



GRM Development Solutions Ltd
Laurus House
First Avenue
Centrum 100
Burton upon Trent
Staffordshire
DE14 2WH

Tel: 01283 551 249
Fax: 01283 211 968
Web: www.grm-uk.com

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Date: 3rd April 2023

Kelvin Dunleavy
Tilbury Douglas Construction NW
By email only

Dear Kelvin,

Re: Sandilands Community Primary School - Site Investigation Works

GRM were instructed by Alan Johnston Partnership Ltd (Client's agent) on behalf of Tilbury Douglas Construction NW (Client) to carry out site investigation works for the proposed re-development of the existing Sandilands Community Primary School, Wendover Road, Manchester M23 9JX.

The following reports have been used in the preparation of, and should be read in conjunction with, this document:

- 1st Horizon, 'Phase 01 Ground Investigation Desk Study' dated 24/06/2021 (ref: SL01-R11 Rev A).
- 1st Horizon, 'Phase 02 Ground Investigation Report' dated 29/09/2021 (ref: SL01-R12).
- 1st Horizon, 'Stage 01 Preliminary UXO Risk Assessment' dated 24/05/2021 (ref: SL01-R14).

The GRM Standard Limitations of Reporting are provided in Appendix A of this report.

BACKGROUND

Proposed Development Layout

The current plan is to demolish the existing school buildings and replace them with a single school building, extend the current car park in the south and construct a new soft social and informal area across the south eastern corner. The current hardstanding playground to the south west and soft outdoor playground area across the northern part are to be retained. A Proposed Development Layout is presented in Appendix B.

Site Location

The site is located approximately 2.6km south east of the centre of Sale, and 9km south of Manchester City Centre. The Grid Reference for the site is SJ 796 896. Access to the site is off Wendover Road which defines the south eastern site boundary. The site covers an approximate



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GRM Development Solutions Limited, Laurus House, First Avenue, Centrum 100, Burton upon Trent, Staffs DE14 2WH
www.grm-uk.com | info@grm-uk.com | 01283 551249 Company No. 3099018 (England), VAT Reg. No. 658 1005 48

area of 3.24Ha. A Site Location and Site Boundary Plan is included as Appendix C. The site is generally flat, and gently slopes to the north east in line with the regional topography.

Site Description

At the time of the fieldwork the site was an active school, with associated buildings and hardstanding areas located in the south east and south west and playing fields across the northern half. The site is defined by Wendover Road to the south east, residential properties define the south western and north eastern boundaries with open space to the north west. There are mature trees along the southern, northern, eastern and partially the western boundary of the site and have been tentatively identified as predominantly oak, pine and beech and an occasional willow.

Site History

Historically, the site was undeveloped land until the Sandilands Primary School was recorded on-site on the 1959 map. A pond was noted on earlier maps in the south west of the site and small drain/un-named water course flowed through the north eastern part of the site, from south east to north west, flowing in a north westerly direction to where it disappeared underground at a 'sinks' 100m north of the site. The hardstanding play ground was built over the pond, however the drain remained cutting across the playing field area. An electricity substation is noted in the south western corner of the site from the 1969 map to current.

Within the immediate surroundings, no development was noted until the map dated 1959 which showed residential properties noted adjacent the north eastern and south western boundaries. The residential development expanded further along the south western boundary on the 1969 and remains at present.

The previous consultant, 1st Horizon, prepared a Preliminary Unexploded Ordnance (UXO) Risk Assessment for the site and concluded that a detailed risk assessment was not required. However, the possibility of shallow buried UXO remaining on-site cannot be completely ruled out at this desktop stage. Therefore, a UXO safety awareness briefing to all personnel conducting ground works would be considered prudent. All GRM staff are briefed and have had UXO awareness training.

Geology and Hydrogeology

The superficial geology beneath the site is recorded as the Glaciofluvial Sheet Deposits.

The solid geology is divided with the Tarporley Siltstone Formation comprising interbedded siltstone, mudstone and sandstone across the majority of the site and Bollin Mudstone Member across the eastern part of the site. The geological boundary (fault) divides the site from south east to north west.

The superficial deposits are designated as a Secondary A Aquifer, whilst the bedrock geology (Tarporley Siltstone and Bollin Mudstone) are designed as Secondary B Aquifers.

The site is not recorded to lie within a Groundwater Source Protection Zone.

The site is not within an area recorded to require a Coal Authority mining report, and shallow coal bearing strata are not recorded across the site, therefore, the risk from coal mining is considered to be negligible.

Hydrology

An unnamed stream is noted approximately 109m to the north east of the site, flowing in an easterly direction.

Environmental Information

- There are no historical or current landfill or waste transfer sites registered within 500m of the site.
- The nearest active industrial site use to the site is 313m north east of the site for cleaning services.
- The site is not recorded to lie within a radon affected area (confirmed on the December 2022 UKHSA radon map).

PREVIOUS INVESTIGATION

1st Horizon carried out a ground investigation 12th and 13th August 2021 comprising eight window sample holes (WS01-WS08) drilled to 5m below existing ground level (begl) and two cable percussive boreholes (BH01 and BH02) drilled to a maximum depth of 8.45m begl, and eight dynamic cone penetration (DCP) tests to 1m depth to determine CBR values. A summary of the findings is included below;

- Topsoil was recorded at the surface across the majority of the holes within the playing field area to the north west (BH01, BH02, WS01-WS03 and WS05). Topsoil was recorded between 0.4 and 0.8m in depth.
- Tarmacadam hardstanding was recorded at the surface of WS04 and WS06-WS08 between 0.05m and 0.15m in thickness. Beneath the hardstanding made ground was recorded to depths between 0.45m begl in WS04 and 4.7m begl in WS08. The made ground was generally described as loose grey sandy gravel to sand and gravel with asphalt, brick and concrete and anticipated to be mainly subbase beneath the hardstanding areas. The deeper made ground in WS08 was recorded as loose to dense ashy gravelly sand with brick, concrete, occasional glass and mixed lithologies. A soft black sandy gravelly clay with gravel of mixed lithologies was recorded between 3.7m and 4.7m begl. An oily sheen was recorded on the wet sand between 2.0m and 3.7m begl in WS08 (possibly as a result of humic matter as no odours were recorded and the window sample was undertaken in the location of the backfilled pond).
- Superficial Glaciofluvial deposits were proven beneath the topsoil or made ground as granular medium dense gravelly sand and cohesive firm brown gravelly slightly sandy clay. Shallow weathered bedrock (Tarporey Siltstone) was recorded in BH01 and BH02 at 7.2m and 7.6m begl respectively, as weak brownish grey siltstone recovered as fine to coarse gravel.
- Shallow groundwater was recorded in each location with the exception of WS08 at depths between 0.7m and 2.0m begl, with a separate water strike recorded in the weathered Tarporey Siltstone at 7.7m begl in BH02. 1st Horizon considered that the water present was representative of perched volumes from surface water infiltration resting on the deeper cohesive strata.
- 1st Horizon identified the superficial Secondary A Aquifer (Glaciofluvial Deposits) and an unnamed stream located 109m to the north east of the site as potential receptors. However, in the absence of any contamination the overall risk to controlled waters was considered to be negligible.
- Three samples (two of topsoil and one of made ground) were tested for a general suite of contaminants. The results were compared against their adopted guideline criteria for a public open space (park) end-use. The results have not indicated the presence of contamination and therefore, their assessment suggests the overall risk to end-users is negligible.

- The historical infilled pond located to the west of the site was noted as a potential source of ground gas. 1st Horizon considered that “the exploratory hole logs did not encounter any putrescible material and the age of the backfill means any generation potential of unidentified organic fill materials is now likely to be minimal consequently the risk of ground gas remains low”.

The 1st Horizon Exploratory Hole Location Plan, logs and test results are included in Appendix D.

GRM INVESTIGATION

GRM attended site on the 20th February 2023 and advanced eight window sample boreholes to depths between 3.0m to 5.0m below existing ground level (begl). In the majority of locations (WS01-WS04, WS06-WS08) window sample holes could not be progressed beyond 3m begl due to the presence of shallow groundwater and loose natural strata. The locations of the boreholes were positioned in accordance with the rationale in Table 1 below;

Table 1 Rationale for borehole locations

Location	Reason
WS01	Located in the hardstanding playground within the area of the historic pond.
WS02	Located within the area of proposed outdoor canopy.
WS03	Located within the proposed sensory garden area.
WS04 – WS08	Located within the area of the proposed school building footprint.

The Exploratory Hole Logs and an Exploratory Hole Location Plan are included in Appendix E and Appendix F for reference.

Shallow groundwater strikes were recorded in each location between depths of 0.9m to 1m begl and rose to depths of 0.84m to 0.95m begl after 20mins of monitoring, associated with the granular Glaciofluvial deposits or deeper made ground.

Testing Rationale

In order to determine whether the existing soils pose a risk to end-users, a total of five representative samples (three of topsoil and two of made ground) were selected and sent to the laboratory for a general suite of testing to include metals, organics, inorganics, polycyclic aromatic hydrocarbons (PAHs) and an asbestos screen. Three samples (one of made ground and two of topsoil) were also analysed for waste acceptance criteria (WAC) analysis.

The results were directly compared against GRM Tier 1 Acceptance Criteria (TAC) for residential without plant-uptake to represent a conservative approach to reflect the end-use as a school (including inhalation, dermal and ingestion pathways). The rationale for using TACs is outlined in Appendix A (vi). A Soil Organic Matter (SOM) content of 2.5% has been used to assess the results as this reflects the lowest SOM recorded in each material. To provide an initial assessment, benzo(a)pyrene has been used as a surrogate marker compound for genotoxic PAHs with the exception of naphthalene.

The chemical results and GRM TAC are presented in Appendix G and H respectively.

SUMMARY OF FINDINGS

Relaid Topsoil

GRM encountered relaid topsoil and subsoil in exploratory holes WS03 to WS08 to depths between 0.45m and 0.6m begl with a general thickness of 0.6m.

Relaid topsoil was recorded as turf over dark brown, slightly gravelly silty sand to sandy silt with gravels of brick, quartzite, chert, mudstone and concrete. Frequent rootlets were also noted.

The chemical analysis results of the topsoil have not recorded any contaminant concentrations in excess of their respective GRM TACs.

Made Ground

Made ground was locally recorded in WS01 and WS02 beneath the existing hardstanding playground area to the west of the site between depths of 0.45m (WS02) and 1.8m begl (WS01).

The made ground was recorded beneath surface tarmacadam/asphalt hardstanding described as dark grey and brown silt, sand and gravel with chert, quartzite, tarmacadam/asphalt, brick, concrete and concrete cobbles.

Deeper made ground was recorded in WS01, located in the area of the historical pond, as soft dark brown slightly gravelly sandy silt to very loose to loose sand and gravel with quartzite, brick, concrete and chert.

A Standard Penetration Test N-value recorded 4 at 1m depth, indicating very loose strata.

Chemical analysis results of the made ground in WS01 were compared against the GRM TACs and elevated concentrations of contaminants were recorded and summarised below;

- Arsenic was recorded at 60mg/kg above the GAC of 40mg/kg.
- Lead was recorded at 390mg/kg above the GAC of 310mg/kg.
- Benzo(a)pyrene was recorded 17mg/kg above the GAC of 5.3mg/kg.

Superficial Glaciofluvial Deposits

Superficial Till was recorded beneath the near surface soils described as very loose to medium dense slightly clayey silty gravelly sand with quartzite and chert gravels and occasional very soft sandy silt or firm sandy gravelly clay bands.

Standard Penetration Test N-values ranged from 5 to 13 at 1m depth, 0 to 14 at 2m depth, 0 to 19 at 3m depth, 0 at 4m depth and 0 at 5m depth indicating loose to medium dense strata at 1m, very loose to medium dense strata at 2m, very loose to medium dense strata at 3m depth, and very loose strata at 4m and 5m in WS01. It should be noted that the presence of groundwater is likely to have caused reduction in N values and apparent reduced bearing capacities.

No visible or olfactory contamination was observed within the soils at the site.

Groundwater

Shallow groundwater strikes were recorded in each location at depths between 0.9m and 1.0m begl with levels rising to approximately 0.8m begl after 20 minutes.

Groundwater monitoring visits recorded standing water levels between 0.56m and 1.0m begl in all locations.

The use of simple dewatering systems (sump pumping) will be required for shallow short-term excavations however, due to the pervasive shallow groundwater encountered, full dewatering systems (e.g. well pointing) are likely to be required to dewater deeper long-term excavations.

Care should be taken to ensure that dewatering does not lead to settlement of soils below existing structures or services on or off-site.

Ground Gas

As the proposed end use has been classified as low sensitivity (school), six 35mm diameter gas/water monitoring standpipes have been installed across the site in the window sample boreholes (WS01, WS02, WS03, WS04, WS06 and WS08) and targeted at the Made Ground in WS01, associated with the historical backfilled pond and Glaciofluvial Deposits in the remaining wells where an insufficient thickness of made ground is present.

On the basis of the confirmed sources of ground gas and proposed end use, four gas monitoring visits has been carried out weekly over a one month period from 1st March 2023 to 23rd March 2023 to assess the risk posed to the end user from potentially harmful ground gases. The results are enclosed for reference in Appendix I and are summarised below:

Table 2 Gas Results

Borehole	Response Zone (m begl) / Strata	Contamination	No. of Monitoring Visits	Methane (%v/v)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Flow (l/hr)	Groundwater Level (m begl)
WS01	0.6 – 1.6 / MG	None	4	0.0	0.0 – 0.3	19.0 – 20.0	0.0 – 0.3	0.56 - 1.0
WS02	0.5 – 1.5 / NS	None	4	0.0	2.5 – 3.8	10.9 – 15.0	0.0 – 0.1	0.72 - 1.0
WS03	0.6 – 1.6 / NS	None	4	0.0	0.7 – 1.3	17.9 – 19.6	0.0 – 0.1	0.72 - 1.0
WS04	0.6 – 1.6 / NS	None	4	0.0	0.6 – 0.7	19.4 – 19.7	0.0	0.7 - 0.9
WS06	0.5 – 1.6 / NS	None	4	0.0	0.7 – 0.9	19.2 – 20.0	0.0 – 0.2	0.81 - 0.9
WS08	0.5 – 1.7 / NS	None	4	0.0	0.3 – 0.8	19.3 – 20.1	0.0	0.57 - 0.9

Notes: MG = Made Ground NS = Natural Strata
Atmospheric Pressure: 998mb-1029mb

The primary guidance document to determine if protection measures are required is BS8485:2015+A1:2019 *Code of practice for the design of protective measures from methane and carbon dioxide ground gases for new buildings*. This uses hazardous gas flow rates (Qhg), which are gas concentrations multiplied by borehole flow rates, to derive a Gas Screening Value (GSV) for the site. The gas regime is then determined based on the GSV and other limiting factors such as gas concentrations.

As methane concentrations have been consistently below the monitor's lower limit of detection a default concentration of 0.1 % v/v has been used in the following assessment.

Natural strata

Using the maximum flow rate of 0.2l/hr and the default methane concentration of 0.1%v/v a Qhg of 0.0002l/hr has been calculated for methane. Using the maximum flow rate of 0.2l/hr and the maximum carbon dioxide concentration of 3.8%v/v, a Qhg of 0.0076/hr has been calculated for carbon dioxide.

Made Ground

Using the maximum flow rate of 0.3l/hr and the default methane concentration of 0.1%v/v a Qhg of 0.0003l/hr has been calculated for methane. Using the maximum flow rate of 0.3l/hr and the maximum carbon dioxide concentration of 0.3%v/v, a Qhg of 0.0009/hr has been calculated for carbon dioxide.

On this basis the GSV for the site is determined as 0.0076l/hr.

Therefore, as the maximum concentration of methane is <1%v/v, the maximum concentration of carbon dioxide is <5%, and the GSV is <0.07l/hr, the site has been assessed as 'Characteristic Situation 1' as outlined in BS8485:2015+A1:2019, for which gas protection measures are not required.

Depleted oxygen levels have been recorded in WS02 and low concentrations can pose a risk to site workers and consideration should be given to this as part of site-specific risk assessments, and the use of monitoring and ventilation measures should be implemented if below ground confined space working is required in the area.

The site is not recorded to lie within a radon affected area.

It is recommended that this assessment is approved by the regulators otherwise monitoring may be required at a later date.

RISK ASSESSMENT

End-users

Localised deep made ground, up to 1.8m begl, was recorded in the location of GRM WS01 and previously in WS08 up to 4.7m begl both located within the area of the historic infilled pond. Elevated concentrations of arsenic, lead and PAHs were recorded within this material from the recent analysis completed.

However, the latest development proposals include the retention of hardstanding across the hotspot area, which will act to sever the linkage between the contaminated made ground and end-users, and as such the risk posed to end-users and site workers is negligible.

Should development proposals change and include the removal of the existing hardstanding across the hotspot area then a further risk assessment will be required and remedial work is anticipated.

The existing relaid topsoil is considered chemically suitable for re-use onsite as part of any soft landscaping including playing fields. However larger anthropogenic materials (brick, concrete) should be removed to improve the aesthetic quality of the soils prior to placement.

Any imported soil for use in constructing the growing medium across proposed soft landscaping areas or playing fields will require chemical validation to confirm that it is chemically suitable for use.

Samples of the soil will need to be analysed for a suite of contaminants including metals, inorganics, speciated PAHs and other contaminants such as, speciated hydrocarbons and asbestos depending on the source. The number of samples that require analysis will depend on the source of the materials. Typically, a minimum of 3 samples taken per type of soil per source with additional samples taken at an analysis rate of one sample per 250m³ applies for virgin soils or 1 per 50m³ for generated soils.

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

Controlled Waters

The underlying superficial Secondary A Aquifer and nearby stream are noted as sensitive receptors and shallow groundwater is recorded across the site. The localised made ground associated with the former infilled pond is considered to be a potential source of contamination.

However, the retention of the existing hardstanding across the area will act to limit any mobilisation and migration of contamination and in the absence of a preferential pathway there is no risk posed to controlled waters.

This assessment may be re-assessed should the proposed development plans change and include the removal of the existing hardstanding across the former pond area.

Summary

Based upon the above, a Remediation Strategy is not required, however, should the development plans change a Remediation Strategy should be allowed for. A Gas Protection Measures Design and Verification Plan is not required.

Following your review of this document, we would recommend that a copy of it be forwarded to the Local Authority for comment and approval, prior to commencing development of the site. The Local Authority may choose to include other consultees as part of the planning process (such as the Environment Agency).

GEOTECHNICAL ASSESSMENT

Geotechnical tests were selected to provide the parameters necessary for the budgetary design of the foundations and infrastructure. The geotechnical test results are presented in Appendix J.

Eight Glaciofluvial Deposits samples underwent pH and water soluble sulphate testing. The test results confirm that pH values ranged from 6.0 to 7.1 and sulphate concentrations were between <10mg/l and 290mg/l.

Two samples of natural cohesive Glaciofluvial Deposits (predominantly granular) underwent Plasticity Index and moisture content testing. The plasticity indexes ranged from 15% to 18% which correlates to low volume change potential soils at depths of 2.35m and 2.1m, respectively.

Buried Concrete

Based on the recorded water-soluble sulphate and pH levels in the made ground and natural soils by 1st Horizon and GRM and assuming mobile groundwater conditions, in accordance with requirements of BRE Special Digest 1 (2005), 'Concrete in Aggressive Ground', the Design Sulphate Class for buried concrete at the site should be assumed as DS-1 and the ACEC Class as AC-1.

For unreinforced foundations with a width of greater than 450mm, the classifications above equate to a concrete designated as GEN1 in BS8500 and RC35 for reinforced foundations.

General Geotechnical Considerations

The near surface soils across the playing field areas were generally soft under foot with areas of standing water during the intrusive investigation. It is therefore recommended that temporary haul roads are implemented until the main roads are constructed.

From the ground investigation undertaken, it is likely that excavations will be unstable in the short to medium term due to the presence of shallow groundwater within 1m depth and loose natural granular strata. Some materials such as granular soils and made ground are liable to collapse without warning. This situation is likely to be exacerbated by water ingress.

There are existing structures on the site including the current school buildings and any associated sub-structures (services, ducts etc.). There may also be old foundations or other buried structures (e.g. associated with demolished buildings), that have not been identified from this investigation which should be considered as part of the proposed foundations. Additionally, the foundation depths of the existing school are not known at this stage.

Foundation Recommendations

The made ground and loose granular strata (N values of generally less than 8) are considered unsuitable as a bearing stratum and all new foundations should be carried down through them to found on the more competent natural granular strata. This will result in foundation depths of 0.6m to 2.1m begl in the area of proposed building.

The depths of the current foundations and potential for associated deeper made ground within the existing footprint is not known at this stage. It should also be noted that made ground may further be generated during site preparations and demolition of current school buildings. It is recommended that the depth of existing foundations is investigated which may impact the foundation solution required for the proposed structure.

The superficial deposits are predominantly granular in nature and given the distance of mature trees (>30m from proposed structures), foundations are unlikely to be affected by tree influence. The limited deeper clay layers (>2m begl) have been classed as low volume change potential. It should be noted that the superficial deposits are recorded to be variable in strength with the granular strata anticipated to be generally loose and are likely to be saturated at shallow depths.

It is considered that traditional foundations are likely to be impractical below a depth of 1m due to the presence of shallow persistent groundwater within the superficial deposits. As the bearing capacity above 1m depth is generally inconsistent, at this stage, traditional foundations are not considered to be practical or economical for the proposed development. Further investigation to refine and assess the net allowable capacity and settlement risk of the shallow strata, through trial pits and plate load tests, may allow the use of traditional foundations given that the groundwater may have reduced the N values during the recent window sampling investigation.

However, until this is undertaken vibro or pile foundations founded onto the competent natural strata are considered to be the most practical and least-risk solution for the proposed development. The use of such will minimise the need for excavation and dewatering.

Piles

A piling specialist will provide dimensions and capacities. However, due to the potentially inconsistent strength of the superficial strata and presence of shallow groundwater, it may be practical to use piles found onto the more competent weathered Tarporley Siltstone. Should piles be adopted, it is likely Continuous Flight Auger (CFA) or Screw piles may be considered viable due to the close proximity of nearby structures and services to minimise potential vibration risk and presence of shallow rock (<10m begl) which will provide a suitable socket into the rock.

Due to the likelihood of buried concrete slabs and other obstructions, pre-boring piles are recommended which would mitigate the need to excavate out the obstructions and slabs.

Whilst piled foundations would end bear beneath the influence of trees, the piles and ring beams should be designed to resist potential heave, down-drag and negative skin friction.

A testing regime and objectives of the works will need agreeing with regulatory and warranting bodies prior to works. The pile design will need to be justified to the warranting bodies and the justification should be included within the piling contract.

If a piled foundation is adopted, then a suitable working platform will be required for any plant. It is recommended that the design of the working platform is carried out as soon as possible. The working platform certificate requires signing by the Principal Contractor for the site.

Vibro Ground Improvement

It is considered that reinforced strip footings on vibro replacement stone columns could be considered as an alternative to traditional foundations and piles for the proposed development. Vibro will enable the use of shallow reinforced traditional foundations above groundwater and minimise the need for dewatering. Should vibro be considered, it is recommended that a bottom-feed approach should be adopted due to the shallow groundwater and potential instability of the natural strata. It should be noted that a working platform will be required by the vibro contractor.

If vibro replacement is used, then an improved bearing capacity is anticipated to allow the use of traditional foundation at a minimum depth of 0.6m below the base of working platform. GRM would advise a minimum column length of 3.00m below proposed traditional foundation depths to achieve minimum bearing capacity of 150kN/m². There may be constraints for the use vibro that requires consideration and additional investigation and assessments such as the potential for buried obstructions and vibration risk for nearby structures / substructures.

A specialist vibro contractor should confirm the suitability of the site for vibro replacement and advise on column lengths. A testing regime and objectives of the works will need agreeing with regulatory and warranting bodies prior to works.

Once the development plan and levels has been finalised, consideration should be given to the most appropriate foundation solution, taking into account removal of substructures, stability of the strata, finished floor levels and proximity to boundaries / services / roads / existing structures.

Floor Slabs

It is considered that if a working platform is adopted as part of the foundation solution, assuming this has been engineered to a suitable standard, it could form a base for a ground bearing floor slab. However, due to the presence of made ground / disturbed topsoil of generally 0.6m thickness and potential disturbance of the ground during demolition / site preparation, the use of a cast in-situ suspended floor is recommended.

Old substructures should be removed to at least 0.5m below any new floor slabs to prevent the formation of 'hard spots'.

Soakaway Drainage

The recent groundwater monitoring visits suggest shallow groundwater is present from depths of between 0.56m and 1.0m begl which corresponds to the reported strikes within the natural superficial deposits during the fieldwork. The previous report by 1st Horizon also recorded shallow groundwater strikes between 0.7m and 2.0m begl within the same strata.

The Environment Agency recommend that at least 1m of unsaturated soils are required beneath the base of any soakaway.

Due to the shallow groundwater, soakaways are not considered to be feasible. It is also considered that permeable paving may not be feasible due to localised deep made ground (ranging between 0.4m and 4.7m begl) and that the addition of water can potentially mobilise contaminants within the made ground and migrate into sensitive controlled water receptors (Secondary A Aquifer) and nearby watercourses.

Therefore, it is considered that the ground conditions at the site are not suitable for the adoption of soakaways. It may be possible to reuse the existing surface water drainage system and this is likely to prove more practical.

It is recommended that the Local Authority and Environment Agency be consulted with regards to the use of soakaways.

Dynamic Cone Penetration Tests (DCPs)

Eight Dynamic Cone Penetration (DCP) tests were conducted by 1st Horizon with the results summarised below;

Table 3 DCP Test Results

Test Location	Depth (m)	CBR %
DCP 1	0.00-0.25	0
	0.25-0.94	10
DCP 2	0.06-0.41	7
	0.41-0.96	69
DCPWS01	0.00-0.28	11
	0.28-0.40	29
	0.46-0.96	55
DCPWS02	0.00-0.43	18
	0.43-0.62	10
	0.62-0.95	29
DCPWS03	0.00-0.29	10
	0.29-0.43	23
	0.43-0.93	38
Test Location	Depth (m)	CBR %
DCPWS05	0.00-0.46	8
	0.46-0.73	7
	0.73-0.91	16
DCPBH01	0.13-0.45	18
	0.45-0.81	8
	0.81-0.95	15
DCPBH02	0.00-0.47	8
	0.47-0.81	11
	0.81-0.91	20

The DCP tests previously carried out recorded a wide range of CBR values between 0 and 69%. 1st Horizon considered that some of the higher values were associated with over-sized gravels present within the soils and should be used with caution. As such, it is recommended that proof rolling and the improvement of soft spots should be considered due to the very low CBR values. Where oversized gravels were absent, which may result in increased CBR values, the incorporation of a geotextile grid into sub-base layers may allow for a reduced capping thickness.

A design value of less than 2% (if undrained), or 5% (when suitably drained), is considered prudent based on the above previous testing and site observations of the natural granular strata. Additional road construction measures including suitable drainage due to the presence of shallow groundwater should be adopted for the proposed development. Proof rolling and the improvement of soft spots may result in increased CBR values and the incorporation of a geotextile grid into sub-base layers may allow for reduced capping thickness.

Disposal and Classification

The topsoil will be classified as Non-Hazardous Waste. The localised made ground associated with the infilled pond in the south west of the site will be classified as Hazardous waste due to the presence of elevated petroleum hydrocarbons (1st Horizon sample from WS08). The WAC analysis suggests that the topsoil is not suitable for disposal at an Inert landfill. At this stage, we would recommend allowing for the topsoil to be disposed of at a Non-Hazardous landfill and the made ground in the vicinity of the backfilled pond to be disposed of at a Hazardous waste landfill.

Early consultation with the relevant landfill sites over their particular acceptance criteria may produce cost savings (see the HazWaste Classification report in Appendix K). Reference should be made to the relevant notes presented in Appendix A (x).

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

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

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

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

Where site-won materials (i.e. made ground or contaminated natural soils) are to be re-used on site, or materials are to be imported, it is recommended that this should be carried out under a Materials Management Plan produced in accordance with the CL:AIRE Definition of Waste Code of Practice. This document should be approved by a CL:AIRE-registered Qualified Person prior to excavation of materials, and be maintained throughout the duration of the project. A Verification Report should be produced on completion of the project in order to confirm the control and recording of material movements around or between sites in accordance with current waste management legislation and guidance.

CONCLUSIONS

Based on the evidence currently available the site is assessed as being of low risk for geotechnical hazards and negligible risk for soil contamination hazards. However, the contamination risks may need to be re-assessed should the proposed development layout change.

Following your review of this document, we would recommend that a copy of it be forwarded to the Local Authority for comment and approval, prior to commencing development of the site. The Local Authority may choose to include other consultees as part of the planning process (such as the Environment Agency).

We trust this is suitable for your current requirements, should you require any further information or need clarification of any of the points raised please do not hesitate to contact us.

Yours sincerely,
for GRM Development Solutions Ltd



Charlotte Mortimer BSc (Hons)
MIEnvSc
Senior Environmental Scientist



Siobhan Jackson BSc (Hons)
MIEnvSc CEnv
Principal Geo-Environmental Scientist



Geoffrey Beckett BSc
CGeol
Director

Enclosed:

Appendix A	–	General Appraisal Comments and Standard Limitations
Appendix B	–	Proposed Development Layout
Appendix C	–	Site Location and Boundary Plan
Appendix D	–	1 st Horizon Exploratory Hole Location Plan, Logs and Results
Appendix E	–	Exploratory Hole Location Plan
Appendix F	–	Exploratory Hole Logs
Appendix G	–	Chemical Analysis Results
Appendix H	–	GRM Tier 1 Assessment Criteria (TACs)
Appendix I	–	Ground Gas / Groundwater Monitoring Results
Appendix J	–	Geotechnical Test Results
Appendix K	–	HazWaste Classification Report



A P P E N D I X A

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GENERAL APPRAISAL COMMENTS

i INFORMATION SOURCES

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

- Relevant British Standards
- British Geological Survey (BGS) Geology Map Scale 1:10,000 for local area
- British Geological Survey (BGS) Geology Map Scale 1:50,000/1:63,320
- BGS Memoir
- BGS Borehole Records
- BGS online viewer: <http://www.bgs.ac.uk/data/mapViewers/home.html>
- Environment Agency Groundwater Vulnerability Maps
- Historical Ordnance Survey (OS) Maps
- Environmental Data Report
- Environment Agency Website: <http://www.environment-agency.gov.uk/>
- Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites, UKWIR, 2010.
- Coal Authority Records / Coal Mining Report
- DEFRA/Environment Agency Contaminated Land publications and DoE Industry Profiles
- BRE Guide BR211 (2015), 'Radon: Guidance on protective measures for new buildings'
- HPA-RPD-033 (2007), 'Indicative Atlas of Radon in England and Wales'
- PHE-CRCE-032 (PHE, 2017), Radon in Homes in England: 2016 Data Report
- CIRIA C665 'Assessing risks posed by hazardous ground gases to buildings'
- BS8485:2015, 'Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'
- Other technical references used throughout this document are detailed in the text.

ii CONTAMINANTS OF CONCERN

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

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

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

iii CONCEPTUAL MODEL METHODOLOGY

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

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

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

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

iv INTRUSIVE INVESTIGATION SAMPLING METHODOLOGY

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

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

v GROUND GAS RISK ASSESSMENT METHODOLOGY

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

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

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

vi HUMAN HEALTH RISK ASSESSMENT METHODOLOGY

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

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

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

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

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

vii **RISK TO SITE WORKERS – GENERAL COMMENTS**

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

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

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

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

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

viii **CONTROLLED WATERS RISK ASSESSMENT METHODOLOGY**

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

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

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ix CONSTRUCTION MATERIALS RISK ASSESSMENT METHODOLOGY

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

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

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

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

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

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

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

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

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

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

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

xi GEOTECHNICAL ASSESSMENT GENERAL COMMENTS

Where finished floor levels of proposed structures have not been provided by the Client, then for the purposes of initial assessment, GRM will assume that finished levels will not vary appreciably from the existing ground levels. If the depths of any underground engineering works (i.e. sewers, pumping stations

etc.) are unknown they will not be taken in to account in the assessment and it will be assumed that any such works will not compromise foundation or ground stability.

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

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

xii GEOTECHNICAL ASSESSMENT – ENGINEERING GROUND TREATMENT

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

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

xiii GEOTECHNICAL ASSESSMENT – EXCAVATIONS

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

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

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

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

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

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

xiv GEOTECHNICAL ASSESSMENT – SUBSTRUCTURES

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

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

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

xv GEOTECHNICAL ASSESSMENT – SOAKAWAYS

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

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

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

xvi GEOTECHNICAL ASSESSMENT – FOUNDATIONS

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

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

NOTES ON LIMITATIONS

General

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

GRM Development Solutions Limited accepts no responsibility or liability for:

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

Phase I Environmental Audits/ Desk Studies

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

Phase II Environmental Audits (Contamination Investigations)

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

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

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

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

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

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

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

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

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



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



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GRM Development Solutions Limited, Laurus House, First Avenue, Centrum 100, Burton upon Trent, Staffs DE14 2WH
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NOTES:
Plan extract from: Ellis Williams (dwg no. SRP1034-EWA-ZZ-ZZ-DR-L-9003) dated 28.02.2023

CLIENT:	Tilbury Douglas Construction Ltd
PROJECT:	Sandilands Community Primary School, Manchester
TITLE:	Proposed Development Layout

PROJECT No:	P10250	DATE:	MAR 2023	DESIGN/DRAWN:	CM
DRAWING NUMBER:	01	ISSUE:	FINAL		
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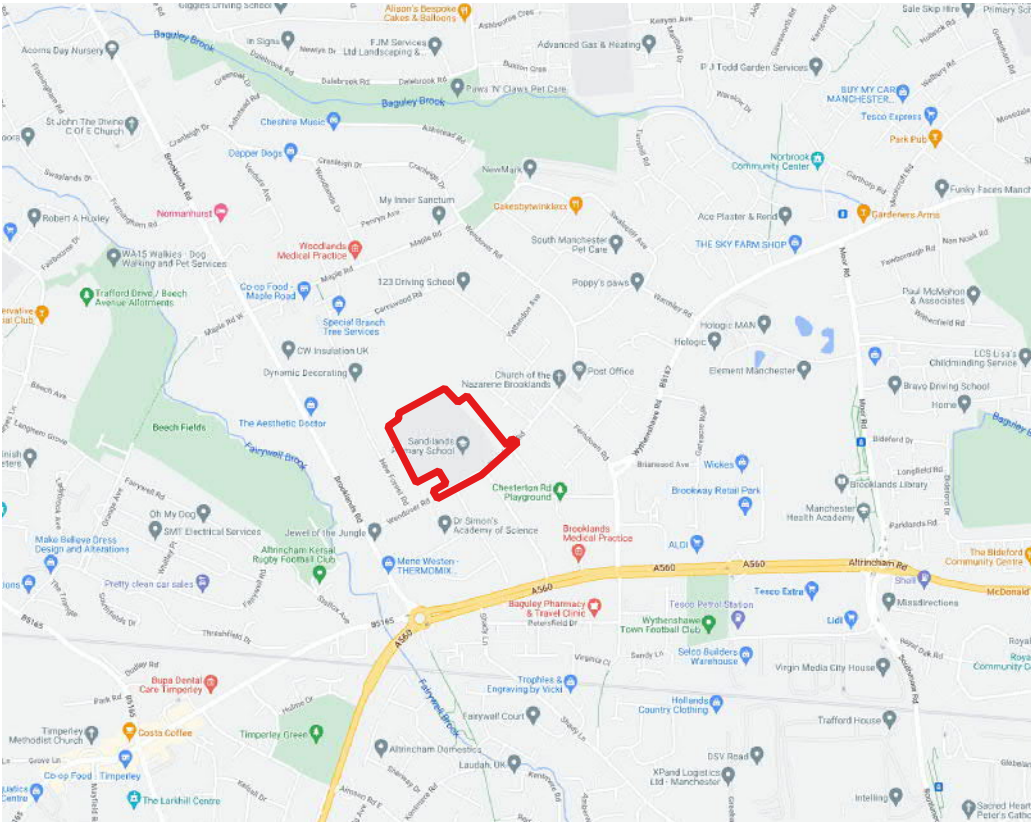
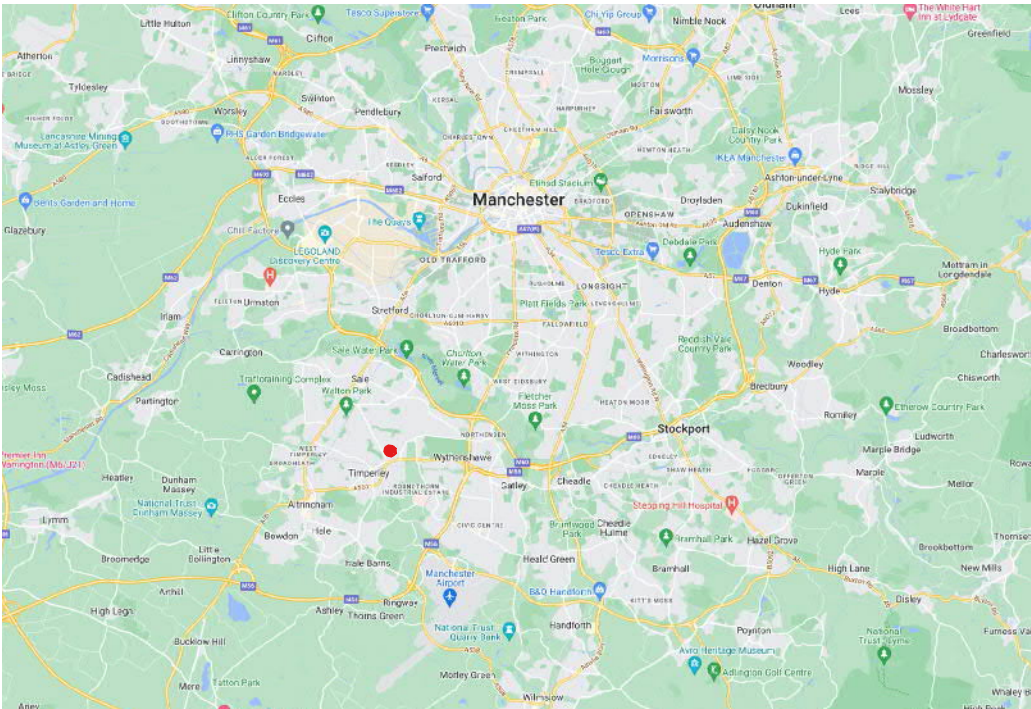
Tel: 01283 551 249
mail@grm-uk.com www.grm-uk.com



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NOTES:

CLIENT:	Tilbury Douglas Construction Ltd
PROJECT:	Sandilands Community Primary School, Manchester
TITLE:	Site Location and Boundary Plan

PROJECT No:	P10250	DATE:	MAR 2023	DESIGN/DRAWN:	CM
DRAWING NUMBER:	02	ISSUE:	FINAL		
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GRM Development Solutions Ltd

Tel: 01283 551 249
mail@grm-uk.com www.grm-uk.com



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Site Boundary



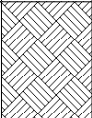
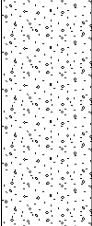
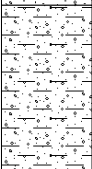
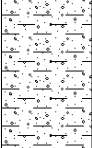
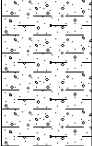
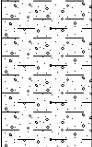
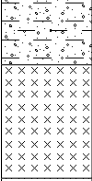
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Figure Title
Existing Site Layout
and Exploratory Hole
Locations

FIGURE 2

Percussion Drilling Log

Project Name: Sandilands		Client: Department of Education		Date: 12/08/2021 - 13/08/2021	
Location: Manchester		Contractor: 1st			
Project No. : SL01-R12		Crew Name: K, C		Drilling Equipment: Dando 2000	
Borehole Number BH01	Hole Type CP	Level 28.41m AoD	Logged By ES	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.80	27.61		Grass over soft brown sandy gravelly CLAY. Gravel is subangular to angular fine to coarse of mixed lithologies. (TOPSOIL)	
		1.20	SPT	N=13 (1,2/2,3,4,4)	1.20	27.21		Medium dense brown slightly gravelly SAND. Gravel is subangular to subrounded fine to coarse of mixed lithologies. (FLUVIOGLACIAL DEPOSITS)	1
		2.00 2.00	D SPT	N=17 (2,3/4,4,4,5)				Medium dense brown very gravelly SAND. Gravel is subrounded to rounded fine to coarse of mixed lithologies. (FLUVIOGLACIAL DEPOSITS)	2
		3.00 3.00	D SPT	N=12 (2,2/3,3,3,3)	2.80	25.61		Firm brown gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to coarse of mixed lithologies. (GLACIAL TILL)	3
		4.00 - 4.50 4.00	B SPT	N=14 (2,2/3,3,4,4)					4
		5.00	SPT	N=11 (2,2/2,2,3,4)					5
		6.00	SPT	N=12 (2,2/2,2,4,4)					6
		7.00	SPT	50 (25 for 20mm/50 for 15mm)	7.20	21.21		Weak brownish grey SILTSTONE. Recovered as a subangular to angular fine to coarse gravel (WEATHERED BEDROCK).	7
					7.95	20.46		End of Borehole at 7.950m	8
									9
									10

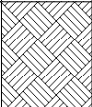
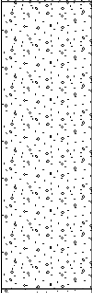
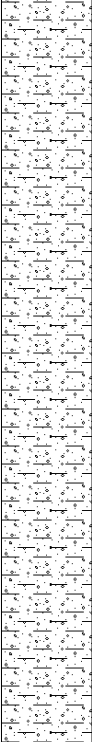
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
7.95	200	7.00	200	7.30	7.95	01:30					

Remarks

Inspection pit to 1.20m. Groundwater encountered at 0.80m.

Percussion Drilling Log

Project Name: Sandilands		Client: Department of Education		Date: 13/08/2021	
Location: Manchester		Contractor: 1stH			
Project No. : SL01-R12		Crew Name: K,C		Drilling Equipment: Dando 2000	
Borehole Number BH02	Hole Type CP	Level 28.37m AoD	Logged By ES	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.70	27.67		Grass over soft brown sandy gravelly CLAY. Gravel is subangular to angular fine to coarse of mixed lithologies. (TOPSOIL)	
		1.00	SPT	N=10 (1,2/2,2,3,3)				Medium dense brown very gravelly SAND. Gravel is subrounded to rounded fine to coarse of mixed lithologies. (FLUVIOGLACIAL DEPOSITS)	1
		2.00	SPT	N=16 (2,3/3,4,4,5)					2
		2.60 - 3.00	B		2.60	25.77		Firm brown slightly sandy gravelly CLAY. Gravel is subrounded to rounded fine to coarse of mixed lithologies. (GLACIAL TILL)	3
		3.00 3.00 - 3.50 3.00	D B SPT	N=9 (1,2/2,2,2,3)					4
		4.00	SPT	N=10 (1,2/2,2,3,3)					5
		5.00	SPT	N=9 (1,2/2,2,3,2)					6
		6.00 6.00	D SPT	N=10 (2,1/2,2,3,3)					7
		7.00	SPT	N=14 (1,2/2,3,4,5)					8
		8.00	SPT	50 (25 for 50mm/50 for 15mm)	8.06	20.31		Weak brownish grey SILTSTONE. Recovered as a subangular to angular fine to coarse gravel (WEATHERED BEDROCK). End of Borehole at 8.060m	9
									10

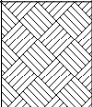
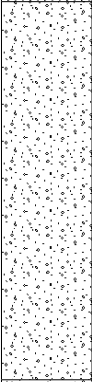
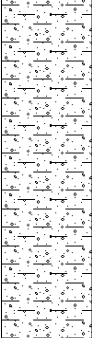
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
8.06	200	8.00	200	7.80	8.00	01:00					

Remarks

Inspection pit to 1.20m. Groundwater encountered @0.70 and 7.70m

Percussion Drilling Log

Project Name: Sandilands		Client: Department of Education		Date: 13/08/2021	
Location: Manchester		Contractor: 1sth			
Project No. : SL01-R12		Crew Name: B, Y		Drilling Equipment: Premier 110	
Borehole Number WS01	Hole Type WLS	Level 28.32m AoD	Logged By ES	Scale 1:50	Page Number Sheet 1 of 1

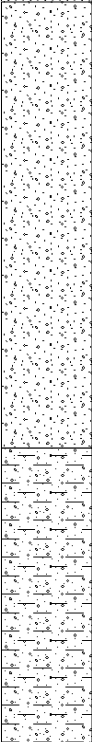
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.70	27.62		Soft brown sandy gravelly CLAY. Gravel is subrounded to rounded fine to coarse of mixed lithologies. (TOPSOIL)	
		1.00	SPT	N=10 (1,2/3,2,2,3)				Medium dense brown very gravelly SAND. Gravel is subrounded to rounded fine to coarse of mixed lithologies. (FLUVIOGLACIAL DEPOSITS)	1
		1.50	D						
		2.00	SPT	N=10 (1,2/2,2,3,3)					2
		3.00	SPT	N=12 (2,2/3,3,3,3)				Firm brown slightly sandy gravelly CLAY. Gravel is subrounded to rounded fine to coarse of mixed lithologies. (GLACIAL TILL)	3
		3.20	D		3.20	25.12			
		4.00	SPT	N=9 (1,2/1,3,3,2)					4
		5.00	SPT	N=12 (3,3/3,3,3,3)					5
					5.45	22.87		End of Borehole at 5.450m	6
									7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
5.45	101										

Remarks
No recovery between 4.00-5.00m. Slow groundwater infiltration @2.00m.

Percussion Drilling Log

Project Name: Sandilands		Client: Department of Education		Date: 13/08/2021	
Location: Manchester		Contractor: 1sth			
Project No. : SL01-R12		Crew Name: B, Y		Drilling Equipment: Premier 110	
Borehole Number WS02	Hole Type WLS	Level 28.33m AoD	Logged By ES	Scale 1:50	Page Number Sheet 1 of 1

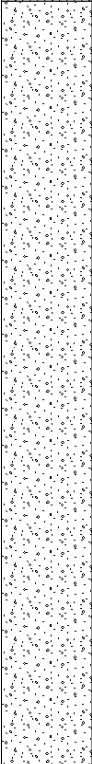
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.55	27.78		Soft brown very sandy slightly gravelly CLAY. gravel is subangular to subrounded fine to coarse of mixed lithologies. (TOPSOIL)	
		1.00	SPT	N=8 (1,2/2,2,2,2)				Loose brownish grey very gravelly SAND. Gravel is rounded to subrounded fine to coarse of mixed lithologies. (FLUVIOGLACIAL DEPOSITS)	1
		1.20	D						
		2.00	SPT	N=10 (1,2/2,2,3,3)					2
		3.00	SPT	N=9 (2,1/2,3,2,2)					3
		4.00	SPT	N=8 (2,2/2,2,2,2)	3.50	24.83			4
		5.00	SPT	N=7 (1,1/1,2,2,2)	5.45	22.88			5
								End of Borehole at 5.450m	6
									7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
5.45	101										

Remarks
No recovery between 4.00-5.00m. Slow groundwater infiltration @2.00m.

Percussion Drilling Log

Project Name: Sandilands		Client: Department of Education		Date: 13/08/2021	
Location: Manchester		Contractor: 1sth			
Project No. : SL01-R12		Crew Name: B, Y		Drilling Equipment: Premier 110	
Borehole Number WS03	Hole Type WLS	Level 28.23m AoD	Logged By ES	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.40	27.83		Grass over loose slightly gravelly SAND. Gravel is subangular to subrounded fine to coarse of mixed lithologies. (TOPSOIL)	
		1.00	SPT	N=8 (1,2/2,2,2,2)				Loose brownish grey gravelly SAND. Gravel is subrounded to rounded fine to coarse of mixed lithologies. (FLUVIOGLACIAL DEPOSITS)	1
		2.00	SPT	N=15 (1,1/3,4,4,4)				<u>At 2.00m becomes medium dense</u>	2
		3.00	SPT	N=4 (1,1/1,1,1,1)					3
		4.00	SPT	N=8 (1,1/2,1,2,3)					4
		5.00	SPT	N=12 (3,3/3,3,3,3)				<u>At 5.00m becomes medium dense</u>	5
					5.45	22.78		End of Borehole at 5.450m	6
									7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
5.45	101										

Remarks

No recovery between 4.00-5.00m. Groundwater resting at 1.50m.

Percussion Drilling Log

Project Name: Sandilands		Client: Department of Education		Date: 13/08/2021	
Location: Manchester		Contractor: 1sth			
Project No. : SL01-R12		Crew Name: B, Y		Drilling Equipment: Premier 110	
Borehole Number WS04	Hole Type WLS	Level 28.50m AoD	Logged By ES	Scale 1:50	Page Number Sheet 1 of 1

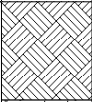
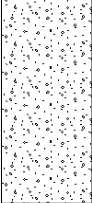
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.05			0.05	28.45		Tarmac (MADE GROUND)	
		0.20			0.20	28.30		Loose grey sandy subangular to angular fine to coarse GRAVEL of asphalt. (MADE GROUND)	
		0.40	ES		0.45	28.05		Loose angular sandy COBBLES of brick. (MADE GROUND)	
		1.00	SPT	N=4 (1,1/1,1,1,1)				Loose greyish brown gravelly SAND. Gravel is subangular to subrounded fine to coarse of mixed lithologies. (FLUVIOGLACIAL DEPOSITS)	1
		1.50	D						
		2.00	SPT	N=12 (2,3/3,3,3,3)				<i>From 2.00m becomes medium dense</i>	2
		3.00	SPT	N=11 (1,2/2,3,3,3)					3
		3.60	D		3.50	25.00		Firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mixed lithologies. (FLUVIOGLACIAL DEPOSITS)	4
		4.00	SPT	N=12 (2,3/3,3,3,3)	4.30	24.20		medium dense dark brown slightly gravelly SAND. Gravel is subrounded to rounded fine to coarse of mixed lithologies. (FLUVIOGLACIAL DEPOSITS)	5
		5.00	SPT	N=14 (2,2/3,3,4,4)	5.45	23.05			6
								End of Borehole at 5.450m	7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
5.45	101										

Remarks
Groundwater resting @ 1.20m.

Percussion Drilling Log

Project Name: Sandilands		Client: Department of Education		Date: 16/08/2021	
Location: Manchester		Contractor: 1sth			
Project No. : SL01-R12		Crew Name: B, Y		Drilling Equipment: Premier 110	
Borehole Number WS05	Hole Type WLS	Level 28.47m AoD	Logged By ES	Scale 1:50	Page Number Sheet 1 of 1

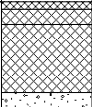
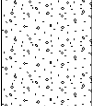
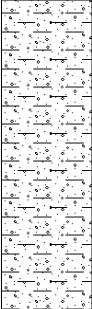
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.65	27.82		Grass over loose brown gravelly SAND Gravel is subrounded to rounded fine to coarse of mixed lithologies. (TOPSOIL)	
		1.00	SPT	N=4 (1,1/1,1,1,1)				Loose brownish grey gravelly SAND. Gravel is subrounded to rounded fine to coarse of mixed lithologies. (FLUVIOGLACIAL DEPOSITS)	1
		2.00	SPT	N=4 (1,1/1,1,1,1)	2.00	26.47		End of Borehole at 2.000m	2
									3
									4
									5
									6
									7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
2.00	101										

Remarks
Hole terminated at 2.00m due to groundwater ingress and collapse.

Percussion Drilling Log

Project Name: Sandilands		Client: Department of Education		Date: 13/08/2021	
Location: Manchester		Contractor: 1sth			
Project No. : SL01-R12		Crew Name: B, Y		Drilling Equipment: Premier 110	
Borehole Number WS06	Hole Type WLS	Level 28.56m AoD	Logged By ES	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.05 0.15 0.60	28.51 28.41 27.96		Tarmac (MADE GROUND)	
								Very dense black subangular to angular fine to coarse GRAVEL of asphalt. (MADE GROUND)	
		1.00	SPT	N=7 (2,2/2,1,2,2)				Medium dense brown subangular to angular fine to coarse SAND AND GRAVEL with high cobble content. Cobbles are angular of brick. (MADE GROUND)	1
		1.50	D					Loose brownish grey slightly gravelly SAND. Gravel is subrounded to rounded fine to coarse of mixed lithologies. (FLUVIOGLACIAL DEPOSITS)	
		2.00	SPT	N=6 (2,1/1,1,2,2)					2
		3.00 3.00	D SPT	N=12 (2,3/3,3,3,3)				<u>At 3.00m medium dense</u>	3
		4.00	SPT	N=8 (1,2/2,2,2,2)	3.40	25.16		Soft brown slightly gravelly CLAY. Gravel is subrounded to rounded fine to coarse of mixed lithologies. (GLACIAL TILL)	4
		5.00	SPT	N=8 (2,2/2,2,2,2)					5
					5.45	23.11		End of Borehole at 5.450m	6
									7
									8
									9
									10

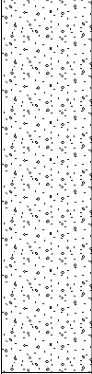
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
5.45	101										

Remarks

Very wet sand from 1.20m.

Percussion Drilling Log

Project Name: Sandilands		Client: Department of Education		Date: 13/08/2021	
Location: Manchester		Contractor: 1sth			
Project No. : SL01-R12		Crew Name: B, Y		Drilling Equipment: Premier 110	
Borehole Number WS07	Hole Type WLS	Level 28.52m AoD	Logged By ES	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.15	28.37			
					0.50	28.02			
		1.00	SPT	N=7 (2,2/1,2,2,2)					1
		1.50	D						
		2.00	SPT	N=15 (2,4/3,4,4,4)				<u>At 2.00m medium dense</u>	2
					3.00	25.52		End of Borehole at 3.000m	3
									4
									5
									6
									7
									8
									9
									10

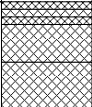
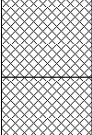
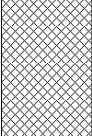
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
3.00	101										

Remarks

No recovery between 2.0 to 3.0m. Hole terminated due to wet sands stuck in casing.

Percussion Drilling Log

Project Name: Sandilands		Client: Department of Education		Date: 13/08/2021	
Location: Manchester		Contractor: 1st			
Project No. : SL01-R12		Crew Name: B, Y		Drilling Equipment: Premier 110	
Borehole Number WS08	Hole Type WLS	Level 28.50m AoD	Logged By ES	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.05 0.10 0.15 0.40	28.45 28.40 28.35 28.10		Tarmac. (MADE GROUND)	
		1.00	SPT	N=7 (1,1/1,2,2,2)				Dense grey subangular to angular fine to coarse GRAVEL of Asphalt. (MADE GROUND)	
		1.50	D		1.20	27.30		Tarmac. (MADE GROUND)	1
		1.50	ES					Dense reddish brown subangular to angular fine to coarse GRAVEL of brick with medium cobble content. Cobbles are angular of brick. (MADE GROUND)	
		2.00	SPT	N=4 (2,2/1,1,1,1)				Loose brown very gravelly SAND. Gravel is subangular to angular fine to coarse of brick and concrete with occasional glass. (MADE GROUND)	2
		2.50	D					Loose brown ashy gravelly SAND. Gravel is subangular to angular fine to coarse of mixed lithologies. (MADE GROUND)	
		2.50	ES					<i>Oil sheen on wet sand between 2.00 and 3.70m.</i>	3
		3.00	SPT	N=4 (1,1/1,1,1,1)					
		4.00	SPT	N=4 (1,1/1,1,1,1)	3.70	24.80		Soft black sandy gravelly CLAY. Gravel is subangular of mixed lithologies. (MADE GROUND)	4
		5.00	SPT	N=4 (1,1/1,1,1,1)	4.70	23.80		Soft brown slightly gravelly CLAY. Gravel is subrounded to rounded fine to coarse of mixed lithologies. (GLACIAL TILL)	5
					5.45	23.05		End of Borehole at 5.450m	6
									7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
5.45	101										

Remarks



DETS

Certificate of Analysis

Certificate Number 21-18565

Issued: 29-Sep-21

Client 1ST HORIZON

The Old Pop Factory, 88-90 High Street

Dodworth, Barnsley

S75 3RQ

Our Reference 21-18565

Client Reference 2548

Order No (not supplied)

Contract Title Sandilands

Description 6 Soil samples.

Date Received 02-Sep-21

Date Completed 29-Sep-21

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



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 21-18565
 Client Ref SL01-R12
 Contract Title Sandilands

Lab No	1898561	1898562	1898563
Sample ID	WS01	WS03	WS05
Depth	0.30	0.30	0.30
Other ID			
Sample Type	SOIL	SOIL	SOIL
Sampling Date	13/08/2021	13/08/2021	16/08/2021
Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
Metals						
Arsenic	DETSC 2301#	0.2	mg/kg	9.5		19
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.4		0.3
Cadmium	DETSC 2301#	0.1	mg/kg	0.2		0.3
Chromium	DETSC 2301#	0.15	mg/kg	16		21
Chromium III	DETSC 2301*	0.15	mg/kg	16		21
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0		< 1.0
Copper	DETSC 2301#	0.2	mg/kg	27		49
Lead	DETSC 2301#	0.3	mg/kg	68		120
Mercury	DETSC 2325#	0.05	mg/kg	0.17		0.29
Nickel	DETSC 2301#	1	mg/kg	18		23
Selenium	DETSC 2301#	0.5	mg/kg	0.7		< 0.5
Zinc	DETSC 2301#	1	mg/kg	47		95
Inorganics						
pH	DETSC 2008#		pH	7.0	6.7	6.1
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.5		0.6
Organic matter	DETSC 2002#	0.1	%	7.0		4.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	140	30	21
Sulphide	DETSC 2024*	10	mg/kg	< 10		< 10
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75		< 0.75
Petroleum Hydrocarbons						
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2		< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4		< 3.4
Aliphatic C35-C40	DETSC 3072*	3.4	mg/kg	< 3.4		< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10		< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9		< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5		< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6		< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4		< 1.4
Aromatic C35-C40	DETSC 3072*	1.4	mg/kg	< 1.4		< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10		< 10
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg	< 10		< 10

Summary of Chemical Analysis

Soil Samples

Our Ref 21-18565

Client Ref SL01-R12

Contract Title Sandilands

Lab No	1898561	1898562	1898563
Sample ID	WS01	WS03	WS05
Depth	0.30	0.30	0.30
Other ID			
Sample Type	SOIL	SOIL	SOIL
Sampling Date	13/08/2021	13/08/2021	16/08/2021
Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
PAHs						
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03		< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03		< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.04		< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03		< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.28		0.27
Anthracene	DETSC 3303	0.03	mg/kg	0.05		0.06
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.41		0.63
Pyrene	DETSC 3303#	0.03	mg/kg	0.39		0.62
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.15		0.31
Chrysene	DETSC 3303	0.03	mg/kg	0.19		0.37
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.18		0.41
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.07		0.17
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.12		0.30
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.06		0.15
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03		0.04
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.06		0.17
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	2.0		3.5
Phenols						
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.6		0.7

Summary of Chemical Analysis

Soil Samples

Our Ref 21-18565

Client Ref SL01-R12

Contract Title Sandilands

Lab No	1898564	1898565	1898566
Sample ID	WS07	WS08	WS08
Depth	0.30	0.30	1.50
Other ID			
Sample Type	SOIL	SOIL	SOIL
Sampling Date	n/s	16/08/2021	16/08/2021
Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
Metals						
Arsenic	DETSC 2301#	0.2	mg/kg			3.8
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg			0.6
Cadmium	DETSC 2301#	0.1	mg/kg			0.5
Chromium	DETSC 2301#	0.15	mg/kg			9.5
Chromium III	DETSC 2301*	0.15	mg/kg			9.5
Chromium, Hexavalent	DETSC 2204*	1	mg/kg			< 1.0
Copper	DETSC 2301#	0.2	mg/kg			30
Lead	DETSC 2301#	0.3	mg/kg			140
Mercury	DETSC 2325#	0.05	mg/kg			< 0.05
Nickel	DETSC 2301#	1	mg/kg			32
Selenium	DETSC 2301#	0.5	mg/kg			0.5
Zinc	DETSC 2301#	1	mg/kg			61
Inorganics						
pH	DETSC 2008#		pH	8.3	8.6	8.7
Cyanide, Total	DETSC 2130#	0.1	mg/kg			0.2
Organic matter	DETSC 2002#	0.1	%			6.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	12	47	56
Sulphide	DETSC 2024*	10	mg/kg			12
Sulphur (free)	DETSC 3049#	0.75	mg/kg			< 0.75
Petroleum Hydrocarbons						
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg			< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg			< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg			< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg			19
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg			44
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg			62
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg			220
Aliphatic C35-C40	DETSC 3072*	3.4	mg/kg			67
Aliphatic C5-C35	DETSC 3072*	10	mg/kg			340
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg			< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg			< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg			< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg			10
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg			150
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg			430
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg			650
Aromatic C35-C40	DETSC 3072*	1.4	mg/kg			160
Aromatic C5-C35	DETSC 3072*	10	mg/kg			1200
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg			1600

Summary of Chemical Analysis

Soil Samples

Our Ref 21-18565

Client Ref SL01-R12

Contract Title Sandilands

Lab No	1898564	1898565	1898566
Sample ID	WS07	WS08	WS08
Depth	0.30	0.30	1.50
Other ID			
Sample Type	SOIL	SOIL	SOIL
Sampling Date	n/s	16/08/2021	16/08/2021
Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
PAHs						
Naphthalene	DETSC 3303#	0.03	mg/kg			2.0
Acenaphthylene	DETSC 3303#	0.03	mg/kg			0.76
Acenaphthene	DETSC 3303#	0.03	mg/kg			4.7
Fluorene	DETSC 3303	0.03	mg/kg			3.6
Phenanthrene	DETSC 3303#	0.03	mg/kg			13
Anthracene	DETSC 3303	0.03	mg/kg			6.1
Fluoranthene	DETSC 3303#	0.03	mg/kg			13
Pyrene	DETSC 3303#	0.03	mg/kg			12
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg			4.7
Chrysene	DETSC 3303	0.03	mg/kg			4.1
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg			4.0
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg			1.8
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg			12
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg			3.6
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg			0.86
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg			4.3
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg			89
Phenols						
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg			1.9

Summary of Asbestos Analysis Soil Samples

Our Ref 21-18565
Client Ref SL01-R12
Contract Title Sandilands

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1898561	WS01 0.30	SOIL	NAD	none	Darryl Fletcher
1898563	WS05 0.30	SOIL	NAD	none	Darryl Fletcher
1898566	WS08 1.50	SOIL	NAD	none	Darryl Fletcher

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.

Information in Support of the Analytical Results

Our Ref 21-18565

Client Ref SL01-R12

Contract Sandilands

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1898561	WS01 0.30 SOIL	13/08/21	GJ 250ml, GJ 60ml x2	Aliphatics/Aromatics (14 days), BTEX (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days)	
1898562	WS03 0.30 SOIL	13/08/21	GJ 250ml	pH + Conductivity (7 days)	
1898563	WS05 0.30 SOIL	16/08/21	GJ 250ml, GJ 60ml	Aliphatics/Aromatics (14 days), BTEX (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days)	
1898564	WS07 0.30 SOIL		GJ 250ml, GJ 60ml x2	Sample date not supplied, Anions 2:1 (30 days), pH + Conductivity (7 days)	
1898565	WS08 0.30 SOIL	16/08/21	GJ 250ml, GJ 60ml x2	pH + Conductivity (7 days)	
1898566	WS08 1.50 SOIL	16/08/21	GJ 250ml, GJ 60ml x2	Aliphatics/Aromatics (14 days), BTEX (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days)	

Key: G-Glass J-Jar

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 425µm sieve, in accordance with BS1377.

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

End of Report



Certificate of Analysis

Certificate Number 21-18565

Issued: 29-Sept-21

Client 1ST HORIZON

The Old Pop Factory,
88-90 High Street

Dodworth, Barnsley

S75 3RQ

Our Reference 21-05082

Client Reference (not supplied)

Order No (not supplied)

Contract Title Sandilands

Description One Soil sample.

Date Received 14-Aug-21

Date Completed 15-Sept-21

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

A handwritten signature in blue ink, appearing to read "A Fenwick", is written over a light blue horizontal line.

Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 21-18565

Client Ref

Contract Title Sandilands

Lab No	1815110
.Sample ID	BH01
Depth	2
Other ID	
Sample Type	SOIL
Sampling Date	12/08/2021
Sampling Time	n/s

Test	Method	LOD	Units
Inorganics			
pH	DETSC 2008#		pH 8.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l 47

Information in Support of the Analytical Results

Our Ref 21-18565

Client Ref

Contract Sandilands

Containers Received & Deviating Samples

Lab No	Sample ID	Date		Containers Received	Holding time exceeded for tests	Inappropriate container for tests
		Sampled				
1815110	BH01	12/08/21	PT 1L		pH + Conductivity (7 days)	
Key: P-Plastic T-Tub 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 425µm sieve, in accordance with BS1377.

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

End of Report



A P P E N D I X E

Land Appraisal | Environmental | Geotechnical | Design | Mining | Inspections

GRM Development Solutions Limited, Laurus House, First Avenue, Centrum 100, Burton upon Trent, Staffs DE14 2WH
www.grm-uk.com | info@grm-uk.com | 01283 551249 Company No. 3099018 (England), VAT Reg. No. 658 1005 48

Legend

- Site Boundary
- Approx. Proposed school building
- Historic Pond outline - based on 1935 OS map

Exploratory Holes

- Window Sample Borehole
- Window Sample Borehole with Gas/Groundwater Monitoring Installation



NOTES:

CLIENT: Tilbury Douglas Construction Ltd

PROJECT: Sandilands Community Primary School, Manchester

TITLE: Exploratory Hole Location Plan

PROJECT No: P10250

DATE: MAR 2023

DESIGN/DRAWN: CM

DRAWING NUMBER: 03

ISSUE: FINAL

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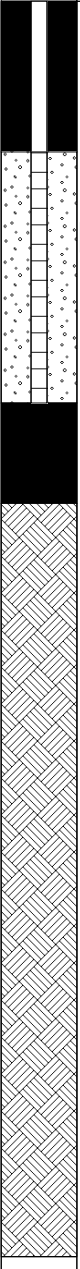
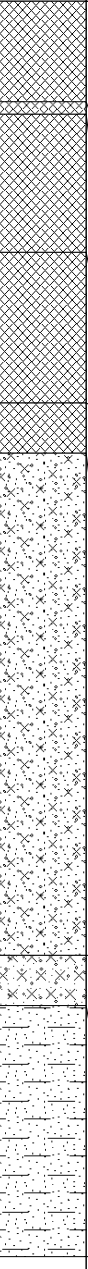
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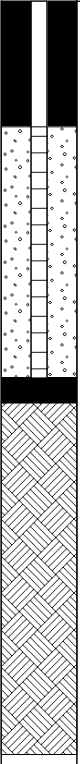


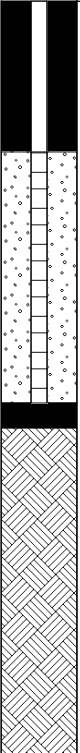
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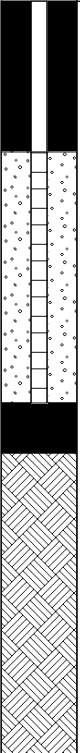
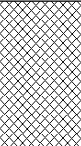
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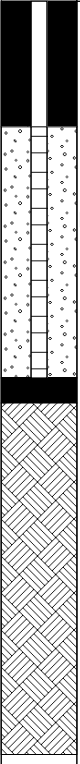
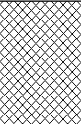
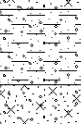
		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole			Borehole No WS01 Sheet 1 of 1	
Site Name: Sandilands Community Primary School							Ground Level (mAOD)	
Client: Tilbury Douglas c/o AJP					GRM Project Ref: P10250		Coordinates 379521 E 389611 N	
Installation/ Backfill	Water Strike	Samples/Tests			Depth (m)	Level (m)	Legend	Stratum Description
		Depth	Type	SPT Result				
		0.20	ES		0.40			Thin asphalt / tarmacadam (5cm) over dark grey, slightly silty, sandy, GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular, tarmac / asphalt (abundant), concrete, brick and sandstone.
		0.50	ES		0.45			MADE GROUND Concrete cobble recovered as fine to coarse angular gravels.
		1.00	S	N=4 (1,1/1,1,1,1)	1.00			MADE GROUND Soft, low strength, dark brown, slightly gravelly, sandy, SILT. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite, brick concrete and chert.
		1.20	D					MADE GROUND Very loose, dark brown, slightly clayey, slightly gravelly, silty, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite, brick and concrete.
		1.60						MADE GROUND
		1.80						Loose, greyish brown mottled brown, slightly silty, sandy, GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular, quartzite, concrete, brick (abundant), and chert.
		1.90	D					MADE GROUND
		2.00	S	N=0 (0,0/0,0,0,0)				Very loose, dark brown, slightly clayey, slightly gravelly, very silty, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert.
		3.00	S	N=0 (0,0/0,0,0,0)				GLACIOFLUVIAL SHEET DEPOSITS
		3.80						Very soft, very low strength, dark grey, slightly gravelly, sandy, SILT. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert.
							GLACIOFLUVIAL SHEET DEPOSITS	
							Very loose, brown, clayey, SAND. Sand is fine to coarse.	
							GLACIOFLUVIAL SHEET DEPOSITS	
							End of Borehole at 5.000m	
Crew: Dynamic Sampling				Logger: SS		Weather: Dry		
Equipment: Window sample rig								
Reason for termination of borehole: Target depth achieved.								
Groundwater Remarks: Groundwater encountered from approximately 1.0m. Groundwater reading upon completion of borehole at 0.88m.								
General Remarks: Hole collapsed to 2.0m.								
Hole Started: 20/02/2023		Hole Complete: 20/02/2023		Version: FINAL		Scale: 1:31		

		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole			Borehole No WS02 Sheet 1 of 1		
Site Name: Sandilands Community Primary School							Ground Level (mAOD)		
Client: Tilbury Douglas c/o AJP					GRM Project Ref: P10250		Coordinates 379555 E 389634 N		
Installation/ Backfill	Water Strike	Samples/Tests			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	SPT Result					
		0.30	ES		0.20 0.25 0.45		 Thin asphalt / tarmacadam (5cm) over dark grey, sandy, GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular, chert, tarmac / asphalt (abundant), brick, concrete, mudstone and sandstone. MADE GROUND		
		0.80	D				 Concrete cobbles recovered as fine to coarse, angular, gravels. MADE GROUND		
		1.00	S	N=9 (1,1/1,1,3,4)	0.90		 Dense, brown, slightly silty, gravelly, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular, brick, concrete, sandstone, mudstone and chert. MADE GROUND		
		1.20	D		1.10		 Medium dense, brown, slightly gravelly, silty, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert. GLACIOFLUVIAL SHEET DEPOSITS		
		1.80	D		1.70		 Loose, brown, slightly silty, SAND. Sand is fine to coarse. GLACIOFLUVIAL SHEET DEPOSITS		
		2.00	S	N=14 (3,3/3,3,4,4)			 Loose, dark grey mottled brown, slightly gravelly, silty, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert. GLACIOFLUVIAL SHEET DEPOSITS		
		2.35	D				 Medium dense, brown, slightly silty, gravelly, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert. GLACIOFLUVIAL SHEET DEPOSITS		
		3.00	S	N=12 (2,3/3,3,3,3)	3.00		 ... layer of gravelly, clay. Gravel is fine to coarse, angular, chert and quartzite between 2.3-2.4m		
		End of Borehole at 3.000m							
Crew: Dynamic Sampling				Logger: SS		Weather: Dry			
Equipment: Window sample rig									
Reason for termination of borehole:				Terminated due to collapse of borehole beyond 3m. Not possible to case due to large groundwater ingress.					
Groundwater Remarks: Groundwater encountered from approximately 1.0m. Groundwater reading upon completion of borehole at 0.95m.									
General Remarks: Hole collapsed to 1.6m.									
Hole Started: 20/02/2023		Hole Complete: 20/02/2023		Version: FINAL		Scale: 1:31			

		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole			Borehole No WS03 Sheet 1 of 1				
Site Name: Sandilands Community Primary School							Ground Level (mAOD)				
Client: Tilbury Douglas c/o AJP					GRM Project Ref: P10250		Coordinates 379550 E 389660 N				
Installation/ Backfill	Water Strike	Samples/Tests			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth	Type	SPT Result							
		0.20	ES					Turf over dark brown, slightly gravelly, very silty, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular, quartzite, chert, brick and concrete. Frequent roots. RELAID TOPSOIL	1		
		0.80	D					Loose, brown, silty, SAND. Sand is fine to coarse. GLACIOFLUVIAL SHEET DEPOSITS			
		1.00	S	N=10 (1,1/1,3,3,3)				Medium dense, orangish brown mottled dark brown, slightly silty, slightly gravelly, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert. GLACIOFLUVIAL SHEET DEPOSITS			
		1.80	D						2		
		2.00	S	N=9 (2,2/2,2,2,3)	2.00			Loose, dark brown, silty, gravelly, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert. GLACIOFLUVIAL SHEET DEPOSITS			
		2.90	D						3		
		3.00	S	N=12 (3,3/3,3,3,3)	3.00			End of Borehole at 3.000m			
											4
											5
Crew: Dynamic Sampling				Logger: SS		Weather: Dry					
Equipment: Window sample rig											
Reason for termination of borehole:				Terminated due to collapse of borehole beyond 3m. Not possible to case due to large groundwater ingress.							
Groundwater Remarks: Groundwater encountered from approximately 1.0m. Groundwater reading upon completion of borehole at 0.94m.											
General Remarks: Hole collapsed to 1.7m.											
Hole Started: 20/02/2023		Hole Complete: 20/02/2023		Version: FINAL		Scale: 1:31					

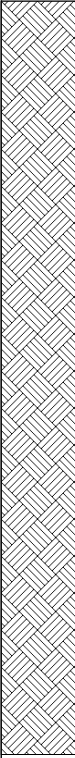
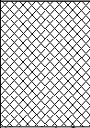
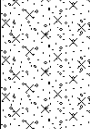
		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole			Borehole No WS04 Sheet 1 of 1		
Site Name: Sandilands Community Primary School							Ground Level (mAOD)		
Client: Tilbury Douglas c/o AJP					GRM Project Ref: P10250		Coordinates 379594 E 389669 N		
Installation/ Backfill	Water Strike	Samples/Tests			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	SPT Result					
		0.30	ES		0.60			Turf over dark brown, slightly gravelly, very silty, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite, chert, concrete and brick. Frequent roots. RELAID TOPSOIL	1
		0.90	D	N=8 (3,2/2,2,2,2)				Loose, brown mottled reddish brown and dark greyish brown, slightly gravelly, silty, SAND. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded, quartzite. GLACIOFLUVIAL SHEET DEPOSITS	
		1.00	S						
		1.20	D		1.50			Medium dense, dark brown mottled brown, slightly silty, slightly gravelly, SAND. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded, quartzite and chert. GLACIOFLUVIAL SHEET DEPOSITS	2
		2.00	S	N=11 (2,2/2,3,3,3)					
		2.20	D						
		3.00	S	N=11 (2,2/2,3,3,3)	3.00		End of Borehole at 3.000m	3	
									4
									5
		Crew: Dynamic Sampling				Logger: SS		Weather: Dry	
Equipment: Window sample rig									
Reason for termination of borehole:				Terminated due to collapse of borehole beyond 3m. Not possible to case due to large groundwater ingress.					
Groundwater Remarks: Groundwater encountered from approximately 1.0m. Groundwater reading upon completion of borehole at 0.85m.									
General Remarks: Hole collapsed to 1.8m.									
Hole Started: 20/02/2023		Hole Complete: 20/02/2023		Version: FINAL		Scale: 1:31			

		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole			Borehole No WS06 Sheet 1 of 1	
Site Name: Sandilands Community Primary School							Ground Level (mAOD)	
Client: Tilbury Douglas c/o AJP					GRM Project Ref: P10250		Coordinates 379610 E 389672 N	

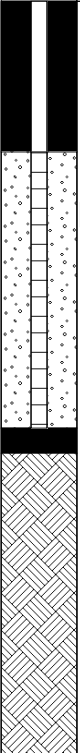
Installation/ Backfill	Water Strike	Samples/Tests			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth	Type	SPT Result							
		0.20	ES					Turf over dark brown, slightly gravelly, silty, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite, chert and brick. Frequent roots. RELAID TOPSOIL			
		0.60	ES		0.50					Loose, orangish brown mottled brown, slightly gravelly, silty, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert. GLACIOFLUVIAL SHEET DEPOSITS	
		1.00	S	N=5 (1,1/1,1,1,2)	1.00					Loose, brown, slightly silty, slightly gravelly, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert. GLACIOFLUVIAL SHEET DEPOSITS	
		1.10	D								
		2.00	S	N=12 (3,3/3,3,3,3)	2.00			Firm, locally soft, low to medium strength, reddish brown, slightly sandy, gravelly, CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert. GLACIOFLUVIAL SHEET DEPOSITS			
		2.10	D		2.30					Medium dense, brown, slightly silty, gravelly, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert. GLACIOFLUVIAL SHEET DEPOSITS	
		3.00	S	N=8 (1,1/2,2,2,2)	3.00			End of Borehole at 3.000m			

Crew: Dynamic Sampling	Logger: SS	Weather: Dry
Equipment: Window sample rig		
Reason for termination of borehole: Terminated due to collapse of borehole beyond 3m. Not possible to case due to large groundwater ingress.		
Groundwater Remarks: Groundwater encountered from approximately 0.9m. Groundwater reading upon completion of borehole at 0.84m.		
General Remarks: Hole collapsed to 1.6m.		
Hole Started: 20/02/2023	Hole Complete: 20/02/2023	Version: FINAL
Scale: 1:31		

		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole			Borehole No WS07 Sheet 1 of 1	
Site Name: Sandilands Community Primary School							Ground Level (mAOD)	
Client: Tilbury Douglas c/o AJP					GRM Project Ref: P10250		Coordinates 379603 E 389688 N	

Installation/ Backfill	Water Strike	Samples/Tests			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	SPT Result					
		0.20	ES					Turf over dark brown, slightly gravelly, very silty, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite, mudstone, brick and chert. Frequent roots.	
					0.50				RELAIID TOPSOIL ...locally very clayey between 0.4-0.5m.
		0.80	D					Loose, brown, slightly silty, slightly gravelly, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert.	
		1.00	S	N=8 (1,1/2,2,2,2)	1.00			GLACIOFLUVIAL SHEET DEPOSITS	1
		1.90	D						Medium dense, brown mottled grey, slightly silty, gravelly, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert.
		2.00	S	N=8 (2,2/2,2,2,2)			GLACIOFLUVIAL SHEET DEPOSITS		2
2.40	D								
		3.00	S	N=19 (4,4/4,5,5,5)	3.00			End of Borehole at 3.000m	3
									4
									5

Crew: Dynamic Sampling		Logger: SS		Weather: Dry	
Equipment: Window sample rig					
Reason for termination of borehole:		Terminated due to collapse of borehole beyond 3m. Not possible to case due to large groundwater ingress.			
Groundwater Remarks: Groundwater encountered from approximately 0.9m. Groundwater reading upon completion of borehole at 0.8m.					
General Remarks: Hole collapsed to 1.6m.					
Hole Started: 20/02/2023		Hole Complete: 20/02/2023		Version: FINAL	
				Scale: 1:31	

		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole			Borehole No WS08 Sheet 1 of 1			
Site Name: Sandilands Community Primary School							Ground Level (mAOD)			
Client: Tilbury Douglas c/o AJP					GRM Project Ref: P10250		Coordinates 379624 E 389684 N			
Installation/ Backfill	Water Strike	Samples/Tests			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth	Type	SPT Result						
		0.20	ES					Turf over dark brown, slightly gravelly, sandy, SILT. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert. Frequent roots. RELAID TOPSOIL		
		0.60								
		0.90	D						Medium dense, grey mottled orangish brown, slightly gravelly, silty, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert. GLACIOFLUVIAL SHEET DEPOSITS	1
		1.00	S	N=13 (4,4/4,3,3,3)	1.00			Medium dense, dark brown, slightly silty, gravelly, SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, quartzite and chert. GLACIOFLUVIAL SHEET DEPOSITS		
		2.00	D						2	
		2.00	S	N=10 (2,3/3,2,2,3)						
		3.00	S	N=7 (1,1/1,1,3,2)	3.00			End of Borehole at 3.000m	3	
									4	
									5	
Crew: Dynamic Sampling				Logger: SS		Weather: Dry				
Equipment: Window sample rig										
Reason for termination of borehole:				Terminated due to collapse of borehole beyond 3m. Not possible to case due to large groundwater ingress.						
Groundwater Remarks: Groundwater encountered from approximately 0.9m. Groundwater reading upon completion of borehole at 0.8m.										
General Remarks: Hole collapsed to 1.8m. Limited recovery between 2.0-3.0m due to samples fallen downhole.										
Hole Started: 20/02/2023		Hole Complete: 20/02/2023		Version: FINAL		Scale: 1:31				



A P P E N D I X G

Land Appraisal | Environmental | Geotechnical | Design | Mining | Inspections

GRM Development Solutions Limited, Laurus House, First Avenue, Centrum 100, Burton upon Trent, Staffs DE14 2WH
www.grm-uk.com | info@grm-uk.com | 01283 551249 Company No. 3099018 (England), VAT Reg. No. 658 1005 48



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7 - 11 Harding Street
Leicester
LE1 4DH

GRM Development Solutions

Laurus House
First Avenue
Centrum 100
Burton Upon Trent
DE14 2WH

Analytical Test Report: L23/00853/GRM - 23-32241

Your Project Reference:	P10250 Sandilands primary School		
Your Order Number:	P10250	Samples Received / Instructed:	21/02/2023 / 21/02/2023
Report Issue Number:	1	Sample Tested:	21/02 to 06/03/2023
Samples Analysed:	9 soil samples	Report issued:	06/03/2023

Signed

James Gane
Analytical Services Manager
CTS Group

Notes:**General**

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report with the exception of the asbestos test portion which is held for 6 months unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30°C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Asbestos

Please note: Where further analysis is required samples identified as containing asbestos are screened and tested on an as received basis. No correction is made for moisture content and these results are not covered by our accreditation

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

WAC Testing

Samples were leached in accordance with BS EN 12457-2: 2002.

Eluate Results are reported as L/S 10. These results have been calculated in accordance with BS EN 12457-2:2002.

Comparative values are taken from the Council Decision Annex - CRITERIA AND PROCEDURES FOR THE ACCEPTANCE OF WASTE AT LANDFILLS, (2003/33/EC).

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 23.09.2022

Issued by: J. Gane

Issue No: 1

Rev No: 1



7 - 11 Harding Street
Leicester
LE1 4DH

L23/00853/GRM - 23-32241

Project Reference - P10250 Sandilands primary School

Analytical Test Results - Soil

Lab Reference			280795	280796	280797	280798	280799
Client Sample ID			WS01	WS02	WS04	WS05	WS07
Client Sample Location			-	-	-	-	-
Client Sample Type			-	-	-	-	-
Client Sample Number			-	-	-	-	-
Depth - Top (m)			0.50	0.30	0.30	0.20	0.20
Depth - Bottom (m)			0.50	0.30	0.30	0.20	0.20
Date of Sampling			20/02/2023	20/02/2023	20/02/2023	20/02/2023	20/02/2023
Time of Sampling			-	-	-	-	-
Sample Matrix			Sand	Other	Clay	Clay	Clay
Determinant	Units	Accreditation					
Arsenic	(mg/kg)	MCERTS	60	< 10	25	24	23
Cadmium	(mg/kg)	MCERTS	2.4	0.8	1.4	1.4	1.9
Chromium (Total)	(mg/kg)	UKAS	20	9.8	22	23	24
Copper	(mg/kg)	MCERTS	160	19	65	69	76
Lead	(mg/kg)	MCERTS	390	61	170	160	170
Mercury	(mg/kg)	UKAS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Nickel	(mg/kg)	MCERTS	43	17	25	27	25
Selenium	(mg/kg)	u	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
Zinc	(mg/kg)	MCERTS	470	73	110	120	120
Total Phenols	(mg/kg)	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cyanide (Total)	(mg/kg)	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium (Hexavalent)	(mg/kg)	u	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
pH	pH Units	MCERTS	7.4	8.8	7.9	6.0	6.0
Sulphate (Water soluble)	(mg/l)	u	< 10	17	< 10	< 10	10
Acenaphthene	(mg/kg)	MCERTS	3.2	0.43	0.04	0.06	0.05
Acenaphthylene	(mg/kg)	UKAS	0.98	0.05	< 0.02	0.04	0.03
Anthracene	(mg/kg)	UKAS	6.0	0.46	0.11	0.18	0.14
Benzo (a) anthracene	(mg/kg)	MCERTS	14	0.92	0.44	0.71	0.64
Benzo (a) pyrene	(mg/kg)	MCERTS	17	0.93	0.55	0.87	0.76
Benzo (b) fluoranthene	(mg/kg)	MCERTS	20	1.1	0.64	1.0	0.84
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	11	0.55	0.32	0.49	0.41
Benzo (k) fluoranthene	(mg/kg)	MCERTS	7.4	0.44	0.23	0.40	0.31
Chrysene	(mg/kg)	MCERTS	16	1.1	0.53	0.86	0.78
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	2.2	0.12	0.06	0.13	0.11
Fluoranthene	(mg/kg)	MCERTS	34	2.2	0.91	1.4	1.3
Fluorene	(mg/kg)	MCERTS	3.3	0.30	0.03	0.05	0.04
Indeno (1, 2, 3, -cd) pyrene	(mg/kg)	MCERTS	11	0.51	0.33	0.60	0.50
Naphthalene	(mg/kg)	MCERTS	1.7	0.22	< 0.02	0.04	< 0.02
Phenanthrene	(mg/kg)	MCERTS	18	1.8	0.42	0.63	0.53
Pyrene	(mg/kg)	MCERTS	28	1.9	0.81	1.3	1.2
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	190	13	5.5	8.8	7.7
SOM (via TOC)	(%)	UKAS	23	2.1	10	9.6	9.5
Asbestos	-	UKAS	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected



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L23/00853/GRM - 23-32241

Project Reference - P10250 Sandilands primary School

Analytical Test Results - Chemical Analysis

Lab Reference			280800	280801	280802	280803
Client Sample ID			WS05	WS04	WS06	WS07
Client Sample Location			-	-	-	-
Client Sample Type			-	-	-	-
Client Sample Number			-	-	-	-
Depth - Top (m)			1.00	1.20	2.10	0.80
Depth - Bottom (m)			1.00	1.20	2.10	0.80
Date of Sampling			20/02/2023	20/02/2023	20/02/2023	20/02/2023
Time of Sampling			-	-	-	-
Sample Matrix			Sand	Sand	Clay	Sand
Determinant	Units	Accreditation				
Water soluble sulphate	(mg/l)	u	290	59	19	< 10
pH Value	pH Units	MCERTS	6.0	6.5	7.1	6.6



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L23/00853/GRM - 23-32241

Project Reference - P10250 Sandilands primary School

Analytical Test Results - TPH CWG

Lab Reference			280795	280796	280797	280798	280799
Client Sample ID			WS01	WS02	WS04	WS05	WS07
Client Sample Location			-	-	-	-	-
Client Sample Type			-	-	-	-	-
Client Sample Number			-	-	-	-	-
Depth - Top (m)			0.50	0.30	0.30	0.20	0.20
Depth - Bottom (m)			0.50	0.30	0.30	0.20	0.20
Date of Sampling			20/02/2023	20/02/2023	20/02/2023	20/02/2023	20/02/2023
Time of Sampling			-	-	-	-	-
Sample Matrix			Sand	Other	Clay	Clay	Clay
Determinant	Units	Accreditation					
Aliphatics							
>C ₅ to C ₆ [HS_MS_1D_AL]	(mg/kg)	u	0.15	< 0.06	0.08	0.12	0.09
>C ₆ to C ₈ [HS_MS_1D_AL]	(mg/kg)	u	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
>C ₈ to C ₁₀ [HS_MS_1D_AL]	(mg/kg)	u	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
>C ₁₀ to C ₁₂ [EH_CU_1D_AL]	(mg/kg)	u	< 10	< 10	< 10	< 10	< 10
>C ₁₂ to C ₁₆ [EH_CU_1D_AL]	(mg/kg)	u	< 10	20	< 10	< 10	< 10
>C ₁₆ to C ₂₁ [EH_CU_1D_AL]	(mg/kg)	u	14	28	< 10	< 10	< 10
>C ₂₁ to C ₃₅ [EH_CU_1D_AL]	(mg/kg)	u	94	260	28	< 20	< 20
Aromatics							
>C ₅ to C ₇ [HS_MS_1D_AR]	(mg/kg)	u	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C ₇ to C ₈ [HS_MS_1D_AR]	(mg/kg)	u	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C ₈ to C ₁₀ [HS_MS_1D_AR]	(mg/kg)	u	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
>C ₁₀ to C ₁₂ [EH_CU_1D_AR]	(mg/kg)	u	< 10	< 10	< 10	< 10	< 10
>C ₁₂ to C ₁₆ [EH_CU_1D_AR]	(mg/kg)	u	34	14	< 10	< 10	< 10
>C ₁₆ to C ₂₁ [EH_CU_1D_AR]	(mg/kg)	u	120	21	< 10	16	15
>C ₂₁ to C ₃₅ [EH_CU_1D_AR]	(mg/kg)	u	440	130	28	47	33
Total							
>C ₅ to C ₄₀ [EH_CU+HS_1D_Total]	(mg/kg)	u	810	580	56	63	< 50



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L23/00853/GRM - 23-32241

Project Reference - P10250 Sandilands primary School

Certificate Of Analysis - WAC Suite

Lab Reference	280796
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Client Sample ID	WS02
Client Sample Location	-
Client Sample Type	-
Client Sample Number	-
Depth - Top (m)	0.3
Depth - Bottom (m)	0.3
Date of Sampling	20/02/2023
Time of Sampling	-
Sample Description	Mottled brownish grey sandy crushed rock
Sample Matrix	Other
Moisture Content (%)	6.9
Stone content (%)	70

Determined Result	Inert Waste Landfill	Stable non reactive hazardous waste in a non hazardous landfill	Hazardous Waste Landfill
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Solid Analysis

Total Organic Carbon	%	MCERTS	1.2	3.0	5.0	6.0
Loss on Ignition	%	UKAS	1.9	-	-	10.0
BTEX	mg/kg	MCERTS	< 0.06	6.00	-	-
PCB's (7 Congeners)	mg/kg	u	< 0.028	1.00	-	-
Mineral Oil (>C ₁₀ to C ₄₀) [EH ₁₀ _Total]	mg/kg	MCERTS	824	500	-	-
PAH	mg/kg	u	13	100	-	-
pH	units	MCERTS	8.8	-	> 6	-

Eluate Analysis

Arsenic	mg/kg	u	< 0.03	0.50	2	25
Barium	mg/kg	u	0.30	20	100	300
Cadmium	mg/kg	u	< 0.03	0.04	1	5
Chromium (total)	mg/kg	u	< 0.03	0.5	10	70
Copper	mg/kg	u	0.02	2.0	50	100
Mercury	mg/kg	u	< 0.01	0.01	0.2	2
Molybdenum	mg/kg	u	< 0.03	0.5	10.0	30
Nickel	mg/kg	u	< 0.03	0.4	10.0	40
Lead	mg/kg	u	< 0.05	0.5	10.0	50
Antimony	mg/kg	u	< 0.03	0.06	0.7	5
Selenium	mg/kg	u	< 0.01	0.1	0.5	7
Zinc	mg/kg	u	< 0.05	4	50	200
Chloride	mg/kg	u	5	800	15000	25000
Fluoride	mg/kg	u	5	10	150	500
Sulphate (as SO ₄)	mg/kg	u	45	1000	20000	50000
Total Dissolved Solids	mg/kg	u	480	4000	60000	100000
Phenol Index	mg/kg	u	< 1.0	1	-	-
Dissolved Organic Carbon	mg/kg	u	< 20	500	800	1000



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L23/00853/GRM - 23-32241

Project Reference - P10250 Sandilands primary School

Certificate Of Analysis - WAC Suite

Lab Reference	280798
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Client Sample ID	WS05
Client Sample Location	-
Client Sample Type	-
Client Sample Number	-
Depth - Top (m)	0.2
Depth - Bottom (m)	0.2
Date of Sampling	20/02/2023
Time of Sampling	-
Sample Description	Dark brown slightly gravelly silty sandy clay with rare rootlets
Sample Matrix	Clay
Moisture Content (%)	17
Stone content (%)	4.6

Determined Result	Inert Waste Landfill	Stable non reactive hazardous waste in a non hazardous landfill	Hazardous Waste Landfill
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Solid Analysis

Total Organic Carbon	%	MCERTS	5.6	3.0	5.0	6.0
Loss on Ignition	%	UKAS	6.5	-	-	10.0
BTEX	mg/kg	MCERTS	< 0.06	6.00	-	-
PCB's (7 Congeners)	mg/kg	u	< 0.028	1.00	-	-
Mineral Oil (>C ₁₀ to C ₄₀) [EH ₁₀ _Total]	mg/kg	MCERTS	328	500	-	-
PAH	mg/kg	u	9.0	100	-	-
pH	units	MCERTS	6.0	-	> 6	-

Eluate Analysis

Arsenic	mg/kg	u	< 0.03	0.50	2	25
Barium	mg/kg	u	0.06	20	100	300
Cadmium	mg/kg	u	< 0.03	0.04	1	5
Chromium (total)	mg/kg	u	< 0.03	0.5	10	70
Copper	mg/kg	u	0.06	2.0	50	100
Mercury	mg/kg	u	< 0.01	0.01	0.2	2
Molybdenum	mg/kg	u	< 0.03	0.5	10.0	30
Nickel	mg/kg	u	< 0.03	0.4	10.0	40
Lead	mg/kg	u	< 0.05	0.5	10.0	50
Antimony	mg/kg	u	< 0.03	0.06	0.7	5
Selenium	mg/kg	u	< 0.01	0.1	0.5	7
Zinc	mg/kg	u	< 0.05	4	50	200
Chloride	mg/kg	u	3	800	15000	25000
Fluoride	mg/kg	u	2	10	150	500
Sulphate (as SO ₄)	mg/kg	u	< 10	1000	20000	50000
Total Dissolved Solids	mg/kg	u	62	4000	60000	100000
Phenol Index	mg/kg	u	< 1.0	1	-	-
Dissolved Organic Carbon	mg/kg	u	36.0	500	800	1000



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L23/00853/GRM - 23-32241

Project Reference - P10250 Sandilands primary School

Certificate Of Analysis - WAC Suite

Lab Reference	280799
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Client Sample ID	WS07
Client Sample Location	-
Client Sample Type	-
Client Sample Number	-
Depth - Top (m)	0.2
Depth - Bottom (m)	0.2
Date of Sampling	20/02/2023
Time of Sampling	-
Sample Description	Dark brown slightly gravelly silty sandy clay with rare rootlets
Sample Matrix	Clay
Moisture Content (%)	25
Stone content (%)	< 0.1

Determined Result	Inert Waste Landfill	Stable non reactive hazardous waste in a non hazardous landfill	Hazardous Waste Landfill
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Solid Analysis

Total Organic Carbon	%	MCERTS	5.5	3.0	5.0	6.0
Loss on Ignition	%	UKAS	8.1	-	-	10.0
BTEX	mg/kg	MCERTS	< 0.06	6.00	-	-
PCB's (7 Congeners)	mg/kg	u	< 0.028	1.00	-	-
Mineral Oil (>C ₁₀ to C ₄₀) [EH ₁₀ _Total]	mg/kg	MCERTS	221	500	-	-
PAH	mg/kg	u	7.8	100	-	-
pH	units	MCERTS	6.0	-	> 6	-

Eluate Analysis

Arsenic	mg/kg	u	< 0.03	0.50	2	25
Barium	mg/kg	u	0.06	20	100	300
Cadmium	mg/kg	u	< 0.03	0.04	1	5
Chromium (total)	mg/kg	u	< 0.03	0.5	10	70
Copper	mg/kg	u	0.17	2.0	50	100
Mercury	mg/kg	u	< 0.01	0.01	0.2	2
Molybdenum	mg/kg	u	< 0.03	0.5	10.0	30
Nickel	mg/kg	u	< 0.03	0.4	10.0	40
Lead	mg/kg	u	< 0.05	0.5	10.0	50
Antimony	mg/kg	u	< 0.03	0.06	0.7	5
Selenium	mg/kg	u	< 0.01	0.1	0.5	7
Zinc	mg/kg	u	< 0.05	4	50	200
Chloride	mg/kg	u	4	800	15000	25000
Fluoride	mg/kg	u	3	10	150	500
Sulphate (as SO ₄)	mg/kg	u	< 10	1000	20000	50000
Total Dissolved Solids	mg/kg	u	77	4000	60000	100000
Phenol Index	mg/kg	u	< 1.0	1	-	-
Dissolved Organic Carbon	mg/kg	u	55.0	500	800	1000



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Project Reference - P10250 Sandilands primary School

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
280795	WS01	-	-	-	Dark brown slightly gravelly clayey silty sand	25	14	75
280796	WS02	-	-	-	Mottled brownish grey sandy crushed rock	6.9	70	19
280797	WS04	-	-	-	Dark brown silty sandy clay	21	< 0.1	89
280798	WS05	-	-	-	Dark brown slightly gravelly silty sandy clay with rare rootlets	17	4.6	86
280799	WS07	-	-	-	Dark brown slightly gravelly silty sandy clay with rare rootlets	25	< 0.1	83
280800	WS05	-	-	-	Dark brown slightly gravelly silty sand	-	-	54
280801	WS04	-	-	-	Dark brown silty sand	-	-	98
280802	WS06	-	-	-	Reddish brown silty clay	-	-	85
280803	WS07	-	-	-	Mottled reddish brown slightly gravelly silty sand	-	-	93



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Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
280795	WS01	-	-	-	VPH/BTEX - Sample taken from container with headspace.
280796	WS02	-	-	-	VPH/BTEX - Sample taken from container with headspace.
280797	WS04	-	-	-	VPH/BTEX - Sample taken from container with headspace.
280798	WS05	-	-	-	VPH/BTEX - Sample taken from container with headspace.
280799	WS07	-	-	-	VPH/BTEX - Sample taken from container with headspace.
280800	WS05	-	-	-	
280801	WS04	-	-	-	
280802	WS06	-	-	-	
280803	WS07	-	-	-	



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Project Reference - P10250 Sandilands primary School

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preparation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
EPHS	MS - CL - EPH in Soil	As received	Passing 10mm test sieve	Determination of Extractable Petroleum Hydrocarbons in soils via GC-MS
PCB7S	MS - CL - PCB Soils	As received	Passing 10mm test sieve	Determination of PCB's (7 congeners) in soils via GC-MS
PAHASRDS	MS - CL - PAH (As Received)	As received	Passing 10mm test sieve	Determination of Polyaromatic hydrocarbons in soil via GC-MS
CWGS	MS - CL - VPH & MS - CL - EPH	As received	Passing 10mm test sieve	Determination of TPH CWG (Volatile Petroleum Hydrocarbons and Extractable Petroleum Hydrocarbons) in soils via Headspace-GC-MS and GC-MS respectively
WACTOCS	MS - CL - TOC Eltra (WAC)	Air dried	Passing 10mm test sieve	Determination of Total Organic Carbon in soil as part of a WAC test
TOCS	MS - CL - TOC Eltra	Air Dried	Passing 10mm test sieve	Determination of Total Organic Carbon in soils
TPHS	MS - CL - TPH (GC-FID)	As received	Passing 10mm test sieve	Determination of Total Petroleum Hydrocarbons in soil using GC-FID
WACSKALAR	MS - CL - Phenols by Skalar (WAC)	As received	BSEN:12457 Leaching	Determination of Total Phenols within leachate as part of a WAC test using a Skalar Segmented flow analyser
VPHS	MS - CL - VPH	As received	Passing 10mm test sieve	Determination of VPH in soils via Headspace-GC-MS
SKALARCNS	MS - CL - Cyanide by Skalar	As received	Passing 10mm test sieve	Determination of cyanide (total / free / complex) in soil using a Skalar segmented flow analyser
WACDOC	MS - CL - DOC (WAC)	As received	BSEN:12457 Leaching	Determination of dissolved organic carbon in a leachate as part of a WAC test
SKALARHCS	MS - CL - Hexavalent Chromium by Skalar	As received	Passing 10mm test sieve	Determination of hexavalent chromium in soil using Skalar segmented flow analyser
WACMETALS	MS - CL - ICP - Metals in Waters (WAC)	As received	BSEN:12457 Leaching	Determination of metals in a leachate as part of a WAC test via ICP
ICPMETS	MS - CL - ICP Metals	Air dried	Passing 10mm test sieve	Determination of metals in soils via ICP
WACPHS	MS - CL - pH in Soils (WAC)	As received	BSEN:12457 Leaching	Determination of pH in soils as part of a WAC test via pH probe
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
WACANIONS	MS - CL - Anions by Aquakem (WAC)	As received	BSEN:12457 Leaching	Determination of sulphate, chloride and fluoride in a leachate as part of a WAC test using a Aquakem analyser
TDSL	MS - CL - Conductivity in Water	As received	BSEN:12457 Leaching	Determination of total dissolved solids in leachates (by calculation)
SKALARPHS	MS - CL - Phenols by Skalar	As received	Passing 10mm test sieve	Determination of total phenols in soil using Skalar segmented flow analyser
ASB	MS - AS - Asbestos	-	-	Fibre identification is in accordance with in house documented methods which are based on the procedure documented in the HSE Document HSG 248 "Asbestos: The analysts guide for sampling, analysis and clearance procedures"
ENLEACHP	BS EN 12457-2	As Received	-	Leaching in accordance with BSEN 12457-2 (10:1 Ratio)
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377LOI	BS1377 LoI	Oven dried	Passing 2mm test sieve	Testing was in accordance with BS 1377: Part 3: 2018 + A1 :2021 Clause 6. Determination of the mass loss on ignition. Some information required by BS1377: 2016: Part 1 has not been reported. This information is available on request.



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Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided

C - Received in inappropriate container

H - Contains headspace

T - Temperature on receipt exceeds storage temperature

R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

Observations whilst in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
280795	WS01	-	-	-	MS - CL - VPH	X
280796	WS02	-	-	-	MS - CL - VPH	X
280797	WS04	-	-	-	MS - CL - VPH	X
280798	WS05	-	-	-	MS - CL - VPH	X
280799	WS07	-	-	-	MS - CL - VPH	X



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HWOL TPH Acronym Index

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
Total	Aliphatics and Aromatics
AL	Aliphatics Only
AR	Aromatics Only
2D	GC-GC - Double Coil Gas Chromatography
#1	EH_Total but with humics mathmatically subtracted
#2	EH_Total but with fatty acids mathmatically subtracted
_	Operator - underscore to separate acronyms (except for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry



A P P E N D I X H

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	GRM TIER 1 ASSESSMENT CRITERIA		
LAND USE	Residential without Plant Uptake		
CONTAMINANT	1%	2.50%	6%
^a Arsenic	40	40	40
^a Cadmium	150	150	150
^b Chromium III	910	910	910
^a Chromium VI	21	21	21
^a Lead	310	310	310
^{b/c} Mercury	56	56	56
^b Selenium	430	430	430
^b Nickel	180	180	180
^b Phenols	750	1300	2300
^b Copper	7100	7100	7100
^b Zinc	40000	40000	40000
^d Cyanide	34	34	34
^b Benzene	0.4	0.7	1.4
^b Toluene	880	1900	3900
^b Ethylbenzene	83	190	440
^b <i>o</i> - xylene	88	210	480
^b <i>m</i> - xylene	82	190	450
^b <i>p</i> - xylene	79	180	430
Non Genotoxic PAHs			
^b Acenaphthene	3000	4700	6000
^b Acenaphthylene	2900	4600	6000
^b Anthracene	31000	35000	37000
^b Fluoranthene	1500	1600	1600
^b Fluorene	2800	3800	4500
^b Naphthalene	2.3	5.6	13
^b Phenanthrene	1300	1500	1500
^b Pyrene	3700	3800	3800
Genotoxic PAHs			
^{a/e} Benzo(a)pyrene	5.3	5.3	5.3
ALIPHATIC HYDROCARBONS			
^b C5-C6	42	78	160
^b C6-C8	100	230	530
^b C8-C10	27	65	150
^b C10-C12	130	330	770
^b C12-C16	1100	2400	4400
^b C16-35	65000	92000	110000
AROMATIC HYDROCARBONS			
^b C5-7 (benzene)	370	690	1400
^b C7-8 (toluene)	860	1800	3900
^b C8-C10	47	110	270
^b C10-C12	250	590	1200
^b C12-C16	1800	2300	2500
^b C16-C21	1900	1900	1900
^b C21-C35			

Notes

- a C4SL - SP1010 (2014) - Benzene and Benzo(a)pyrene values for 1% and 2.5% SOM have been calculated using default C4SL parameters in CLEA v1.07
- b LQM/CIEH S4UL values (2015).
- c S4UL for inorganic Hg used.
- d Atkins ATRISKsoil Value
- e Benzo(a)pyrene is a surrogate marker for the 8 genotoxic PAHs (Benzo(a)pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Chrysene, Dibenzo(ah)anthracene, Ideno(1,2,3-cd)pyrene)

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A P P E N D I X I

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In-Situ Gas Monitoring Results

Project Name	Sandilands Community Primary School, Washford Drive
Project Number	10250
Client	Alan Johnston Partnership Ltd
Date	01/03/2023
Weather	Rain
Atmospheric Pressure (mb)	1029
Pressure Trend	Falling
Equipment	Gas Data GFM436
Operator	Liam Press

Ground Gas													
Well ID	Response Zone			Methane		CO2		Oxygen		Gas Flow		PID Reading	
	mbegl			%v/v		%v/v		%v/v		l/h		ppm	
ID	Top	Base	Strata	Peak	Steady	Peak	Steady	Low	Steady	Peak	Steady	Peak	Steady
WS01	0.6	1.6	MG	0.0	0.0	0.3	0.3	19.0	19.0	0.3	0.3	Not Recorded	
WS02	0.5	1.5	NS	0.0	0.0	2.5	2.5	13.3	13.3	0.0	0.0	Not Recorded	
WS03	0.6	1.6	NS	0.0	0.0	0.7	0.7	19.0	19.0	0.0	0.0	Not Recorded	
WS04	0.6	1.6	NS	0.0	0.0	0.6	0.6	19.6	19.6	0.0	0.0	Not Recorded	
WS06	0.5	1.6	NS	0.0	0.0	0.7	0.7	19.5	19.5	0.2	0.2	Not Recorded	
WS08	0.5	1.7	NS	0.0	0.0	0.8	0.8	19.3	19.3	0.0	0.0	Not Recorded	

Groundwater	
Depth to Groundwater	Total Well Depth
mbegl	mbegl
1.0	1.7
1.0	1.5
1.0	1.4
0.9	1.7
0.9	1.1
0.9	1.5

Notes

L.E.L.	Lower Explosive Limit (100% L.E.L.= 5% Flammable Gas)		
N.D.	Not Detected	a	Methane => 1% v/v
N.R.	Not Recorded	b	Carbon Dioxide =>5% v/v
PID	Photo-Ionising Detector	MG	Made Ground
%	By volume	NS	Natural Strata

Ground Material Key

MG	Made Ground
NS	Natural Strata

Key

	Threshold gas concentration exceeded
--	--------------------------------------



In-Situ Gas Monitoring Results

Project Name	Sandilands Community Primary School, Washford Drive
Project Number	10250
Client	Alan Johnston Partnership Ltd
Date	07/03/2023
Weather	Partly Sunny
Atmospheric Pressure (mb)	998
Pressure Trend	Steady
Equipment	Gas Data GFM436
Operator	Liam Press

Ground Gas													
Well ID	Response Zone			Methane		CO2		Oxygen		Gas Flow		PID Reading	
	mbegl			%v/v		%v/v		%v/v		l/h		ppm	
ID	Top	Base	Strata	Peak	Steady	Peak	Steady	Low	Steady	Peak	Steady	Peak	Steady
WS01	0.6	1.6	MG	0.0	0.0	0.0	0.0	19.4	19.4	0.0	0.0	Not Recorded	
WS02	0.5	1.5	NS	0.0	0.0	3.8	3.8	10.9	10.9	0.1	0.1	Not Recorded	
WS03	0.6	1.6	NS	0.0	0.0	1.3	1.3	17.9	17.9	0.1	0.1	Not Recorded	
WS04	0.6	1.6	NS	0.0	0.0	0.7	0.7	19.4	19.4	0.0	0.0	Not Recorded	
WS06	0.5	1.6	NS	0.0	0.0	0.9	0.9	19.2	19.2	0.0	0.0	Not Recorded	
WS08	0.5	1.7	NS	0.0	0.0	0.3	0.3	19.7	19.7	0.0	0.0	Not Recorded	

Groundwater	
Depth to Groundwater	Total Well Depth
mbegl	mbegl
0.9	1.7
1.0	1.5
1.0	1.4
0.9	1.7
0.9	1.1
0.8	1.5

Notes				Ground Material Key	
L.E.L.	Lower Explosive Limit (100% L.E.L.= 5% Flammable Gas)			MG	Made Ground
N.D.	Not Detected	a	Methane => 1% v/v	NS	Natural Strata
N.R.	Not Recorded	b	Carbon Dioxide =>5% v/v		
PID	Photo-Ionising Detector	MG	Made Ground	Key	
%	By volume	NS	Natural Strata		
					Threshold gas concentration exceeded



In-Situ Gas Monitoring Results

Project Name	Sandilands Community Primary School, Washford Drive
Project Number	10250
Client	Alan Johnston Partnership Ltd
Date	14/03/2023
Weather	Sleet
Atmospheric Pressure (mb)	1006
Pressure Trend	Rising
Equipment	Gas Data GFM436
Operator	James Wardle

Ground Gas													
Well ID	Response Zone			Methane		CO2		Oxygen		Gas Flow		PID Reading	
	mbegl			%v/v		%v/v		%v/v		l/h		ppm	
ID	Top	Base	Strata	Peak	Steady	Peak	Steady	Low	Steady	Peak	Steady	Peak	Steady
WS01	0.6	1.6	MG	0.0	0.0	0.0	0.0	19.0	19.0	0.0	0.0	Not Recorded	
WS02	0.5	1.5	NS	0.0	0.0	3.2	3.2	13.3	13.3	0.0	0.0	Not Recorded	
WS03	0.6	1.6	NS	0.0	0.0	0.6	0.6	18.0	18.0	0.0	0.0	Not Recorded	
WS04	0.6	1.6	NS	0.0	0.0	0.6	0.6	19.2	19.2	0.0	0.0	Not Recorded	
WS06	0.5	1.6	NS	0.0	0.0	0.5	0.5	20.0	20.0	0.0	0.0	Not Recorded	
WS08	0.5	1.7	NS	0.0	0.0	0.0	0.0	19.4	19.4	0.0	0.0	Not Recorded	

Groundwater	
Depth to Groundwater	Total Well Depth
mbegl	mbegl
0.8	1.7
1.0	1.5
0.9	1.3
0.8	1.7
0.8	1.1
0.8	1.5

Notes

L.E.L.	Lower Explosive Limit (100% L.E.L.= 5% Flammable Gas)		
N.D.	Not Detected	a	Methane => 1% v/v
N.R.	Not Recorded	b	Carbon Dioxide =>5% v/v
PID	Photo-Ionising Detector	MG	Made Ground
%	By volume	NS	Natural Strata

Ground Material Key

MG	Made Ground
NS	Natural Strata

Key

	Threshold gas concentration exceeded
--	--------------------------------------



In-Situ Gas Monitoring Results

Project Name	Sandilands Community Primary School, Washford Drive
Project Number	10250
Client	Alan Johnston Partnership Ltd
Date	24/03/2023
Weather	Mostly Cloudy
Atmospheric Pressure (mb)	991
Pressure Trend	Steady
Equipment	Gas Data GFM436
Operator	Liam Press

Ground Gas													
Well ID	Response Zone			Methane		CO2		Oxygen		Gas Flow		PID Reading	
	mbegl			%v/v		%v/v		%v/v		l/h		ppm	
ID	Top	Base	Strata	Peak	Steady	Peak	Steady	Low	Steady	Peak	Steady	Peak	Steady
WS01	0.6	1.6	MG	0.0	0.0	0.1	0.1	20.0	20.0	0.2	0.2	Not Recorded	
WS02	0.5	1.5	NS	0.0	0.0	0.4	0.4	15.0	15.0	0.0	0.0	Not Recorded	
WS03	0.6	1.6	NS	0.0	0.0	0.1	0.1	19.6	19.6	0.0	0.0	Not Recorded	
WS04	0.6	1.6	NS	0.0	0.0	0.2	0.2	19.7	19.7	0.0	0.0	Not Recorded	
WS06	0.5	1.6	NS	0.0	0.0	0.1	0.1	20.0	20.0	0.0	0.0	Not Recorded	
WS08	0.5	1.7	NS	0.0	0.0	0.0	0.0	20.1	20.1	0.0	0.0	Not Recorded	

Groundwater	
Depth to Groundwater	Total Well Depth
mbegl	mbegl
0.6	1.7
0.7	1.5
0.7	1.4
0.7	1.7
0.8	1.1
0.6	1.5

Notes

L.E.L.	Lower Explosive Limit (100% L.E.L.= 5% Flammable Gas)		
N.D.	Not Detected	a	Methane => 1% v/v
N.R.	Not Recorded	b	Carbon Dioxide =>5% v/v
PID	Photo-Ionising Detector	MG	Made Ground
%	By volume	NS	Natural Strata

Ground Material Key

MG	Made Ground
NS	Natural Strata

Key

	Response Zone Flooded
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TEST REPORT:**DETERMINATION OF THE MOISTURE CONTENT OF SOILS**

BS 1377:Part 2:1990 clause 3.2 - oven drying method

REPORT NUMBER:

C1074309 / 239048.1.1.1

SAMPLE NUMBER:

See Below

CLIENT:

GRM Development Solutions Ltd

CLIENT REF:

See Below

ADDRESS:

Laurus House First Avenue, Centrum 100, Burton-on-Trent, Staffordshire, DE14 2WH

DATE SAMPLED:

20/02/2023

SITE:

P10250, Standard

SAMPLED BY:

Unknown

SUPPLIER:

Unknown

DATE RECEIVED:

22/02/2023

SOURCE:

Unknown

DATE COMPLETED:

27/02/2023

MATERIAL:

See Below

TESTED BY:

Marc McConnell

LOCATION:

See Below

TYPE OF SAMPLE:

Disturbed

PREPARATION METHOD:

BS 1377-1: 2016 clause 8

SAMPLING PLAN:

Client Provided

METHOD OF SAMPLING:

Unknown

ENVIRONMENTAL
CONDITIONS:

Unknown

LOCATION AND ORIENTATION
WITHIN SAMPLE:**TEST RESULT:** Test Location: CTS Leicester

SAMPLE NO.	CLIENT REF.	LOCATION OF TEST	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	LOWER LIMIT	UPPER LIMIT
370347	WS02 2.35m	WS02, 2.35, 2.35	Brown slightly sandy, gravelly CLAY	9.6	NA	NA

Remarks:

Test results reported relate only to the items tested.
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Report Format: MC/TP01/Rep Issue 1 Rev 1 06/22

7-11 Harding Street, Leicester, Leicestershire LE1 4DH 0343 227 8545

enquiries@constructiontesting.co.uk

www.constructiontesting.co.uk

END OF REPORT

For and on behalf of CTS

Lee Harbottle - GCM Operations Manager



Approved Signatory

Report date 28-Feb-23

Construction Testing Solutions Ltd.

Registered in England No. 05998333

Report version 1



4161

TEST REPORT:
DETERMINATION OF THE PLASTICITY INDEX OF SOIL

BS 1377:Part 2:1990 clause 5.4

REPORT NUMBER:

C1074309 / 239048.2.1.1

SAMPLE NUMBER:

370347

CLIENT:

GRM Development Solutions Ltd

CLIENT REF:

WS02 2.35m

ADDRESS:

 Laurus House First Avenue, Centrum 100, Burton-on-Trent,
Staffordshire, DE14 2WH

DATE SAMPLED:

20/02/2023

SITE:

P10250, Standard

SAMPLED BY:

Unknown

SUPPLIER:

Unknown

DATE RECEIVED:

22/02/2023

MATERIAL:

Brown slightly sandy, gravelly CLAY

DATE COMPLETED:

27/02/2023

LOCATION:

WS02, 2.35, 2.35

TESTED BY:

Lily Lavery-Allcroft

PREPARATION METHOD:

BS 1377:Part 1:2016 cl 8.3 & 8.4.3

TYPE OF SAMPLE:

Disturbed

VARIATIONS:

None

WITHIN ORIGINAL SAMPLE:

N/A

SAMPLING PLAN:

Client Provided

 ENVIRONMENTAL
CONDITIONS:

RESULTS: Test Location: CTS Leicester

TEST DETAILS	TEST RESULT	SPECIFICATION LIMITS	
		Lower Limit	Upper Limit
THE LIQUID LIMIT OF THE SAMPLE: (BS 1377: Part 2:1990 clause 4.4 one point)	29%	N/A	N/A
THE PLASTIC LIMIT OF THE SAMPLE: (BS 1377: Part 2:1990 clause 5.4)	14%	N/A	N/A
THE PLASTICITY INDEX OF THE SAMPLE:	15%		
THE PERCENTAGE PASSING 425µm TEST SIEVE:	86%		
Sample History:	The material was tested in the natural state		

Remarks:

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END OF REPORT

For and on behalf of CTS

Lee Harbottle - GCM Operations Manager



Approved Signatory

Report date 28-Feb-23

Construction Testing Solutions Ltd.

Registered in England No. 05998333



4161

TEST REPORT:
DETERMINATION OF THE PLASTICITY INDEX OF SOIL

BS 1377:Part 2:1990 clause 5.4

REPORT NUMBER:

C1074309 / 239048.2.1.1

SAMPLE NUMBER:

370347

CLIENT:

GRM Development Solutions Ltd

CLIENT REF:

WS02 2.35m

ADDRESS:

 Laurus House First Avenue, Centrum 100, Burton-on-Trent,
Staffordshire, DE14 2WH

DATE SAMPLED:

20/02/2023

SITE:

P10250, Standard

SAMPLED BY:

Unknown

SUPPLIER:

Unknown

DATE RECEIVED:

22/02/2023

MATERIAL:

Brown slightly sandy, gravelly CLAY

DATE COMPLETED:

27/02/2023

LOCATION:

WS02, 2.35, 2.35

TESTED BY:

Lily Lavery-Allcroft

PREPARATION METHOD:

BS 1377:Part 1:2016 cl 8.3 & 8.4.3

TYPE OF SAMPLE:

Disturbed

VARIATIONS:

None

WITHIN ORIGINAL SAMPLE:

N/A

SAMPLING PLAN:

Client Provided

 ENVIRONMENTAL
CONDITIONS:

RESULTS: Test Location: CTS Leicester

TEST DETAILS	TEST RESULT	SPECIFICATION LIMITS	
		Lower Limit	Upper Limit
THE LIQUID LIMIT OF THE SAMPLE: (BS 1377: Part 2:1990 clause 4.4 one point)	29%	N/A	N/A
THE PLASTIC LIMIT OF THE SAMPLE: (BS 1377: Part 2:1990 clause 5.4)	14%	N/A	N/A
THE PLASTICITY INDEX OF THE SAMPLE:	15%		
THE PERCENTAGE PASSING 425µm TEST SIEVE:	86%		
Sample History:	The material was tested in the natural state		

Remarks:

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enquiries@constructiontesting.co.uk
www.constructiontesting.co.uk
END OF REPORT

For and on behalf of CTS
Lee Harbottle - GCM Operations Manager



Approved Signatory
Report date 28-Feb-23

Construction Testing Solutions Ltd.
Registered in England No. 05998333



4161

TEST REPORT:
DETERMINATION OF THE MOISTURE CONTENT OF SOILS

BS 1377:Part 2:1990 clause 3.2 - oven drying method

REPORT NUMBER: C1074309 / 239048.3.1.1

SAMPLE NUMBER: See Below

CLIENT: GRM Development Solutions Ltd

CLIENT REF: See Below

ADDRESS: Laurus House First Avenue, Centrum 100, Burton-on-Trent, Staffordshire, DE14 2WH

DATE SAMPLED: 20/02/2023

SITE: P10250, Standard

SAMPLED BY: Unknown

SUPPLIER: Unknown

DATE RECEIVED: 22/02/2023

SOURCE: Unknown

DATE COMPLETED: 27/02/2023

MATERIAL: See Below

TESTED BY: Marc McConnell

LOCATION: See Below

TYPE OF SAMPLE: Disturbed

PREPARATION METHOD: BS 1377-1: 2016 clause 8

SAMPLING PLAN: Client Provided

METHOD OF SAMPLING: Unknown

ENVIRONMENTAL CONDITIONS: Unknown

LOCATION AND ORIENTATION WITHIN SAMPLE:

TEST RESULT: Test Location: CTS Leicester

SAMPLE NO.	CLIENT REF.	LOCATION OF TEST	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	LOWER LIMIT	UPPER LIMIT
370348	WS06 2.10m	WS06, 2.10, 2.10	Brown slightly sandy, gravelly CLAY	8.5	NA	NA

Remarks:

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Report Format: MC/TP01/Rep Issue 1 Rev 1 06/22

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For and on behalf of CTS
 Lee Harbottle - GCM Operations Manager



Approved Signatory
 Report date 28-Feb-23

Construction Testing Solutions Ltd.
 Registered in England No. 05998333



4161

TEST REPORT:
DETERMINATION OF THE PLASTICITY INDEX OF SOIL

BS 1377:Part 2:1990 clause 5.4

REPORT NUMBER:

C1074309 / 239048.4.1.1

SAMPLE NUMBER:

370348

CLIENT:

GRM Development Solutions Ltd

CLIENT REF:

WS06 2.10m

ADDRESS:

 Laurus House First Avenue, Centrum 100, Burton-on-Trent,
Staffordshire, DE14 2WH

DATE SAMPLED:

20/02/2023

SITE:

P10250, Standard

SAMPLED BY:

Unknown

SUPPLIER:

Unknown

DATE RECEIVED:

22/02/2023

MATERIAL:

Brown slightly sandy, gravelly CLAY

DATE COMPLETED:

27/02/2023

LOCATION:

WS06, 2.10, 2.10

TESTED BY:

Lily Lavery-Allcroft

PREPARATION METHOD:

BS 1377:Part 1:2016 cl 8.3 & 8.4.3

TYPE OF SAMPLE:

Disturbed

VARIATIONS:

None

WITHIN ORIGINAL SAMPLE:

N/A

SAMPLING PLAN:

Client Provided

 ENVIRONMENTAL
CONDITIONS:

RESULTS: Test Location: CTS Leicester

TEST DETAILS	TEST RESULT	SPECIFICATION LIMITS	
		Lower Limit	Upper Limit
THE LIQUID LIMIT OF THE SAMPLE: (BS 1377: Part 2:1990 clause 4.4 one point)	32%	N/A	N/A
THE PLASTIC LIMIT OF THE SAMPLE: (BS 1377: Part 2:1990 clause 5.4)	14%	N/A	N/A
THE PLASTICITY INDEX OF THE SAMPLE:	18%		
THE PERCENTAGE PASSING 425µm TEST SIEVE:	68%		
Sample History:	The material was tested in the natural state		

Remarks:

Test results reported relate only to the items tested.
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END OF REPORT

For and on behalf of CTS
Lee Harbottle - GCM Operations Manager



Approved Signatory
Report date 28-Feb-23

Construction Testing Solutions Ltd.
Registered in England No. 05998333



4161

TEST REPORT:
DETERMINATION OF THE PLASTICITY INDEX OF SOIL

BS 1377:Part 2:1990 clause 5.4

REPORT NUMBER:

C1074309 / 239048.4.1.1

SAMPLE NUMBER:

370348

CLIENT:

GRM Development Solutions Ltd

CLIENT REF:

WS06 2.10m

ADDRESS:

 Laurus House First Avenue, Centrum 100, Burton-on-Trent,
Staffordshire, DE14 2WH

DATE SAMPLED:

20/02/2023

SITE:

P10250, Standard

SAMPLED BY:

Unknown

SUPPLIER:

Unknown

DATE RECEIVED:

22/02/2023

MATERIAL:

Brown slightly sandy, gravelly CLAY

DATE COMPLETED:

27/02/2023

LOCATION:

WS06, 2.10, 2.10

TESTED BY:

Lily Lavery-Allcroft

PREPARATION METHOD:

BS 1377:Part 1:2016 cl 8.3 & 8.4.3

TYPE OF SAMPLE:

Disturbed

VARIATIONS:

None

WITHIN ORIGINAL SAMPLE:

N/A

SAMPLING PLAN:

Client Provided

 ENVIRONMENTAL
CONDITIONS:

RESULTS: Test Location: CTS Leicester

TEST DETAILS	TEST RESULT	SPECIFICATION LIMITS	
		Lower Limit	Upper Limit
THE LIQUID LIMIT OF THE SAMPLE: (BS 1377: Part 2:1990 clause 4.4 one point)	32%	N/A	N/A
THE PLASTIC LIMIT OF THE SAMPLE: (BS 1377: Part 2:1990 clause 5.4)	14%	N/A	N/A
THE PLASTICITY INDEX OF THE SAMPLE:	18%		
THE PERCENTAGE PASSING 425µm TEST SIEVE:	68%		
Sample History:	The material was tested in the natural state		

Remarks:

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END OF REPORT

For and on behalf of CTS
Lee Harbottle - GCM Operations Manager



Approved Signatory
Report date 28-Feb-23

Construction Testing Solutions Ltd.
Registered in England No. 05998333



4161



A P P E N D I X K

Land Appraisal | Environmental | Geotechnical | Design | Mining | Inspections

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Waste Classification Report

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

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



1QDQ3-8XSKO-JICLB

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

Job name

P10250 - Sandilands Community Primary School

Description/Comments

Assessment based upon chemical data from previous and current ground investigations.

Project

P10250

Site

Manchester

Classified by

Name: **Charlotte Mortimer** Company: **GRM Development Solutions Ltd**
Date: **13 Mar 2023 14:29 GMT**
Telephone: **01283 551 249**

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

HazWasteOnline™ Certification:

CERTIFIED

Course
Hazardous Waste Classification
Most recent 3 year Refresher

Date
19 Sep 2017
07 Dec 2021

Next 3 year Refresher due by Dec 2024

Purpose of classification

2 - Material Characterisation

Address of the waste

Wendover Road, Manchester

Post Code M23 9JX

SIC for the process giving rise to the waste

41201 Construction of commercial buildings

Description of industry/producer giving rise to the waste

Demolition and construction of new school buildings.

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

Excavation of soils from the demolition and of school buildings.

Description of the waste

Made Ground and Topsoil.

**Job summary**

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	WS01	0.50	Non Hazardous		3
2	WS02	0.30	Non Hazardous		5
3	WS04	0.30	Non Hazardous		7
4	WS05	0.20	Non Hazardous		9
5	WS07	0.20	Non Hazardous		11
6	WS01[2]	0.3	Non Hazardous		13
7	WS05[2]	0.3	Non Hazardous		15
8	WS08	1.5	Hazardous	HP 7, HP 11	17

Related documents

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

Report

Created by: Charlotte Mortimer

Created date: 13 Mar 2023 14:29 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	20
Appendix B: Rationale for selection of metal species	21
Appendix C: Version	22

Classification of sample: WS01

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

Sample details

Sample name:	LoW Code:
WS01	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.50 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
25%	
(dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 25% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1		arsenic { arsenic trioxide }			1	60 mg/kg	1.32	63.376 mg/kg	0.00634 %	✓	
		033-003-00-0	215-481-4	1327-53-3							
2		cadmium { cadmium sulfide }			1	2.4 mg/kg	1.285	2.468 mg/kg	0.000192 %	✓	
		048-010-00-4	215-147-8	1306-23-6							
3		chromium {  chromium(III) oxide }				20 mg/kg	1.462	23.385 mg/kg	0.00234 %	✓	
			215-160-9	1308-38-9							
4		copper { dicopper oxide ; copper (I) oxide }				160 mg/kg	1.126	144.114 mg/kg	0.0144 %	✓	
		029-002-00-X	215-270-7	1317-39-1							
5		lead {  lead compounds with the exception of those specified elsewhere in this Annex }			1	390 mg/kg		312 mg/kg	0.0312 %	✓	
		082-001-00-6									
6		mercury { mercury dichloride }				<2.5 mg/kg	1.353	<3.384 mg/kg	<0.000338 %		<LOD
		080-010-00-X	231-299-8	7487-94-7							
7		nickel { nickel dihydroxide }				43 mg/kg	1.579	54.335 mg/kg	0.00543 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
8		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<8 mg/kg	1.405	<11.24 mg/kg	<0.00112 %		<LOD
		034-002-00-8									
9		zinc { zinc sulphate }				470 mg/kg	2.469	928.455 mg/kg	0.0928 %	✓	
		030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
10		phenol				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2							
11		cyanides {  salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
		006-007-00-5									
12		pH				7.4 pH		7.4 pH	7.4 pH		
				PH							
13		acenaphthene				3.2 mg/kg		2.56 mg/kg	0.000256 %	✓	
			201-469-6	83-32-9							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
14	acenaphthylene	205-917-1	208-96-8		0.98 mg/kg		0.784 mg/kg	0.0000784 %	✓	
15	anthracene	204-371-1	120-12-7		6 mg/kg		4.8 mg/kg	0.00048 %	✓	
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	14 mg/kg		11.2 mg/kg	0.00112 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	17 mg/kg		13.6 mg/kg	0.00136 %	✓	
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	20 mg/kg		16 mg/kg	0.0016 %	✓	
19	benzo[ghi]perylene	205-883-8	191-24-2		11 mg/kg		8.8 mg/kg	0.00088 %	✓	
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	7.4 mg/kg		5.92 mg/kg	0.000592 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	16 mg/kg		12.8 mg/kg	0.00128 %	✓	
22	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	2.2 mg/kg		1.76 mg/kg	0.000176 %	✓	
23	fluoranthene	205-912-4	206-44-0		34 mg/kg		27.2 mg/kg	0.00272 %	✓	
24	fluorene	201-695-5	86-73-7		3.3 mg/kg		2.64 mg/kg	0.000264 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		11 mg/kg		8.8 mg/kg	0.00088 %	✓	
26	naphthalene	601-052-00-2	202-049-5	91-20-3	1.7 mg/kg		1.36 mg/kg	0.000136 %	✓	
27	phenanthrene	201-581-5	85-01-8		18 mg/kg		14.4 mg/kg	0.00144 %	✓	
28	pyrene	204-927-3	129-00-0		28 mg/kg		22.4 mg/kg	0.00224 %	✓	
29	TPH (C6 to C40) petroleum group		TPH		810 mg/kg		648 mg/kg	0.0648 %	✓	
30	confirm TPH has NOT arisen from diesel or petrol				☒					
Total:								0.235 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because No liquid phase present, therefore threshold adjusted to 10,000mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0648%)

Classification of sample: WS02

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

Sample details

Sample name:	LoW Code:
WS02	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.30 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
6.9%	
(dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 6.9% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				<10 mg/kg	1.32	<13.203 mg/kg	<0.00132 %			<LOD
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium sulfide }			1	0.8 mg/kg	1.285	0.962 mg/kg	0.0000748 %	✓		
	048-010-00-4	215-147-8	1306-23-6								
3	chromium { chromium(III) oxide }				9.8 mg/kg	1.462	13.399 mg/kg	0.00134 %	✓		
		215-160-9	1308-38-9								
4	copper { dicopper oxide; copper (I) oxide }				19 mg/kg	1.126	20.011 mg/kg	0.002 %	✓		
	029-002-00-X	215-270-7	1317-39-1								
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	61 mg/kg		57.063 mg/kg	0.00571 %	✓		
	082-001-00-6										
6	mercury { mercury dichloride }				<2.5 mg/kg	1.353	<3.384 mg/kg	<0.000338 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
7	nickel { nickel dihydroxide }				17 mg/kg	1.579	25.118 mg/kg	0.00251 %	✓		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<8 mg/kg	1.405	<11.24 mg/kg	<0.00112 %			<LOD
	034-002-00-8										
9	zinc { zinc sulphate }				73 mg/kg	2.469	168.624 mg/kg	0.0169 %	✓		
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]								
10	phenol				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
	604-001-00-2	203-632-7	108-95-2								
11	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
12	pH				8.8 pH		8.8 pH	8.8 pH			
			PH								
13	acenaphthene				0.43 mg/kg		0.402 mg/kg	0.0000402 %	✓		
		201-469-6	83-32-9								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
14	acenaphthylene	205-917-1	208-96-8		0.05 mg/kg		0.0468 mg/kg	0.00000468 %	✓	
15	anthracene	204-371-1	120-12-7		0.46 mg/kg		0.43 mg/kg	0.000043 %	✓	
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.92 mg/kg		0.861 mg/kg	0.0000861 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.93 mg/kg		0.87 mg/kg	0.000087 %	✓	
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	1.1 mg/kg		1.029 mg/kg	0.000103 %	✓	
19	benzo[ghi]perylene	205-883-8	191-24-2		0.55 mg/kg		0.514 mg/kg	0.0000514 %	✓	
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.44 mg/kg		0.412 mg/kg	0.0000412 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	1.1 mg/kg		1.029 mg/kg	0.000103 %	✓	
22	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.12 mg/kg		0.112 mg/kg	0.0000112 %	✓	
23	fluoranthene	205-912-4	206-44-0		2.2 mg/kg		2.058 mg/kg	0.000206 %	✓	
24	fluorene	201-695-5	86-73-7		0.3 mg/kg		0.281 mg/kg	0.0000281 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.51 mg/kg		0.477 mg/kg	0.0000477 %	✓	
26	naphthalene	601-052-00-2	202-049-5	91-20-3	0.22 mg/kg		0.206 mg/kg	0.0000206 %	✓	
27	phenanthrene	201-581-5	85-01-8		1.8 mg/kg		1.684 mg/kg	0.000168 %	✓	
28	pyrene	204-927-3	129-00-0		1.9 mg/kg		1.777 mg/kg	0.000178 %	✓	
29	TPH (C6 to C40) petroleum group		TPH		580 mg/kg		542.563 mg/kg	0.0543 %	✓	
30	confirm TPH has NOT arisen from diesel or petrol				☒					
Total:								0.087 %		

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)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because No liquid phase present, therefore threshold adjusted to 10,000mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0543%)

Classification of sample: WS04

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

Sample details

Sample name:	LoW Code:
WS04	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.30 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
21%	
(dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 21% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1		arsenic { arsenic trioxide }			1	25 mg/kg	1.32	27.279 mg/kg	0.00273 %	✓	
		033-003-00-0	215-481-4	1327-53-3							
2		cadmium { cadmium sulfide }			1	1.4 mg/kg	1.285	1.487 mg/kg	0.000116 %	✓	
		048-010-00-4	215-147-8	1306-23-6							
3		chromium { chromium(III) oxide }				22 mg/kg	1.462	26.574 mg/kg	0.00266 %	✓	
			215-160-9	1308-38-9							
4		copper { dicopper oxide; copper (I) oxide }				65 mg/kg	1.126	60.482 mg/kg	0.00605 %	✓	
		029-002-00-X	215-270-7	1317-39-1							
5		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	170 mg/kg		140.496 mg/kg	0.014 %	✓	
		082-001-00-6									
6		mercury { mercury dichloride }				<2.5 mg/kg	1.353	<3.384 mg/kg	<0.000338 %		<LOD
		080-010-00-X	231-299-8	7487-94-7							
7		nickel { nickel dihydroxide }				25 mg/kg	1.579	32.634 mg/kg	0.00326 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
8		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<8 mg/kg	1.405	<11.24 mg/kg	<0.00112 %		<LOD
		034-002-00-8									
9		zinc { zinc sulphate }				110 mg/kg	2.469	224.481 mg/kg	0.0224 %	✓	
		030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
10		phenol				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2							
11		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
		006-007-00-5									
12		pH				7.9 pH		7.9 pH	7.9 pH		
				PH							
13		acenaphthene				0.04 mg/kg		0.0331 mg/kg	0.00000331 %	✓	
			201-469-6	83-32-9							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
14	acenaphthylene	205-917-1	208-96-8		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
15	anthracene	204-371-1	120-12-7		0.11 mg/kg		0.0909 mg/kg	0.00000909 %	✓	
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.44 mg/kg		0.364 mg/kg	0.0000364 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.55 mg/kg		0.455 mg/kg	0.0000455 %	✓	
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.64 mg/kg		0.529 mg/kg	0.0000529 %	✓	
19	benzo[ghi]perylene	205-883-8	191-24-2		0.32 mg/kg		0.264 mg/kg	0.0000264 %	✓	
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.23 mg/kg		0.19 mg/kg	0.000019 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	0.53 mg/kg		0.438 mg/kg	0.0000438 %	✓	
22	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.06 mg/kg		0.0496 mg/kg	0.00000496 %	✓	
23	fluoranthene	205-912-4	206-44-0		0.91 mg/kg		0.752 mg/kg	0.0000752 %	✓	
24	fluorene	201-695-5	86-73-7		0.03 mg/kg		0.0248 mg/kg	0.00000248 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.33 mg/kg		0.273 mg/kg	0.0000273 %	✓	
26	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
27	phenanthrene	201-581-5	85-01-8		0.42 mg/kg		0.347 mg/kg	0.0000347 %	✓	
28	pyrene	204-927-3	129-00-0		0.81 mg/kg		0.669 mg/kg	0.0000669 %	✓	
29	TPH (C6 to C40) petroleum group		TPH		56 mg/kg		46.281 mg/kg	0.00463 %	✓	
30	confirm TPH has NOT arisen from diesel or petrol				☒					
Total:								0.0581 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because No liquid phase present, therefore threshold adjusted to 10,000mg/kg.

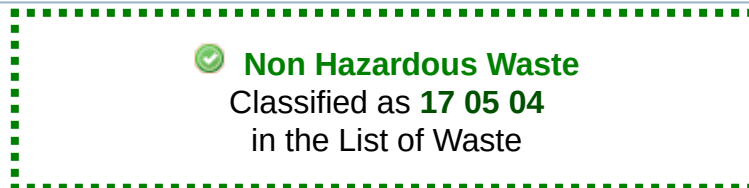
Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00463%)

Classification of sample: WS05



Sample details

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

Hazard properties

None identified

Determinands

Moisture content: 17% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1		arsenic { arsenic trioxide }			1	24 mg/kg	1.32	27.084 mg/kg	0.00271 %	✓	
		033-003-00-0	215-481-4	1327-53-3							
2		cadmium { cadmium sulfide }			1	1.4 mg/kg	1.285	1.538 mg/kg	0.00012 %	✓	
		048-010-00-4	215-147-8	1306-23-6							
3		chromium { chromium(III) oxide }				23 mg/kg	1.462	28.731 mg/kg	0.00287 %	✓	
			215-160-9	1308-38-9							
4		copper { dicopper oxide; copper (I) oxide }				69 mg/kg	1.126	66.399 mg/kg	0.00664 %	✓	
		029-002-00-X	215-270-7	1317-39-1							
5		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	160 mg/kg		136.752 mg/kg	0.0137 %	✓	
		082-001-00-6									
6		mercury { mercury dichloride }				<2.5 mg/kg	1.353	<3.384 mg/kg	<0.000338 %		<LOD
		080-010-00-X	231-299-8	7487-94-7							
7		nickel { nickel dihydroxide }				27 mg/kg	1.579	36.45 mg/kg	0.00364 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
8		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<8 mg/kg	1.405	<11.24 mg/kg	<0.00112 %		<LOD
		034-002-00-8									
9		zinc { zinc sulphate }				120 mg/kg	2.469	253.261 mg/kg	0.0253 %	✓	
		030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
10		phenol				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2							
11		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
		006-007-00-5									
12		pH				6 pH		6 pH	6pH		
				PH							
13		acenaphthene				0.06 mg/kg		0.0513 mg/kg	0.00000513 %	✓	
			201-469-6	83-32-9							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
14	acenaphthylene	205-917-1	208-96-8		0.04 mg/kg		0.0342 mg/kg	0.00000342 %	✓	
15	anthracene	204-371-1	120-12-7		0.18 mg/kg		0.154 mg/kg	0.0000154 %	✓	
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.71 mg/kg		0.607 mg/kg	0.0000607 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.87 mg/kg		0.744 mg/kg	0.0000744 %	✓	
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	1 mg/kg		0.855 mg/kg	0.0000855 %	✓	
19	benzo[ghi]perylene	205-883-8	191-24-2		0.49 mg/kg		0.419 mg/kg	0.0000419 %	✓	
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.4 mg/kg		0.342 mg/kg	0.0000342 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	0.86 mg/kg		0.735 mg/kg	0.0000735 %	✓	
22	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.13 mg/kg		0.111 mg/kg	0.0000111 %	✓	
23	fluoranthene	205-912-4	206-44-0		1.4 mg/kg		1.197 mg/kg	0.00012 %	✓	
24	fluorene	201-695-5	86-73-7		0.05 mg/kg		0.0427 mg/kg	0.00000427 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.6 mg/kg		0.513 mg/kg	0.0000513 %	✓	
26	naphthalene	601-052-00-2	202-049-5	91-20-3	0.04 mg/kg		0.0342 mg/kg	0.00000342 %	✓	
27	phenanthrene	201-581-5	85-01-8		0.63 mg/kg		0.538 mg/kg	0.0000538 %	✓	
28	pyrene	204-927-3	129-00-0		1.3 mg/kg		1.111 mg/kg	0.000111 %	✓	
29	TPH (C6 to C40) petroleum group		TPH		63 mg/kg		53.846 mg/kg	0.00538 %	✓	
30	confirm TPH has NOT arisen from diesel or petrol				☒					
Total:								0.0629 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because No liquid phase present, therefore threshold adjusted to 10,000mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00538%)

Classification of sample: WS07

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

Sample details

Sample name:	LoW Code:
WS07	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.20 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
25%	
(dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 25% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1		arsenic { arsenic trioxide }			1	23 mg/kg	1.32	24.294 mg/kg	0.00243 %	✓	
		033-003-00-0	215-481-4	1327-53-3							
2		cadmium { cadmium sulfide }			1	1.9 mg/kg	1.285	1.954 mg/kg	0.000152 %	✓	
		048-010-00-4	215-147-8	1306-23-6							
3		chromium { chromium(III) oxide }				24 mg/kg	1.462	28.062 mg/kg	0.00281 %	✓	
			215-160-9	1308-38-9							
4		copper { dicopper oxide; copper (I) oxide }				76 mg/kg	1.126	68.454 mg/kg	0.00685 %	✓	
			029-002-00-X	215-270-7		1317-39-1					
5		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	170 mg/kg		136 mg/kg	0.0136 %	✓	
			082-001-00-6								
6		mercury { mercury dichloride }				<2.5 mg/kg	1.353	<3.384 mg/kg	<0.000338 %		<LOD
			080-010-00-X	231-299-8		7487-94-7					
7		nickel { nickel dihydroxide }				25 mg/kg	1.579	31.59 mg/kg	0.00316 %	✓	
			028-008-00-X	235-008-5 [1] 234-348-1 [2]		12054-48-7 [1] 11113-74-9 [2]					
8		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<8 mg/kg	1.405	<11.24 mg/kg	<0.00112 %		<LOD
			034-002-00-8								
9		zinc { zinc sulphate }				120 mg/kg	2.469	237.052 mg/kg	0.0237 %	✓	
			030-006-00-9	231-793-3 [1] 231-793-3 [2]		7446-19-7 [1] 7733-02-0 [2]					
10		phenol				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
			604-001-00-2	203-632-7		108-95-2					
11		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
			006-007-00-5								
12		pH				6 pH		6 pH	6pH		
				PH							
13		acenaphthene				0.05 mg/kg		0.04 mg/kg	0.000004 %	✓	
				201-469-6		83-32-9					

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
14	acenaphthylene	205-917-1	208-96-8		0.03 mg/kg		0.024 mg/kg	0.0000024 %	✓	
15	anthracene	204-371-1	120-12-7		0.14 mg/kg		0.112 mg/kg	0.0000112 %	✓	
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.64 mg/kg		0.512 mg/kg	0.0000512 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.76 mg/kg		0.608 mg/kg	0.0000608 %	✓	
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.84 mg/kg		0.672 mg/kg	0.0000672 %	✓	
19	benzo[ghi]perylene	205-883-8	191-24-2		0.41 mg/kg		0.328 mg/kg	0.0000328 %	✓	
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.31 mg/kg		0.248 mg/kg	0.0000248 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	0.78 mg/kg		0.624 mg/kg	0.0000624 %	✓	
22	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.11 mg/kg		0.088 mg/kg	0.0000088 %	✓	
23	fluoranthene	205-912-4	206-44-0		1.3 mg/kg		1.04 mg/kg	0.000104 %	✓	
24	fluorene	201-695-5	86-73-7		0.04 mg/kg		0.032 mg/kg	0.0000032 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.5 mg/kg		0.4 mg/kg	0.00004 %	✓	
26	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
27	phenanthrene	201-581-5	85-01-8		0.53 mg/kg		0.424 mg/kg	0.0000424 %	✓	
28	pyrene	204-927-3	129-00-0		1.2 mg/kg		0.96 mg/kg	0.000096 %	✓	
29	TPH (C6 to C40) petroleum group		TPH		<50 mg/kg		<50 mg/kg	<0.005 %		<LOD
Total:								0.0601 %		

Key

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

Classification of sample: WS01[2]

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

Sample details

Sample name:	LoW Code:
WS01[2]	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.3 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				9.5	mg/kg	1.32	12.543	mg/kg	0.00125 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium sulfide }			1	0.2	mg/kg	1.285	0.257	mg/kg	0.00002 %	✓	
	048-010-00-4	215-147-8	1306-23-6									
3	chromium { chromium(III) oxide }				16	mg/kg	1.462	23.385	mg/kg	0.00234 %	✓	
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				27	mg/kg	1.126	30.399	mg/kg	0.00304 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	68	mg/kg		68	mg/kg	0.0068 %	✓	
	082-001-00-6											
6	mercury { mercury dichloride }				0.17	mg/kg	1.353	0.23	mg/kg	0.000023 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
7	nickel { nickel dihydroxide }				18	mg/kg	1.579	28.431	mg/kg	0.00284 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.7	mg/kg	1.405	0.983	mg/kg	0.0000983 %	✓	
	034-002-00-8											
9	zinc { zinc sulphate }				47	mg/kg	2.469	116.057	mg/kg	0.0116 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]									
10	phenol				0.6	mg/kg		0.6	mg/kg	0.00006 %	✓	
	604-001-00-2	203-632-7	108-95-2									
11	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				0.5	mg/kg	1.884	0.942	mg/kg	0.0000942 %	✓	
	006-007-00-5											
12	pH				7	pH		7	pH	7pH		
			PH									
13	acenaphthene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		201-469-6	83-32-9									
14	acenaphthylene				0.04	mg/kg		0.04	mg/kg	0.000004 %	✓	
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	anthracene	204-371-1	120-12-7		0.05 mg/kg		0.05 mg/kg	0.000005 %	✓	
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.15 mg/kg		0.15 mg/kg	0.000015 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.12 mg/kg		0.12 mg/kg	0.000012 %	✓	
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.18 mg/kg		0.18 mg/kg	0.000018 %	✓	
19	benzo[ghi]perylene	205-883-8	191-24-2		0.06 mg/kg		0.06 mg/kg	0.000006 %	✓	
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.07 mg/kg		0.07 mg/kg	0.000007 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	0.19 mg/kg		0.19 mg/kg	0.000019 %	✓	
22	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
23	fluoranthene	205-912-4	206-44-0		0.41 mg/kg		0.41 mg/kg	0.000041 %	✓	
24	fluorene	201-695-5	86-73-7		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.06 mg/kg		0.06 mg/kg	0.000006 %	✓	
26	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
27	phenanthrene	201-581-5	85-01-8		0.28 mg/kg		0.28 mg/kg	0.000028 %	✓	
28	pyrene	204-927-3	129-00-0		0.39 mg/kg		0.39 mg/kg	0.000039 %	✓	
29	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
Total:								0.0294 %		

Key

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

Classification of sample: WS05[2]

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

Sample details

Sample name:	LoW Code:
WS05[2]	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.3 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used	
		EU CLP index number	EC Number	CAS Number									
1		arsenic { arsenic trioxide }			1	19	mg/kg	1.32	25.086	mg/kg	0.00251 %	✓	
		033-003-00-0	215-481-4	1327-53-3									
2		cadmium { cadmium sulfide }			1	0.3	mg/kg	1.285	0.386	mg/kg	0.00003 %	✓	
		048-010-00-4	215-147-8	1306-23-6									
3		chromium { chromium(III) oxide }				21	mg/kg	1.462	30.693	mg/kg	0.00307 %	✓	
			215-160-9	1308-38-9									
4		copper { dicopper oxide; copper (I) oxide }				49	mg/kg	1.126	55.169	mg/kg	0.00552 %	✓	
		029-002-00-X	215-270-7	1317-39-1									
5		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	120	mg/kg		120	mg/kg	0.012 %	✓	
		082-001-00-6											
6		mercury { mercury dichloride }				0.29	mg/kg	1.353	0.393	mg/kg	0.0000393 %	✓	
		080-010-00-X	231-299-8	7487-94-7									
7		nickel { nickel dihydroxide }				23	mg/kg	1.579	36.328	mg/kg	0.00363 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
8		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<0.5	mg/kg	1.405	<0.703	mg/kg	<0.0000703 %		<LOD
		034-002-00-8											
9		zinc { zinc sulphate }				95	mg/kg	2.469	234.583	mg/kg	0.0235 %	✓	
		030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]									
10		phenol				0.7	mg/kg		0.7	mg/kg	0.00007 %	✓	
		604-001-00-2	203-632-7	108-95-2									
11		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				0.6	mg/kg	1.884	1.13	mg/kg	0.000113 %	✓	
		006-007-00-5											
12		pH				6.1	pH		6.1	pH	6.1 pH		
				PH									
13		acenaphthene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-469-6	83-32-9									
14		acenaphthylene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	anthracene	204-371-1	120-12-7		0.06 mg/kg		0.06 mg/kg	0.000006 %	✓	
16	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.31 mg/kg		0.31 mg/kg	0.000031 %	✓	
17	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.3 mg/kg		0.3 mg/kg	0.00003 %	✓	
18	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.41 mg/kg		0.41 mg/kg	0.000041 %	✓	
19	benzo[ghi]perylene	205-883-8	191-24-2		0.17 mg/kg		0.17 mg/kg	0.000017 %	✓	
20	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.17 mg/kg		0.17 mg/kg	0.000017 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	0.37 mg/kg		0.37 mg/kg	0.000037 %	✓	
22	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.04 mg/kg		0.04 mg/kg	0.000004 %	✓	
23	fluoranthene	205-912-4	206-44-0		0.63 mg/kg		0.63 mg/kg	0.000063 %	✓	
24	fluorene	201-695-5	86-73-7		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.15 mg/kg		0.15 mg/kg	0.000015 %	✓	
26	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
27	phenanthrene	201-581-5	85-01-8		0.27 mg/kg		0.27 mg/kg	0.000027 %	✓	
28	pyrene	204-927-3	129-00-0		0.62 mg/kg		0.62 mg/kg	0.000062 %	✓	
29	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
Total:								0.0519 %		

Key

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

Classification of sample: WS08

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

Sample details

Sample name:	LoW Code:
WS08	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 03 * (Soil and stones containing hazardous substances)
1.5 m	

Hazard properties

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.16%)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.16%)

Determinands

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

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	 arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	3.8 mg/kg	1.32	5.017 mg/kg	0.000502 %	✓	
2	 cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	0.5 mg/kg	1.285	0.643 mg/kg	0.00005 %	✓	
3	 chromium { chromium(III) oxide }	215-160-9	1308-38-9		9.5 mg/kg	1.462	13.885 mg/kg	0.00139 %	✓	
4	 copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	30 mg/kg	1.126	33.777 mg/kg	0.00338 %	✓	
5	 lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			140 mg/kg		140 mg/kg	0.014 %	✓	
6	 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
7	 nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]	32 mg/kg	1.579	50.544 mg/kg	0.00505 %	✓	
8	 selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8			0.5 mg/kg	1.405	0.703 mg/kg	0.0000703 %	✓	

#	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								
9	zinc { zinc sulphate }				61 mg/kg	2.469	150.627 mg/kg	0.0151 %		✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]								
10	phenol				1.9 mg/kg		1.9 mg/kg	0.00019 %		✓	
	604-001-00-2	203-632-7	108-95-2								
11	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				0.2 mg/kg	1.884	0.377 mg/kg	0.0000377 %		✓	
	006-007-00-5										
12	pH				8.7 pH		8.7 pH	8.7 pH			
			PH								
13	acenaphthene				4.7 mg/kg		4.7 mg/kg	0.00047 %		✓	
		201-469-6	83-32-9								
14	acenaphthylene				0.76 mg/kg		0.76 mg/kg	0.000076 %		✓	
		205-917-1	208-96-8								
15	anthracene				6.1 mg/kg		6.1 mg/kg	0.00061 %		✓	
		204-371-1	120-12-7								
16	benzo[a]anthracene				4.7 mg/kg		4.7 mg/kg	0.00047 %		✓	
	601-033-00-9	200-280-6	56-55-3								
17	benzo[a]pyrene; benzo[def]chrysene				12 mg/kg		12 mg/kg	0.0012 %		✓	
	601-032-00-3	200-028-5	50-32-8								
18	benzo[b]fluoranthene				4 mg/kg		4 mg/kg	0.0004 %		✓	
	601-034-00-4	205-911-9	205-99-2								
19	benzo[ghi]perylene				4.3 mg/kg		4.3 mg/kg	0.00043 %		✓	
		205-883-8	191-24-2								
20	benzo[k]fluoranthene				1.8 mg/kg		1.8 mg/kg	0.00018 %		✓	
	601-036-00-5	205-916-6	207-08-9								
21	chrysene				4.1 mg/kg		4.1 mg/kg	0.00041 %		✓	
	601-048-00-0	205-923-4	218-01-9								
22	dibenz[a,h]anthracene				0.86 mg/kg		0.86 mg/kg	0.000086 %		✓	
	601-041-00-2	200-181-8	53-70-3								
23	fluoranthene				13 mg/kg		13 mg/kg	0.0013 %		✓	
		205-912-4	206-44-0								
24	fluorene				3.6 mg/kg		3.6 mg/kg	0.00036 %		✓	
		201-695-5	86-73-7								
25	indeno[123-cd]pyrene				3.6 mg/kg		3.6 mg/kg	0.00036 %		✓	
		205-893-2	193-39-5								
26	naphthalene				2 mg/kg		2 mg/kg	0.0002 %		✓	
	601-052-00-2	202-049-5	91-20-3								
27	phenanthrene				13 mg/kg		13 mg/kg	0.0013 %		✓	
		201-581-5	85-01-8								
28	pyrene				12 mg/kg		12 mg/kg	0.0012 %		✓	
		204-927-3	129-00-0								
29	TPH (C6 to C40) petroleum group				1600 mg/kg		1600 mg/kg	0.16 %		✓	
			TPH								
30	confirm TPH has NOT arisen from diesel or petrol				☑						
Total:									0.209 %		

Key

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



Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because No liquid phase present, therefore threshold adjusted to 10,000mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.16%)

Appendix A: Classifier defined and non GB MCL determinands

■ **chromium(III) oxide** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from ECHA's C&L inventory database

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

Data source date: 30 Apr 2020

Hazard Statements: Acute Tox. 4; H302, Skin Sens. 1; H317, Eye Irrit. 2; H319

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

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

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

Additional Hazard Statement(s): Carc. 2; H351

Reason for additional Hazards Statement(s):

20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium

www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

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

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

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

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

Reason for additional Hazards Statement(s):

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

■ **pH** (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

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

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

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

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

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

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

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

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

Data source date: 23 Jul 2015

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

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 21 Aug 2015

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

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 06 Aug 2015

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

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

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

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

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

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

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

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

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

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

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

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on risk phrases

cadmium {cadmium sulfide}

Worst case species based on risk phrases

chromium {chromium(III) oxide}

Cr(VI) below laboratory limit of detection.

copper {dicopper oxide; copper (I) oxide}

Most likely common species

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

Cr(VI) below laboratory limit of detection, most appropriate compound selected.

mercury {mercury dichloride}

Worst case species based on risk phrases

nickel {nickel dihydroxide}

Worst case species based on risk phrases

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

Worst case species based on risk phrases

zinc {zinc sulphate}

Cr(VI) below laboratory limit of detection, most appropriate compound selected.

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

Worst case species

Appendix C: Version

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

HazWasteOnline Classification Engine Version: 2023.69.5541.10251 (10 Mar 2023)

HazWasteOnline Database: 2023.69.5541.10251 (10 Mar 2023)

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



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Ground Gas Assessments | Material Management Plans
Environmental Impact Assessments & Reports
Remediation Strategies & Validation | Due Diligence Audits

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Retaining Wall Design | Ground Stability | Vibration Assessments
Value Engineering

Design

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Structural Design | Structural Surveys

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Mine Workings | Mine Shafts | Subsidence | Mineral Resource Assessments

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Remediation Validation | Structural Inspections

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