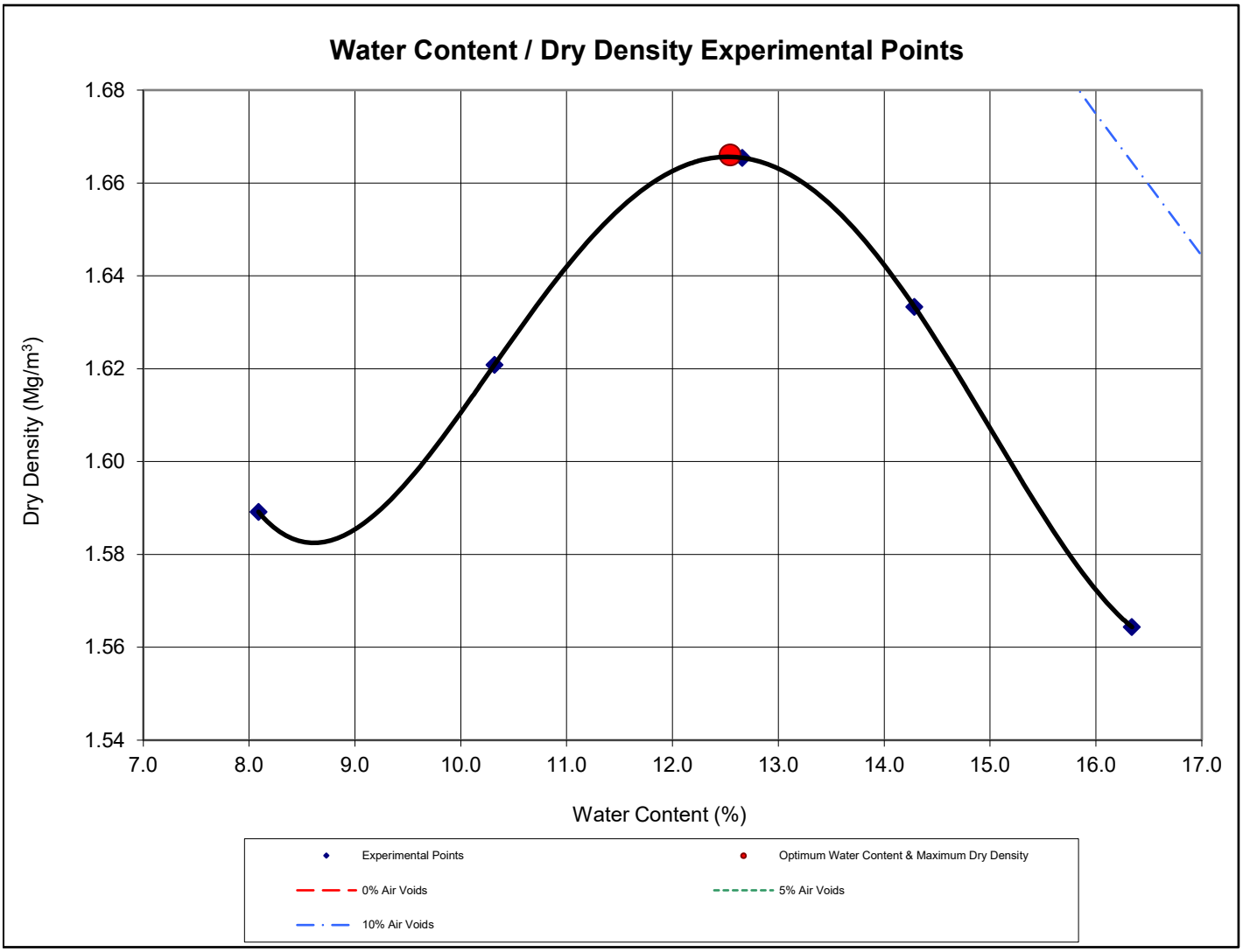
Optimum Water Content (%)	**Maximum Dry Density (Mg/m^3)**
12	**1.70**
Remarks	

Borehole :	SP04
Sample :	B
Depth (m) :	1.00

Tested in accordance with BS 1377 - 2 : 2022

DETERMINATION OF WATER CONTENT / DRY DENSITY RELATIONSHIP

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Test Method	:	Clause 11.6: 4.5kg rammer, 5 layers, 62 blows/layer
Preparation Method	:	Separate samples
% Passing 37.5mm	:	95
% Passing 20mm	:	89
Grading Zone	:	4
Particle Density	:	2.65 Mg/m^3 (Assumed)

Experimental Points	
Water Content (%)	Dry Density (Mg/m^3)
8.1	1.59
10.3	1.62
12.7	1.67
14.3	1.63
16.3	1.56

Optimum Water Content (%)	**Maximum Dry Density (Mg/m^3)**
13	**1.67**

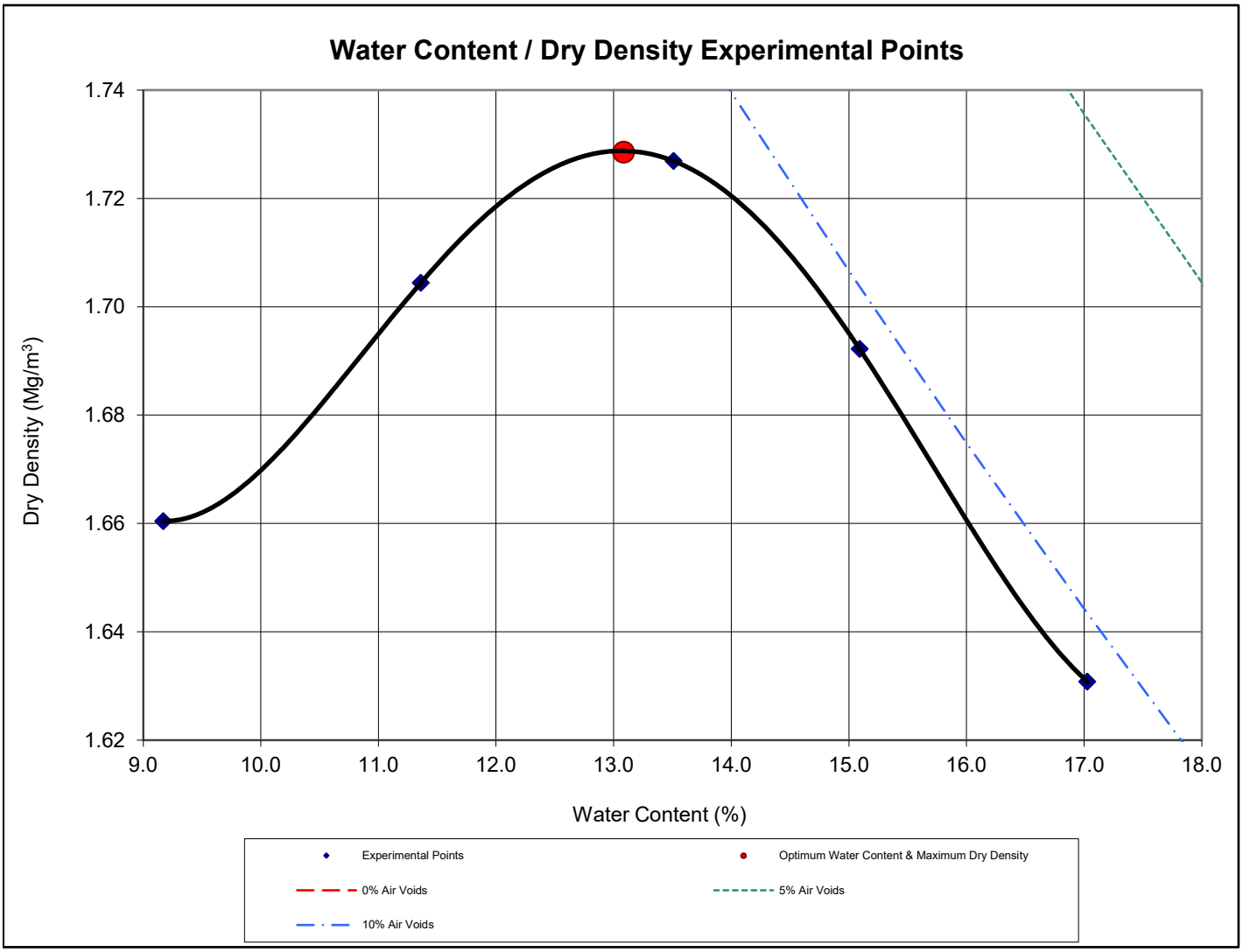
Remarks

Borehole :	SP05
Sample :	B
Depth (m) :	1.50

Tested in accordance with BS 1377 - 2 : 2022

DETERMINATION OF WATER CONTENT / DRY DENSITY RELATIONSHIP

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Test Method	:	Clause 11.6: 4.5kg rammer, 5 layers, 62 blows/layer
Preparation Method	:	Separate samples
% Passing 37.5mm	:	94
% Passing 20mm	:	87
Grading Zone	:	5
Particle Density	:	2.65 Mg/m^3 (Assumed)

Experimental Points	
Water Content (%)	Dry Density (Mg/m^3)
9.2	1.66
11.4	1.70
13.5	1.73
15.1	1.69
17.0	1.63

Optimum Water Content (%)	**Maximum Dry Density (Mg/m^3)**
13	**1.73**

Remarks

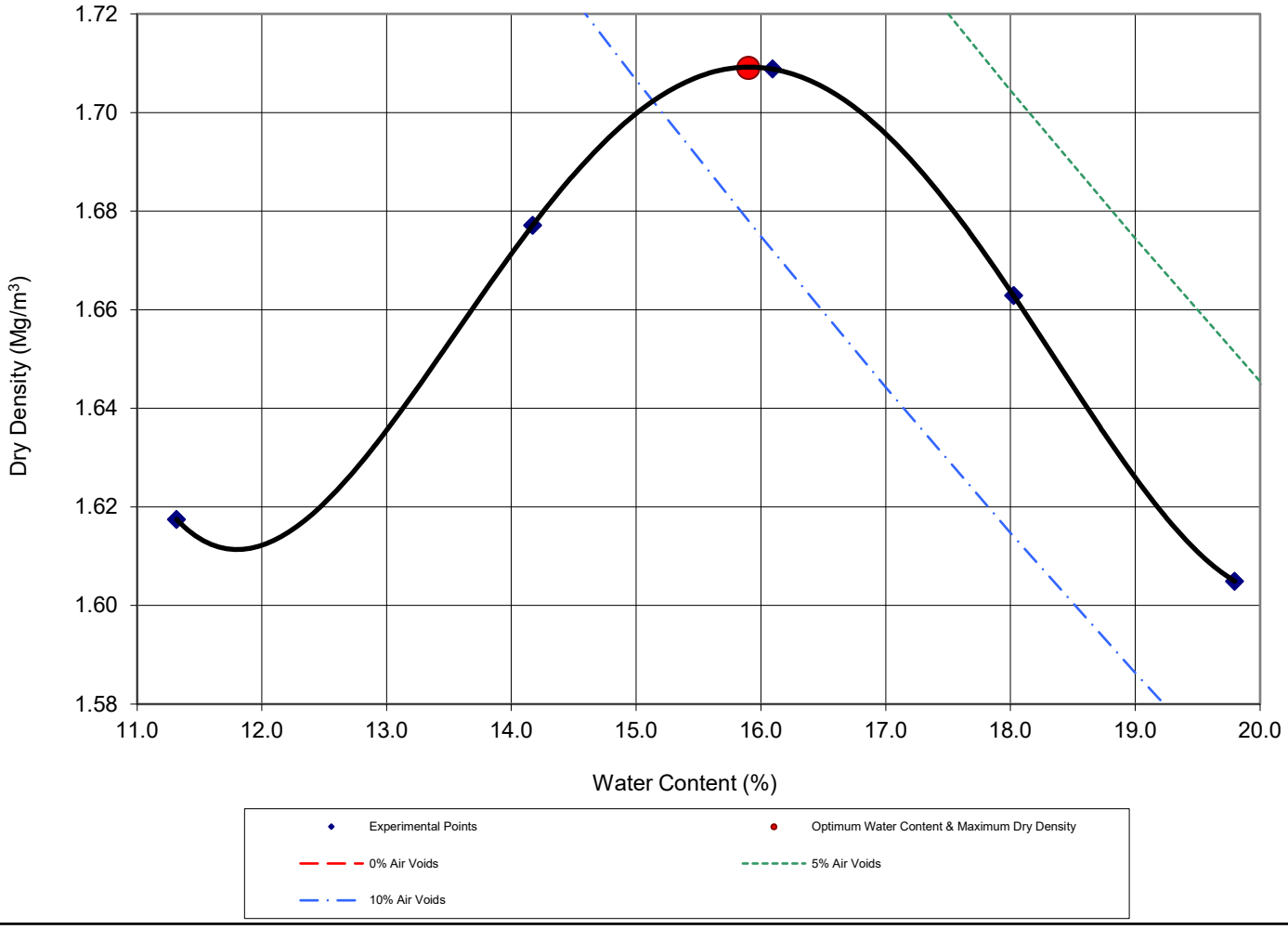
Borehole :	SP06
Sample :	B
Depth (m) :	1.20

Tested in accordance with BS 1377 - 2 : 2022

DETERMINATION OF WATER CONTENT / DRY DENSITY RELATIONSHIP

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Water Content / Dry Density Experimental Points



Test Method	:	Clause 11.6: 4.5kg rammer, 5 layers, 62 blows/layer
Preparation Method	:	Separate samples
% Passing 37.5mm	:	96
% Passing 20mm	:	89
Grading Zone	:	4
Particle Density	:	2.65 Mg/m^3 (Assumed)

Experimental Points	
Water Content (%)	Dry Density (Mg/m^3)
11.3	1.62
14.2	1.68
16.1	1.71
18.0	1.66
19.8	1.60

Optimum Water Content (%)	**Maximum Dry Density (Mg/m^3)**
16	**1.71**

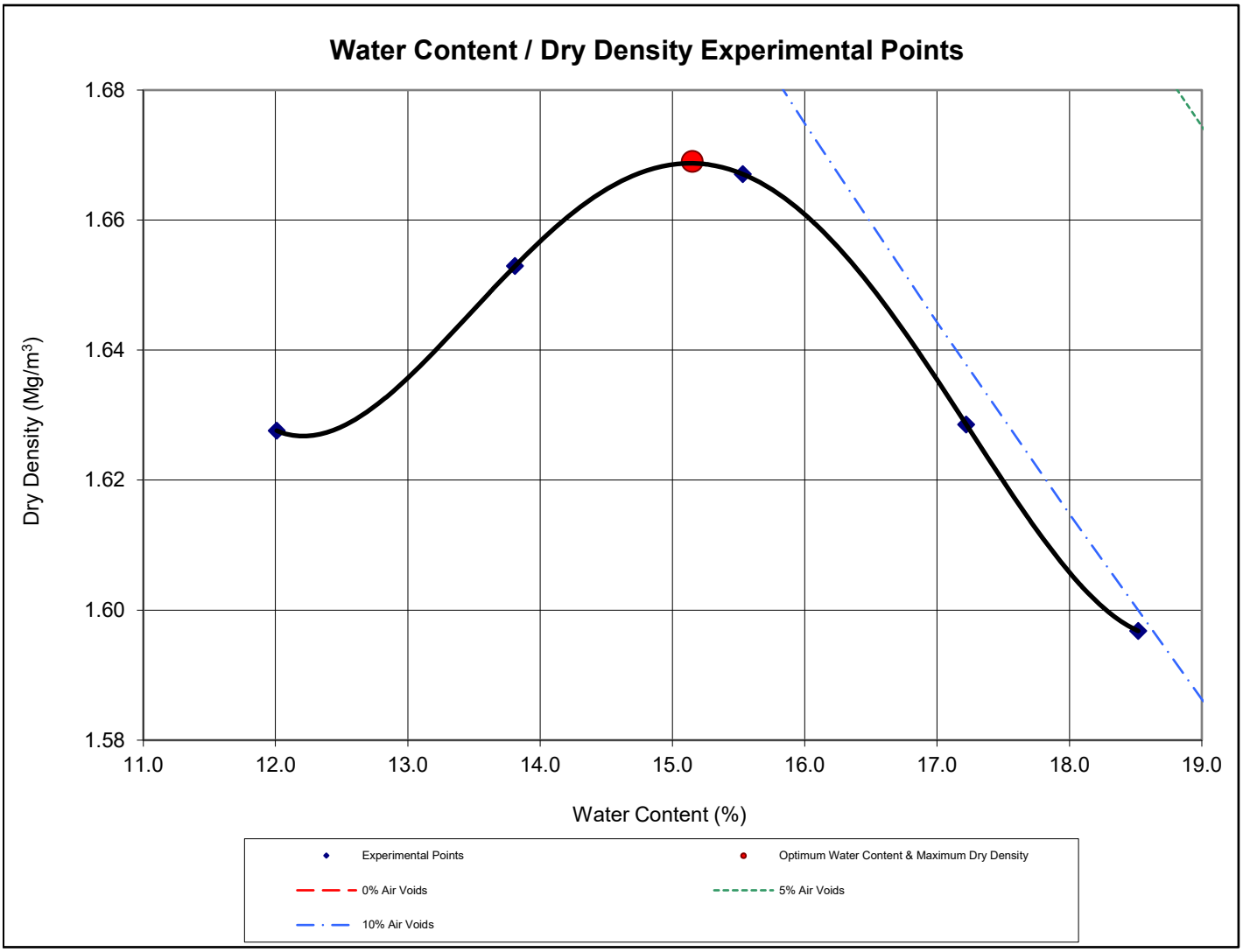
Remarks

Borehole :	SP07
Sample :	B
Depth (m) :	0.50

Tested in accordance with BS 1377 - 2 : 2022

DETERMINATION OF WATER CONTENT / DRY DENSITY RELATIONSHIP

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Test Method	:	Clause 11.6: 4.5kg rammer, 5 layers, 62 blows/layer
Preparation Method	:	Separate samples
% Passing 37.5mm	:	96
% Passing 20mm	:	92
Grading Zone	:	4
Particle Density	:	2.65 Mg/m^3 (Assumed)

Experimental Points	
Water Content (%)	Dry Density (Mg/m^3)
12.0	1.63
13.8	1.65
15.5	1.67
17.2	1.63
18.5	1.60

Optimum Water Content (%)	**Maximum Dry Density (Mg/m^3)**
15	**1.67**

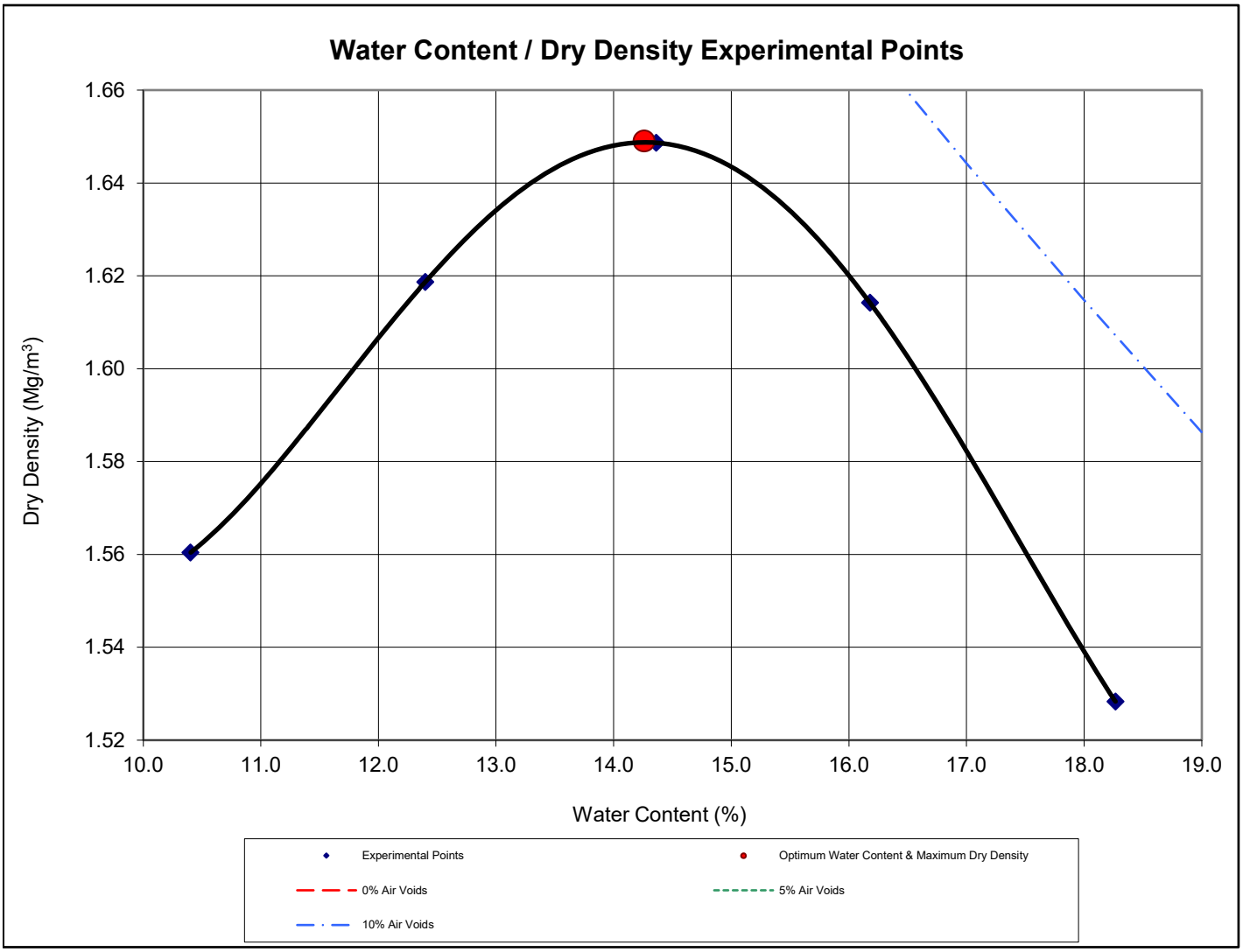
Remarks

Borehole :	SP07
Sample :	B
Depth (m) :	1.70

Tested in accordance with BS 1377 - 2 : 2022

DETERMINATION OF WATER CONTENT / DRY DENSITY RELATIONSHIP

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Test Method	:	Clause 11.6: 4.5kg rammer, 5 layers, 62 blows/layer
Preparation Method	:	Separate samples
% Passing 37.5mm	:	97
% Passing 20mm	:	87
Grading Zone	:	4
Particle Density	:	2.65 Mg/m^3 (Assumed)

Experimental Points	
Water Content (%)	Dry Density (Mg/m^3)
10.4	1.56
12.4	1.62
14.4	1.65
16.2	1.61
18.3	1.53

Optimum Water Content (%)	**Maximum Dry Density (Mg/m^3)**
14	**1.65**
Remarks	

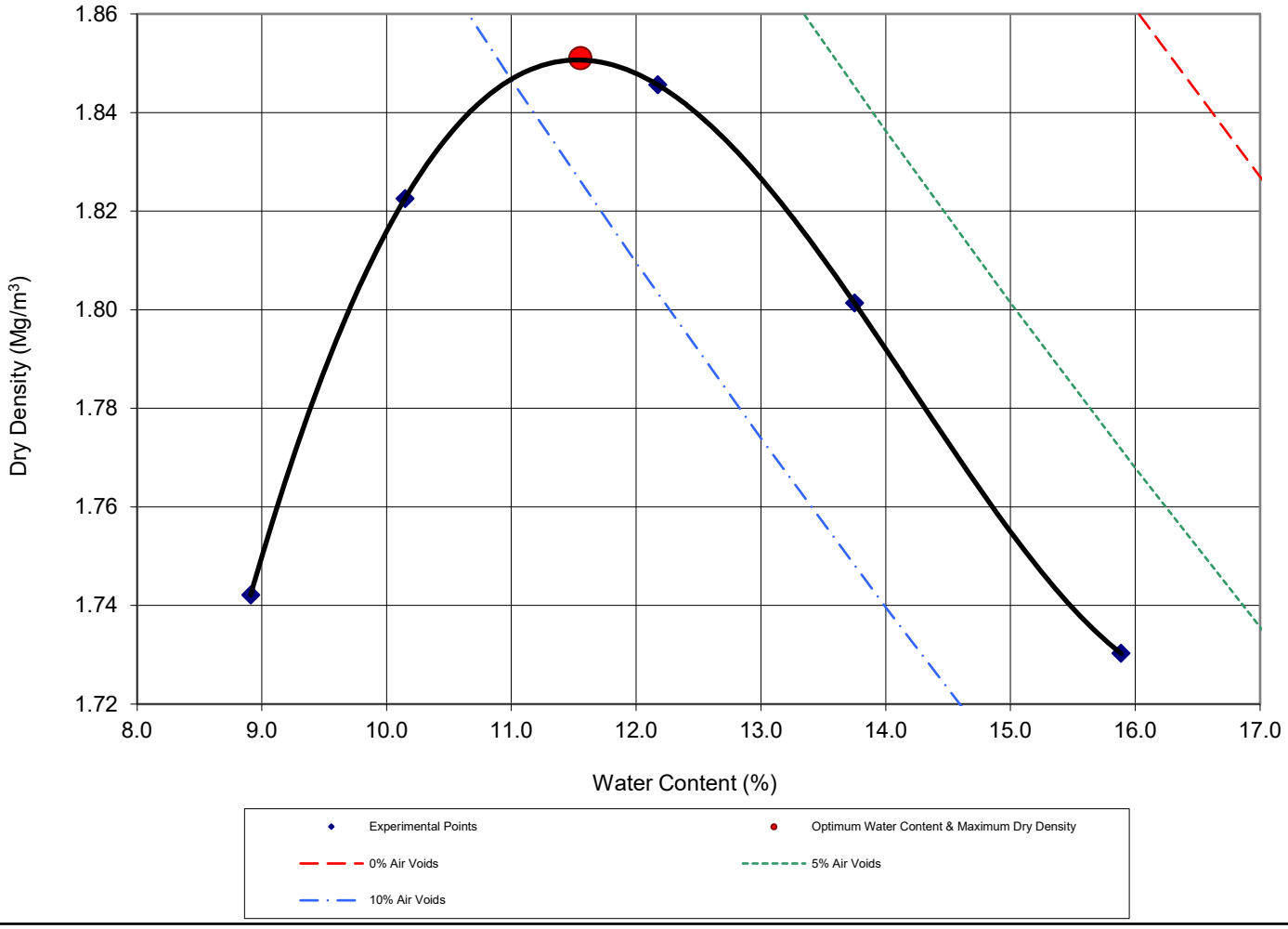
Borehole :	SP08
Sample :	B
Depth (m) :	1.50

Tested in accordance with BS 1377 - 2 : 2022

DETERMINATION OF WATER CONTENT / DRY DENSITY RELATIONSHIP

MATtest Limited
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Water Content / Dry Density Experimental Points



Test Method	:	Clause 11.6: 4.5kg rammer, 5 layers, 62 blows/layer
Preparation Method	:	Separate samples
% Passing 37.5mm	:	99
% Passing 20mm	:	93
Grading Zone	:	4
Particle Density	:	2.65 Mg/m^3 (Assumed)

Experimental Points	
Water Content (%)	Dry Density (Mg/m^3)
8.9	1.74
10.1	1.82
12.2	1.85
13.8	1.80
15.9	1.73

Optimum Water Content (%)	**Maximum Dry Density (Mg/m^3)**
12	**1.85**

Remarks

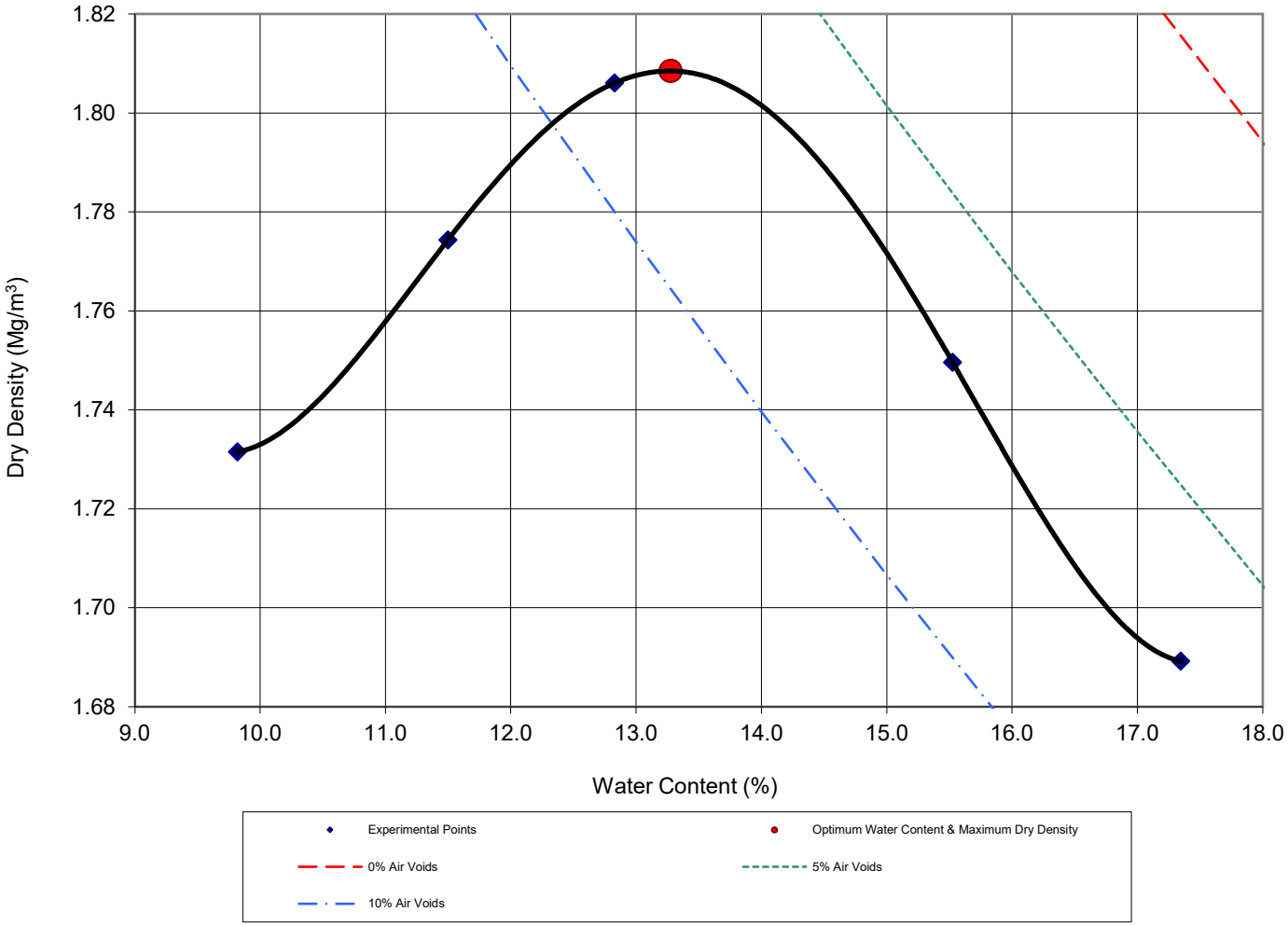
Borehole :	SP09
Sample :	B
Depth (m) :	0.60

Tested in accordance with BS 1377 - 2 : 2022

DETERMINATION OF WATER CONTENT / DRY DENSITY RELATIONSHIP

MATtest Limited
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Water Content / Dry Density Experimental Points



Test Method	:	Clause 11.6: 4.5kg rammer, 5 layers, 62 blows/layer
Preparation Method	:	Separate samples
% Passing 37.5mm	:	98
% Passing 20mm	:	93
Grading Zone	:	4
Particle Density	:	2.65 Mg/m^3 (Assumed)

Experimental Points	
Water Content (%)	Dry Density (Mg/m^3)
9.8	1.73
11.5	1.77
12.8	1.81
15.5	1.75
17.3	1.69

Optimum Water Content (%)	**Maximum Dry Density (Mg/m^3)**
13	**1.81**
Remarks	

Borehole :	SP09
Sample :	B
Depth (m) :	2.00

Tested in accordance with BS 1377 - 2 : 2022

DETERMINATION OF WATER CONTENT / DRY DENSITY RELATIONSHIP

LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

Certificate No : **26/173 - 01-1**

To : **Hugh O' Leary**

Client : **LandWise Consulting Ltd.**
43 Buchanan Drive
Cambuslang
Glasgow
G72 8BD

LABORATORY TESTING OF SOIL

Introduction

We refer to samples taken from Jaguar Landrover, Halewood, Eastlands, Liverpool and delivered to our laboratory on 13th February 2026.

Material & Source

Sample Reference	:	See Report Plates
Sampled By	:	Client
Sampling Certificate	:	Not Supplied
Location	:	See Report Plates
Description	:	See Page 2 to Page 3 inclusive
Date Sampled	:	Not Supplied
Date Tested	:	13th February 2026 Onwards
Source	:	LW25-136 - Jaguar Landrover, Halewood, Eastlands, Liverpool

Test Results

As Detailed On Page 2 to Page 27 inclusive

Comments

The results contained in this report relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Remarks

Approved for Issue

T McLelland (Director)

Date 24/02/2026

UKAS TESTING
2643

BOREHOLE	SAMPLE	DEPTH (m)	SAMPLE DESCRIPTION
BH01	B	0.00-0.50	Brown / grey silty clayey fine to coarse CRUSHED ROCK / RECYCLED AGGREGATE.
BH01	U	1.00-1.90	Brown gravelly very sandy very silty CLAY. Gravel is fine to coarse.
BH01	U	2.00-2.90	Brown slightly gravelly slightly sandy CLAY. Gravel is fine to medium.
BH01	U	3.00-4.00	Brown gravelly sandy CLAY. Gravel is fine to coarse.
BH01	U	4.00-5.00	Brown slightly sandy slightly silty CLAY.
BH02	U	2.00-3.00	Brown very gravelly very silty very sandy CLAY. Gravel is fine to coarse.
BH03	U	1.20-2.00	Brown very gravelly very sandy CLAY with cobbles. Gravel is fine to coarse.
BH04	U	2.00-2.90	Brown gravelly very sandy CLAY. Gravel is fine to coarse.
BH05	U	1.20-2.00	Brown gravelly sandy CLAY. Gravel is fine to coarse.
BH06	B	1.80	Brown very clayey very silty fine to coarse CRUSHED ROCK / RECYCLED AGGREGATE.
BH07	B	0.00-0.50	Grey silty fine to coarse CRUSHED ROCK.
BH07	U	1.00-1.90	Brown gravelly slightly sandy CLAY. Gravel is fine to coarse.
BH07	U	4.00-4.60	Brown gravelly very sandy CLAY. Gravel is fine to coarse.
BH08	B	0.00-0.50	Brown fine to coarse CRUSHED ROCK with cobbles.
BH09	U	1.20-2.10	Brown slightly gravelly slightly sandy CLAY. Gravel is fine to medium.
BH10	U	1.00-1.50	Brown very gravelly silty very sandy CLAY. Gravel is fine to coarse.
BH11	B	0.00-0.50	Brown slightly clayey fine to coarse CRUSHED ROCK / RECYCLED AGGREGATE.
BH12	U	0.00-0.80	Brown slightly gravelly very silty very sandy CLAY. Gravel is fine to coarse.
BH13	U	1.00-1.15	Brown slightly gravelly sandy CLAY. Gravel is fine to medium.
BH14	U	2.00-2.80	Brown gravelly sandy CLAY. Gravel is fine to medium.
BH15	U	4.00-4.80	Brrown slightly gravelly slightly sandy CLAY. Gravel is fine to medium.
BH16	B	1.80	Brown gravelly sandy CLAY. Gravel is fine to medium.

SUMMARY OF SAMPLE DESCRIPTIONS

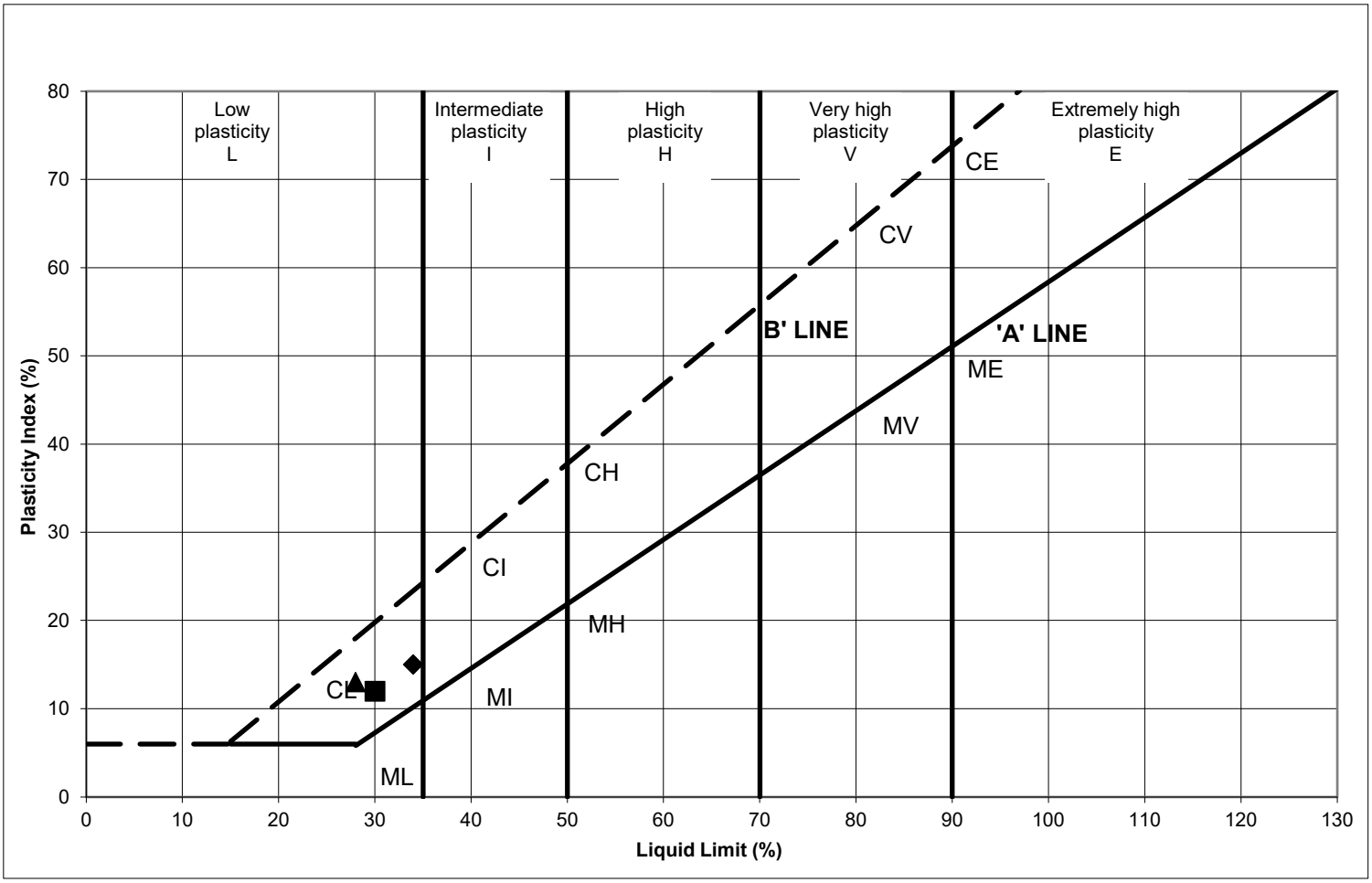
BOREHOLE	SAMPLE	DEPTH (m)	SAMPLE DESCRIPTION
BH17	U	1.20-2.00	Brown slightly gravelly sandy CLAY. Gravel is fine to coarse.
BH18	B	0.00-0.50	Brown slightly clayey fine to coarse CRUSHED ROCK / RECYCLED AGGREGATE with cobbles.
BH18	U	3.00-3.90	Brown slightly gravelly very sandy CLAY. Gravel is fine to coarse.
BH19	U	1.00-1.90	Brown very gravelly very sandy CLAY. Gravel is fine to coarse.
BH19	U	3.00-3.50	Brown gravelly sandy CLAY. Gravel is fine to coarse.
BH21	U	3.00-3.60	Brown gravelly sandy silty CLAY. Gravel is fine to medium.
BH22	U	1.20-1.80	Brown gravelly sandy CLAY. Gravel is fine to coarse.
BH23	B	0.50-1.00	Brown very gravelly very sandy CLAY. Gravel is fine to coarse.
BH24	B	0.00-0.50	Grey silty clayey fine to coarse CRUSHED ROCK / RECYCLED AGGREGATE with cobbles.
BH24	U	1.00-1.60	Brown / grey silty very clayey fine to coarse CRUSHED ROCK with fragments of brick.
BH24	U	3.00-3.60	Brown / grey slightly silty very sandy fine to coarse CRUSHED ROCK with fragments of brick.

SUMMARY OF SAMPLE DESCRIPTIONS

BOREHOLE	SAMPLE	DEPTH (m)	WATER CONTENT (%)
BH02	U	2.00	19.3
BH04	U	2.00	17.1
BH06	B	1.80	30.0
BH07	U	4.20	19.3
BH14	U	2.40	17.5
BH21	U	3.40	23.6

BS EN ISO 17892-1 : 2014 + A1 : 2022
BS 1377-2 : 2022

SUMMARY OF WATER CONTENT TEST RESULTS



Symbol	Borehole	Sample	Depth	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% Passing 0.425mm Sieve	Remarks
■	BH07	U	4.30	19.3	30	18	12	61	Clay with low plasticity
◆	BH14	U	2.50	17.5	34	19	15	65	Clay with low plasticity
▲	BH21	U	3.50	23.6	28	15	13	73	Clay with low plasticity
●									
□									
◇									
△									
○									
×									
✳									

Tested in accordance with BS EN ISO 17892-12 : 2018 + A2 2022 : Clause 5.3, 5.5 & 6.5 : Four point method / BS 1377-2 : 2022
All samples were washed on a 0.425mm test sieve prior to test.

SUMMARY OF ATTERBERG LIMITS TEST RESULTS

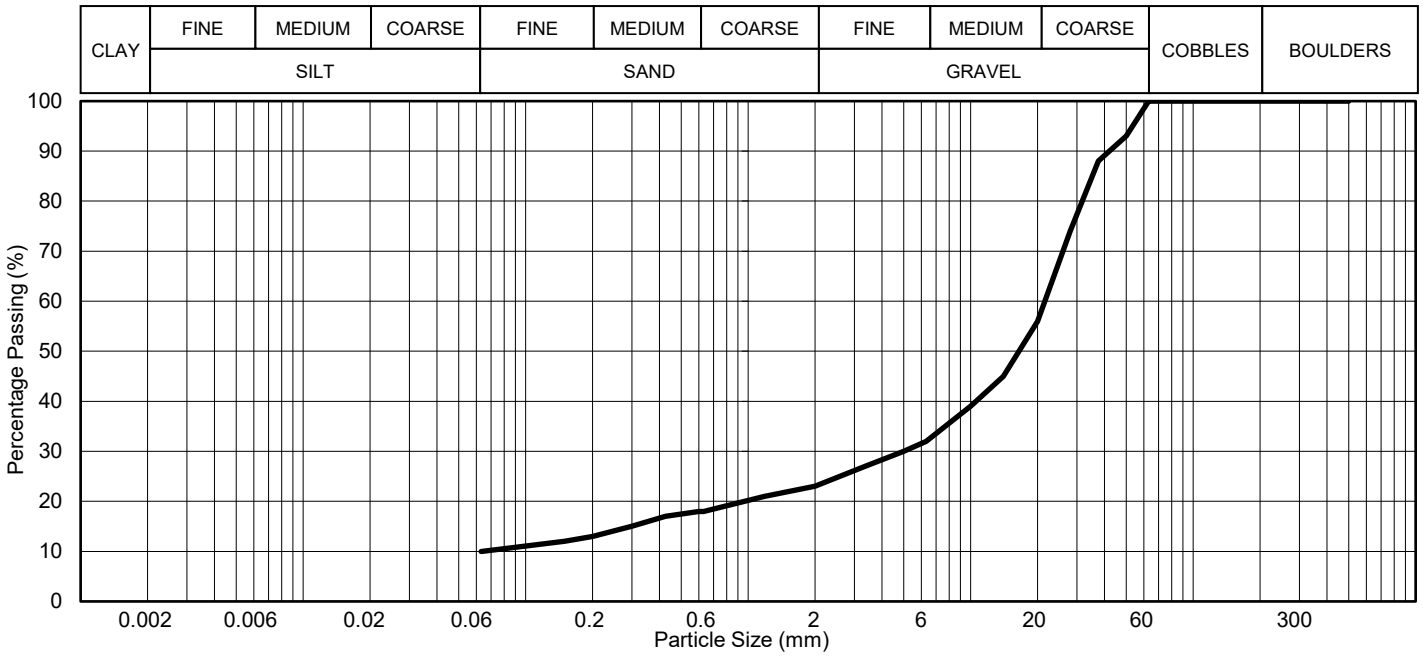
MATtest Limited
materials testing & consultancy

BOREHOLE	SAMPLE	DEPTH (m)	WATER CONTENT (%)	BULK DENSITY (Mg/m^3)	DRY DENSITY (Mg/m^3)
BH16	B	1.80	18.9	2.11	1.77
BH22	U	1.60	17.3	2.01	1.71

BS EN ISO 17892-2 : 2014 : 5.1 - Linear Measurement Method
BS 1377 - 2 : 2022

SUMMARY OF WATER CONTENT AND BULK DENSITY TEST RESULTS

Borehole	BH01
Sample	B
Depth (m)	0.00-0.50



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**1A, 6E & 6R, 6F2, 6F3, 6I, 6M, 6N, 6P,**	
50.0	93	-	-		
37.5	88	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	74	-	-		
20.0	56	-	-		
14.0	45	-	-		
10.0	39	-	-	**PERCENTAGE SOIL TYPES**	
6.3	32	-	-		
5.0	30	-	-		
3.350	27	-	-		
2.000	23	-	-		
1.180	21	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	18	-	-		
0.600	18	-	-		
0.425	17	-	-		
0.300	15	-	-		
0.200	13	-	-		
0.150	12	-	-		
0.063	10	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
/	10	13	77	0

D10	D60	Specification
0.063	21.778	
UNIFORMITY COEFFICIENT 346		-

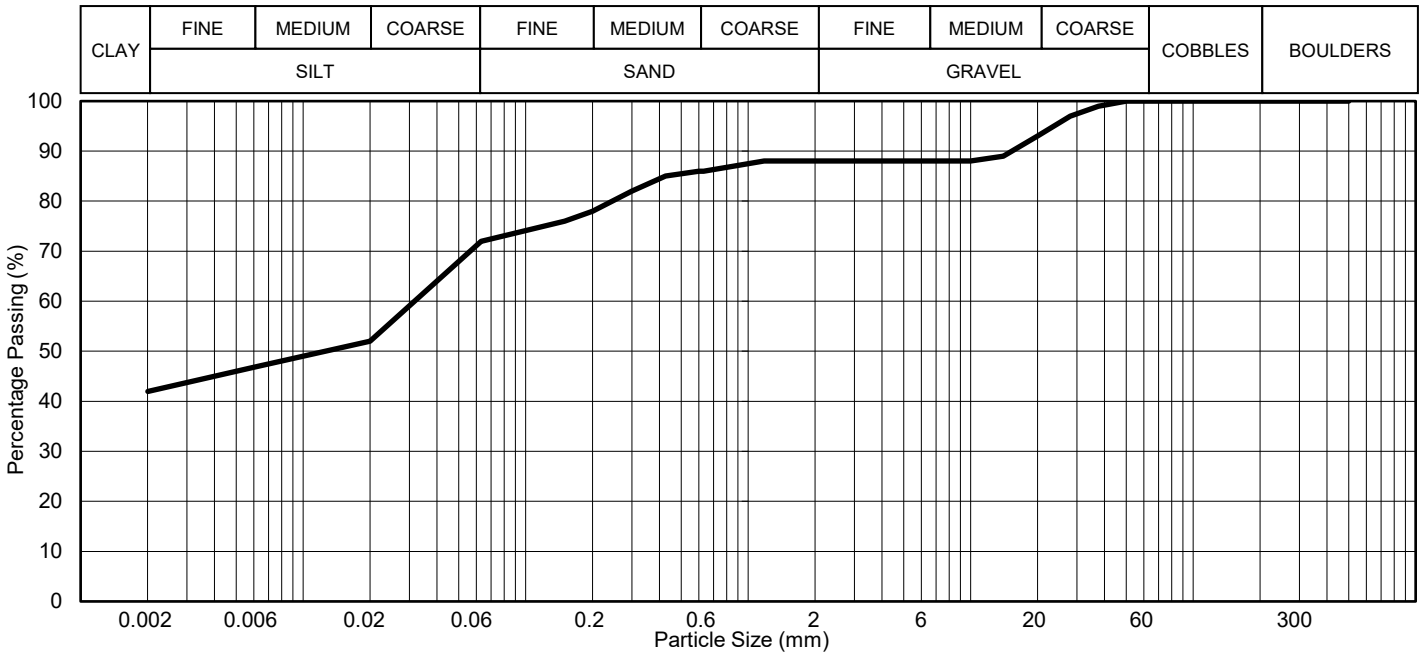
Remarks

₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Sample does not meet minimum mass requirement for material type

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

Borehole	BH01
Sample	U
Depth (m)	1.00-1.90



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	52
300.0	100	-	-	0.0063	47
125.0	100	-	-	0.0020	42
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**2A & 2B, 7A, 7E, 7F, 7I,**	
50.0	100	-	-		
37.5	99	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	97	-	-		
20.0	93	-	-		
14.0	89	-	-		
10.0	88	-	-	**PERCENTAGE SOIL TYPES**	
6.3	88	-	-		
5.0	88	-	-		
3.350	88	-	-		
2.000	88	-	-		
1.180	88	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	86	-	-		
0.600	86	-	-		
0.425	85	-	-		
0.300	82	-	-		
0.200	78	-	-		
0.150	76	-	-		
0.063	72	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
42	30	16	12	0

D10	D60	Specification
0.002	0.037	
UNIFORMITY COEFFICIENT	**19**	-

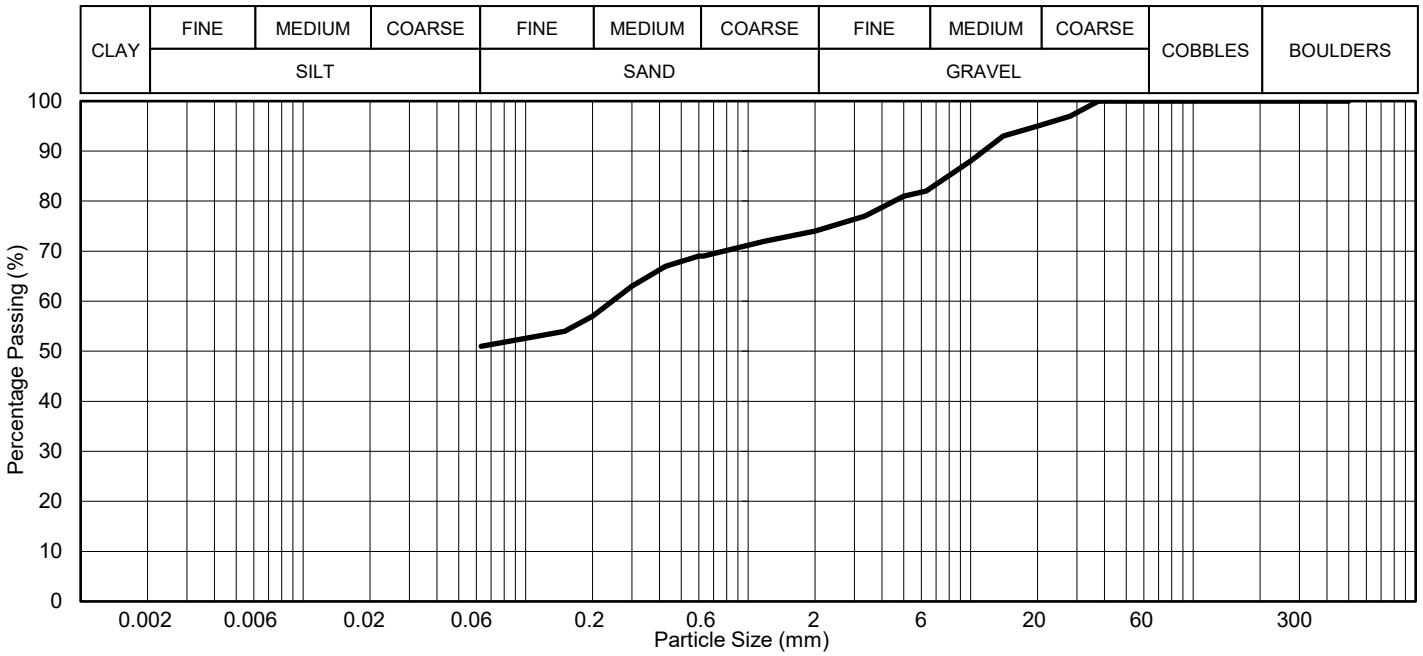
Remarks

₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.002mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	BH02
Sample	U
Depth (m)	2.00-3.00



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**2C, 7A, 7E, 7I,**	
50.0	100	-	-		
37.5	100	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	97	-	-		
20.0	95	-	-		
14.0	93	-	-		
10.0	88	-	-	**PERCENTAGE SOIL TYPES**	
6.3	82	-	-		
5.0	81	-	-		
3.350	77	-	-		
2.000	74	-	-		
1.180	72	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	69	-	-		
0.600	69	-	-		
0.425	67	-	-		
0.300	63	-	-		
0.200	57	-	-		
0.150	54	-	-		
0.063	51	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
/	51	23	26	0

D10	D60	Specification
0.063	0.250	
UNIFORMITY COEFFICIENT	**4**	-

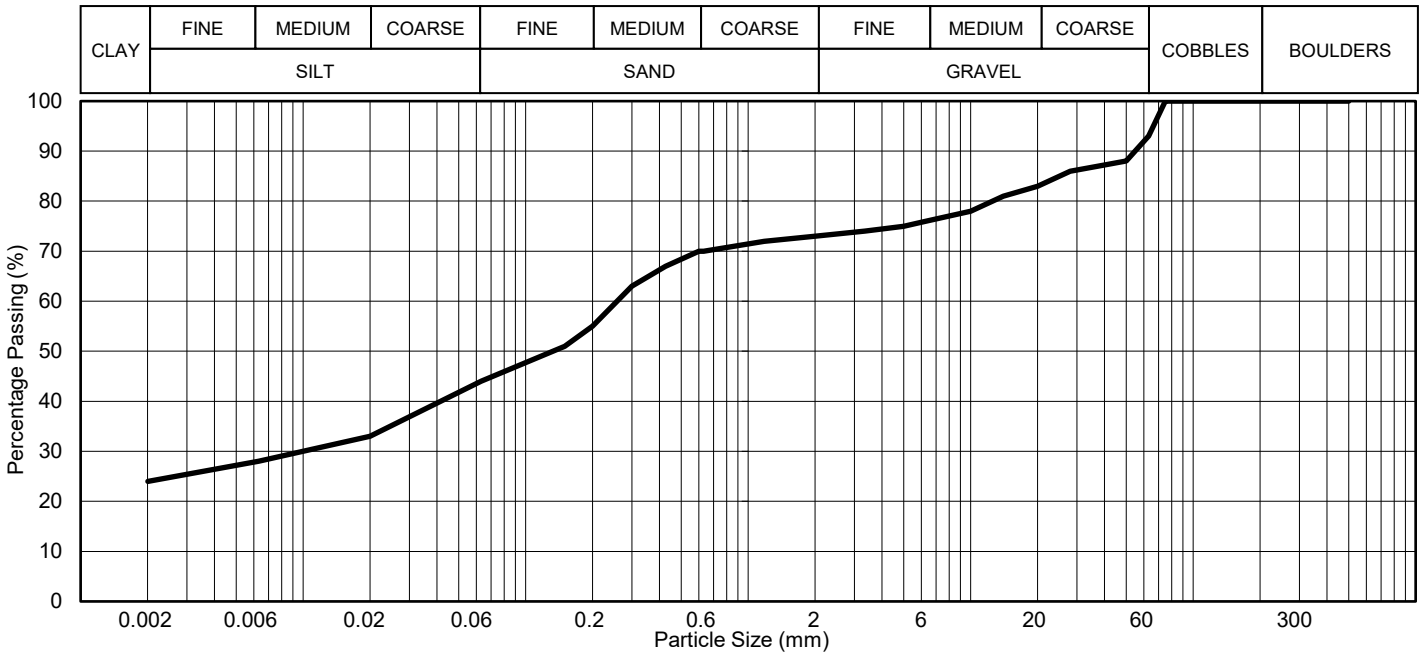
Remarks

₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	BH03
Sample	U
Depth (m)	1.20-2.00



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	33
300.0	100	-	-	0.0063	28
125.0	100	-	-	0.0020	24
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	93	-	-	**2C, 7A, 7F,**	
50.0	88	-	-		
37.5	87	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	86	-	-		
20.0	83	-	-		
14.0	81	-	-		
10.0	78	-	-	**PERCENTAGE SOIL TYPES**	
6.3	76	-	-	**CLAY** / **SILT ₸** / **SAND** / **GRAVEL** / **COBBLES**	
5.0	75	-	-		
3.350	74	-	-	24 / 20 / 29 / 20 / 7	
2.000	73	-	-		
1.180	72	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	70	-	-	**D10** / **D60** / **Specification**	
0.600	70	-	-		
0.425	67	-	-	0.002 / 0.263	
0.300	63	-	-	**UNIFORMITY COEFFICIENT 132** / **-**	
0.200	55	-	-		
0.150	51	-	-		
0.063	44	-	-		

Remarks

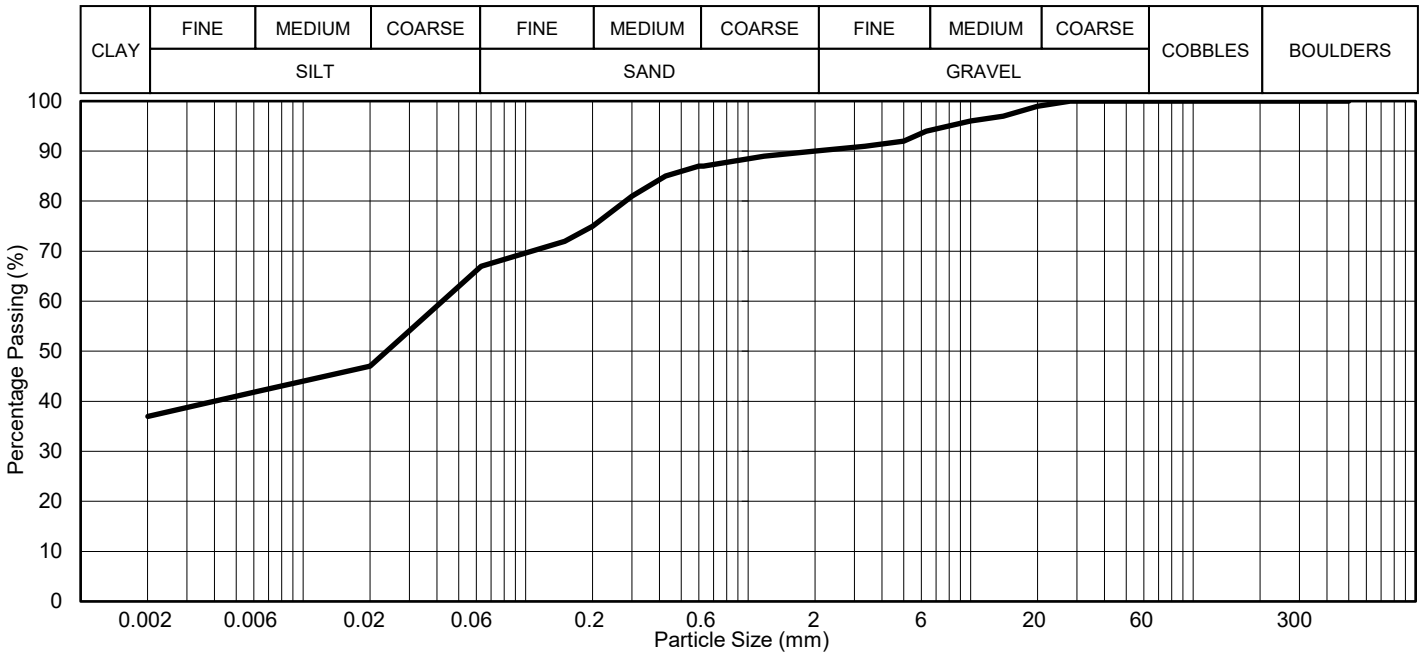
₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Sample does not meet minimum mass requirement for material type

Uniformity coefficient calculated using 0.002mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	BH04
Sample	U
Depth (m)	2.00-2.90



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	47
300.0	100	-	-	0.0063	42
125.0	100	-	-	0.0020	37
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**2A & 2B, 7A, 7E, 7F, 7I,**	
50.0	100	-	-		
37.5	100	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	100	-	-		
20.0	99	-	-		
14.0	97	-	-		
10.0	96	-	-	**PERCENTAGE SOIL TYPES**	
6.3	94	-	-		
5.0	92	-	-		
3.350	91	-	-		
2.000	90	-	-		
1.180	89	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	87	-	-		
0.600	87	-	-		
0.425	85	-	-		
0.300	81	-	-		
0.200	75	-	-		
0.150	72	-	-		
0.063	67	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
37	30	23	10	0

D10	D60	Specification
0.002	0.048	
UNIFORMITY COEFFICIENT	**24**	-

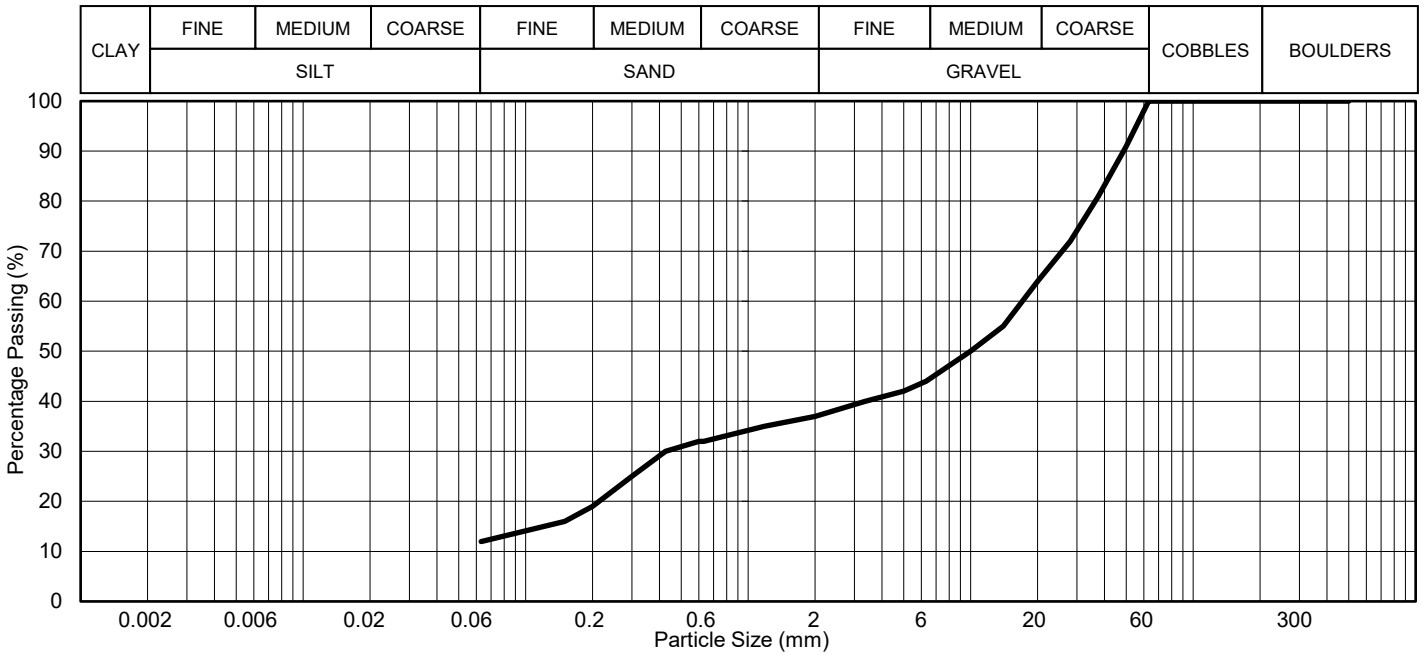
Remarks

₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.002mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	BH06
Sample	B
Depth (m)	1.80



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**1A, 6E & 6R, 6F1, 6I, 6N, 6P,**	
50.0	91	-	-		
37.5	81	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	72	-	-		
20.0	64	-	-		
14.0	55	-	-		
10.0	50	-	-	**PERCENTAGE SOIL TYPES**	
6.3	44	-	-		
5.0	42	-	-		
3.350	40	-	-		
2.000	37	-	-		
1.180	35	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	32	-	-		
0.600	32	-	-		
0.425	30	-	-		
0.300	25	-	-		
0.200	19	-	-		
0.150	16	-	-		
0.063	12	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
/	12	25	63	0

D10	D60	Specification
0.063	17.333	
UNIFORMITY COEFFICIENT	**275**	-

Remarks

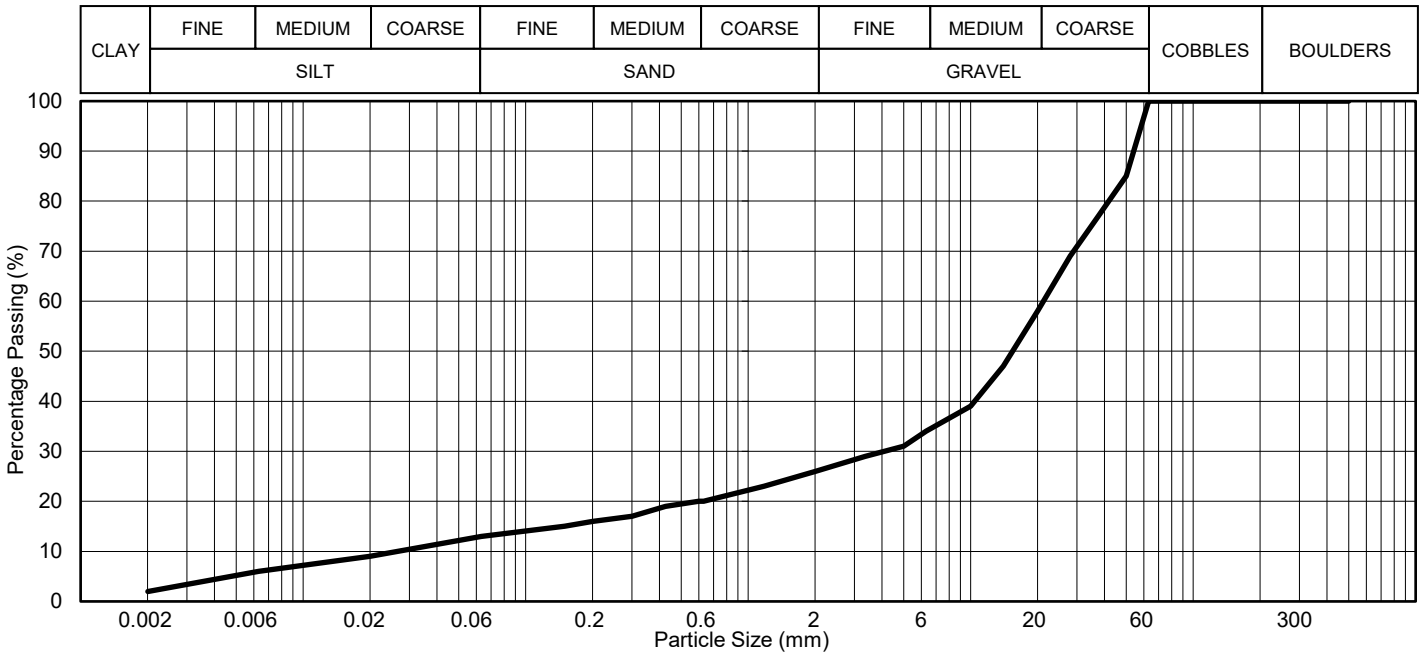
₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Sample does not meet minimum mass requirement for material type

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	BH07
Sample	B
Depth (m)	0.00-0.50



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	9
300.0	100	-	-	0.0063	6
125.0	100	-	-	0.0020	2
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**1A, 6E & 6R, 6I, 6N, 6P,**	
50.0	85	-	-		
37.5	77	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	69	-	-		
20.0	58	-	-		
14.0	47	-	-		
10.0	39	-	-	**PERCENTAGE SOIL TYPES**	
6.3	34	-	-		
5.0	31	-	-		
3.350	29	-	-		
2.000	26	-	-		
1.180	23	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	20	-	-		
0.600	20	-	-		
0.425	19	-	-		
0.300	17	-	-		
0.200	16	-	-		
0.150	15	-	-		
0.063	13	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
2	11	13	74	0

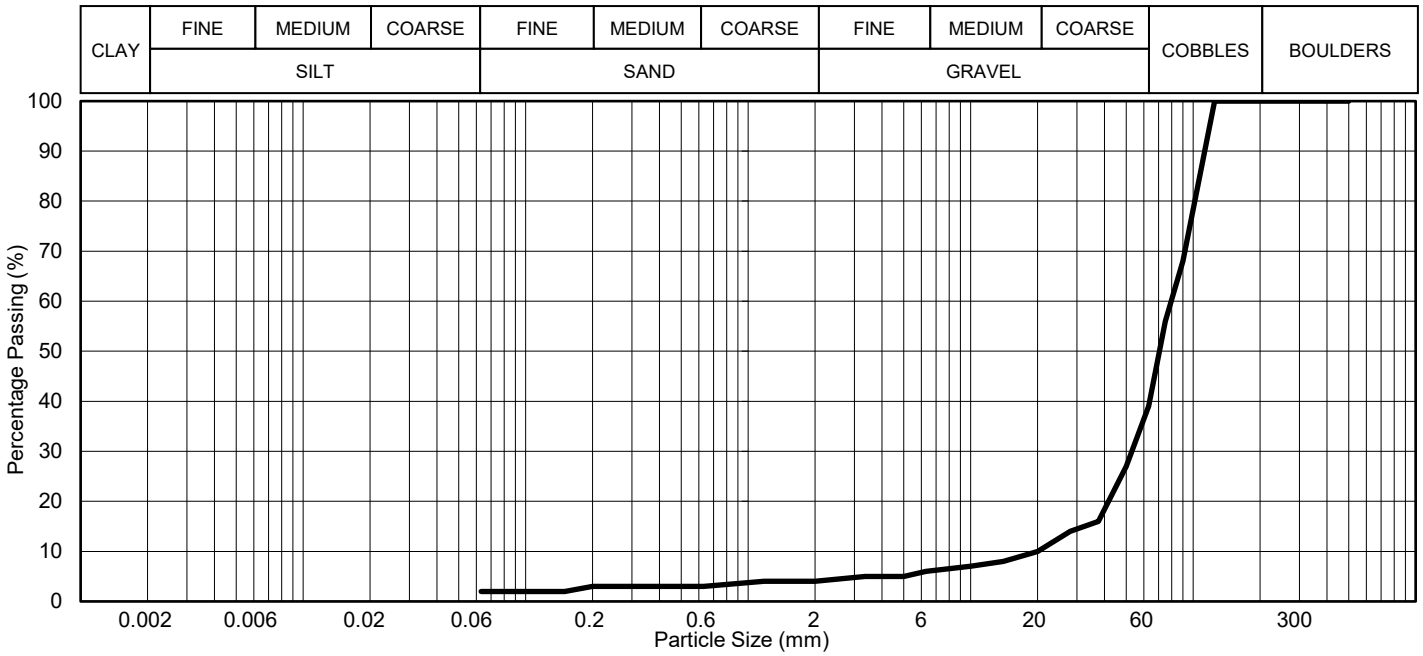
D10	D60	Specification
0.031	21.455	
UNIFORMITY COEFFICIENT	**692**	-

Remarks

₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Sample does not meet minimum mass requirement for material type

Borehole	BH08
Sample	B
Depth (m)	0.00-0.50



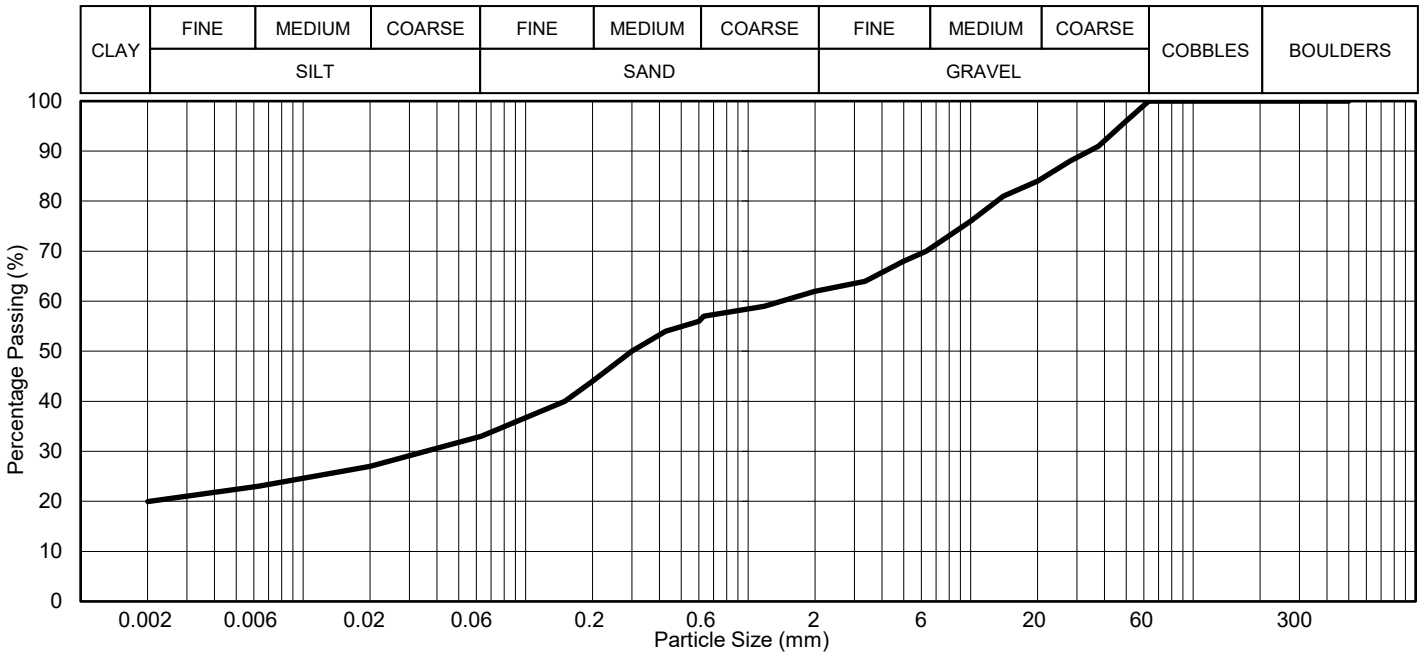
SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	68	-	-		
75.0	56	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	39	-	-	**1B,**	
50.0	27	-	-		
37.5	16	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	14	-	-		
20.0	10	-	-		
14.0	8	-	-		
10.0	7	-	-	**PERCENTAGE SOIL TYPES**	
6.3	6	-	-	**CLAY** / **SILT ₸** / **SAND** / **GRAVEL** / **COBBLES**	
5.0	5	-	-		
3.350	5	-	-	/ 2 2 35 61	
2.000	4	-	-		
1.180	4	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	3	-	-	**D10** / **D60** / **Specification**	
0.600	3	-	-		
0.425	3	-	-	20.000 80.000	
0.300	3	-	-	**UNIFORMITY COEFFICIENT 4** -	
0.200	3	-	-		
0.150	2	-	-		
0.063	2	-	-		

Remarks

₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Sample does not meet minimum mass requirement for material type

Borehole	BH10
Sample	U
Depth (m)	1.00-1.50



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	27
300.0	100	-	-	0.0063	23
125.0	100	-	-	0.0020	20
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**2C, 7A, 7D, 7F,**	
50.0	96	-	-		
37.5	91	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	88	-	-		
20.0	84	-	-		
14.0	81	-	-		
10.0	76	-	-	**PERCENTAGE SOIL TYPES**	
6.3	70	-	-	**CLAY** / **SILT ₸** / **SAND** / **GRAVEL** / **COBBLES**	
5.0	68	-	-		
3.350	64	-	-	20 / 13 / 29 / 38 / 0	
2.000	62	-	-		
1.180	59	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	57	-	-	**D10** / **D60** / **Specification**	
0.600	56	-	-		
0.425	54	-	-	0.002 / 1.453	
0.300	50	-	-	**UNIFORMITY COEFFICIENT 727** / **-**	
0.200	44	-	-		
0.150	40	-	-		
0.063	33	-	-		

Remarks

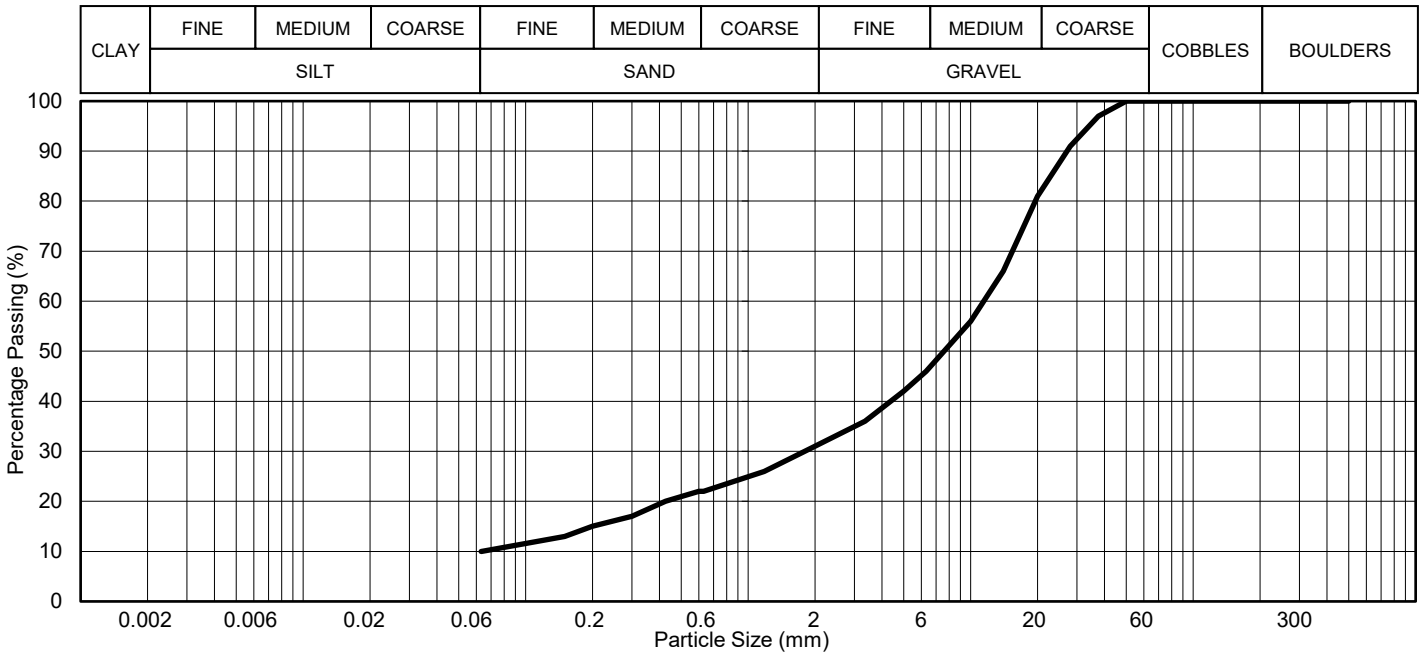
₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Sample does not meet minimum mass requirement for material type

Uniformity coefficient calculated using 0.002mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	BH11
Sample	B
Depth (m)	0.00-0.50



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**1A, 6E & 6R, 6F1, 6F2, 6F3, 6I, 6M, 6N, 6P,**	
50.0	100	-	-		
37.5	97	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	91	-	-		
20.0	81	-	-		
14.0	66	-	-		
10.0	56	-	-	**PERCENTAGE SOIL TYPES**	
6.3	46	-	-	**CLAY** / **SILT Ŧ** / **SAND** / **GRAVEL** / **COBBLES**	
5.0	42	-	-		
3.350	36	-	-	/ 10 21 69 0	
2.000	31	-	-		
1.180	26	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	22	-	-	**D10** / **D60** / **Specification**	
0.600	22	-	-		
0.425	20	-	-	0.063 / 11.600	
0.300	17	-	-	**UNIFORMITY COEFFICIENT 184** / -	
0.200	15	-	-		
0.150	13	-	-		
0.063	10	-	-		

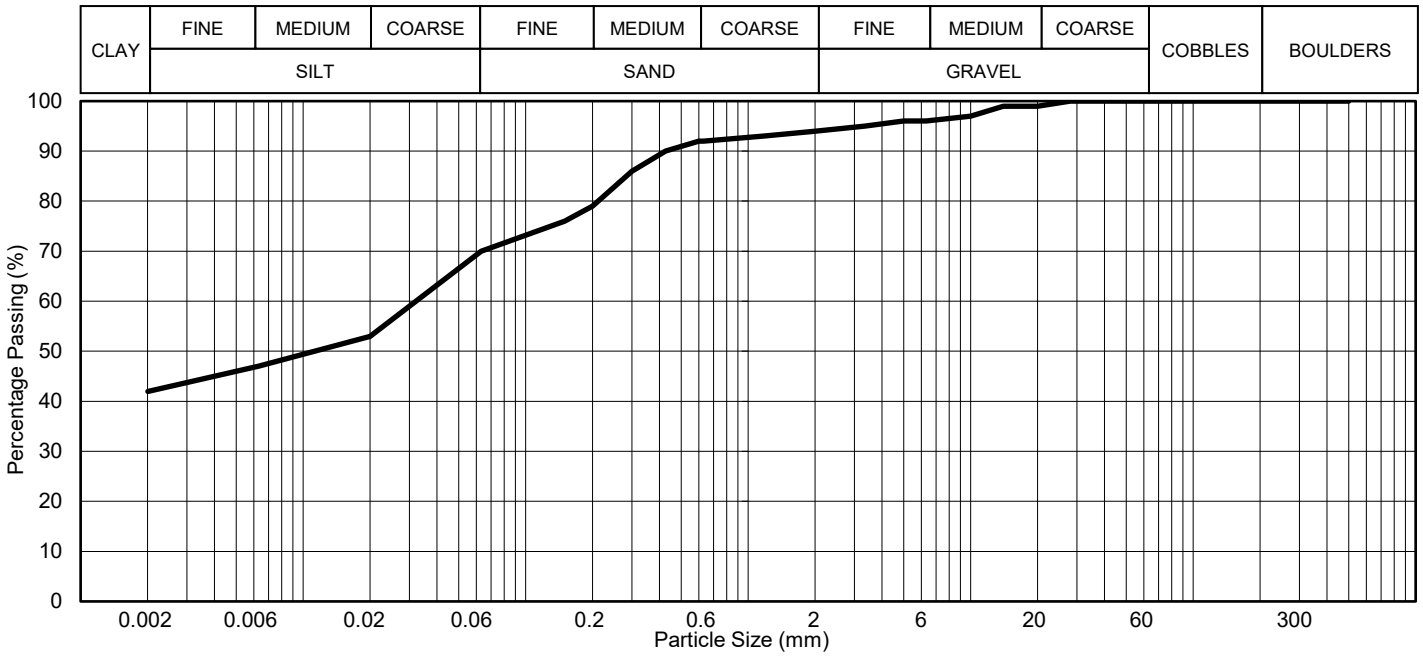
Remarks

Ŧ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	BH12
Sample	U
Depth (m)	0.00-0.80



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	53
300.0	100	-	-	0.0063	47
125.0	100	-	-	0.0020	42
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**2A & 2B, 7A, 7E, 7F, 7I,**	
50.0	100	-	-		
37.5	100	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	100	-	-		
20.0	99	-	-		
14.0	99	-	-		
10.0	97	-	-	**PERCENTAGE SOIL TYPES**	
6.3	96	-	-	**CLAY** / **SILT ₸** / **SAND** / **GRAVEL** / **COBBLES**	
5.0	96	-	-		
3.350	95	-	-	42 / 28 / 24 / 6 / 0	
2.000	94	-	-		
1.180	93	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	92	-	-	**D10** / **D60** / **Specification**	
0.600	92	-	-		
0.425	90	-	-	0.002 / 0.038	
0.300	86	-	-	**UNIFORMITY COEFFICIENT 19** / **-**	
0.200	79	-	-		
0.150	76	-	-		
0.063	70	-	-		

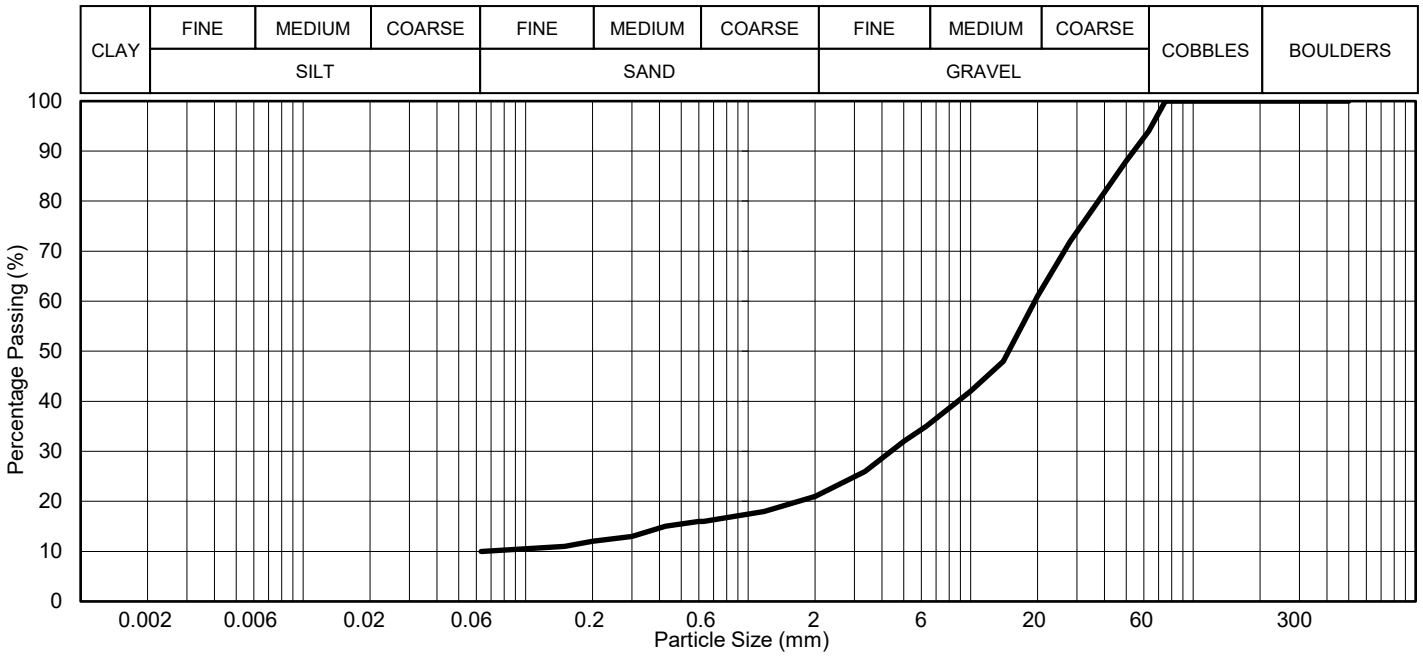
Remarks

₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.002mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	BH18
Sample	B
Depth (m)	0.00-0.50



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	94	-	-	**1A, 6E & 6R, 6F1, 6F2, 6F3, 6I, 6M, 6N, 6P,**	
50.0	88	-	-		
37.5	80	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	72	-	-		
20.0	61	-	-		
14.0	48	-	-		
10.0	42	-	-	**PERCENTAGE SOIL TYPES**	
6.3	35	-	-	**CLAY** / **SILT Ŧ** / **SAND** / **GRAVEL** / **COBBLES**	
5.0	32	-	-		
3.350	26	-	-	/ 10 11 73 6	
2.000	21	-	-		
1.180	18	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	16	-	-	**D10** / **D60** / **Specification**	
0.600	16	-	-		
0.425	15	-	-	0.063 / 19.538	
0.300	13	-	-	**UNIFORMITY COEFFICIENT 310** / -	
0.200	12	-	-		
0.150	11	-	-		
0.063	10	-	-		

Remarks

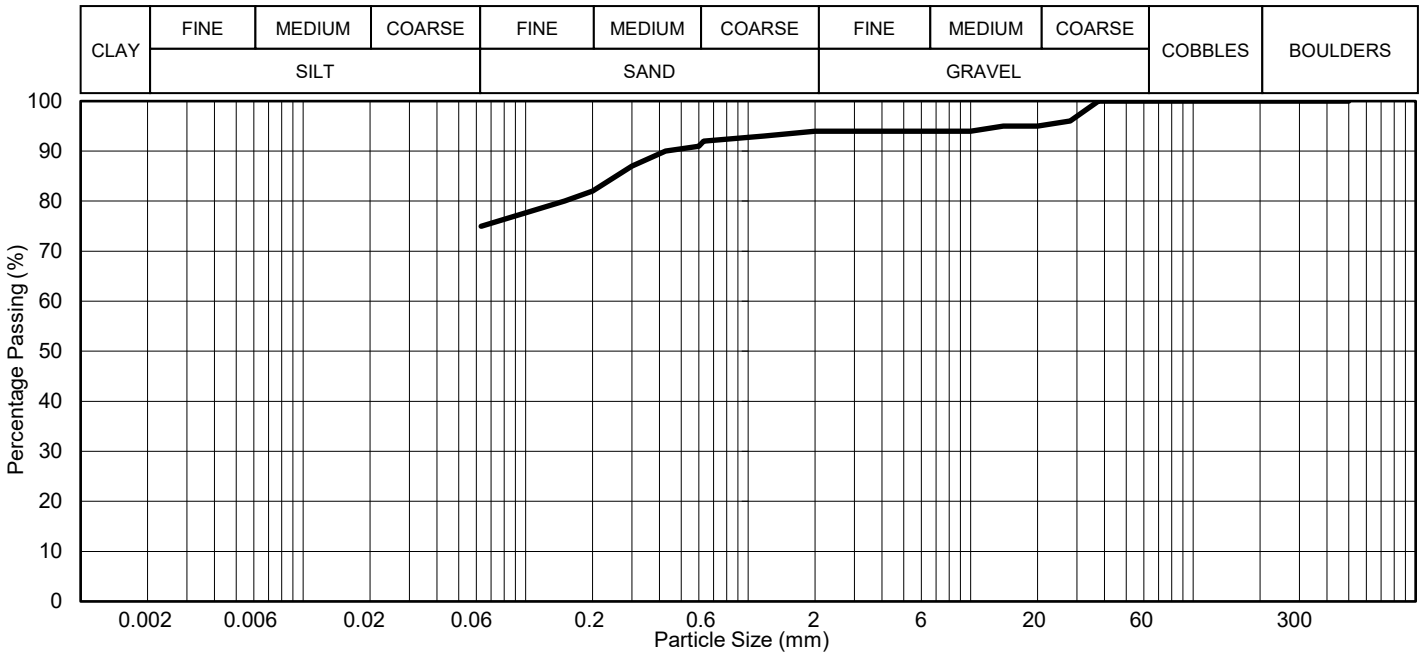
Ŧ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Sample does not meet minimum mass requirement for material type

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

Borehole	BH18
Sample	U
Depth (m)	3.00-3.90



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**2A & 2B, 7A, 7E, 7I,**	
50.0	100	-	-		
37.5	100	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	96	-	-		
20.0	95	-	-		
14.0	95	-	-		
10.0	94	-	-	**PERCENTAGE SOIL TYPES**	
6.3	94	-	-		
5.0	94	-	-		
3.350	94	-	-		
2.000	94	-	-		
1.180	93	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	92	-	-		
0.600	91	-	-		
0.425	90	-	-		
0.300	87	-	-		
0.200	82	-	-		
0.150	80	-	-		
0.063	75	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
/	75	19	6	0

D10	D60	Specification
0.063	0.000	
UNIFORMITY COEFFICIENT	**0**	-

Remarks

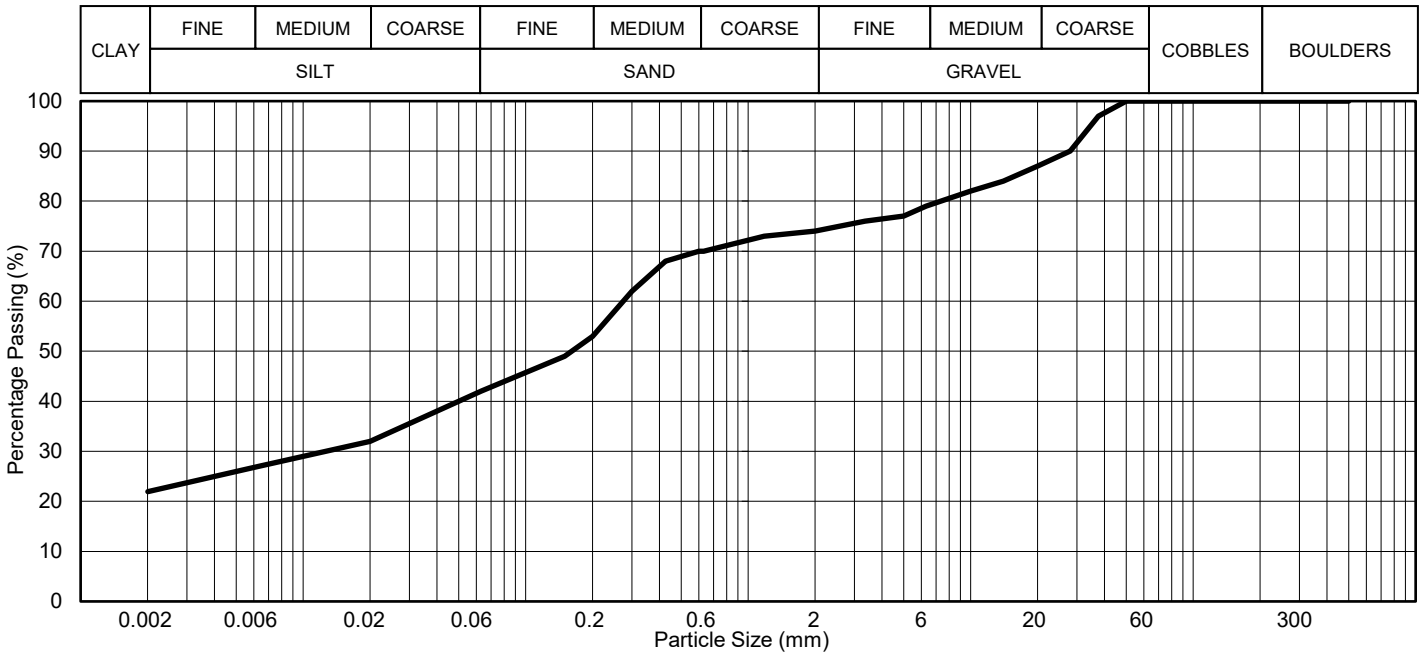
₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

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Borehole	BH23
Sample	B
Depth (m)	0.50-1.00



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	32
300.0	100	-	-	0.0063	27
125.0	100	-	-	0.0020	22
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	100	-	-	**2C, 7A, 7F,**	
50.0	100	-	-		
37.5	97	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	90	-	-		
20.0	87	-	-		
14.0	84	-	-		
10.0	82	-	-	**PERCENTAGE SOIL TYPES**	
6.3	79	-	-	**CLAY** / **SILT ₸** / **SAND** / **GRAVEL** / **COBBLES**	
5.0	77	-	-		
3.350	76	-	-	22 / 20 / 32 / 26 / 0	
2.000	74	-	-		
1.180	73	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	70	-	-	**D10** / **D60** / **Specification**	
0.600	70	-	-		
0.425	68	-	-	0.002 / 0.278	
0.300	62	-	-	**UNIFORMITY COEFFICIENT 139** / **-**	
0.200	53	-	-		
0.150	49	-	-		
0.063	42	-	-		

Remarks

₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

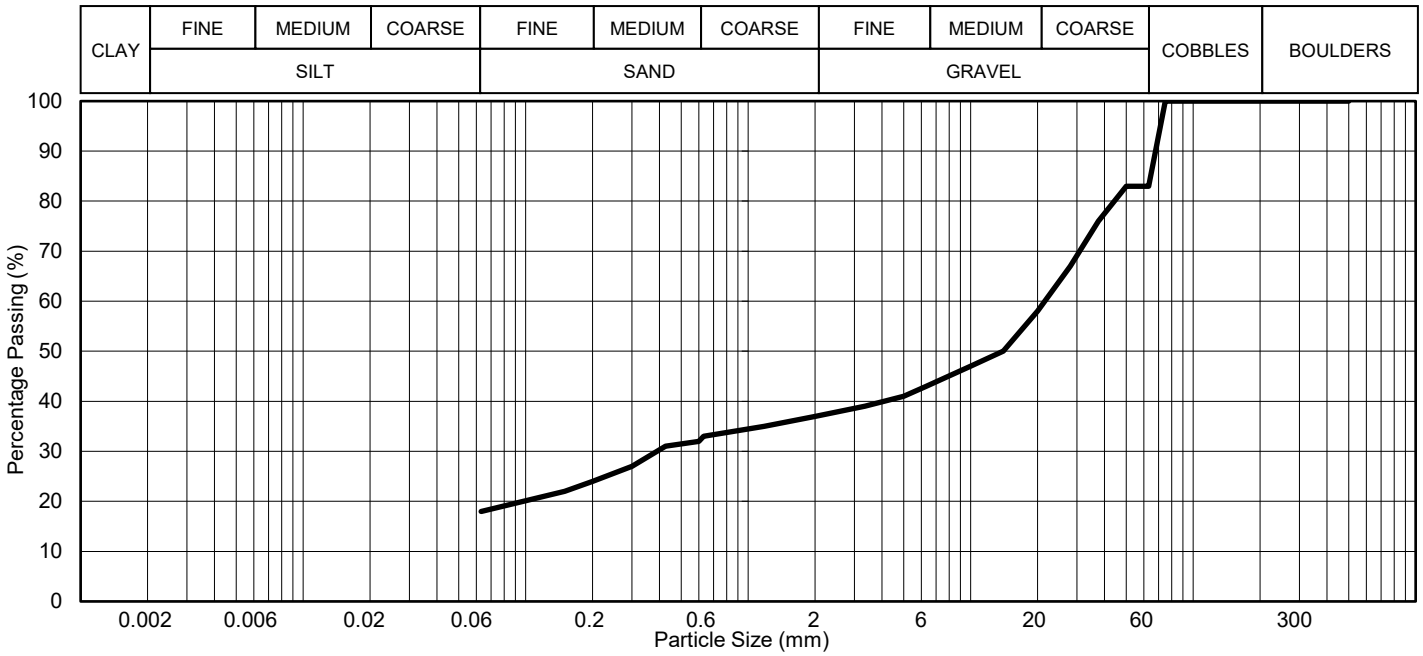
Sample does not meet minimum mass requirement for material type

Uniformity coefficient calculated using 0.002mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022

MATtest Limited
materials testing & consultancy

Borehole	BH24
Sample	B
Depth (m)	0.00-0.50



SIEVING				SEDIMENTATION (Assumed ρs of 2.65Mg/m³)	
Sieve Size (mm)	Percentage Passing (%)	Specification Not Applicable		Particle Size (mm)	Percentage Passing (%)
		Lower %	Upper %		
500.0	100	-	-	0.0200	
300.0	100	-	-	0.0063	
125.0	100	-	-	0.0020	
90.0	100	-	-		
75.0	100	-	-	**GRADING CLASSIFICATION (SHW TABLE 6/2)**	
63.0	83	-	-	**2C, 7A, 7F,**	
50.0	83	-	-		
37.5	76	-	-	Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.	
28.0	67	-	-		
20.0	58	-	-		
14.0	50	-	-		
10.0	47	-	-	**PERCENTAGE SOIL TYPES**	
6.3	43	-	-		
5.0	41	-	-		
3.350	39	-	-		
2.000	37	-	-		
1.180	35	-	-	**UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)**	
0.630	33	-	-		
0.600	32	-	-		
0.425	31	-	-		
0.300	27	-	-		
0.200	24	-	-		
0.150	22	-	-		
0.063	18	-	-		

CLAY	SILT ₸	SAND	GRAVEL	COBBLES
/	18	19	46	17

D10	D60	Specification
0.063	21.778	
UNIFORMITY COEFFICIENT 346		-

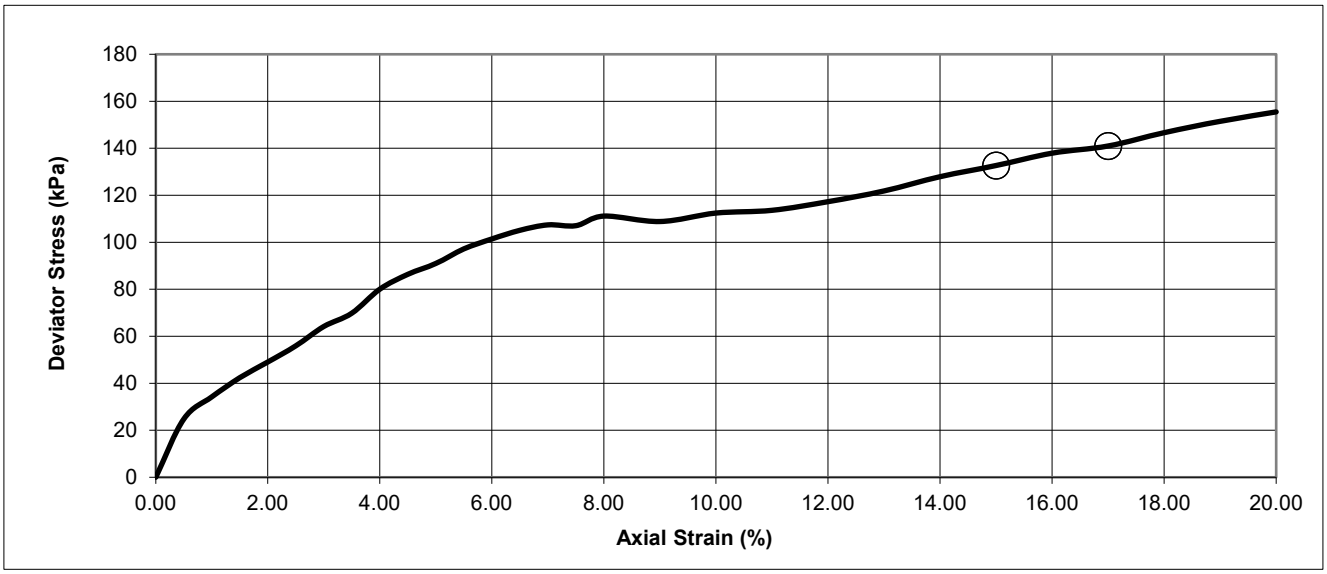
Remarks

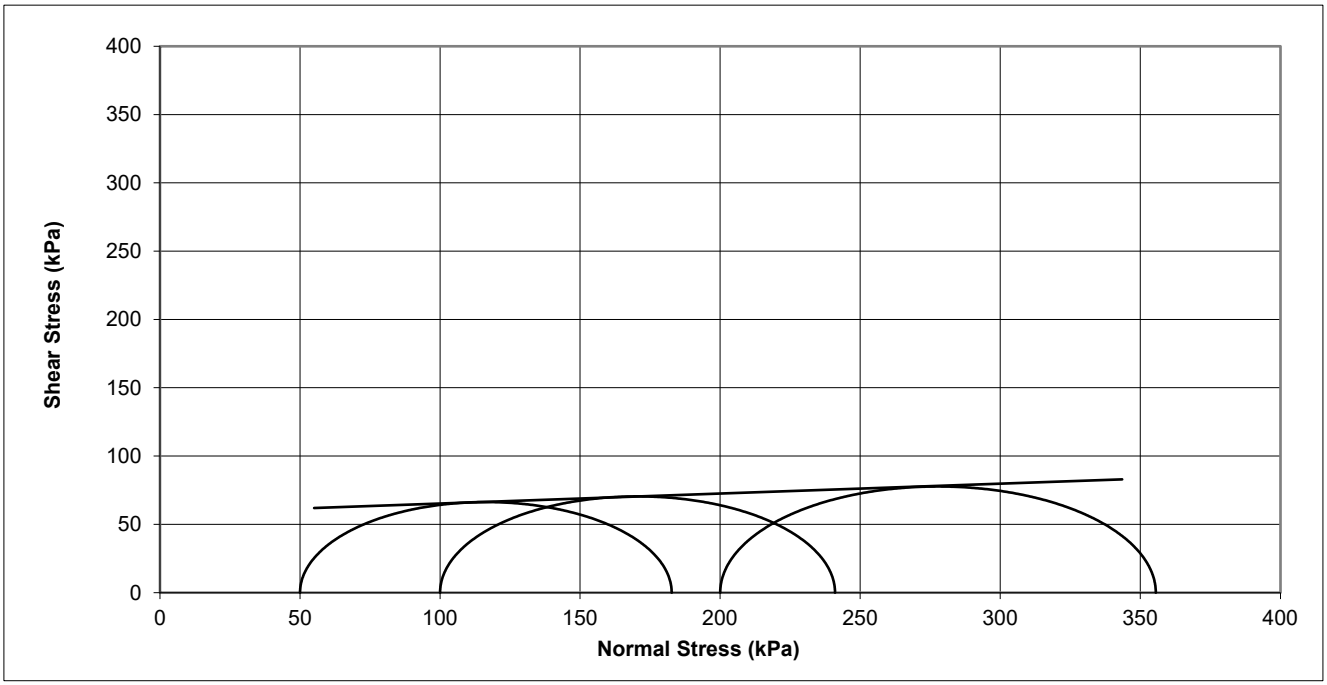
₸ Where a sedimentation test was not carried out, this figure represents total fines, i.e., particles of diameter less than 63 microns

Sample does not meet minimum mass requirement for material type

Uniformity coefficient calculated using 0.063mm as d10 as no value was available.

PARTICLE SIZE DISTRIBUTION - BS EN ISO 17892-4 : 2016 / BS 1377 - 2 : 2022





Failure Conditions				
Cell pressure	kPa	50	100	200
Membrane correction	kPa	1.0	1.1	1.2
Strain at failure	%	15.0	17.0	20.0
Failure Type		Plastic	Plastic	Plastic
Corrected deviator stress	kPa	133	141	155
Undrained shear stress	kPa	66	70	78

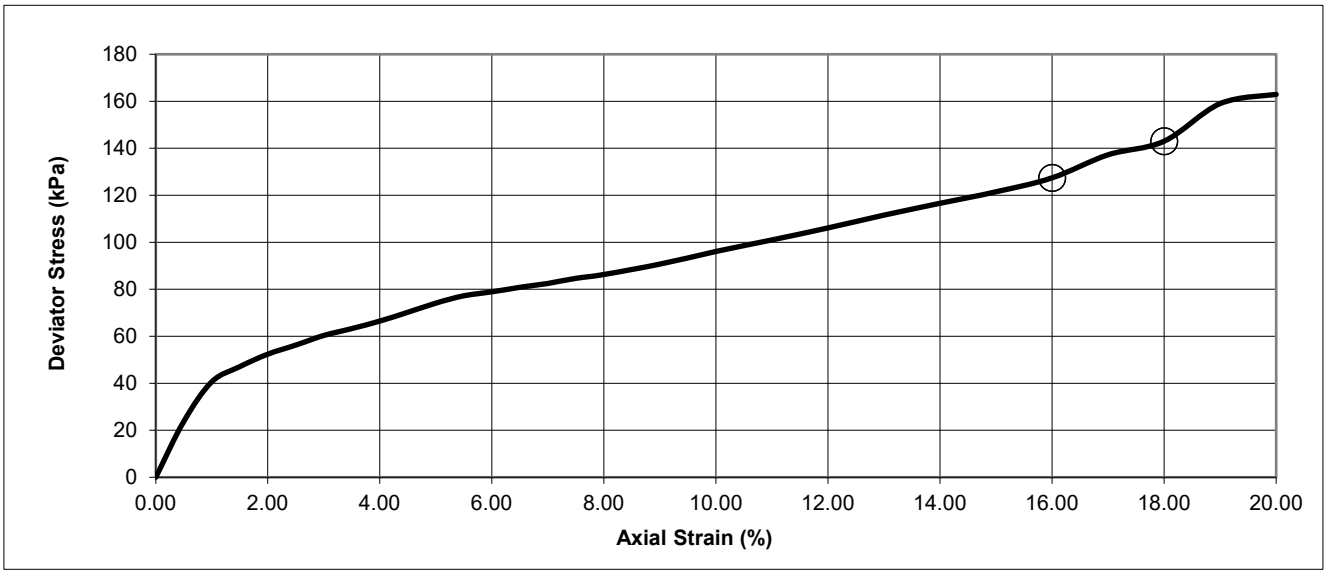
Cohesion	kPa	58.0	Friction Angle	°	4.2

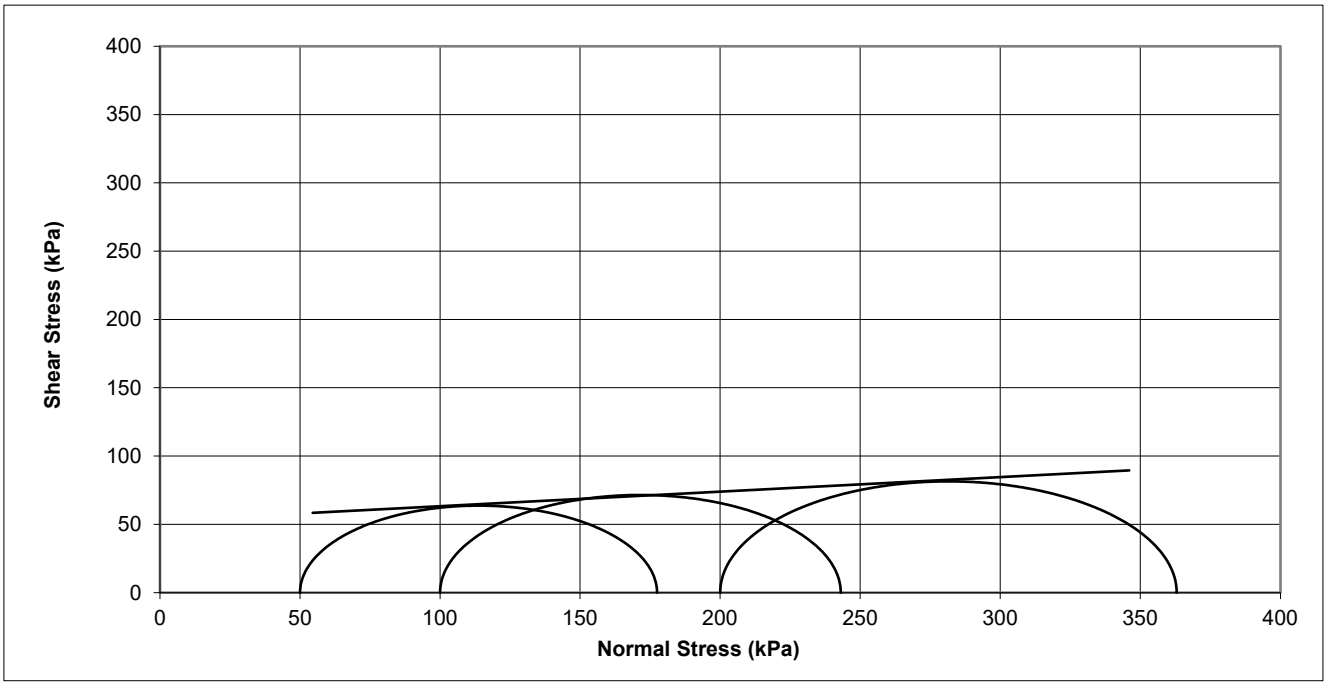
Initial Conditions							
Sample length	mm	131.60	Rate of strain	%/min	2.0	Borehole	BH01
Sample diameter	mm	64.08	Bulk Density	Mg/m^3	2.00	Sample	U
Membrane type		Latex	Dry Density	Mg/m^3	1.70	Depth (m)	4.80
Membrane thickness	mm	0.20	Moisture Content	%	18		

Undisturbed sample, taken directly from the sample tube and retaining axial orientation

DETERMINATION OF MULTI STAGE UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

Tested in accordance with BS 1377-7 : 1990





Failure Conditions				
Cell pressure	kPa	50	100	200
Membrane correction	kPa	1.0	1.1	1.2
Strain at failure	%	16.0	18.0	20.0
Failure Type		Plastic	Plastic	Plastic
Corrected deviator stress	kPa	127	143	163
Undrained shear stress	kPa	64	72	81

Cohesion	kPa	52.7	Friction Angle	°	6.1

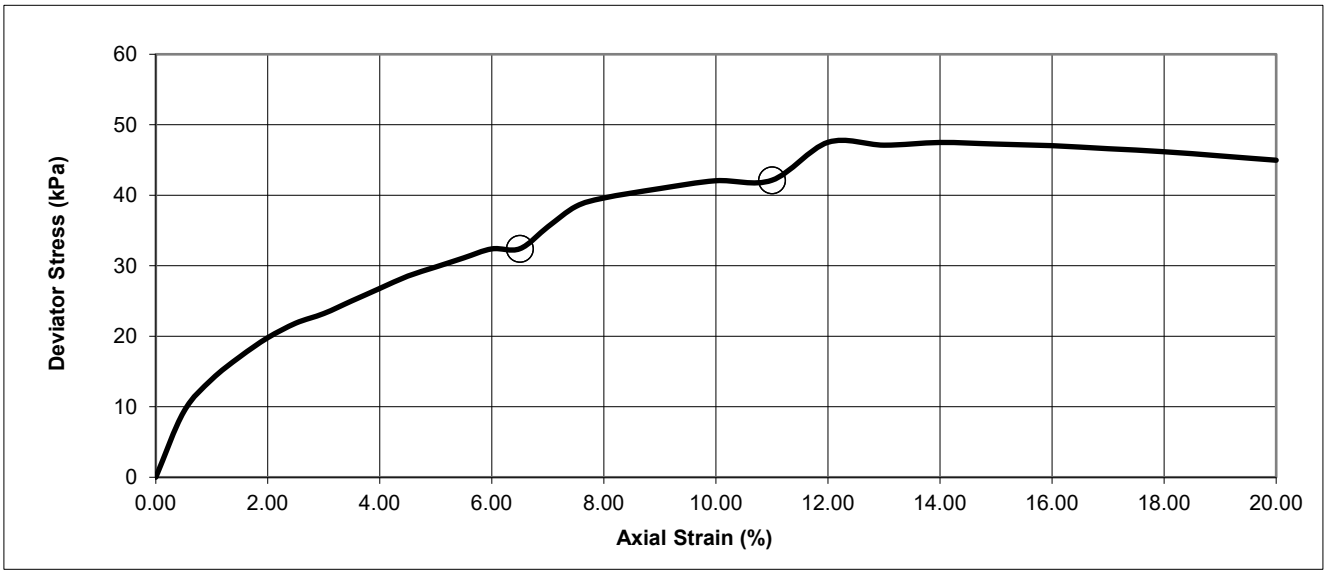
Initial Conditions					
Sample length	mm	126.79	Rate of strain	%/min	2.0
Sample diameter	mm	63.91	Bulk Density	Mg/m^3	2.23
Membrane type		Latex	Dry Density	Mg/m^3	1.88
Membrane thickness	mm	0.20	Moisture Content	%	19

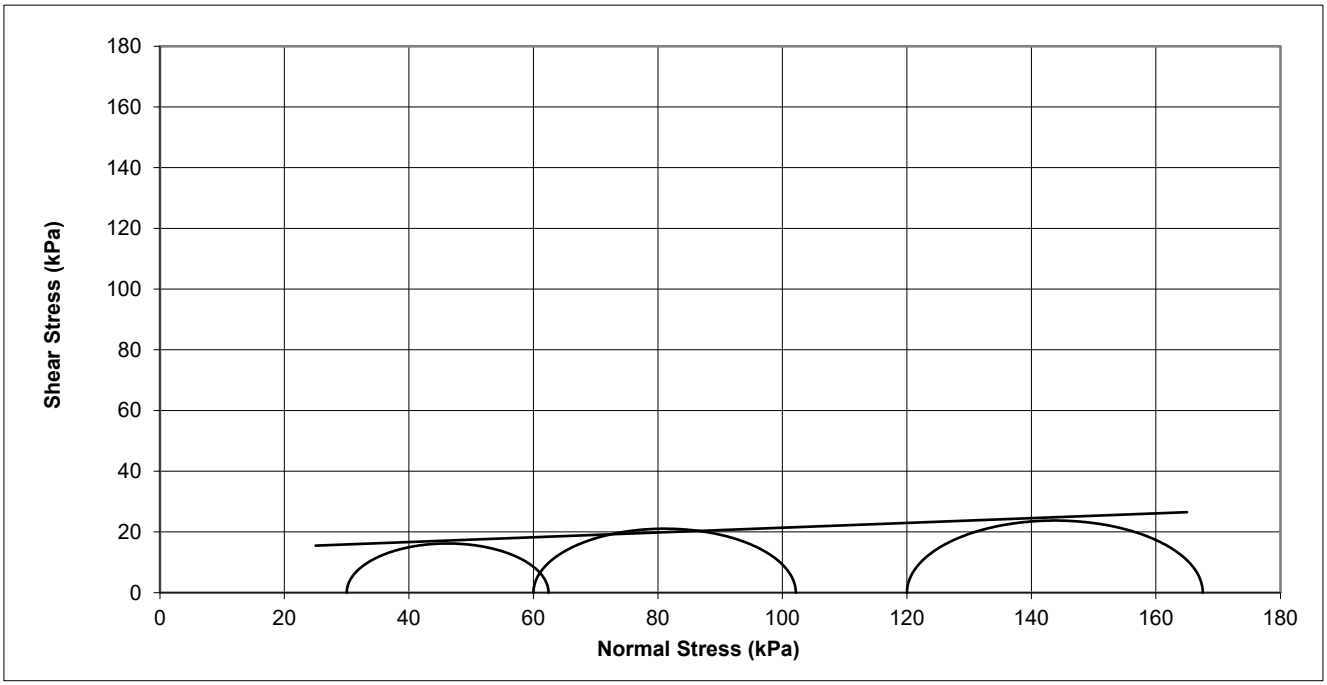
Borehole	BH07
Sample	U
Depth (m)	4.40

Undisturbed sample, taken directly from the sample tube and retaining axial orientation

DETERMINATION OF MULTI STAGE UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

Tested in accordance with BS 1377-7 : 1990





Failure Conditions				
Cell pressure	kPa	30	60	120
Membrane correction	kPa	0.4	0.7	0.7
Strain at failure	%	6.5	11.0	12.0
Failure Type		Intermediate	Intermediate	Intermediate
Corrected deviator stress	kPa	32	42	48
Undrained shear stress	kPa	16	21	24

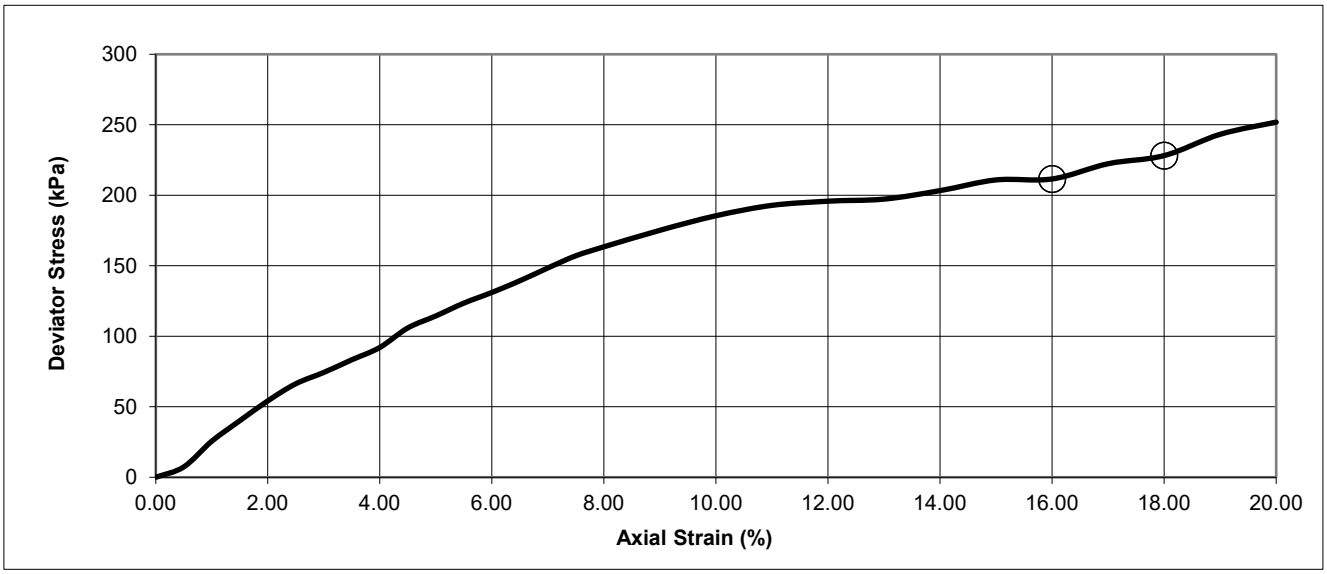
Cohesion	kPa	13.5	Friction Angle	°	4.5

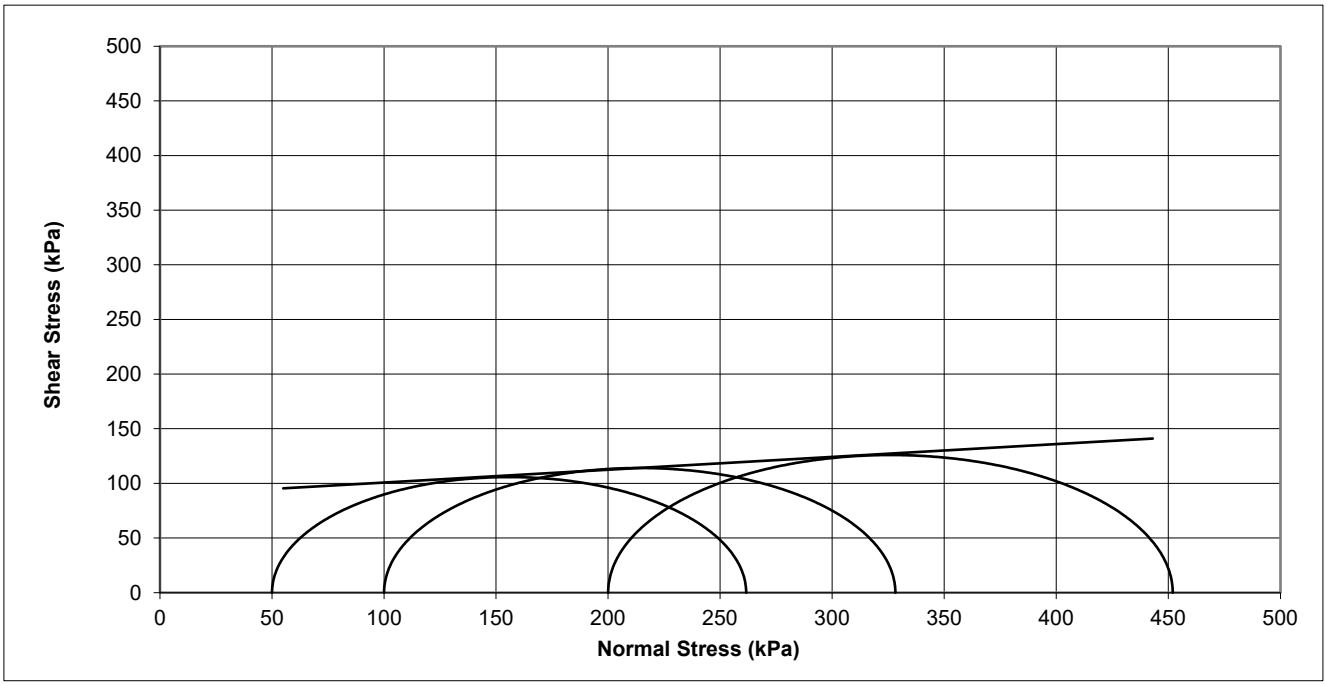
Initial Conditions							
Sample length	mm	149.41	Rate of strain	%/min	2.0	Borehole	BH14
Sample diameter	mm	72.15	Bulk Density	Mg/m^3	2.06	Sample	U
Membrane type		Latex	Dry Density	Mg/m^3	1.70	Depth (m)	2.60
Membrane thickness	mm	0.20	Moisture Content	%	21		

Undisturbed sample, taken directly from the sample tube and retaining axial orientation

DETERMINATION OF MULTI STAGE UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

Tested in accordance with BS 1377-7 : 1990





Failure Conditions				
Cell pressure	kPa	50	100	200
Membrane correction	kPa	1.1	1.2	1.2
Strain at failure	%	16.0	18.0	20.0
Failure Type		Plastic	Plastic	Plastic
Corrected deviator stress	kPa	212	228	252
Undrained shear stress	kPa	106	114	126

Cohesion	kPa	89.1	Friction Angle	°	6.7

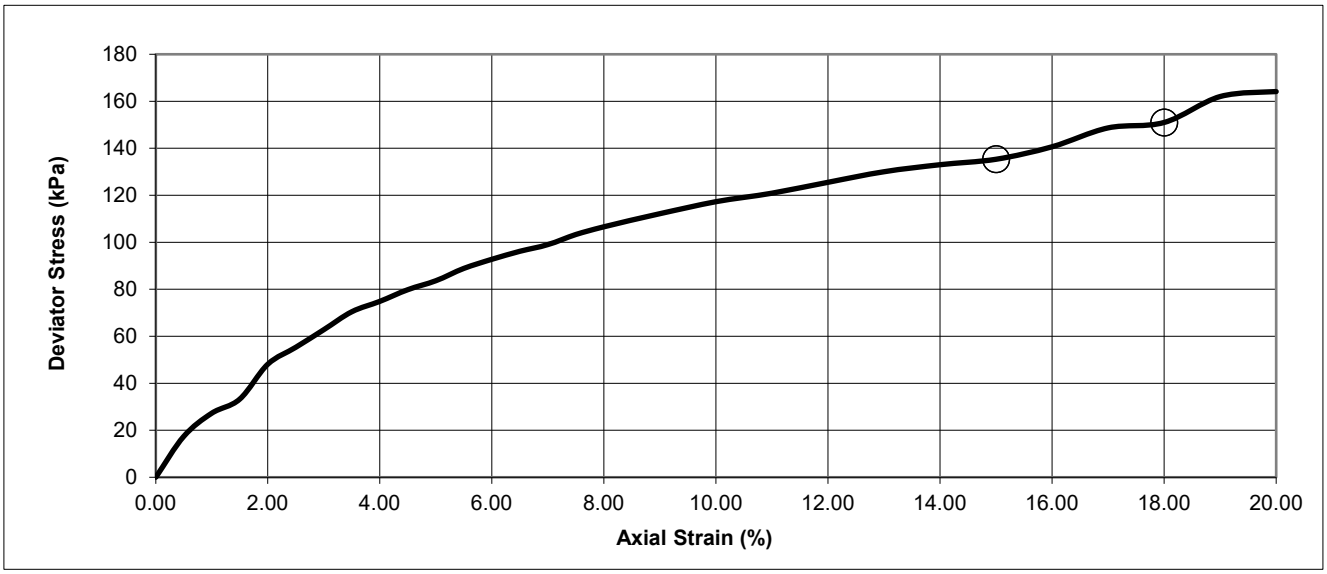
Initial Conditions					
Sample length	mm	126.74	Rate of strain	%/min	2.0
Sample diameter	mm	61.14	Bulk Density	Mg/m^3	2.22
Membrane type		Latex	Dry Density	Mg/m^3	1.94
Membrane thickness	mm	0.20	Moisture Content	%	15

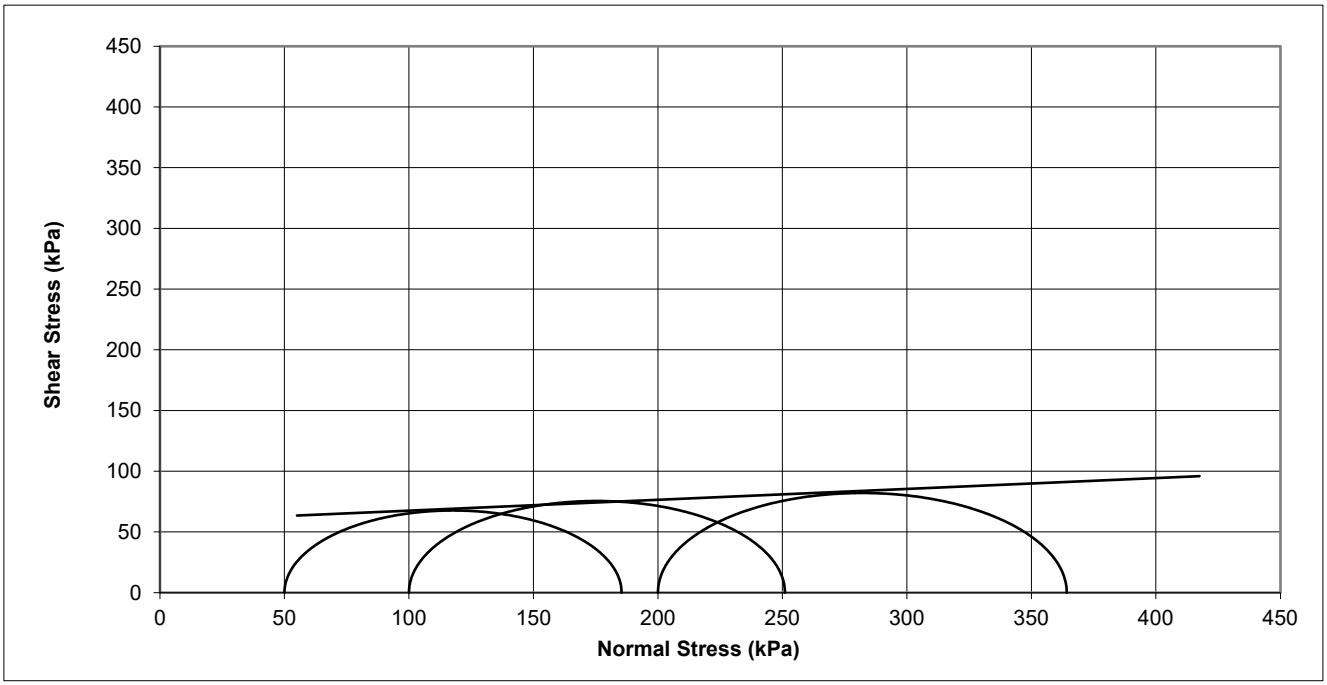
Borehole	BH15
Sample	U
Depth (m)	4.60

Undisturbed sample, taken directly from the sample tube and retaining axial orientation

DETERMINATION OF MULTI STAGE UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

Tested in accordance with BS 1377-7 : 1990





Failure Conditions				
Cell pressure	kPa	50	100	200
Membrane correction	kPa	0.8	0.9	1.0
Strain at failure	%	15.0	18.0	20.0
Failure Type		Plastic	Plastic	Plastic
Corrected deviator stress	kPa	135	151	164
Undrained shear stress	kPa	68	75	82

Cohesion	kPa	58.6	Friction Angle	°	5.1

Initial Conditions							
Sample length	mm	156.94	Rate of strain	%/min	2.0	Borehole	BH19
Sample diameter	mm	75.99	Bulk Density	Mg/m^3	2.12	Sample	U
Membrane type		Latex	Dry Density	Mg/m^3	1.78	Depth (m)	3.30
Membrane thickness	mm	0.20	Moisture Content	%	19		

Undisturbed sample, taken directly from the sample tube and retaining axial orientation

DETERMINATION OF MULTI STAGE UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

Tested in accordance with BS 1377-7 : 1990

BOREHOLE	SAMPLE	DEPTH	VANE TEST (kPa)
BH01	U	2.80	50
BH01	U	3.90	40
BH05	U	1.90	53
BH07	U	1.90	57
BH09	U	2.00	65
BH13	U	1.10	42
BH17	U	1.90	68
BH19	U	1.80	25
BH24	U	1.50	80

SUMMARY OF LABORATORY HAND VANE TEST RESULTS



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