White Moss Road, Blackley

Phase 2 Geo-Environmental Investigation, Risk Assessment and Outline Remediation Strategy

Job Number	Report Date	Client
LKC261050	**13th July 2026**	**Chapterre**

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Site Address	White Moss Road, Manchester, M9 7HD
Report Title	Phase 2 Geo-Environmental Investigation, Risk Assessment and Outline Remediation Strategy
Job Number	LKC261050
Client	Chapterre

Revision	0	**Date of Issue**	13/07/2026
Document Ref:	LKC261050-B1-GI-White Moss Road, Blackley-R0		
Status	Interim		
Written By	Rosie Cummings, Colin Wardle		
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EXECUTIVE SUMMARY

Site Details

Location	End of White Moss Road, east of Rochdale Road, Blackley, Manchester. Centred at National Grid Reference 386055E 403350N.
Area	4,000m^2.
Topography	78-80 metres Above Ordnance Datum (AOD). Site is approximately level. A small, raised area is present in the west of site.
Current Site Use	The site currently comprises a one storey building in the east of the site with a mixture of hardstood and grassed groundcover across the centre and west of site.
Proposed Development	Residential apartments including gardens, soft landscaping and associated parking and footpaths.

Site Setting

Main Historical Features	Onsite: Undeveloped Land, Embankment, Hardstood Parking, The VASA Club. Surrounding Area: Ponds, Reservoirs, Sand Pits, Fire Station.
Geology / Hydrogeology	Artificial: No BGS recorded artificial. Superficial: Glaciofluvial sheet deposits (sand and gravel) to the south and east of site. Secondary A Aquifer. Glacial Till (diamicton) to the north and west of site. Secondary Undifferentiated Aquifer. Bedrock: Chester Formation (sandstone). Principal Aquifer.
Landfills / Infilled Ground	Landfill recorded 12m south of site. Potentially infilled ground identified.
Other Relevant Environmental Settings etc.	e.g., if within coal mining DHRA or Cheshire Brine. The site is within a development high risk area. A coal mining risk assessment has been carried out under separate cover. Further assessment is required. The site is within the Cheshire Brine Consultation Area. Further assessment is required.

Ground Investigation Work Undertaken

Date of Investigation:	14th to 15th May 2026.
Intrusive Investigation Work Undertaken:	8no. window sample boreholes. 1no day of mechanically excavated trial trenching. Contamination and geotechnical testing. Gas monitoring.

Ground Conditions

Made Ground	Found in all holes between 0.00-0.70mbgl generally comprising gravelly silty sand with anthropogenic material.
Superficial	0.20-5.45mbgl comprising generally silty sand or sandy silt. Limited gravelly sandy clay was recorded.
Bedrock	Not recorded.
Groundwater	None encountered.
Obstructions	None recorded.

Geotechnical Assessment

Allowable Bearing Pressure	The shallow strata upto 3.00mbgl ranges between very loose and medium dense, returning an average ABC of 57kN/m^2 with and average angle of internal friction (ϕ') of 30°.
Anticipated Foundation Type	Vibro granular columns supporting shallow foundations and a raft foundation are both viable, it is considered that a piled foundation solution will provide the most reliable and cost-effective option for the site.
Other Considerations	Temporary supports of excavations will be required. Detailed design should be carried out by structural engineer.

	Concrete Requirements DS1-AC-1.

Contamination Risk Assessment

PL	Contaminant	Risk	Recommendations
1	Lead, Benzo(a)pyrene, Asbestos	**Moderate**	Lead, Benzo(a)pyrene and asbestos recorded in soils in the proposed soft landscaping / communal garden would provide a potential pathway for future receptors. **Recommendations:** Remediation required involving capping layer or removal of made ground.
	Hydrocarbons	**Low**	No hydrocarbons recorded. **Recommendation**: No remediation required.
2	Naphthalene and other volatiles	**Low**	No volatile hydrocarbons recorded. **Recommendations:** No remediation required.
3	Hazardous / ground gas: methane, carbon dioxide	**Moderate**	High methane (9.8%v/v) and carbon dioxide (10.8%v/v) concentrations were recorded in WS101 but flow rates were very low (<0.1l/hr). CS2 recommended at this stage although assessment to be undertaken on completion of the gas monitoring. **Recommendations:** Gas monitoring (CS2) recommended.
4	Heavy Metals, PAHS	**Low**	Unlikely likelihood given limited mobile contamination encountered and crystalline nature of ash source. **Recommendations:** No water sampling or leaching tests required unless evidence of significant potentially mobile contamination is identified in the soil.
5	Naphthalene	Low	No naphthalene recorded. **Recommendations:** Water pipe assessment required but barrier pipe unlikely to be required.

PL1= Human health risk (direct contact). PL2= Human health (vapours). PL3= Gas risk. PL4= Controlled waters risk. PL5= Potable waters risk

PL	Recommendation
1	Environmental cover system required in soft landscaping and garden areas
2	No remediation required
3	Gas protection measures required (CS2) to be updated on completion of gas monitoring.
4	No remediation required.
5	Potable water pipe assessment required but barrier pipe unlikely

Further Work Requirements
Completion of gas monitoring
Validation of cover system
Validation of soils to be imported into shared gardens and landscaping
Completion report

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1. Introduction

LK Consult Ltd (LKC) has been commissioned to carry out a Phase 2 Geo-Environmental Investigation, Risk Assessment and Outline Remediation Strategy for White Moss Road, Blackley. The investigation was undertaken in support of a future planning application to develop the site for residential use.

The following work has previously been undertaken: Preliminary Risk Assessment (PRA) report, undertaken by LKC (Ref: LKC261050, dated 27th May 2026).

This investigation has been undertaken to confirm the ground conditions below the site and to allow a contamination and geotechnical assessment to be undertaken. It was also requested that trial trenching was undertaken to attempt to locate a potential culvert running across the site.

The investigation will aim to confirm the risks of the potential pollutant linkages identified in the PRA and recommend further assessment / remediation, as required.

A summary of the site details is presented in Table 1-1. Figure 1 indicates the site location and boundary plan. Figure 2 indicates the proposed development.

Location	End of White Moss Road, east of Rochdale Road, Blackley, Manchester. Centred at National Grid Reference 386055E 403350N.
Area	4,000m^2.
Topography	78-80 metres Above Ordnance Datum (AOD). Site is approximately level. A small, raised area is present in the west of site.
Current Site Use	The site currently comprises a one storey building in the east of the site with a mixture of hardstood and grassed groundcover across the centre and west of site.
Proposed Development	Residential apartments including shared gardens, soft landscaping and associated parking and footpaths.

Table 1-1: Summary of site details.

2. Summary of Preliminary Risk Assessment (PRA)

2.1. Phase 1 Preliminary Risk Assessment (PRA)

Pertinent information has been summarised from the PRA in Table 2-1.

Main Historical Features	Onsite: Undeveloped Land, Embankment, Hardstood Parking, The VASA Club. Surrounding Area: Ponds, Reservoirs, Sand Pits, Fire Station.
Geology / Hydrogeology	Artificial: No BGS recorded artificial. Superficial: Glaciofluvial sheet deposits (sand and gravel) to the south and east of site. Secondary A Aquifer. Glacial Till (diamicton) to the north and west of site. Secondary Undifferentiated Aquifer. Bedrock: Chester Formation (sandstone). Principal Aquifer.
Landfills / Infilled Ground	Landfill recorded 12m south of site. Potentially infilled ground identified.

Table 2-1: Summary of site details, historical review, environmental settings, and site reconnaissance.

Table 2-2 summarises the geotechnical constraints.

Coal Mining	No further assessment required.
Slope Stability	No further assessment required.
Made Ground	Unknown depth and constituent of made ground across the site.
Superficial	Unknown strength of soils for foundation design.
Bedrock	Unknow depth to bedrock.
Groundwater	Unknown depth and variability of groundwater.
Plasticity	Plasticity of clay deposits should be confirmed.
Sulphate	Unknown sulphate content of the made ground and natural.
Road / Pavement Design	Unknown CBR values for footpath and road design should be calculated.
Coal Mining	No further assessment required.

Table 2-2: Summary of geotechnical constraints.

2.2. Conceptual Model

The preliminary contamination conceptual model using contaminant-pathway-receptor linkages based on guidance in LCRM[1] has been summarised in Table 2-3.

Each pollutant linkage is described along with an assessment of the risk based upon guidance on probabilities and consequences outlined in CIRIA C552[2]. The risk matrix is provided in Appendix A.

A site investigation was recommended.

PL	Contaminants of Concern (source)	Pathway	Receptor	Probability	Consequence	Risk	Assessment and Recommendations
1	Heavy Metals, PAHs, Asbestos (made ground)	Dermal contact. Inhalation of soil, fibres, and dust. Ingestion of soils, dust, home-grown produce, soil attached to home-grown produce (only if growing). Windblown dust.	Future site users. Offsite Receptors.	Low Likelihood	Medium	**Moderate / Low**	Low likelihood, given the limited history of development onsite. However, shallow made ground associated with the embankment and site activity may represent a potential source, and the proposed soft landscaping / communal garden would provide a potential pathway for future receptors. **Recommendations:** Investigation required, testing subject to ground conditions.
2	Naphthalene and other volatiles (made ground)	Inhalation of vapours. Migration via permeable strata and preferential pathways.	Future site users. Offsite Receptors.	Unlikely	Medium	**Low**	Unlikely probability given limited history of development onsite. Any coal / ash derived naphthalene is unlikely to generate significant vapours. **Recommendations:** Intrusive investigation required as part of PL1. This should include the analysis of volatiles, if identified.
3	Hazardous / ground gas: methane, carbon dioxide (offsite infilled features / landfill)	Migration via permeable strata and preferential pathways. Inhalation of gas. Explosion in confined spaces.	Future site users. Buildings. Offsite receptors.	Low Likelihood	Severe	**Moderate**	Low likelihood given large area of landfill recorded 12m south of site. Where present, the sand and gravel superficial strata may provide a pathway for gas to migrate to the site. The area of the landfill has been developed for residential housing and LKC would expect the landfill would have been remediated. However, at this stage a moderate risk is considered suitable due to the age of the housing. **Recommendations:** Gas monitoring or precautionary gas protection (CS2) recommended.
4	Heavy Metals, PAHS (made ground)	Surface run-off. Migration via permeable strata and preferential pathways. Perched waters migration.	Groundwater	Unlikely	Medium	**Low**	Unlikely likelihood given limited development history onsite. The anticipated ash / construction made ground will unlikely generate mobile contamination. **Recommendations:** No water sampling or leaching tests required unless evidence of significant potentially mobile contamination is identified in the soil.
5	Naphthalene (made ground)	Ingestion of tainted water supply.	Future site users. Water pipes.	Low Likelihood	Medium	**Moderate / Low**	Low likelihood given limited made ground expected at pipeline depth (c.0.75-1.35mbgl). Key source to permeation into pipework would be from naphthalene (from ash and coal). **Recommendations:** Sampling and analysis of soils if made ground / impacted natural ground at anticipated pipeline depths (c. 0.75-1.35mbgl). Water pipe assessment required.

Table 2-3: Preliminary Contamination Conceptual Model.

3. Ground Investigation

3.1. Site Investigation Design and Methodology

The investigation was carried out on 14th to 15th May 2026 and comprised the following:

- 8no. window sample boreholes drilled to 5.45 metres below ground level (mbgl) (ref. WS101 to WS108).
- 1no. day of trial trenching (TT101 to TT103).

All site investigation locations are shown in Figure 3.

The locations were chosen to allow adequate assessment of ground conditions across the site . Table 3-1 details the site investigation locations.

Site Investigation Locations	Rationale
WS101-WS108	General site coverage.
TT101-TT103	Trial trenching to ascertain location of suspected culvert.

Table 3-1: Summary of Sampling Locations.

LKC were instructed to undertake trial trenching by the client due to anecdotal evidence that a culvert may cross the site. A review of mapping and other data during the Preliminary Risk Assessment did not identify a culvert. It was also not identified on current service plans. The location of the suspected culvert was not ascertained during the trial trenching undertaken to the depths excavated. However, please note the location of the trenches were limited to the grassed areas as it was not possible to excavate within the car park or road areas.

The number of site investigation points corresponds to approximately one location per 23m square centres. This is considered to be a conservative sampling density and is in line with BS10175[3] for a 'detailed investigation'.

All profile logs are provided in Appendix B and are in line with BS14688-1[4] and BS5930[5].

3.2. Well Installations

4no. of the boreholes (WS101, WS103, WS105, WS107) were installed with monitoring wells for gas and groundwater monitoring. Monitoring wells were installed in accordance with BS10175 and CIRIA C665[6] and generally comprised approximately 1m plain pipe over a length of slotted pipe surrounded by pea gravel and sealed at the top with bentonite and concrete.

Well installation details are provided in Profile Logs in Appendix B.

3.3. Sampling Protocol

3.3.1. Soil Sampling (Contamination)

Standard sampling protocol and preservation of samples was undertaken as described in the EA guidance on site investigation[7].

Soil was collected for onsite testing for total volatile organic compounds (TVOCs) using a photoionisation detector (PID) fitted with a 10.6eV lamp and moisture trap. A plastic zip bag was half filled with soil allowing a suitably sized headspace. The bag was sealed and stored for at least 20 minutes before being tested. Results of the PID readings are presented on the profile logs (Appendix B). The onsite monitoring was carried out in line CIRIA C665[8] to aid in screening samples for volatile analysis.

Soil samples of approximately 500g were recovered in amber jars and plastic tubs. All the samples were sent to DETS laboratory for chemical testing.

Many of the contamination tests are UKAS or MCERTS accredited and further details are given in the Certificate of Analysis presented in Appendix C. Table 3-2 shows the soil testing undertaken.

Testing	No. Samples	Justification
Metals / metalloids, pH, water soluble sulphate, speciated PAHs, SOM and asbestos screen.	8	A basic suite with a broad selection of contaminants where no significant evidence of contamination was identified (except for occasional ash and coal).
Asbestos Quantification	2	Where asbestos was encountered.

Table 3-2: Summary of Soil Testing.

Notes:

If asbestos present during screen identification and quantification will be undertaken.

Metal/metalloids=arsenic, cadmium, chromium, (total and hexavalent), copper, lead, mercury, nickel, selenium, vanadium, zinc, and boron; PAH=polycyclic aromatic hydrocarbons, SOM=Soil Organic Matter.

3.3.2. Soil Sampling (Geotechnical)

Soil samples taken during the investigation were collected in tubs and bulk bags and for sent to Murray Rix Laboratories for geotechnical testing.

Further details are given in the laboratory report presented in Appendix D. Table 3-3 shows the geotechnical testing undertaken.

Testing	No. Samples
Particle Size Distribution (PSD)	2
BRE Short Suite	4
PSD Sedimentation	4

Table 3-3: Summary of Geotechnical Testing Undertaken.

3.4. In-situ Testing

3.4.1. Geotechnical Testing

In-situ geotechnical tests were performed in the boreholes to further characterise the sub-soil conditions. The following tests were undertaken:

- Standard Penetration Tests (SPTs) were performed in the window sample boreholes at approximately 1m intervals.

The results are provided within Appendix B.

3.5. Gas Monitoring

All the installed boreholes are currently being monitored for gas. To date, one gas monitoring visit has been undertaken. A further five visits are proposed.

Monitoring is being undertaken using a Geotechnical Instruments GA5000 in accordance with the monitoring protocol outlined in CIRIA C665[9] (flow rate measured first). The monitoring will aim to be undertaken over a range of weather conditions (including low and falling barometric pressure and heavy rain) to demonstrate worst-case conditions.

The gas monitoring results to date, are reproduced in full in Appendix E.

4. Ground Conditions

4.1. Geology

The ground conditions beneath the site are summarised below. Logs are provided in Appendix B.

4.1.1. Made Ground

Made ground was recorded in all locations to depths of 0.00-0.70mbgl in the boreholes and 0.00->4.00mbgl in the trial trenches. Table 4-1 summaries made ground.

Locations	Depth (mbgl)	Strata Description
WS101,WS102,WS105	0.00-0.10	Tarmacadam.
TT101	0.00-0.90	Gravelly silty sand with rootlets and anthropogenic material.
TT102, TT103, WS103, WS104, WS106, WS107, WS108	0.00-0.70	Gravelly sandy silt with rootlets and anthropogenic material.
WS101, WS102, WS105	0.10-0.40	Sandy gravel.
WS102, WS105	0.15-0.50	Gravelly clayey sand with anthropogenic material.
TT101, TT102	0.30->4.00	Gravelly silty sand with anthropogenic material.
TT101	1.80-2.50	Sandy silty clay with organic odour and anthropogenic material.

Table 4-1: Summary of made ground.

4.1.2. Natural Strata

Superficial strata was encountered in all locations to depths of 0.20-5.45mbgl and is summarised in table 4-2.

Locations	Depth (mbgl)	Strata Description
WS101-WS108	0.40-5.45	Silty sand.
WS101. WS102, WS105, WS06, WS108	0.20-5.45	Sandy silt.
TT103	0.40-3.00	Gravelly silty sand.
WS102, WS108	0.50-2.50	Sandy slightly organic silt.
WS102, WS108	1.20-3.80	Gravelly sandy silt.
TT101, TT103	2.50-3.60	Gravelly sandy clay.

Table 4-2: Summary of natural strata.

4.1.3. Contamination

There was no visual / olfactory evidence of hydrocarbons or volatile contaminants in any locations. The PID recorded a maximum of 0.4ppm TVOC in the samples.

4.2. Groundwater

4.2.1. Groundwater Levels

No groundwater strikes were recorded during the investigation in trial pits and boreholes. This data is provided in the profile logs (Appendix B).

5. Geotechnical Assessment

5.1. Proposed Development

It is understood that the proposed development will comprise residential apartments with associated landscaping, car parking and infrastructure. Details of the proposed loadings are not known and therefore a line loading of 75kN/m has been assumed for preliminary assessment purposes only.

The finished ground levels have not been provided and it is therefore anticipated that they will not vary significantly from current levels. However, should the development proposals or finished levels be altered then the comments/recommendations in this section may require revising.

The depths of any underground engineering works (sewers etc.) are unknown and therefore have not been considered in the following assessment. Any such works should be designed so as not to influence, or compromise, proposed or existing foundations or ground stability.

Anecdotal information was given on the potential presence of a culvert crossing the site north to south. Investigations were undertaken at selected locations on site by LKC and previously off site by others (fire station to north) in an attempt to identify if a culvert is present, to date no evidence of a culvert has been identified, however, significant depths of made ground were recorded in Trial Trenches TT01 (2.50m) and TT02 (>4.00m).

Given the nature of the proposed development the structure meets the criteria of Geotechnical Category 2 of Eurocode 7[10].

Given the nature of the development the acceptable risk from settlement is a total settlement value of 25mm for a masonry structure.

5.2. Summary of Ground Conditions

Ground conditions identified at the site are detailed in Section 4.1, and typically comprises made ground between 0.20-0.70mbgl at the locations of the window sample boreholes and TT104. At the location of TT101 made ground is recorded to 2.50mbgl and at the location of TT102, the extent of the made ground was not proven (in excess of 4.00m deep).

Natural strata comprises horizons of SAND and SILT to the completion depths of the window sample boreholes. Stiff CLAY was recorded within TT101 and TT103 from 2.50m to 3.00mbgl respectively.

Groundwater was not recorded in any of the exploratory holes during the siteworks however the strata in WS107 was noted as damp from 4.45mbgl.

5.3. Site Preparation

The site should be cleared and any vegetation below areas of proposed development stripped in accordance with GC 109 of the Manual of Contract Documents for Highways Works[11]. This should include:

- Roots present below the footprint of proposed structures and infrastructure should be grubbed out and the resulting void infilled with suitable compacted engineered fill.
- Redundant services should be sealed off and grubbed out and replaced with suitable compacted engineered fill; and,
- Buried structures and old foundations can be anticipated to be present on site from the former club house. These should be excavated from below the proposed development footprint with the resulting void backfilled.

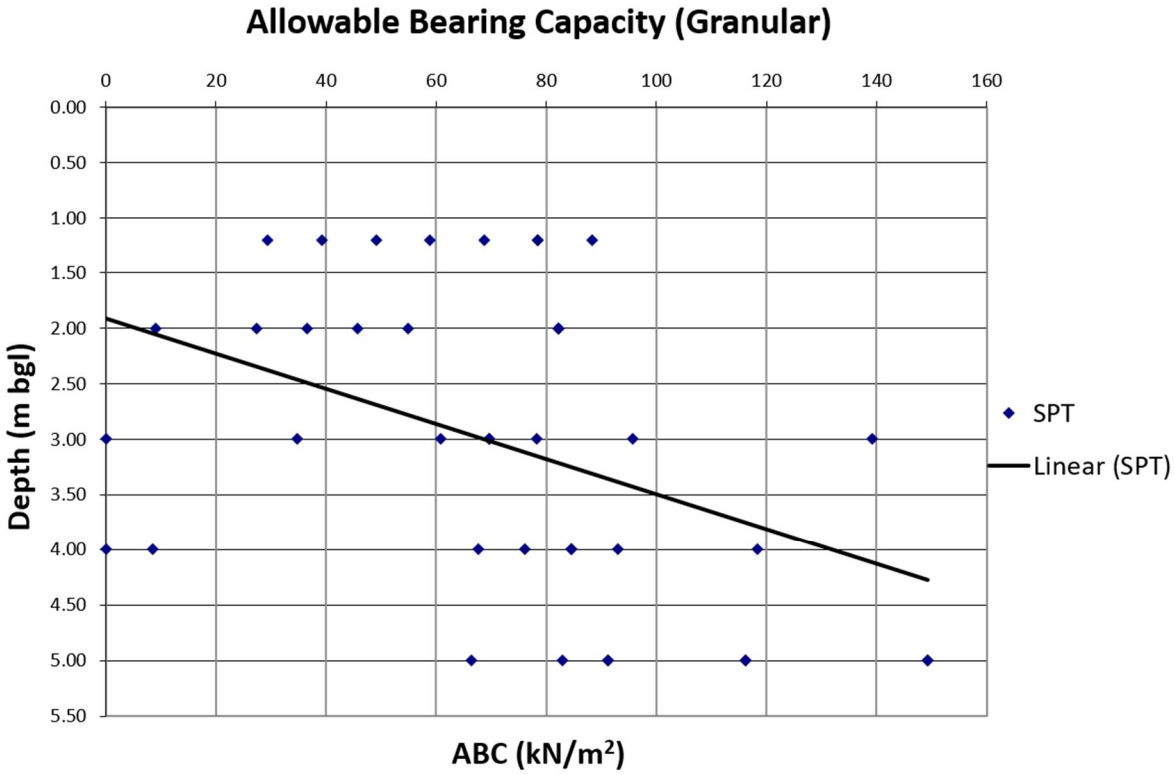
The near surface soils may potentially be disturbed by weathering and site traffic. Precautions should be taken to avoid this, as excessive disturbance may result in more onerous floor slab design, road cap thickness and increased amount of site disposal etc. Based on site observations the near surface soils

may require at least some treatment or reinforcing to allow safe movement of construction plant and labour. A working platform will be required for piling plant.

5.4. Foundation Conditions and Bearing Capacity

5.4.1. General

The natural material comprising SAND and SILT has been assessed using in-situ testing by SPT to obtain the Allowable Bearing Capacity (ABC) of the material. The SILT has been assessed as a granular soil based upon the results of the Particle Size Distribution (PSD) tests. The results of the testing have been plotted against depth and is shown in Graph 5-1.



Graph 5-1: Summary of ABC Vs. Depth from In-Situ SPT.

Graph 5-1 demonstrates that the ABC of the granular deposits ranges between loose to medium dense although there were occasionally very loose strata encountered with low SPTs of N0 and N1 between 2.00m and 4.00mbgl.

SPT results from the upper 3.00m return an average density of medium dense, with an average ABC of 57kN/m^2 and an angle of internal friction of 30°.

5.4.2. Foundations Options

The variability in density of the SAND and SILT strata will preclude its suitability for supporting shallow strip foundations without undertaking ground improvement. Foundation options are therefore:

- Conventional strip footings on vibro granular columns.
- Raft foundation.
- Deeper pile foundations.

These options are discussed in the following sections.

5.4.3. Ground Improvement

The use of ground improvement techniques such as vibro granular columns will allow shallow foundations to be utilised with the made ground. The vibro granular columns should provide an Allowable Bearing Capacity of around 150kN/m² but will also remove variability within the shallow granular strata. Specialist advice should be sought from a suitably experienced contractor regarding Allowable Bearing Capacity and settlements.

It should be noted that the stone columns provide a pathway for gas and vapour migration, and additional mitigation measures may be required to help prevent the ingress into properties.

5.4.4. Raft Foundations

The shallow strata is of varying density, comprising deposits of SAND and SILT ranging between very loose to medium dense and offering a range of bearing capacities. Consideration should be given to the use of a stiffened pad and beam raft which will bridge over areas of soft, loose pockets and prevent structural cracking by forcing the entire building to settle as a single, rigid unit, distributing high structural loads evenly despite subgrade inconsistencies.

Raft foundation design should be undertaken by a suitably qualified and experienced Structural Engineer.

5.4.5. Piled Foundations

As an alternative, consideration may be given to the use of mini-piled foundations to transfer loadings through any deep made ground / poor ground conditions and bear within the shallow granular strata.

Use of mini piles will reduce the amount of spoil generated from foundation trenches requiring offsite disposal, along with the amount of concrete required for the development.

Between 0.20 and 0.70m of made ground has been recorded within the window sample boreholes across the site. Within the trial trenches between 2.50m and in excess of 4.00m of made ground is recorded but these are not within the footprint of the proposed apartment building. Consideration must be given to the potential for negative skin friction to influence the piles.

Casing is required while drilling the piles due to the presence of sands and silts. This will help minimise ground disturbance and prevent collapse into the borehole causing areas of weakness.

Due to the presence of sand, bored piles are recommended over the use of Continuous Flight Auger. This should be discussed with a piling contractor who may feel, from previous experience with similar ground in the local area and the information available, the CFA could be suitable.

For preliminary purposes the following initial pile carrying capacities have been calculated. When undertaking these preliminary calculations, the following parameters have been used:

- Modelling based on assumed strata of made ground to 0.70mbgl, natural sand and silt to >5.45mbgl.
- Groundwater not encountered so assumed at 6.00mbgl.
- The natural sand is loose to medium dense so assumed to be 18.00kN/m^3, with an average angle of internal friction based on SPT results of 30°.
- Global Factor of Safety of 3.
- This does not consider the potential for negative skin friction due to settlement of the made ground.
- Settlement of pile has not been considered.

Depth (mbgl)	Pile Carrying Capacity (kN)		
	300mm dia	450mm dia	600mm dia
3	53	116	202
4	70	160	277
5	89	199	356

Table 5-1: Preliminary Pile Carrying Capacity.

The above examples are not intended to constitute any form of recommendation regarding pile size or type, but merely to illustrate the use of above ground coefficients. Pile design should be undertaken by a specialist contractor to allow them to reduce the Factor or Safety based on their extensive pile testing data and for the design of appropriate piling scheme.

Should a piled foundation solution be the preferred option, then warranty providers such as the NHBC or LABC, may require further information on ground conditions to a minimum of 5m below the base of the pile.

5.4.6. Foundation Recommendations

Vibro granular columns supporting shallow foundations and a raft foundation are both viable, however it is considered that a piled foundation solution will provide the most reliable and cost-effective option for the site.

5.5. Ground Floor Slabs

Warranty providers such as NHBC will require suspended floor slabs where Made Ground is in excess of 600mm. Due to the presence of varying thickness' upto 0.70m depth of Made Ground within the footprint of the proposed apartment block, it is considered that a suspended floor slab will be required for the proposed structures.

Should a piled foundation solution be selected then a piled structure will generally have a suspended or piled floor due to potential differential settlement between the floor and the shell.

If vibro granular columns are used for the foundations, then this could be extended to the floor slab to improve formation conditions and reduce the risk of damage from settlement. However, it may be more reliable to opt for suspended floor slabs.

5.6. Pavement Construction

Topsoil is not suitable for use as a sub-grade. Untreated made ground is considered unsuitable as a sub-grade due to its potential variability and potentially low strength/high compressibility. It should be removed to a depth of 0.5m below formation level and sorted to remove any unsuitable or deleterious materials. The sub formation should be rolled, and suitable excavated material can then be replaced, up to formation level, in fully compacted thin layers. Any deficit should be made up with suitable imported fill compacted as above. Following this treatment an overall design CBR of 2-5% should be available, although this will require confirmation through in-situ CBR tests.

5.7. Drainage

Soil infiltration tests have not been undertaken as part of this assessment however it is considered that that the fine sand / Silt will have a permeability of c.2.5^{-7}m/s – 6.4^{-7}m/s based on the D_{10} from PSD testing and therefore may prove suitable for the application of soakaway drainage. It is recommended that testing is undertaken in line with BRE 365 to confirm the suitability of the strata for the disposal of surface water runoff.

5.8. Concrete Durability

Based upon the results of the chemical analyses (Appendix D), subsurface concrete can be designed in accordance with Design Sulphate Class DS-1, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1 in accordance with the recommendations provided in BRE Special Digest 1 (2005).

5.9. Excavations

Site observations indicated that excavations should be feasible in the near surface with normal plant. exploratory holes were observed to be stable during the excavation/drilling with the exception of TT102 which recorded collapse within the made ground. As the made ground and natural deposits include granular strata the short- and long-term stability of near vertically sided excavations can not be guaranteed, random and sudden instability within these soils should be anticipated.

Due to the granular nature of the soils, all excavations should be supported or battered back in accordance with guidance contained in CIRIA R97[12].

5.10. Construction Activity and Inspection

The following activities and inspections should be incorporated into the site works:

- Due to the variability of the soils at the site it is recommended that sufficient allowance is made for the inspection of formation and sub formations to foundations and pavement construction.
- Excavations where access is required should be subject to a risk assessment from a competent person and where appropriate mitigation measures such as benching back the sides or use of support systems in accordance with CIRIA R97[13] utilised.
- De-watering may be required, especially following periods of heavy rainfall. Removal of surface water and water within trenches should be possible with conventional sump pumping. Discharge of any water should be agreed with the relevant regulatory body and be undertaken under a trade effluent discharge, where required. Measures to remove silt and suspended solids may be required and consideration should be given to provision of space for settling tanks or an attenuation pond.
- Where access to confined spaces is required appropriate mitigation measures should be addressed within the Construction Stage Health and Safety Plan. Particular account should be taken of the gas results.
- The presence of potential contamination and mitigation measures should be addressed as part of the Construction Stage Health and Safety Plan and should include measures to design out the risks, reduce their impact and finally the use of Personnel Protective Equipment (PPE).

6. Generic Risk Assessment

6.1. Introduction

Current good practice requires that the findings from a site investigation should be evaluated on a site-specific basis, using a risk-based approach. Risk assessment involves identification and evaluation of the hazards presented by the concentrations of contaminants measured followed by an evaluation of the risks which are associated with these hazards (LCRM[14]). Information gathered from the risk assessment has been collated in the revised contamination conceptual model in Section 6.6.

6.2. Soil Risk Assessment

6.2.1. Methodology

With regards to the soil risk assessment LKC will use the following hierarchy:

- Category 4 Screening Levels (C4SLs) [15, 16].
- LQM Suitable 4 Use Levels (S4ULs) [17, 18, 19, 20].

The proposed development is for residential apartments with communal garden and shared landscaping, therefore the assessment criteria for residential without plant uptake has been used.

All criteria have been generated using the CLEA V1.06 model[21] based either on 1%, 2.5% and 6% Soil Organic matter (SOM). Results will be compared to the nearest appropriate SOM.

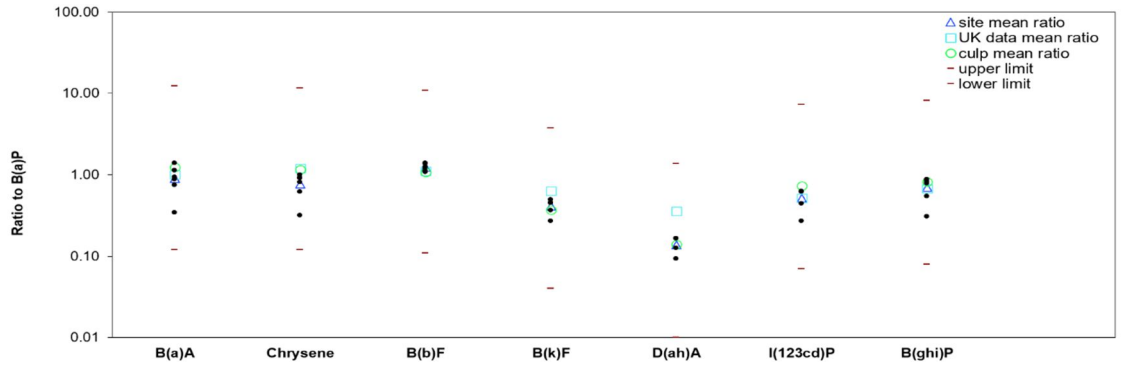
A summary of the generic assessment criteria used in this assessment is provided in Appendix F.

B(a)P as Surrogate Marker

LKC consider the main risk drivers for PAHs are benzo(a)pyrene (B(a)P) and naphthalene. This is due to B(a)P possibly being a carcinogen and most toxic of the PAHs[22,23] and naphthalene the most volatile and soluble[24]. The C4SLs indicate B(a)P as a surrogate marker for carcinogenic PAHs, if it falls within appropriate limits, since the risk from other non-carcinogenic PAHs are considered negligible[25]. For B(a)P to be used as a surrogate marker it should follow the profile described by the HPA (2008)[26] and CL:AIRE (2013). Naphthalene will be treated separately using the LQM S4ULs.

LKC undertook an assessment of the PAH data for the site with regards to using B(a)P as a surrogate marker for carcinogenic PAHs as per HPA and CL:AIRE guidelines. The primary toxicological study related to Culp *et.al*[27], which was based on coal tar mixtures (>80,000mg/kg of total PAHs) fed in food to mice over a two-year carcinogenicity study.

Graph 6-1 summarises the study site data with respect to how the ratios of carcinogenic PAHs relate to B(a)P, within the confidence limits provided in the HPA document.



Graph 6-1: The ratio of PAH to B(a)P in soil for all available data at the site based on 6no. samples (where values were >LOD to allow the calculation of a ratio).

Notes:

B(a)P=Benzo(a)pyrene; D(ah)A=Dibenzo(ah)anthracene; B(a)A=Benzo(a)anthracene; B(b)F=Benzo(b)fluoranthene; B(k)F=Benzo(k)fluoranthene; I(123cd)P=Indeno(123cd)pyrene; B(ghi)P=Benzo(ghi)perylene.

All the data points that could be used to calculate ratios fall inside the upper or lower limits.

Based on this distribution of data LKC considers B(a)P can be used as a surrogate marker for carcinogenic PAHs and the C4SL criteria is suitable for this dataset.

6.2.2. Soil Results Comparison against Assessment Criteria

All analysis sheets are presented in Appendix C. All the data has been compared to relevant assessment criteria and elevated results are presented in Table 6-1.

Sample Location / Depth (mbgl)	Contaminant	Criteria	Total No. of Samples Tested	Sample Result > Criteria
WS102 / 0.3-0.35	Lead	310	8	1100
WS105 / 0.15-0.20	Benzo(a)pyrene	5.3	8	32

Table 6-1: Summary of Elevated Results.

Notes:

All units in mg/kg.

Only results that exceeded assessment criteria have been shown and results from all depths are noted.

Results have been compared to the nearest appropriate SOM for the assessment criteria hierarchy described in Section 6.2.

Asbestos was identified, as detailed in Table 6-2.

Sample Location	ID	Type	Total Asbestos (%)
WS102 (0.30-0.35m)	Chrysotile Amosite Crocidolite	Bundles of Chrysotile and Amosite. Crocidolite fibres.	0.055
WS103 (0.30-0.35m)	Amosite	Bundles of Amosite fibres	0.003
WS105 (0.15-0.20m)	Chrysotile Amosite Crocidolite	Chrysotile, Amosite and Crocidolite present as fibre bundles	0.003
WS107 (0.20-0.25m)	Chrysotile	Chrysotile present as fibre bundles	0.001
WS108 (0.20-0.25m)	Chrysotile	Chrysotile present as fibre bundles	<0.001

Table 6-2: Details of Asbestos Identified.

6.2.3. Direct Contact Risk – Pollutant Linkage 1

Metals and PAHs

Elevated PAHs and metals (lead) have been identified on site. Given the number and location of elevated samples, the contamination is likely to be site wide.

The source of the contamination is expected to the ash and clinker mortar on brick noted in the made ground.

At the concentrations identified, the contaminants are considered to pose a potential risk to future site users (residents) in gardens and soft landscaped areas, where made ground may be exposed . The principal pathways are the ingestion pathways (soil and dust) and dermal contact.

The probability of PAH and metal contamination affecting site users is likely. With a medium consequence, the risk is considered to be moderate, and remediation will be required

Asbestos

Asbestos (Chrysotile, Amosite and Crocidolite) were found across the site in numerous boreholes and generally found as fibre bundles. LKC have utilised the Joint Industry Working Group (JIWG) Decision Support Tool for receptor risk ranking of ACM onsite. This model incorporates guidance from CL:AIRE CAR-SOIL[28]and CIRIA C733[29]. The following assumptions have been incorporated into the model:

Asbestos type, nature and concentrations as encountered during the site investigation and reported in laboratory data.

In this model an infant (<5 years old) exposed to fibres >10 hours per day (residential exposure) and conservatively assumed using the landscaped area in or within 10m of the area.

Medium respirable index was assumed based on the ACM identified onsite as per RIVM[30].

For added conservatism, the model does not consider moisture content, which can significantly reduce the potential for airborne fibre release from soil in a typical UK climate. Swartjes and Tromp (2008)[31] based on work by Addison *et al*.[32] note that the addition of 10% water to soil decreases the risk of potential fibre release by a factor of between 2 and 10. The moisture content of the soil from this area was c. 13% making fibre release unlikely.

The JIWG model output sheet is presented in Appendix G. A **medium risk** was identified.

Asbestos may affect site users in soft landscaping areas in localised areas of the site, via the inhalation of fibres. The probability of asbestos affected site users is considered to be likely. With a medium consequence, the risk is moderate and remediation is recommended. Construction workers should be and vigilant for any suspected ACM during groundworks (discussed further in Section 8.6).

6.2.4. Risk from Inhalation of Vapours – Pollutant Linkage 2

No visual / olfactory evidence of volatile contaminants was identified during the investigation. The PID did not detect any significant TVOCs. Confirmatory soil analysis did not detect any VOCs / SVOCs above assessment criteria.

LKC therefore consider the probability of volatile contaminants affecting site users as unlikely. The consequence is expected to be medium, giving a low risk and no remediation is required.

6.3. Gas Risk Assessment

One gas monitoring visit has been undertaken on the study site. Gas monitoring results in full are presented in Appendix E and summarised in Table 6-3. Following guidance set out in CIRIA C665[33] and BS8485[34] peak methane and carbon dioxide concentrations have been used in the gas risk assessment. In addition, and as per guidance, flow rates were measured first.

Borehole Ref.	Visit	Peak CH4 (%v/v)	Peak CO2 (%v/v)	Min O2 (%v/v)	Flow (l/h)	Groundwater Level (mbgl)	Pressure (mb)	Prev 24hr Pressure Trend
WS101	1	9.8	10.8	0.3	<0.1	Dry	1015	Steady
WS103	1	<0.1	2.0	19.5	<0.1	Dry	1015	Steady
WS105	1	<0.1	1.0	19.3	<0.1	Dry	1015	Steady
WS107	1	<0.1	7.8	9.7	<0.1	Dry	1015	Steady

Table 6-3: Gas Monitoring Results.

Only one gas monitoring visit has been undertaken to date. Very high concentration of methane was recorded in WS101 (9.8%v/v) although flow rate was negligible (<0.1l/hr). Carbon dioxide concentration was also high in this borehole (10.8%v/v). Concentrations of methane and carbon dioxide were generally low across the other boreholes, although 7.8%v/v carbon dioxide was recorded in WS107.

The source of the gas is unlikely to be the landfill 12m south of the site as it would be expected that boreholes closer to the landfill would also be affected. Silt was recorded in WS101 and could be the potential source of gas although silt was also recorded in WS103 and WS105 where gas concentrations were low. It is too early to assess the potential source as it could be an artifice of the drilling process puncturing a pocket of gas that may be depleted over subsequent monitoring visit.

Gas Screening Value

In accordance with CIRIA C665[35], a Gas Screening Value (GSV) may be calculated. Assuming worst-case scenario maximum gas concentrations and flow for each borehole have been used to calculate the GSV. The GSV can be used to determine the characteristic situation (CS).

Table 6-4 shows the maximum GSV for each borehole and the appropriate characteristic situation (based on GSV only). An overall site assessment (WS101-WS107) has also been included (worst case values across the site).

Boreholes	Max GSV (l/hr)	CS
WS101	0.0108	CS1
WS103	0.0020	CS1
WS105	0.0010	CS1
WS107	0.0078	CS1
WS101-107	0.0098 (CH_4) 0.0108 (CO_2)	CS1

Table 6-4: Summary of Worst-Case Gas Screening Values (GSV).
Notes:
CS = Characteristic Situation; TL= Traffic Light.

In addition, in accordance with CIRIA C665[36], if carbon dioxide and methane are recorded above 5%v/v and 1%v/v respectively, you should consider upgrading the characteristic situation from CS1 to CS2.

Due to the occurrence of high carbon dioxide and methane (above 5% and 1% respectively), LKC consider that in this case, the site should be treated as precautionary CS2 at this stage although this will need to be updated on completion of the monitoring.

6.4. Controlled Water Assessment

The PRA identified a low risk with respect to controlled waters as no significant source of mobile contamination was anticipated. Furthermore, although a Principal Aquifer is present below the site, no abstractions have been identified within influencing distance and the site is not located in a Source Protection Zone. The surface water is not considered to be a significant receptor.

No evidence of potential significant mobile contamination was identified on the site. Although elevated metals and PAHs were identified within the soils, the source is anticipated to be ash and clinker mortar on brick noted within the made ground. Contamination associated with ash and clinker is not anticipated to be mobile due to the residual crystalline nature of the matrix.

The site investigation did not identify any significant sources of likely mobile contamination within the soils. This confirms an unlikely probability of onsite contamination affecting controlled waters. With a medium consequence the risk is anticipated to be low, and no remediation is required.

6.5. Potable Water Supply

Soil results were compared to United Utilities (UU) guidelines for the selection of potable water pipes in land potentially affected by contamination. Only contaminants of concern, based on the preliminary conceptual model and ground conditions encountered, were analysed.

No elevated VOCs (based on naphthalene only) have been identified.

The probability of organic contaminants affecting potable water pipes is unlikely. Given the consequence is considered to be medium, the risk (Pollutant Linkage 5) is anticipated to be low and no remediation is likely to be required.

Once details of the pipeline location and depths are known a UU Water Pipe Risk Assessment in line with the utility provider should be undertaken to confirm the most appropriate pipework for potable water.

6.6. Revised Contamination Conceptual Model

The preliminary contamination conceptual model (Table 2-3) has been revised following the risk assessments undertaken in Sections 6.1-6.4. The revised contamination conceptual model follows the same methodology and guidance used in the preliminary contamination conceptual model. The risk matrix is provided in Appendix A.

The revised contamination conceptual model is presented in Table 6 5.

Where a very low risk or low risk is identified no specific remediation is required.

Where there is a moderate / low risk is identified, some form of remediation may be required depending on the pollutant linkage, the type and concentration of contaminants present and the proposed development.

Where LKC identifies a moderate or higher risk, remediation or further investigation work is recommended.

PL	Contaminants of Concern	Pathway	Receptor	Probability	Consequence	Risk	Assessment and Recommendations
1	Lead, Benzo(a)pyrene, Asbestos	Dermal contact. Inhalation of soil, fibres, and dust. Ingestion of soils and dust. Windblown dust.	Future site users. Offsite Receptors.	Likely	Medium	**Moderate**	Likely likelihood for Lead, Benzo(a)pyrene and asbestos recorded in soils in the proposed soft landscaping / communal garden would provide a potential pathway for future receptors. **Recommendations:** Remediation required involving clean environmental capping layer.
2	Naphthalene and other volatiles	Inhalation of vapours. Migration via permeable strata and preferential pathways.	Future site users. Offsite Receptors.	Unlikely	Medium	**Low**	Unlikely likelihood as no volatile hydrocarbons recorded. **Recommendations:** No remediation required.
3	Hazardous gas: methane, carbon dioxide (offsite landfill & onsite organic silts)	Migration via permeable strata and preferential pathways. Inhalation of gas. Explosion in confined spaces.	Future site users. Buildings. Offsite receptors.	Low likelihood	Severe	**Moderate**	Low likelihood as elevated methane (9.8%v/v) and carbon dioxide (10.8%v/v) concentrations were recorded in WS101 but flow rates were negligible (<0.1l/hr). **Recommendations:** Gas monitoring (CS2) recommended at this stage subject to subsequent gas monitoring results.
4	Heavy Metals, PAHS (made ground)	Surface run-off. Migration via permeable strata and preferential pathways. Perched waters migration.	Groundwater	Unlikely	Medium	**Low**	Unlikely likelihood given limited mobile contamination encountered and crystalline nature of ash source. **Recommendations:** No water sampling or leaching tests required based on made ground composition.
5	Naphthalene (made ground)	Ingestion of tainted water supply.	Future site users. Water pipes.	Unlikely	Medium	**Low**	Unlikely likelihood, as no naphthalene recorded. **Recommendations:** Water pipe assessment required but barrier pipe unlikely to be required.

Table 6-3: Revised Contamination Conceptual Model.

7. Summary Conclusions

7.1. Ground Conditions

Ground conditions are summarised in Table 7-1 below.

Made Ground	Found in all holes between 0.00-0.70mbgl generally comprising gravelly silty sand with anthropogenic material.
Superficial	0.20 to >5.45mbgl comprising generally silty sand or sandy silt. Limited gravelly sandy clay was recorded.
Bedrock	Not recorded.
Groundwater	None encountered.
Obstructions	None recorded.

Table 7-1: Summary of Ground Conditions.

7.2. Geotechnical

Geotechnical observations and conclusions are contained in Table 7-2 below, more detailed discussions are contained within Section 5.

Allowable Bearing Capacity	The shallow strata upto 3.00mbgl ranges between very loose and medium dense, returning an average ABC of 57kN/m^2 with and average angle of internal friction (ϕ') of 30°.
Anticipated Foundation Type	Vibro granular columns supporting shallow foundations and a raft foundation are both viable, it is considered that a piled foundation solution will provide the most reliable and cost-effective option for the site.
Shallow Groundwater	Not recorded during course of site work.
Concrete Requirements	Based on BRE Digest 2005[37] – DS-1 AC-1 recommended.
Services	Services – consideration to the presence of services running through the site. Services may need to be re-routed.
Temporary support of excavation	Due to presence of granular strata temporary support of excavations will be required.

Table 7-2: Geotechnical Conclusions Table.

7.3. Contamination Assessment

A revised contamination conceptual model has been produced by LKC which is summarised in Table 7-3 below (more detailed model provided in Section 6).

PL	Contaminant	Risk	Recommendations
1	Lead, Benzo(a)pyrene, Asbestos	**Moderate**	Likely likelihood for Lead, PAHs and asbestos recorded in soils in the proposed soft landscaping / communal garden would provide a potential pathway for future receptors. **Recommendations:** Remediation required involving clean environmental capping layer.
2	Naphthalene and other volatiles	**Low**	Unlikely likelihood as no volatile hydrocarbons recorded. **Recommendations:** No remediation required.
3	Methane and carbon dioxide	**Moderate**	Low likelihood as elevated methane (9.8%v/v) and carbon dioxide (10.8%v/v) concentrations were recorded in WS101 but flow rates were negligible (<0.1l/hr). **Recommendations:** Gas monitoring (CS2) recommended at this stage subject to subsequent gas monitoring results.
4	Heavy Metals, PAHS	**Low**	Unlikely likelihood given limited mobile contamination encountered and crystalline nature of ash source. **Recommendations:** No water sampling or leaching tests required based on made ground composition.
5	Naphthalene	Low	Unlikely likelihood, as no naphthalene recorded. **Recommendations:** Water pipe assessment required but barrier pipe unlikely to be required.

Table 7-3: Summary Risk Table.
PL=Pollutant Linkage.
PL1= Human health risk (direct contact). PL2= Human health (vapours). PL3= Gas risk. PL4= Controlled waters risk. PL5= Potable waters risk.

8. Outline Remediation Strategy

The recommendations/requirements provided below are considered appropriate for the site based on the site investigation work undertaken. LKC should stress that no remediation, enabling works or designing works should take place until Regulatory approval has been obtained.

A summary of remediation requirements is included in Table 8-1.

PL	Recommendation
1	Environmental cover system required in soft landscaping and communal garden areas
2	No remediation required
3	Gas protection measures required (CS2) to be updated on completion of gas monitoring.
4	No remediation required.
5	Potable water pipe assessment required but barrier pipe unlikely

Table 8-1: Remediation Summary.

8.1. Remediation and Validation Recommendations

8.1.1. Environmental Cover System (PL1)

In gardens and soft landscaping areas, an environmental cover system will be required and should comprise 450mm in soft landscaping/shared gardens. The environmental cover system should constructed be as shown in Plate 8-1.

<table>
<tr><th colspan="2">Either (physical break layer)</th><th colspan="2">Or (geotextile membrane)</th></tr>
<tr><td rowspan="3">450mm soft landscaping and shared gardens

(minimum)</td><td>Chemically validated TOPSOIL[1]</td><td rowspan="3">450mm soft landscaping and shared gardens

(minimum)</td><td>Chemically validated TOPSOIL[1]</td></tr>
<tr><td>Chemically validated SUBSOIL</td><td rowspan="2">Chemically validated SUBSOIL

GEOTEXTILE MEMBRANE (at base of subsoil)</td></tr>
<tr><td>100mm (minimum) PHYSICAL BREAK LAYER[2]</td></tr>
<tr><td colspan="4">Existing MADE GROUND</td></tr>
</table>

Plate 8-1: Typical Environmental Cover System Construction.

Notes:

Hardstood Areas – No Remediation Required.

[1]NHBC recommend 100mm minimum topsoil depth.

[2]Gravel break layer, minimal fines.

Validation of environmental cover soils will be required and should include measuring depth using a staff and providing photographic evidence. Photographic evidence of the granular physical break or geotextile layer should also be collected.

Chemical validation of imported soils is required, details are included in Section 8.3.

The Joint Industry Working Group (JIWG) model was rerun incorporating the 450mm cover system and the resulting risk from asbestos was determined to be **very low.** This confrms that the cover system is suitable remediation for the asbestos encountered. The post remediation JIWG assessment is included in Appendix H.

8.1.2. Gas Remediation (PL3)

Gas protection measures in line with Characteristic Situation 2 are recommended across the site, in line with UK guidance[38, 39].

Depending on the type of building and foundation design the protection measures can vary. The gas protection measures should be detailed as part of a verification plan once the design has been confirmed and provided to the Local Authority for approval.

Validation of gas protection measures will be required and should be in line with CIRIA 735[40] including, as a minimum, photographic evidence of ventilation and suitably sealed gas membrane.

8.2. Other Considerations

8.2.1. Unexpected Contamination

The relevant contractors should be briefed that during development works at the site should any unusual ground conditions and / or visual or olfactory evidence of contamination (including asbestos containing material) be encountered at the site, LKC and the Local Authority should be informed, and further assessment of the material may be required.

Impacted soils should be placed on an impermeable surface to await further assessment, treatment, or removal from site (this may be subject to chemical testing to confirm suitable waste facility). The work should be done under the supervision and instruction of an environmental consultant.

To determine that significantly impacted soils have been removed, verification samples will be collected from the base and sides of the excavation. If all impacted ground cannot be removed and contamination remains on the ground, further remediation may need to be considered.

Validation requirements should include a log of work undertaken, including photographs and details of any sampling undertaken and validation of any potential additional remedial work.

8.2.2. Re-use of Site Generated Material

To ensure material is compliant with appropriate waste regulations, any site won material re-used onsite should be in recourse to appropriate exemptions. A U1 and T5 exemption should be registered. This will allow the following to be used onsite or brought in for use onsite (refer to guidance for types of waste that can be used[41]):

- 5,000 tonnes (c. 2,500m^3) treatment of crushed concrete / stone.
- 1,000 tonnes (c. 500m^3) use of non-hazardous soil.
- 5,000 tonnes (c. 2,500m^3) use of clays, sand, gravel, brick, concrete, stone etc.
- 50,000 tonnes (c. 25,000m^3) use of bituminous material to be used in roadways.

A Materials Management Plan (MMP) with recourse to the CL:AIRE Code of Practice[42] may be required if volumes exceed exemption limits. This must be registered before material movement starts onsite.

If an MMP is required, this needs to be registered by a Qualified Person (QP) and there must be ‘certainty of use’ for any material re-used onsite or exported to site to ensure there is no ‘sham recovery’.

For all the above material will need to be tested at the rate and analytical suites presented in Table 8-2.

8.2.3. Stockpile Management

Stockpiled material should be suitably managed. Material should be segregated by type and source. For example, construction / demolition arisings, site won subsoil. Stockpiles may also require covering to minimise the generation of vapours, fibres, dust, and possible nuisance to adjacent receptors, and to prevent rainwater ingress. The source of each stockpile should be recorded and appropriate validation testing for re-use or potential offsite disposal should be undertaken as required.

8.2.4. Disposal

Material required to be removed from site should be undertaken under an appropriate duty of care and the results of chemical analysis should be provided to a licensed landfill for confirmation of waste classification.

Waste records such as disposal tickets and waste carrier licences should be provided in the Site Completion Report. Photographic evidence of removal and waste removal tickets should be retained and included in the validation report.

8.2.5. Health and Safety Considerations

In working with, removing, or treating any contaminating material it is important that any potential risks associated with the actual site works are mitigated by good environmental management of the site during the remedial phases. Standard health and safety precautions (as per HSE guidance[43]) should be adopted by all workers involved with site enabling and construction works.

8.2.6. Asbestos in Soils Management Plan

Due to the presence of asbestos containing material, it is recommended that additional precautions are taken during site clearance, earthworks, and construction in the area of concern. The presence of asbestos in the made ground at the site presents a potential risk of generation of airborne fibres if this material is disturbed, such as for excavations to construct new foundations.

LKC recommend that an appropriate 'Asbestos Management Strategy' is developed in line with CIRIA C733[44]. The likely recommendations are as follows.

Stage 3

Risk Assessment Outputs

Probable Licensing Status	Non-Licensed Work
RPE*	EN149 type FFP3 disposable
Dust Suppression**	Manual/localised dust suppression
Hygiene/Decontamination***	Localised and basic personal decontamination facilities

*Where RPE has to be worn continuously for long periods (e.g. more than 1-hour), then powered RPE may be necessary.
**Reduction in control measures possible if natural mitigation factors are present (e.g. raining, wet ground)
***Guide only; suitability of selected personal hygiene measures may be reviewed on a site/contamination-specific basis

8.3. Validation of Imported / Site Won Soils

Chemical validation of all imported and site-won soils to be used on site in shared gardens and soft landscaping areas should be undertaken. Imported soils should be accompanied by a certificate of analysis and source details.

A summary of the required imported material sampling requirements is presented in Table 8-2, based on MCC 'Guidelines to Developer' (2021) [45]. LKC consider no testing, but proof of provenance is sufficient for natural, virgin, quarried material.

Ideally, the material should be sampled at source to prevent double handling if soil fails, with confirmatory sampling undertaken on importation to site. Where this is not possible then material imported should be segregated based on source and soil type. Validation samples should be taken prior to placement in gardens / soft landscaping to ensure suitability for use.

Material Type	Source	Suite of Analysis	Sampling Rate (min. 3 per source)		
			Garden	Landscape	Other *
Topsoil / subsoil / Fill material	Greenfield	Suite A	200m^3	200m^3	200m^3
	Remediated / Site-won	Suite A / B dependent upon original SI	100m^3	150m^3	200m^3
	Brownfield / Unknown	Suite B	50m^3	150m^3	200m^3
Quarried Fill	First Generation i.e., quarried sand (subsoil) or stone (break layer)	No testing is required.	Certification of material provenance is required.		

Table 8-2: Sampling Requirements for Imported and Site Won Soils.

Notes:

Suite A - Heavy metals, pH, water soluble sulphate, speciated PAH, soil organic matter and asbestos screen.

Suite B - Heavy metals, pH, water soluble sulphate, speciated PAH, phenol, total and free cyanide, soil organic matter, asbestos screen, banded petroleum hydrocarbons (TPH CWG), BTEX, MTBE.

*Other assumed to be stone / 6F2 / mass fill etc.

Any soil with visual or olfactory evidence of hydrocarbons should be rejected.

In addition, it should be ensured that the matrix of the topsoil is suitable as a growing medium and no undesirable material is present (in line with BS3882[46]). LKC advise this information is provided by the supplier before material is imported onto site.

Imported material to be used in gardens will be compared against residential with plant uptake criteria (as used in the contamination risk assessment in Section 6).

8.4. Site Completion Report

All remediation and validation work should be documented in a Site Completion Report. The Site Completion Report will allow discharge of relevant planning conditions.

Figures





Client: Chapterre				Title: Site Location & Boundary Plan	LK CONSULT
Site: White Moss Road, Blackley					
Job No.: LKC261050	Drawn By: CK	Checked By: RC	Drawn: May 2026	Scale (see scale bar): 1:25,000 & 1:1250 @ A4	Figure: 1 / Revision:



Extract From: Bowker Sadler Partnership Limited
Drawing Ref: Sketch Site Plan - Option 1, No.25-041 0001, Rev:C (15/01/2026)

KEY

Site Boundary

Schedule of Accomodation:
18no. 43% 1b2p Apartments @ 51m²
24no. 57% 2b3p Apartments @ 61m²
42 no. Total

All NDSS / M4(2) (& 2no M4(3) (4%))
100% car parking (of which 5no.dis.)

Sprinklers throughout building.
All Design Subject to full surveys inc but not limited to Topographical, Services, Highways adoption, Phase 2 desktop, Ecological, BNG

Sampling Locations and features annotated by LK Consult Ltd are approximate and are based upon observed measurements unless otherwise stated. Do not scale from this drawing and work from marked dimensions only. All dimensions and features should be confirmed on site by the Contractor. Where this drawing includes information provided to LK Consult Ltd by others, LK Consult Ltd gives no warranty, representation or assurance as to the accuracy of such information.

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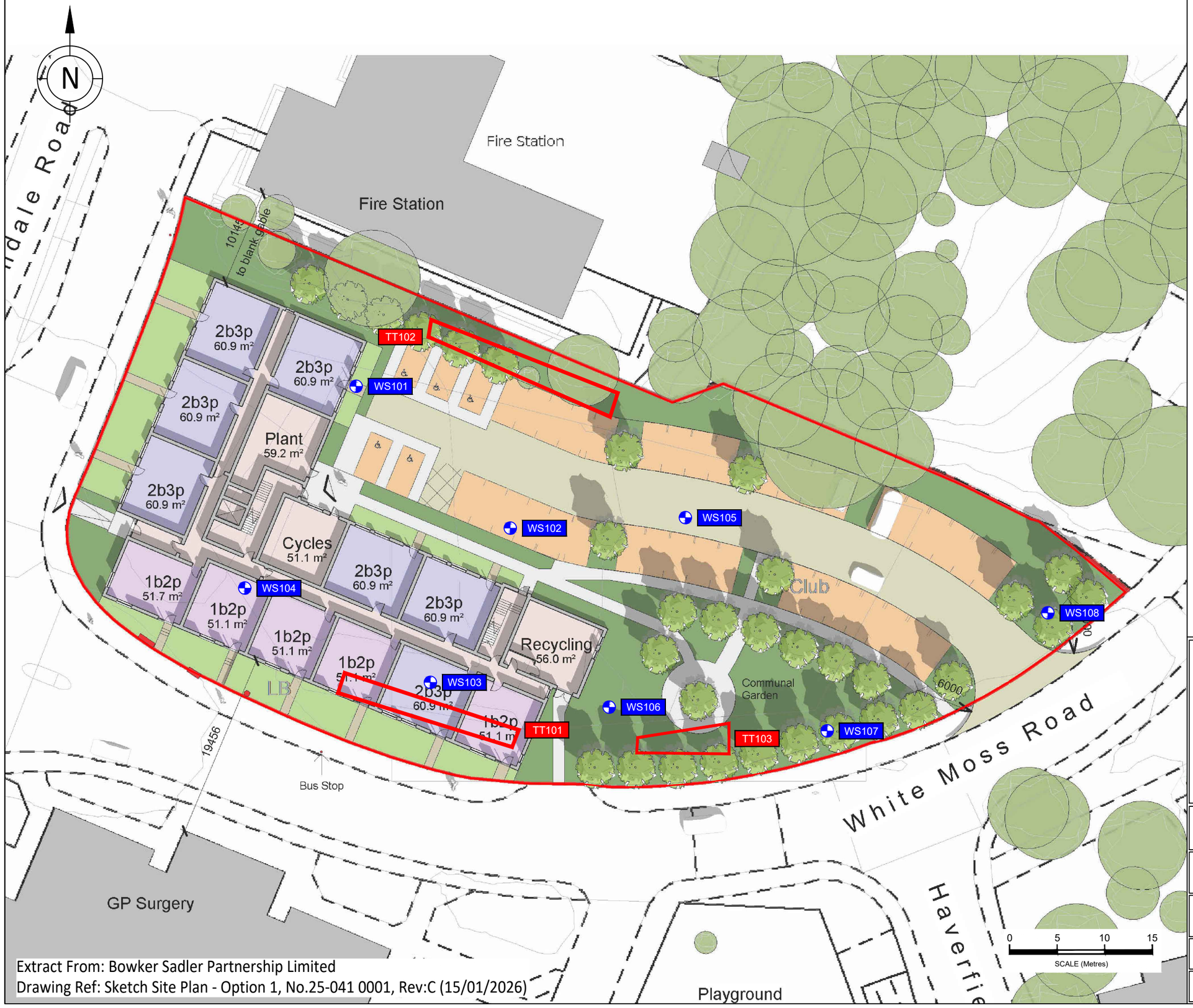
Client: Chapterre

Site: White Moss Road, Blackley

Title: Proposed Development Plan

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC261050	See Scale Bar	2	

Drawn By:	Checked By:	Drawn:
AC	AE	May 2026



Extract From: Bowker Sadler Partnership Limited
Drawing Ref: Sketch Site Plan - Option 1, No.25-041 0001, Rev:C (15/01/2026)

KEY

- Site Boundary
- Window Sample Borehole (WS)
- Trial Trench (TT)

Sampling Locations and features annotated by LK Consult Ltd are approximate and are based upon observed measurements unless otherwise stated. Do not scale from this drawing and work from marked dimensions only. All dimensions and features should be confirmed on site by the Contractor. Where this drawing includes information provided to LK Consult Ltd by others, LK Consult Ltd gives no warranty, representation or assurance as to the accuracy of such information.

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Client: Chapterre

Site: White Moss Road, Blackley

Title: Site Investigation Location Plan

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC261050	See Scale Bar	3	

Drawn By:	Checked By:	Drawn:
AC	AE	May 2026

Appendix A – Risk Matrix

RISK EVALUATION

The method for risk evaluation is a qualitative method of interpreting the output from the risk estimation stage of the assessment, based on CIRIA 552[47]. It involves the classification of the:

- Magnitude of the potential consequence (severity) of the risk occurring (Table A).
- Magnitude if the probability (likelihood) of the risk occurring (Table B).

Consequence (Severity)		
Classification	**Definition**	**Example**
Severe	Short term (acute) risk to human health likely to results in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short term risk of pollution (note: water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Catastrophic damage to buildings/properties. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem (note: the definition of ecological systems within the Draft Circular on Contaminated Land, DETR, 2000).	High Concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled waters. Explosion, causing building collapse (can also equate to short term human health risk if buildings are occupied).
Medium	Chronic damage to Human Health ('significant harm' as defined in DETR, 2000). Pollution of sensitive water resources (note Water Resources Act contains no scope for considering significance of pollution). A significant change in a particular ecosystem, or organism forming part of such ecosystem.	Concentrations of a contaminant from site exceed generic, or site-specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer (Principal and Secondary). Death of a species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures, and services ('significant harm' as defined in DETR, 2000). Damage to sensitive buildings/structures/services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (e.g., foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc). Easily repairable damage to buildings, structures, and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discoloration of concrete.

Table A. Classification of Consequence

Probability (Likelihood)	
Classification	**Definition**
High Likelihood	There is a pollutant linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a pollutant linkage, and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low Likelihood	There is a pollutant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place and is less likely in the shorter term.
Unlikely	There is a pollutant linkage, but circumstances are such that it is improbable that an event would occur in the very long term.

Table B. Classification of Probability.

These classifications are then compared to indicate the risk presented by each pollutant linkage (Table C). It is important that this classification is only applied where there is a possibility (which can range from high likelihood to unlikely) of a pollutant linkage existing.

		Consequence			
		Severe	**Medium**	**Mild**	**Minor**
Probability	**High Likelihood**	**Very High Risk**	**High Risk**	Moderate Risk	Moderate / Low Risk
	Likely	**High Risk**	Moderate Risk	Moderate / Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate / Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate / Low Risk	Low Risk	Very Low Risk	Very Low Risk

Table C. Comparison of Consequence against Probability

Once the risk has been determined the corresponding action can be assessed (Table D).

Risk	Action Required
Very High Risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR there is evidence that sever harm to a designated receptor is currently happening. This risk, if realised, is likely to results in a substantial liability. Urgent investigation (if not already undertaken) and remediation are likely to be required.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term.
Moderate Risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Table D. Description of the Classification and Likely Action Required.

Where a very low risk is identified no specific remediation is required.

Where a low risk is identified, some form of remediation may be required depending on the pollutant linkage, the type and concentration of contaminants present and the proposed development.

Where there is a moderate/low risk is identified, an assessment will be undertaken to establish what category the pollutant linkage will fall into.

Where LKC identifies a moderate or higher risk, remediation or further investigation work is recommended.

Appendix B – Profile Logs

Window Sample Borehole Log

LK CONSULT

Location Number: **WS101**

Project Name: White Moss Road, Blackley	Client: Chapter	Date: 14/05/2026 - 14/05/2026
Project No. : LKC261050	Contractor: D & I Drilling Ltd	Co-ords: 386046.28E, 403361.75N +/- 0.1m
Equipment: Window Sample Rig: Competitor Dart	Level: 78.24m AOD / Logged By: JL / Scale: 1:40	Page Number: Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)	Well
		0.10		MADE GROUND: Dark grey TARMACADAM.	78.14	
0.15-0.20	ES			MADE GROUND: Light greyish brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded comprising sandstone and limestone.		
0.15-0.20	PID=0.3ppm	0.40			77.84	
0.50-1.00	D			Very loose to loose dark brown slightly organic silty SAND. Sand is fine to medium. 0.70m to 2.40mbgl - Not organic.		
1.20-1.65	D					
1.20	N=8 (1,2/2,2,2,2)					
1.50-2.00	B					
2.00-2.45	D			2.00m to 2.40mbgl - Very loose.		
2.00	N=1 (1,0/0,1,0,0)					
		2.40			75.84	
2.50-3.00	D			Soft consistency dark brown mottled light grey slightly sandy SILT. Sand is fine.		
3.00-3.45	D					
3.00	N=11 (2,2/2,3,3,3)					
4.00-4.45	D			3.90m to 5.45mbgl - Becomes dark orangish brown very sandy SILT.		
4.00	N=10 (2,2/3,2,2,3)					
5.00-5.45	D					
5.00	N=11 (1,2/2,3,3,3)					
		5.45		End of Borehole at 5.45m	72.79	

Remarks:

Borehole is stable.

Borehole is dry.

LK CONSULT

Window Sample Borehole Log

Location Number: **WS102**

Project Name: White Moss Road, Blackley	Client: Chapter	Date: 14/05/2026 - 14/05/2026
Project No. : LKC261050	Contractor: D & I Drilling Ltd	Co-ords: 386062.47E, 403346.81N +/- 0.1m
Equipment: Window Sample Rig: Competitor Dart	Level: 78.67m AOD / Logged By: JL / Scale: 1:40	Page Number: Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)
		0.10		MADE GROUND: Dark grey TARMACADAM.	78.56
0.30-0.35	ES	0.30		MADE GROUND: Light greyish brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded comprising sandstone and limestone.	78.36
0.30-0.35	PID=0.4ppm				
0.50-1.00	D	0.50		MADE GROUND: Dark greyish brown gravelly slightly clayey SAND with frequent brick fragments, concrete fragments, timber fragments and ash. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded comprising sandstone and anthropogenic material.	78.17
				Soft consistency dark brown mottled light grey slightly organic slightly sandy SILT. Sand is fine.	
1.20-1.50	D	1.20		Soft consistency dark grey mottled yellowish brown slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is fine to coarse, subangular comprising sandstone.	77.46
1.20-1.65	D				
1.20	N=5 (1,0/0,1,2,2)				
		1.80		Soft consistency dark orangish brown very sandy SILT. Sand is fine.	76.86
2.00-2.45	B				
2.00-3.00	D				
2.00	N=9 (2,2/2,2,2,3)				
3.00-3.45	D			3.00m to 3.50mbgl - Becomes very soft consistency.	
3.00	N=4 (1,0/1,1,1,1)				
3.50-4.00	D	3.50		Loose to medium dense orangish brown silty SAND. Sand is fine.	75.17
4.00-4.45	D				
4.00	N=9 (1,2/2,2,2,3)				
5.00-5.45	D			5.00m to 5.45mbgl - Becomes medium dense.	
5.00	N=14 (3,4/4,4,3,3)				
		5.45		End of Borehole at 5.45m	73.22

1 2 3 4 5 6 7 8

Remarks:

Borehole is stable.
Borehole is dry.

Window Sample Borehole Log

LK CONSULT

Location Number: **WS103**

Project Name: White Moss Road, Blackley	Client: Chapter	Date: 14/05/2026 - 14/05/2026
Project No. : LKC261050	Contractor: D & I Drilling Ltd	Co-ords: 386054.13E, 403330.62N +/- 0.1m
Equipment: Window Sample Rig: Competitor Dart	Level: 78.79m AOD / Logged By: JL / Scale: 1:40	Page Number: Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)	Well
0.30-0.35	D	0.50		MADE GROUND: Dark greyish brown gravelly slightly sandy SILT with frequent brick fragments, concrete fragments, timber fragments and ash. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded comprising sandstone and anthropogenic material.	78.29	
1.00-2.00	B			Loose orangish brown silty SAND. Sand is fine.		
1.20-1.65 1.20	D N=9 (2,2/2,2,2,3)					
2.00-2.45 2.00	D N=9 (1,1/2,2,2,3)	2.00		Soft consistency dark brown mottled light grey slightly organic slightly sandy SILT. Sand is fine.	76.79	
2.50-3.00	D					
3.00-3.45 3.00-4.00 3.00	D D N=9 (1,2/2,2,3,2)					
4.00-4.45 4.00	D N=10 (2,2/2,2,3,3)					
		4.50		Medium dense orangish brown very silty SAND. Sand is fine.	74.29	
5.00-5.45 5.00	D N=18 (3,3/4,4,5,5)					
		5.45		End of Borehole at 5.45m	73.34	

1 2 3 4 5 6 7 8

Remarks:

Borehole is stable.
Borehole is dry.

LK CONSULT

Window Sample Borehole Log

Location Number: **WS104**

Project Name: White Moss Road, Blackley	Client: Chapter	Date: 14/05/2026 - 14/05/2026
Project No. : LKC261050	Contractor: D & I Drilling Ltd	Co-ords: 386034.58E, 403340.46N +/- 0.1m
Equipment: Window Sample Rig: Competitor Dart	Level: 78.29m AOD / Logged By: JL / Scale: 1:40	Page Number: Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)
0.40-0.45 0.40-0.45	ES PID=0.2ppm			MADE GROUND: Dark greyish brown gravelly slightly sandy SILT with frequent brick fragments, concrete fragments, timber fragments and ash. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded comprising sandstone and anthropogenic material.	
		0.70			77.59
1.20-2.00 1.20	B N=3 (1,0/1,0,1,1)			Very loose dark greyish brown silty SAND with frequent pockets of dark grey sandy silt. Sand is fine.	
2.00-2.45 2.00	D N=5 (1,1/1,1,1,2)				
3.00	N=8 (1,1/2,2,2,2)	3.00		No recovery.	75.29
4.00-5.00 4.00	D N=0 (1,0/0,0,0,0)	4.00		Very loose to medium dense dark greyish brown silty SAND. Sand is fine.	74.29
5.00-5.45 5.00	D N=11 (2,2/2,3,3,3)			5.00m to 5.45mbgl - Becomes medium dense.	
		5.45		End of Borehole at 5.45m	72.84

1 2 3 4 5 6 7 8

Remarks:

Borehole is stable.
Borehole is dry.

LK CONSULT

Window Sample Borehole Log

Location Number: **WS105**

Project Name: White Moss Road, Blackley	Client: Chapter	Date: 15/05/2026 - 15/05/2026
Project No. : LKC261050	Contractor: D & I Drilling Ltd	Co-ords: 386080.89E, 403347.87N +/- 0.1m
Equipment: Window Sample Rig: Competitor Dart	Level: 79.11m AOD / Logged By: JL / Scale: 1:40	Page Number: Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)	Well
		0.10		MADE GROUND: Dark grey TARMACADAM.	79.01	
0.15-0.20	ES	0.15		MADE GROUND: Light greyish brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded comprising sandstone and limestone.	78.96	
0.15-0.20	PID=0.3ppm	0.30			78.81	
0.50-0.90	D			MADE GROUND: Dark greyish brown gravelly slightly clayey SAND with frequent brick fragments, concrete fragments, timber fragments and ash. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded comprising sandstone and anthropogenic material.		
		0.90		Dark greyish brown silty SAND. Sand is fine.	78.21	
1.00-2.00	B			Very soft to soft consistency orangish brown very sandy SILT. Sand is fine.		
1.20-1.65	D					
1.20	N=7 (1,1/1,2,2,2)					
2.00-2.45	D					
2.00	N=3 (1,1/0,1,1,1)					
3.00-3.45	D					
3.00	N=8 (1,1/2,2,2,2)					
3.20-4.20	B	3.20		Medium dense orangish brown silty SAND. Sand is fine.	75.91	
4.00-4.45	D					
4.00	N=14 (2,3/3,3,4,4)					
5.00-5.45	D					
5.00	N=10 (2,2/3,3,2,2)					
		5.45		End of Borehole at 5.45m	73.66	

Remarks:

Borehole is stable.
Borehole is dry.

Window Sample Borehole Log

LK CONSULT

Location Number: **WS106**

Project Name: White Moss Road, Blackley	Client: Chapter	Date: 15/05/2026 - 15/05/2026
Project No. : LKC261050	Contractor: D & I Drilling Ltd	Co-ords: 386072.89E, 403328.03N +/- 0.1m
Equipment: Window Sample Rig: Competitor Dart	Level: 78.88m AOD / Logged By: JL / Scale: 1:40	Page Number: Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)
0.10-0.15 0.15-0.20	ES PID=0.1ppm	0.20		MADE GROUND: Dark greyish brown gravelly slightly sandy SILT with frequent rootlets, rare brick fragments, concrete fragments and ash. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded comprising sandstone and anthropogenic material.	78.68
0.50-1.50	B			Very soft to soft dark orangish brown very sandy SILT. Sand is fine.	
1.20-1.65 1.20	D N=6 (1,1/1,1,2,2)				
2.00-2.45 2.00	D N=6 (1,1/1,2,1,2)				
2.50-3.50	B				
3.00-3.45 3.00	D N=0 (1,0/0,0,0,0)			3.00m to 3.50mbgl - Becomes loose.	
3.50-4.20	B	3.50		Very loose to loose orangish brown silty SAND. Sand is fine.	75.38
4.00	N=1 (1,1/0,1,0,0)				
5.00-5.45 5.00	D N=8 (1,2/2,2,2,2)				
		5.45		End of Borehole at 5.45m	73.43

1 2 3 4 5 6 7 8

Remarks:

Borehole is stable.

Borehole is dry.

Window Sample Borehole Log

LK CONSULT

Location Number: **WS107**

Project Name: White Moss Road, Blackley	Client: Chapter	Date: 15/05/2026 - 15/05/2026
Project No. : LKC261050	Contractor: D & I Drilling Ltd	Co-ords: 386095.76E, 403325.54N +/- 0.1m
Equipment: Window Sample Rig: Competitor Dart	Level: 78.85m AOD / Logged By: JL / Scale: 1:40	Page Number: Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)	Well
0.20-0.25 0.20-0.25 0.50-1.50	ES PID=0.3ppm B	0.40		MADE GROUND: Dark greyish brown gravelly slightly sandy SILT with frequent rootlets, rare brick fragments, concrete fragments and ash. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded comprising sandstone and anthropogenic material.	78.45	
1.20-1.65 1.20	D N=8 (1,2/2,2,2,2)			Loose to medium dense orangish brown very silty SAND. Sand is fine.		
2.00-2.45 2.00	D N=9 (1,2/2,2,2,3)					
3.00-3.45 3.00-4.00 3.00	B D N=7 (1,1/1,2,2,2)					
4.00-4.45 4.00	D N=8 (1,1/2,2,2,2)			4.50m to 5.45mbgl - Strata becomes damp.		
5.00-5.45 5.00	D N=18 (2,2/3,4,5,6)			5.00m to 5.45mbgl - Becomes medium dense.		
		5.45		End of Borehole at 5.45m	73.40	

1 2 3 4 5 6 7 8

Remarks:

Borehole is stable.
Borehole is damp from 4.45mbgl.

Window Sample Borehole Log

LK CONSULT

Location Number: **WS108**

Project Name: White Moss Road, Blackley	Client: Chapter	Date: 15/05/2026 - 15/05/2026
Project No. : LKC261050	Contractor: D & I Drilling Ltd	Co-ords: 386118.96E, 403337.88N +/- 0.1m
Equipment: Window Sample Rig: Competitor Dart	Level: 79.25m AOD / Logged By: JL / Scale: 1:40	Page Number: Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)
0.20-0.25 0.20-0.25 0.50-1.00	ES PID=0.1ppm B	0.40		MADE GROUND: Dark greyish brown gravelly slightly sandy SILT with frequent rootlets, rare brick fragments, concrete fragments and ash. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded comprising sandstone and anthropogenic material.	78.85
				Orangish brown very silty SAND. Sand is fine.	
1.20-1.65 1.20-2.00 1.20	B D N=4 (1,2/1,1,1,1)	1.20		Very soft consistency dark brown mottled light grey slightly organic sandy SILT. Sand is fine to medium.	78.05
2.00-2.45 2.00	D N=4 (1,1/1,1,1,1)				
2.50-3.00	D	2.50		Firm consistency dark brown mottled light grey slightly gravelly sandy SILT. Sand is fine to medium. Gravel is fine to coarse, subangular comprising sandstone and coal.	76.75
3.00-3.45 3.00	D N=16 (2,3/4,4,4,4)				
3.80-4.80	B	3.80		Medium dense orangish brown very silty SAND. Sand is fine.	75.45
4.00-4.45 4.00	D N=11 (2,2/2,3,3,3)				
5.00-5.45 5.00	D N=14 (2,3/3,3,4,4)				
		5.45		End of Borehole at 5.45m	73.80

Remarks:

Borehole is stable.
Borehole is dry.

LK CONSULT

Trial Pit Log

Location Ref: **TT101**

Project: White Moss Road, Blackley	Client: Chapter	Date: 14/05/2026
Project No. : LKC261050	Contractor: H & C Plant Hire	Co-ords: 386053.88E, 403327.63N +/- 0.1m
Equipment: Excavator: 7 Tonne Tracked	Level: 78.80m AOD / Logged By: AE / Scale: 1:25	Page Number: Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)
0.00-0.90	D			MADE GROUND: Dark brown gravelly silty SAND with frequent brick fragments, occasional whole bricks, concrete fragments, rare glass fragments, timber, ash and metal wire. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising anthropogenic material.	
0.90-1.80	D	0.90		MADE GROUND: Greyish brown gravelly very silty SAND with occasional whole bricks, brick fragments and rare concrete fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.	77.90
1.80-2.50	D	1.80		MADE GROUND: Soft consistency brownish grey with mild organic odour sandy silty CLAY with rare brick fragments. Sand is fine to coarse.	77.00
2.50-3.30	D	2.50		Stiff consistency brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising sandstone and mudstone.	76.30
		3.30		End of Trial Pit at 3.30m	75.50

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5



Pit Dimensions

Length (m)	Width (m)	Depth (m)
19.00	0.80	3.30

Pit Stability

Stable

Remarks:

Pit dry.
No culvert encountered.

LK CONSULT

Trial Pit Log

Location Ref: **TT102**

Project: White Moss Road, Blackley	Client: Chapter	Date: 14/05/2026
Project No. : LKC261050	Contractor: H & C Plant Hire	Co-ords: 386063.73E, 403363.76N +/- 0.1m
Equipment: Excavator: 7 Tonne Tracked	Level: 78.98m AOD / Logged By: AE / Scale: 1:25	Page Number: Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)
0.30-1.00	D	0.30		MADE GROUND: Soft consistency brown slightly gravelly sandy SILT with frequent rootlets and rare brick fragments. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising sandstone.	78.68
				MADE GROUND: Light brown slightly gravelly silty SAND with occasional brick fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.	
		4.00		End of Trial Pit at 4.00m	74.98

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5



Pit Dimensions

Length (m)	Width (m)	Depth (m)
21.00	1.30	4.00

Pit Stability

Unstable - collapse from groundlevel at 4.00mbgl.

Remarks:

Pit dry.
No culvert encountered.

LK CONSULT

Trial Pit Log

Location Ref: **TT103**

Project: White Moss Road, Blackley	Client: Chapter	Date: 14/05/2026
Project No. : LKC261050	Contractor: H & C Plant Hire	Co-ords: 386080.68E, 403324.34N +/- 0.1m
Equipment: Excavator: 7 Tonne Tracked	Level: 78.85m AOD / Logged By: AE / Scale: 1:25	Page Number: Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)
				MADE GROUND: Soft consistency brown gravelly sandy SILT with occasional brick fragments and rare ash. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising sandstone.	
		0.40		Light brown slightly gravelly silty SAND. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.	78.45
		3.00		Stiff consistency brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising sandstone and mudstone.	75.85
		3.60		End of Trial Pit at 3.60m	75.25

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5



Pit Dimensions			Pit Stability
Length (m)	Width (m)	Depth (m)	Stable
10.00	0.90	3.60	

Remarks:

Pit dry.
No culvert encountered.

Appendix C – Certificates of Analysis (Soil)

Certificate of Analysis

Certificate Number	26-11654	*Issued:*	27-May-26

Client LK Consult Limited
Unit 29
Eton Business Park
Eton Hill Road
Radcliffe
Manchester
M26 2ZS

Our Reference 26-11654

Client Reference ~ LKC261050

Order No ~ PO-C002957

Contract Title ~ White Moss Road, Blackley

Description 4 Soil samples.

Date Received 15-May-26

Date Started 15-May-26

Date Completed 27-May-26

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By [redacted]

Reyhan Irfan
Operations Manager

2139

Summary of Chemical Analysis
Soil Samples

Our Ref 26-11654
Client Ref ~ LKC261050
Contract Title ~ White Moss Road, Blackley

	Lab No	2687037	2687038	2687039	2687040
	Sample ID ~	WS101	WS102	WS103	WS104
	Depth ~	0.15-0.20	0.30-0.35	0.30-0.35	0.40-0.45
	Other ID ~				
	Sample Type ~	SOIL	SOIL	SOIL	SOIL
	Sampling Date ~	14/05/2026	14/05/2026	14/05/2026	14/05/2026
	Sampling Time ~	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Asbestos Quantification (Gravimetric)	DETSC 1102	0.001	%		0.055	0.003	
Preparation							
Moisture Content	DETSC 1004	0.1	%	4.7	11	17	17
Metals							
Arsenic	DETSC 2301#	0.2	mg/kg	2.1	9.3	13	9.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	1.1	0.4	0.2
Chromium	DETSC 2301#	0.15	mg/kg	4.0	15	14	11
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	7.2	73	59	25
Lead	DETSC 2301#	0.3	mg/kg	10	1100	150	60
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.09	0.24	0.13
Nickel	DETSC 2301#	1	mg/kg	4.3	12	16	12
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	6.0	19	24	18
Zinc	DETSC 2301#	1	mg/kg	25	400	180	60
Inorganics							
pH	DETSC 2008#		pH	11.9	9.8	8.5	8.2
Organic matter	DETSC 2002#	0.1	%	0.5	1.4	3.0	1.9
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	53	210	17	44
PAHs							
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	0.24	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	0.06	0.06	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.05	1.6	< 0.03	0.30
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	1.4	< 0.03	0.12
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.24	7.1	0.07	0.18
Anthracene	DETSC 3303	0.03	mg/kg	0.14	2.0	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	1.9	7.7	0.09	0.06
Pyrene	DETSC 3303#	0.03	mg/kg	2.6	6.4	0.08	0.05
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	1.3	2.5	< 0.03	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	1.2	2.0	< 0.03	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	4.1	2.7	< 0.03	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	1.4	1.0	< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	3.8	2.2	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	2.4	0.98	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.63	0.28	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	3.2	1.2	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	23	39	0.24	0.70

Summary of Asbestos Analysis
Soil Samples

Our Ref 26-11654
Client Ref ~ LKC261050
Contract Title ~ White Moss Road, Blackley

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2687037	WS101 0.15-0.20	SOIL	NAD	none	Darryl Fletcher
2687038	WS102 0.30-0.35	SOIL	Chrysotile Amosite Crocid	Bundles of Chrysotile & Amosite & Crocidolite fibres	Darryl Fletcher
2687039	WS103 0.30-0.35	SOIL	Amosite	Bundles of Amosite fibres	Darryl Fletcher
2687040	WS104 0.40-0.45	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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 26-11654
Client Ref ~ LKC261050
Contract Title ~ White Moss Road, Blackley

			Lab No	2687038	2687039
			Sample ID ~	WS102	WS103
			Depth ~	0.30-0.35	0.30-0.35
			Other ID ~		
			Sample Type ~		
			Sampling Date ~	14/05/2026	14/05/2026
			Sampling Time ~		
Test	**Method**	**LOQ**	**Units**		
Total Mass% Asbestos (a+b+c)	DETSC 1102	< 0.001	Mass %	**0.055**	**0.003**
Gravimetric Quantification (a)	DETSC 1102	< 0.001	Mass %	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	< 0.001	Mass %	0.055	0.003
Quantification by PCOM (c)	DETSC 1102	< 0.001	Mass %	na	na
Potentially Respirable Fibres (d)	DETSC 1102	< 0.001	Fibres/g	na	na
Breakdown of Gravimetric Analysis (a)					
Mass of Sample			g	887.88	777.25
ACMs present*			type		
Mass of ACM in sample			g		
% ACM by mass			%		
% asbestos in ACM			%		
% asbestos in sample			%		
Breakdown of Detailed Gravimetric Analysis (b)					
% Amphibole bundles in sample			Mass %	0.004	0.003
% Chrysotile bundles in sample			Mass %	0.051	na
Breakdown of PCOM Analysis (c)					
% Amphibole fibres in sample			Mass %	na	na
% Chrysotile fibres in sample			Mass %	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)					
Amphibole fibres			Fibres/g	na	na
Chrysotile fibres			Fibres/g	na	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample
The results are based on dry weight.

Information in Support of the Analytical Results

Our Ref 26-11654
Client Ref ~ LKC261050
Contract ~ White Moss Road, Blackley

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2687037	WS101 0.15-0.20 SOIL	14/05/26	GJ 250ml, GJ 60ml, PT 1L		
2687038	WS102 0.30-0.35 SOIL	14/05/26	GJ 250ml, GJ 60ml, PT 1L		
2687039	WS103 0.30-0.35 SOIL	14/05/26	GJ 250ml, GJ 60ml, PT 1L		
2687040	WS104 0.40-0.45 SOIL	14/05/26	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

Normec DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 250µm sieve
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	26-11950	*Issued:*	01-Jun-26

Client LK Consult Limited
Unit 29
Eton Business Park
Eton Hill Road
Radcliffe
Manchester
M26 2ZS

Our Reference	26-11950
Client Reference ~	LKC261050
Order No ~	PO-C002957
Contract Title ~	White Moss Rd
Description	4 Soil samples.
Date Received	19-May-26
Date Started	19-May-26
Date Completed	01-Jun-26
Test Procedures	Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By [redacted]

Reyhan Irfan
Operations Manager

2139

Summary of Chemical Analysis
Soil Samples

Our Ref 26-11950
Client Ref ~ LKC261050
Contract Title ~ White Moss Rd

	Lab No	2688773	2688774	2688775	2688776
	Sample ID ~	WS105	WS106	WS107	WS108
	Depth ~	0.15-0.20	0.10-0.15	0.20-0.25	0.20-0.25
	Other ID ~				
	Sample Type ~	ES	ES	es	ES
	Sampling Date ~	15/05/2026	15/05/2026	15/05/2026	15/05/2026
	Sampling Time ~	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Asbestos Quantification (Gravimetric)	DETSC 1102	0.001	%	0.003		0.001	< 0.001
Preparation							
Moisture Content	DETSC 1004	0.1	%	9.1	20	20	23
Metals							
Arsenic	DETSC 2301#	0.2	mg/kg	4.0	12	13	21
Cadmium	DETSC 2301#	0.1	mg/kg	0.6	0.4	0.5	5.1
Chromium	DETSC 2301#	0.15	mg/kg	9.2	16	15	900
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	18	26	340	270
Lead	DETSC 2301#	0.3	mg/kg	65	54	91	220
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.09	0.10	1.1
Nickel	DETSC 2301#	1	mg/kg	4.4	13	20	44
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.5
Vanadium	DETSC 2301#	0.8	mg/kg	7.8	19	21	32
Zinc	DETSC 2301#	1	mg/kg	90	59	98	280
Inorganics							
pH	DETSC 2008#		pH	8.5	7.4	7.5	7.3
Organic matter	DETSC 2002#	0.1	%	1.8	4.7	5.1	6.7
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	28	15	32	18
PAHs							
Naphthalene	DETSC 3303#	0.03	mg/kg	0.30	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	0.38	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	16	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	9.8	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	49	0.09	0.04	0.26
Anthracene	DETSC 3303	0.03	mg/kg	17	< 0.03	< 0.03	0.06
Fluoranthene	DETSC 3303#	0.03	mg/kg	69	0.16	0.10	0.51
Pyrene	DETSC 3303#	0.03	mg/kg	61	0.14	0.11	0.50
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	30	0.07	0.06	0.21
Chrysene	DETSC 3303	0.03	mg/kg	26	0.05	0.05	0.22
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	36	0.07	0.10	0.33
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	8.7	< 0.03	0.04	0.11
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	32	0.05	0.08	0.24
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	8.7	< 0.03	0.05	0.15
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	3.0	< 0.03	< 0.03	0.04
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	9.8	0.04	0.07	0.19
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	380	0.67	0.70	2.8

Summary of Asbestos Analysis
Soil Samples

Our Ref 26-11950
Client Ref ~ LKC261050
Contract Title ~ White Moss Rd

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2688773	WS105 0.15-0.20	SOIL	Chrysotile Amosite Crocid	Chrysotile Amosite and Crocidolite present as fibre bundles	D Wilkinson
2688774	WS106 0.10-0.15	SOIL	NAD	none	D Wilkinson
2688775	WS107 0.20-0.25	SOIL	Chrysotile	Chrysotile present as fibre bundles	D Wilkinson
2688776	WS108 0.20-0.25	SOIL	Chrysotile	Chrysotile present as fibre bundles	D Wilkinson

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Summary of Asbestos Quantification Analysis

Soil Samples

Our Ref 26-11950
Client Ref ~ LKC261050
Contract Title ~ White Moss Rd

	Lab No	2688773	2688775	2688776
	Sample ID ~	WS105	WS107	WS108
	Depth ~	0.15-0.20	0.20-0.25	0.20-0.25
	Other ID ~			
	Sample Type ~	ES	es	ES
	Sampling Date ~	15/05/2026	15/05/2026	15/05/2026
	Sampling Time ~			

Test	Method	LOQ	Units			
Total Mass% Asbestos (a+b+c)	DETSC 1102	< 0.001	Mass %	**0.003**	**0.001**	**< 0.001**
Gravimetric Quantification (a)	DETSC 1102	< 0.001	Mass %	na	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	< 0.001	Mass %	0.003	0.001	<0.001
Quantification by PCOM (c)	DETSC 1102	< 0.001	Mass %	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	< 0.001	Fibres/g	na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample			g	911.70	614.38	455.35
ACMs present*			type			
Mass of ACM in sample			g			
% ACM by mass			%			
% asbestos in ACM			%			
% asbestos in sample			%			
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample			Mass %	0.002	na	na
% Chrysotile bundles in sample			Mass %	0.001	0.001	<0.001
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample			Mass %	na	na	na
% Chrysotile fibres in sample			Mass %	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres			Fibres/g	na	na	na
Chrysotile fibres			Fibres/g	na	na	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample
The results are based on dry weight.

Information in Support of the Analytical Results

Our Ref 26-11950
Client Ref ~ LKC261050
Contract ~ White Moss Rd

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2688773	WS105 0.15-0.20 SOIL	15/05/26	GJ 250ml, GJ 60ml, PT 1L		
2688774	WS106 0.10-0.15 SOIL	15/05/26	GJ 250ml, GJ 60ml, PT 1L		
2688775	WS107 0.20-0.25 SOIL	15/05/26	GJ 250ml, GJ 60ml, PT 1L		
2688776	WS108 0.20-0.25 SOIL	15/05/26	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

Normec DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 250µm sieve
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	26-13378	*Issued:*	11-Jun-26

Client LK Consult Limited
Unit 29
Eton Business Park
Eton Hill Road
Radcliffe
Manchester
M26 2ZS

Our Reference 26-13378

Client Reference ~ LKC261050

Order No ~ PO-C002957

Contract Title ~ White Moss Road, Blackley

Description 4 Soil samples.

Date Received 04-Jun-26

Date Started 04-Jun-26

Date Completed 11-Jun-26

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By [redacted]

Louise Cook
Contracts Manager

2139

Sample Deviations present. See Deviation Table Section for details.

Normec DETS Limited
Unit 2, Park Road Industrial Estate South, Consett, Co Durham, DH8 5PY
Tel: 01207 582333 • email: info-dets@normecgroup.com • normecdets.com

Summary of Chemical Analysis
Soil Samples

Our Ref 26-13378
Client Ref ~ LKC261050
Contract Title ~ White Moss Road, Blackley

	Lab No	2696759	2696760	2696761	2696762
	Sample ID ~	WS101	WS103	WS105	WS107
	Depth ~	1.20-1.65	2.00-2.45	1.20-1.65	1.20-1.65
	Other ID ~				
	Sample Type ~	SOIL	SOIL	SOIL	SOIL
	Sampling Date ~	15/05/2026	15/05/2026	15/05/2026	15/05/2026
	Sampling Time ~	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Magnesium Aqueous Extract (2:1)	DETSC 2076*	10	mg/l	< 10	< 10	< 10	< 10
Inorganics					
pH	DETSC 2008#		pH	7.4	6.7	7.3	8.0
Chloride Aqueous Extract (2:1)	DETSC 2055	1	mg/l	7.0	5.4	5.1	7.1
Nitrate Aqueous Extract as NO3 (2:1)	DETSC 2055	1	mg/l	< 1.0	1.1	< 1.0	< 1.0
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	68	280	64	14

Information in Support of the Analytical Results

Our Ref 26-13378
Client Ref ~ LKC261050
Contract ~ White Moss Road, Blackley

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2696759	WS101 1.20-1.65 SOIL	15/05/26	PT 1L	pH + Conductivity (7 days)	
2696760	WS103 2.00-2.45 SOIL	15/05/26	PT 1L	pH + Conductivity (7 days)	
2696761	WS105 1.20-1.65 SOIL	15/05/26	PT 1L	pH + Conductivity (7 days)	
2696762	WS107 1.20-1.65 SOIL	15/05/26	PT 1L	pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

Normec DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 250µm sieve
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix D – Certificates of Analysis (Geotechnical)

MURRAY RIX
CONSULTANCY, SITE INVESTIGATION
CONSTRUCTION MATERIALS TESTING

TEST REPORT

Client LK Consult Ltd

Address Unit 29 Eton Business Park
Eton Hill Road
Radcliffe
Greater Manchester
M26 2ZS

Contract LKC 26 1050, White Moss Road

Job Number MRN 26004/57
Date of Issue 25 June 2026

Approved Signatories
S J Hutchings, O P Davies

Notes

1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.

2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.

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

4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.

5 The results included within the report are representative of the samples submitted for analysis.

6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.

7 Decision Rule Basis: Unless instructed/agreed otherwise and noted on the individual test certificates included in this report, the adopted decision rule will be one of simple acceptance.

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

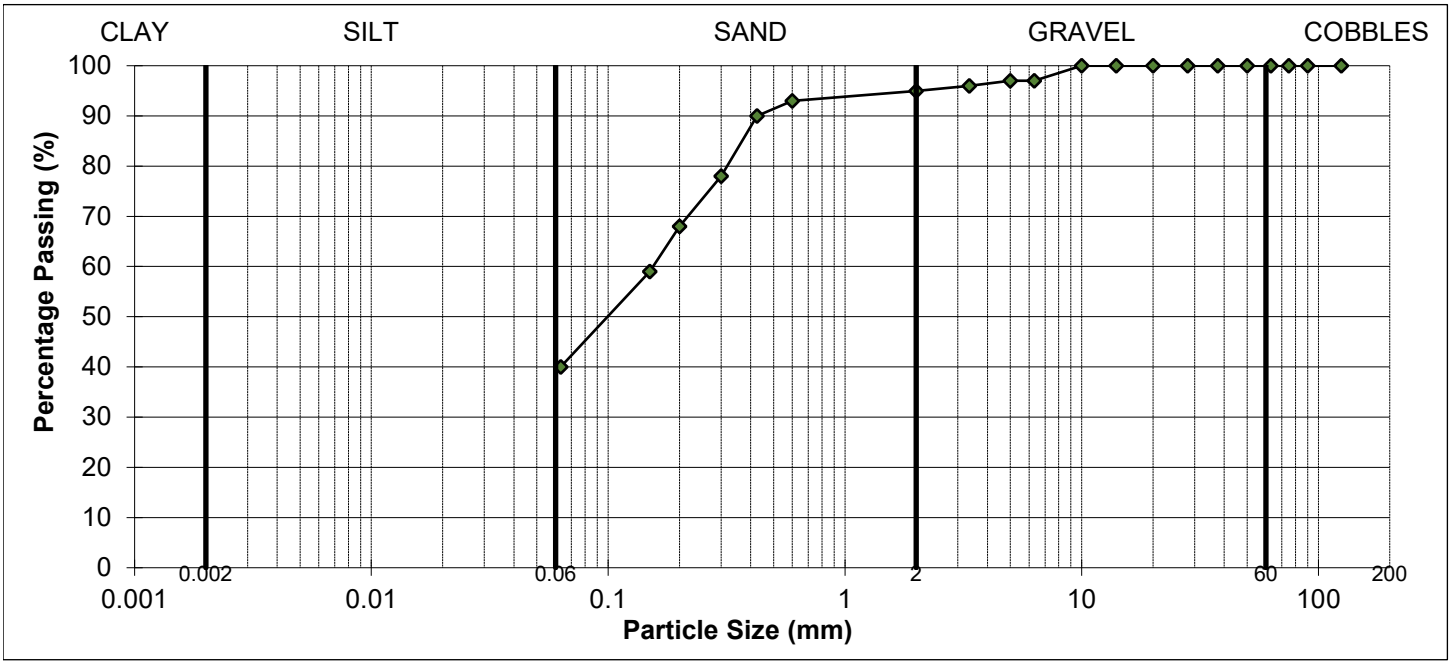
PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 26 1050, White Moss Road
JOB NUMBER	MRN 26004/57

SAMPLE LABEL	WS101 1.5-2.0m	DATE SAMPLED	14-May-26
LAB SAMPLE No	6116601	DATE RECEIVED	27-May-26
DATE TESTED	12-Jun-26	SAMPLED BY	Client

MATERIAL	Brown very silty slightly gravelly SAND		
ADVISED SOURCE	Site Investigation Sample	AS RECEIVED WATER CONTENT (%)	16.9

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	6 1050, White Moss (%)	Specification (%)
125	100		6.3	97	
90	100		5	97	
75	100		3.35	96	
63	100		2	95	
50	100		0.6	93	
37.5	100		0.425	90	
28	100		0.3	78	
20	100		0.2	68	
14	100		0.15	59	
10	100		0.063	40	



SOIL FRACTIONS			
COBBLES	0	SAND	55%
GRAVEL	5%	SILT / CLAY	40%

REMARKS

SIGNED [redacted]

Name O.P. Davies BA (Hons) (Director) DATE 25-Jun-26

MURRAY RIX

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DUKINFIELD, CHESHIRE SK16 4QX
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UKAS TESTING 1580

TEST CERTIFICATE

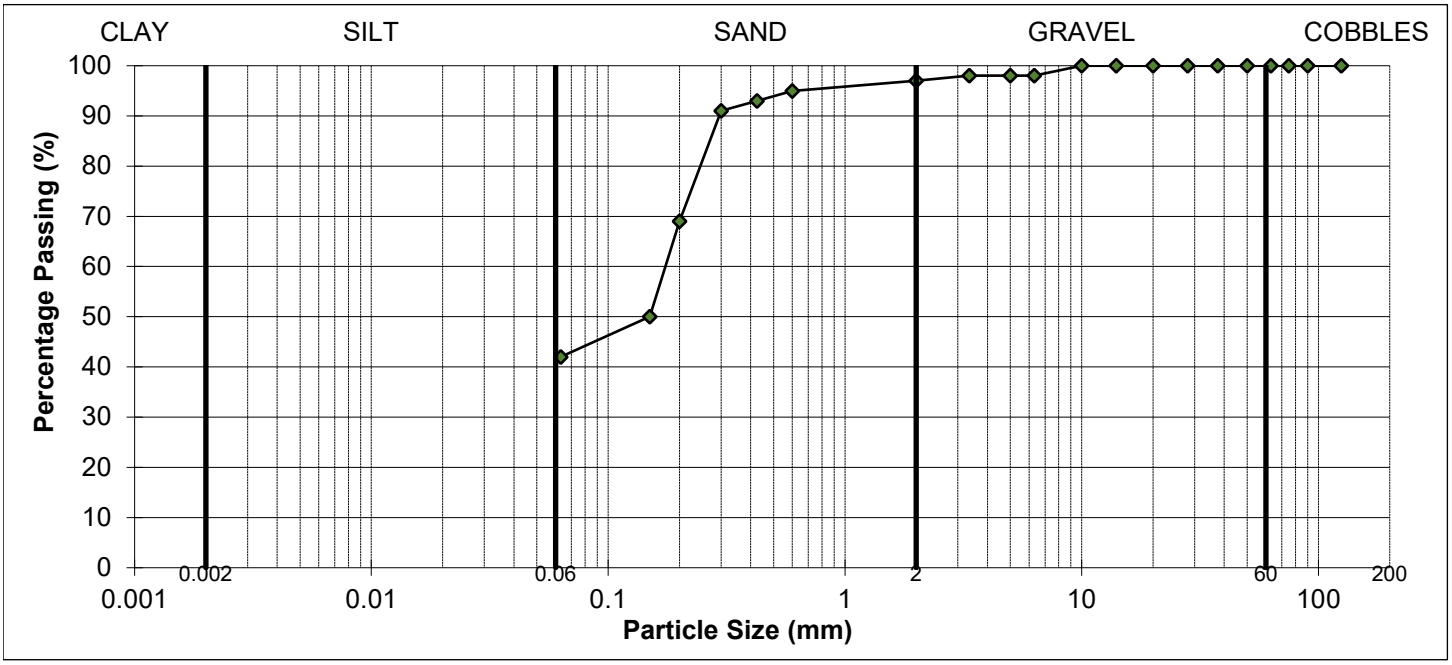
PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 26 1050, White Moss Road
JOB NUMBER	MRN 26004/57

SAMPLE LABEL	WS103 1.0-2.0m	DATE SAMPLED	14-May-26
LAB SAMPLE No	6116603	DATE RECEIVED	27-May-26
DATE TESTED	12-Jun-26	SAMPLED BY	Client

MATERIAL	Bronw silty slightly sandy CLAY		
ADVISED SOURCE	Site Investigation Sample	AS RECEIVED WATER CONTENT (%)	18.2

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	6 1050, White Moss (%)	Specification (%)
125	100		6.3	98	
90	100		5	98	
75	100		3.35	98	
63	100		2	97	
50	100		0.6	95	
37.5	100		0.425	93	
28	100		0.3	91	
20	100		0.2	69	
14	100		0.15	50	
10	100		0.063	42	



SOIL FRACTIONS			
COBBLES	0	SAND	55%
GRAVEL	3%	SILT / CLAY	42%

REMARKS

SIGNED [redacted]

Name O.P. Davies BA (Hons) (Director) DATE 25-Jun-26

MURRAY RIX

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TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

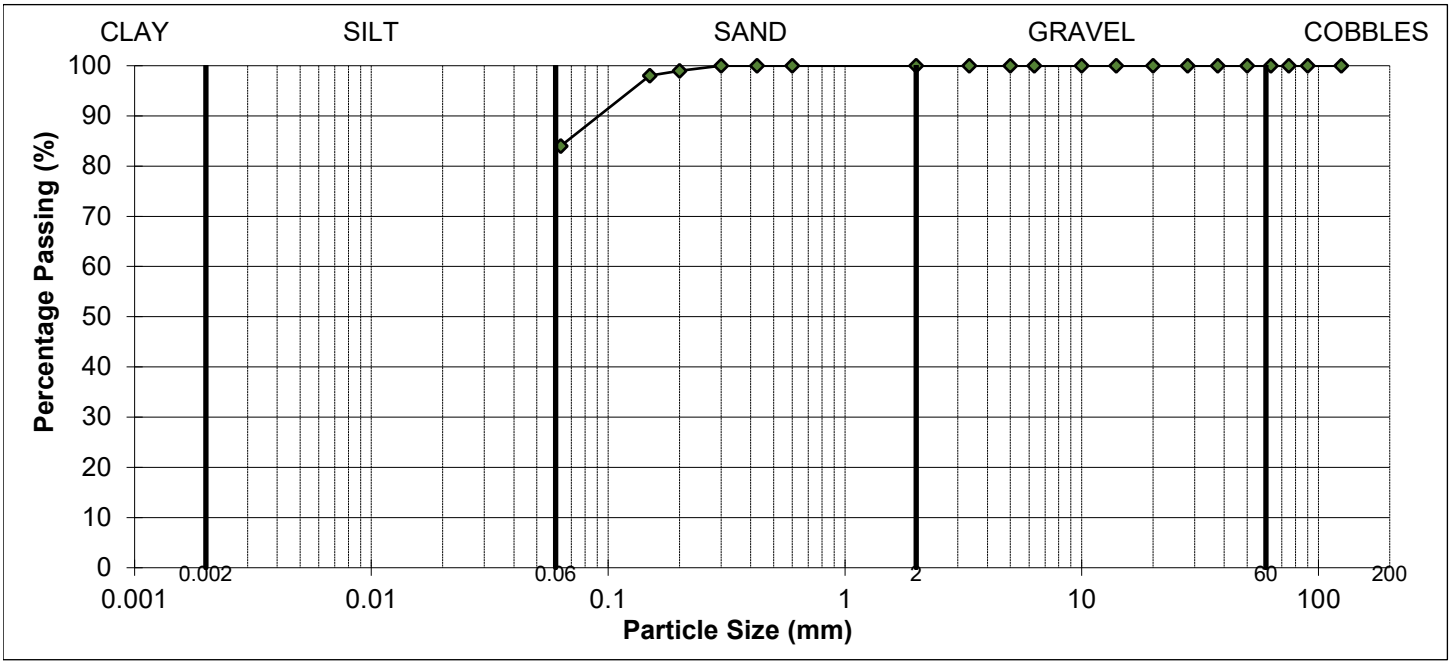
PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 26 1050, White Moss Road
JOB NUMBER	MRN 26004/57

SAMPLE LABEL	WS107 0.5-1.5m	DATE SAMPLED	14-May-26
LAB SAMPLE No	6116605	DATE RECEIVED	27-May-26
DATE TESTED	12-Jun-26	SAMPLED BY	Client

MATERIAL	Brown slightly sandy SILT		
ADVISED SOURCE	Site Investigation Sample	AS RECEIVED WATER CONTENT (%)	18.2

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	6 1050, White Moss (%)	Specification (%)
125	100		6.3	100	
90	100		5	100	
75	100		3.35	100	
63	100		2	100	
50	100		0.6	100	
37.5	100		0.425	100	
28	100		0.3	100	
20	100		0.2	99	
14	100		0.15	98	
10	100		0.063	84	



SOIL FRACTIONS			
COBBLES	0	SAND	16%
GRAVEL		SILT / CLAY	84%

REMARKS

SIGNED [redacted]

Name O.P. Davies BA (Hons) (Director) DATE 25-Jun-26

MURRAY RIX

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TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

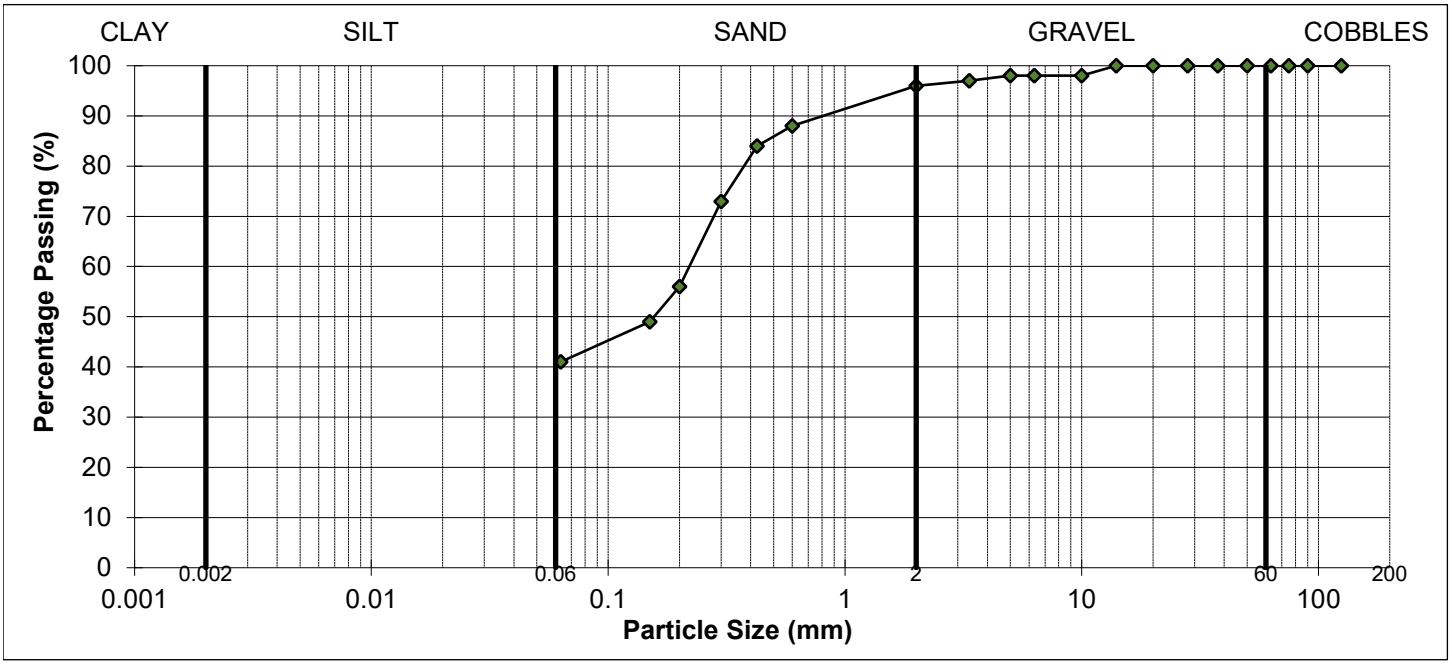
PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 26 1050, White Moss Road
JOB NUMBER	MRN 26004/57

SAMPLE LABEL	WS108 0.5-1.0m	DATE SAMPLED	14-May-26
LAB SAMPLE No	6116606	DATE RECEIVED	27-May-26
DATE TESTED	12-Jun-26	SAMPLED BY	Client

MATERIAL	Brown very silty slightly gravelly SAND		
ADVISED SOURCE	Site Investigation Sample	AS RECEIVED WATER CONTENT (%)	26.5

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	6 1050, White Moss (%)	Specification (%)
125	100		6.3	98	
90	100		5	98	
75	100		3.35	97	
63	100		2	96	
50	100		0.6	88	
37.5	100		0.425	84	
28	100		0.3	73	
20	100		0.2	56	
14	100		0.15	49	
10	98		0.063	41	



SOIL FRACTIONS			
COBBLES	0	SAND	55%
GRAVEL	4%	SILT / CLAY	41%

REMARKS

SIGNED [redacted]

Name O.P. Davies BA (Hons) (Director) DATE 25-Jun-26

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
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TEL 0161 475 0870

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

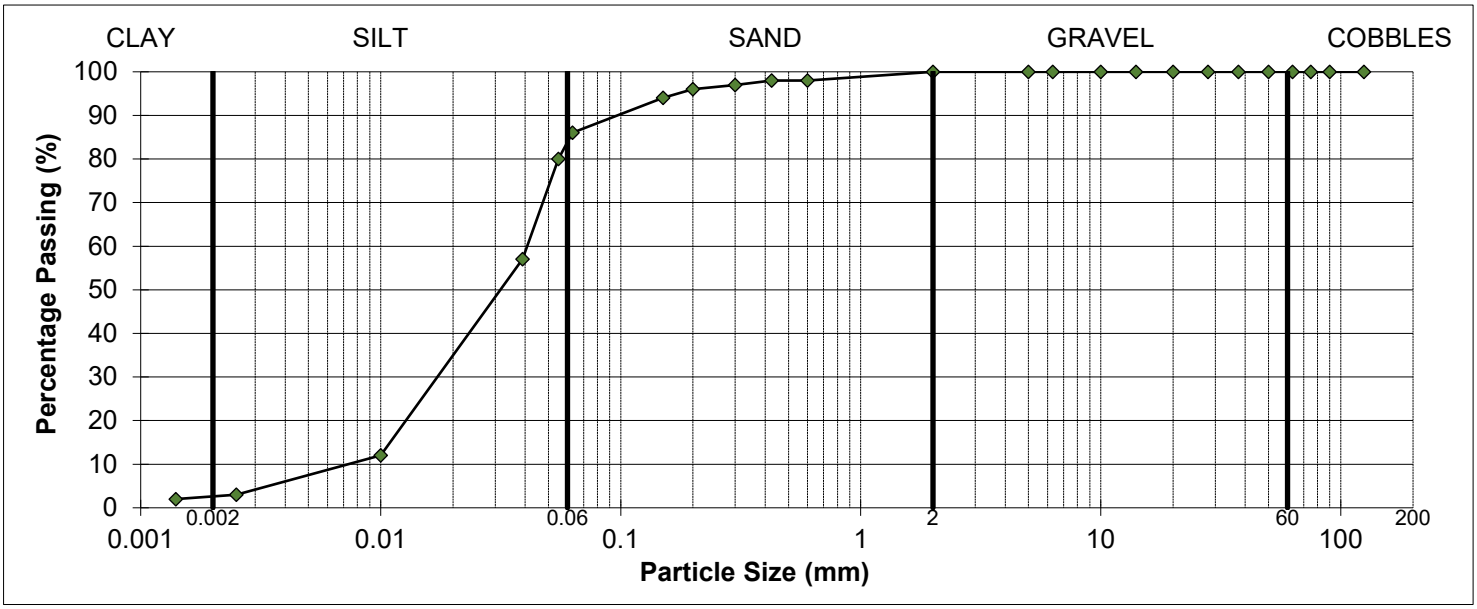
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 26 1050, White Moss Road
JOB NUMBER	MRN 26004/57

SAMPLE LABEL	WS102 2.0-2.45m	DATE SAMPLED	14-May-26
LAB SAMPLE No	6116602	DATE RECEIVED	27-May-26
DATE TESTED	12-Jun-26	SAMPLED BY	Client

MATERIAL	Bronw clayey slightly sandy SILT		
ADVISED SOURCE	Site Investigation Sample	AS RECEIVED WATER CONTENT (%)	22.6

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing 26 1050, White Moss	Specification (%)
125	100		2	100	
90	100		0.6	98	
75	100		0.425	98	
63	100		0.3	97	
50	100		0.2	96	
37.5	100		0.15	94	
28	100		0.063	86	
20	100		0.055	80	
14	100		0.039	57	
10	100		0.01	12	
6.3	100		0.0025	3	
5	100		0.0014	2	



SOIL FRACTIONS			
GRAVEL	0%	SILT	83%
SAND	14%	CLAY	3%

REMARKS

SIGNED [redacted]

NAME O.P. Davies BA (Hons) (Director) DATE 25-Jun-26

M U R R A Y R I X

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

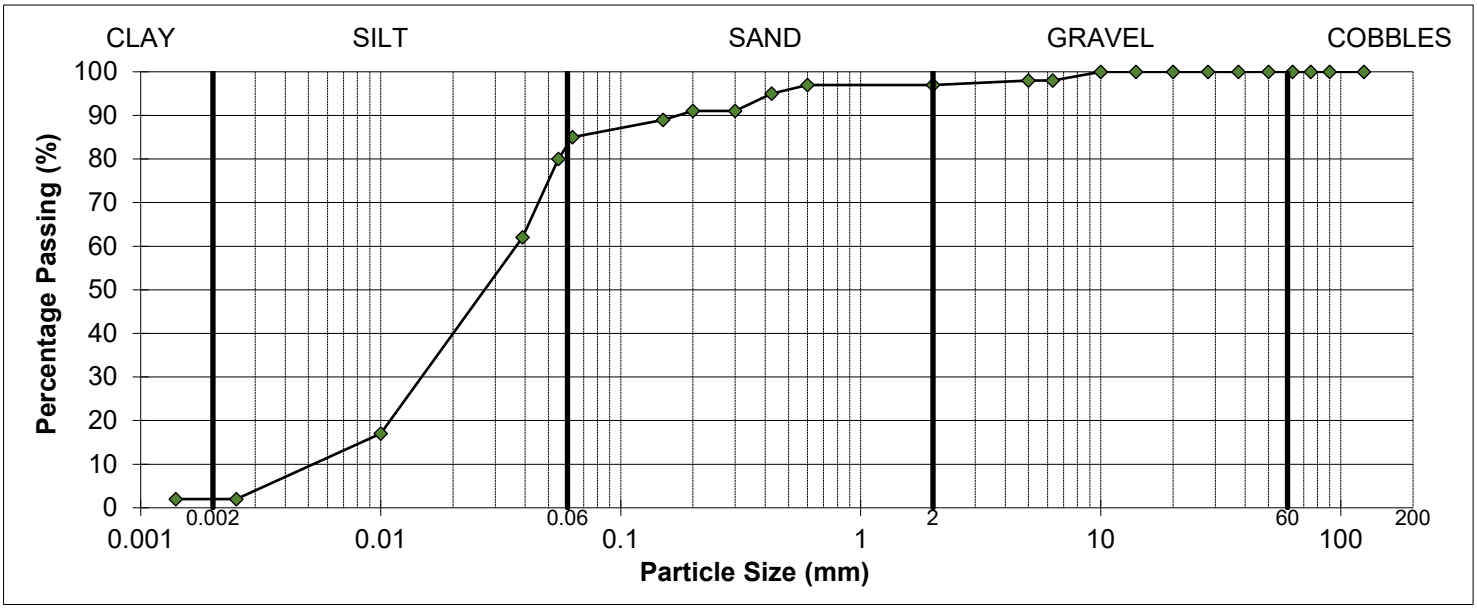
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 26 1050, White Moss Road
JOB NUMBER	MRN 26004/57

SAMPLE LABEL	WS105 1.0-2.0m	DATE SAMPLED	14-May-26
LAB SAMPLE No	6116604	DATE RECEIVED	27-May-26
DATE TESTED	12-Jun-26	SAMPLED BY	Client

MATERIAL	Bronw clayey slightly sandy slightly gravelly SILT		
ADVISED SOURCE	Site Investigation Sample	AS RECEIVED WATER CONTENT (%)	25.8

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing 26 1050, White Moss	Specification (%)
125	100		2	97	
90	100		0.6	97	
75	100		0.425	95	
63	100		0.3	91	
50	100		0.2	91	
37.5	100		0.15	89	
28	100		0.063	85	
20	100		0.055	80	
14	100		0.039	62	
10	100		0.01	17	
6.3	98		0.0025	2	
5	98		0.0014	2	



SOIL FRACTIONS			
GRAVEL	3%	SILT	83%
SAND	12%	CLAY	2%

REMARKS

SIGNED [redacted]

NAME O.P. Davies BA (Hons) (Director) DATE 25-Jun-26

Appendix E – Gas Monitoring Results

LK CONSULT

LK CONSULT LTD

GAS MONITORING RECORD

Site Details		Monitoring Visit Conditions		Visit No.
Site Name	White Moss Road, Blackley	**Recent Weather**	Overcast	1
Job Number	LKC261050	**Ground Conditions**	Damp	of
Engineer	AP	**Approx. Air temperature (°C)**	17	6
Date	01/07/2026	**Atmospheric Pressure (Prev. 24 hrs)**	Steady	

	BH Ref.	WS101	WS103	WS105	WS107												
Site Monitoring	Time	NR	NR	NR	NR												
	Barometric Pressure (mb)	1015	1015	1015	1015												
	Relative Pressure (mb)	-7.51	-5.49	-6.51	-3.29												
Gas and Groundwater Monitoring Data	Internal Flow[3] (l/hr)	0	0	0	0												
	Peak Flow (l/hr)	0	0	0	0												
	Steady CH_4 (%v/v)	9.6	0	0	0												
	Peak CH_4 (%v/v)	9.8	0	0	0												
	% LEL[2]	0	0	0	0												
	Steady CO_2 (%v/v)	10.8	2	1	7.8												
	Peak CO_2 (%v/v)	10.8	2	1	7.8												
	Steady O2 (%v/v)	0.3	19.5	19.3	9.7												
	Min O_2 (%v/v)	0.3	19.5	19.3	9.7												
	Balance (%)	79.3	78.5	79.7	82.5												
	Steady CO (ppm)	3	0	2	1												
	Peak CO (ppm)	7	0	7	6												
	Steady H_2S (ppm)	0	0	0	0												
	Peak H_2S (ppm)	0	0	0	0												
	Steady PID (ppm)	NR	NR	NR	NR												
	Max PID (ppm)	NR	NR	NR	NR												
	Standing Water Level (mbgl)	Dry	Dry	Dry	Dry												
	Installation Base Depth (mbgl)	4.86	4.88	4.76	4.87												
	Response Zone/Strata	1-4m	1-4m	1-4m	1-4m												
	Comments																

Equipment	
Gas Machine	Gas Analyser GA5000
	G507783
Dipmeter	HydroTechnik
	HT-04
PID	-
	-

ABBREVIATIONS			
ND	Not detected	**ppm**	Parts per million
NR	Not recorded	**mb**	Millibars
UR	Unable to record	**l/hr**	Litres per hour
OS	Off recordable scale	**mbgl**	Metres below ground level
N/A	Not applicable	**LEL**	Lower explosive limit in air

NOTES

All monitoring is carried out in line with LK Consult Ltd procedures, with reference to CIRIA C665.

[1]Equipment is serviced and checked as recommended by the manufacturer. Refer to calibration records and service certificates.

[2]CH4 is explosive between the range of 5-15%v/v. 100% lower explosive limit is equal to 5%v/v CH4.

[3]Flow readings are based on steady 1 minute value where flow is detected (equipment range of +/- 12 ltr/hr).

Appendix F – Generic Assessment Criteria Values

Generic Assessment Criteria Values

	Contaminant	SOM	Res +	Res -	Allot.	Comm.	^{POS}resi	^{POS}park	Source
Metals	Inorganic Arsenic	N/A	37	40	49	640	79	168	DEFRA C4SL
	Beryllium	N/A	1.7	1.7	35	12	2.2	63	LQM S4UL
	Boron	N/A	290	11,000	45	240,000	21,000	46,000	LQM S4UL
	Cadmium	N/A	26	149	4.9	410	220	880	DEFRA C4SL
	Chromium (III)	N/A	910	910	18,000	8,600	1,500	33,000	LQM S4UL
	Chromium (VI)	N/A	21.0	21.0	170.0	49	23.0	250	DEFRA C4SL
	Copper	N/A	2,400	7,100	520	68,000	12,000	44,000	LQM S4UL
	Lead	N/A	200	310	80	2,330	630	1,300	DEFRA C4SL
	Elemental Mercury	N/A	1.2	1.2	21	58 (25.8) ^{vap}	16	30 (25.8) ^{vap}	LQM S4UL
	Inorganic Mercury	N/A	40	56	19	1,100	120	240	LQM S4UL
	Methylmercury	N/A	11	15	6.0	320	40	68	LQM S4UL
	Nickel	N/A	130	180	53	980	230	800	LQM S4UL
	Selenium	N/A	250	430	88	12,000	1,100	1,800	LQM S4UL
	Vanadium	N/A	410	1,200	91	9,000	2,000	5,000	LQM S4UL
	Zinc	N/A	3,700	40,000	620	730,000	81,000	170,000	LQM S4UL
Polycyclic Aromatic Hydrocarbons (PAHs)	Acenaphthene	1%	210	3,000 (57.1) ^{sol}	34	84,000 (57.0) ^{sol}	15,000	29,000	LQM S4UL
		2.5%	510	4,700 (141) ^{sol}	85	97,000 (141) ^{sol}	15,000	30,000	LQM S4UL
		6%	1,100	6,000 (336) ^{sol}	200	100,000	15,000	30,000	LQM S4UL
	Acenaphthylene	1%	170	2,900 (86.1) ^{sol}	28	83,000 (86.1) ^{sol}	15,000	29,000	LQM S4UL
		2.5%	420	4,600 (212) ^{sol}	69	97,000 (212) ^{sol}	15,000	30,000	LQM S4UL
		6%	920	6,000 (506) ^{sol}	160	100,000	15,000	30,000	LQM S4UL
	Anthracene	1%	2,400	31,000 (1.17) ^{vap}	380	520,000	74,000	150,000	LQM S4UL
		2.5%	5,400	35,000	950	540,000	74,000	150,000	LQM S4UL
		6%	11,000	37,000	2,200	540,000	74,000	150,000	LQM S4UL
	Benz(a)anthracene	1%	7.2	11	2.9	170	29	49	LQM S4UL
		2.5%	11	14	6.5	170	29	56	LQM S4UL
		6%	13	15	13	180	29	62	LQM S4UL
	Benzo(a)pyrene (only)	1%	5.0	5.3	5.70	77	10.0	21	DEFRA C4SL
		2.5%	5.0	5.3	5.70	77	10.0	21	DEFRA C4SL
		6%	5.0	5.3	5.70	77	10.0	21	DEFRA C4SL
	Benzo(a)pyrene (surrogate marker Coal Tar)	1%	0.8	1.2	0.32	15	2.2	4	LQM S4UL
		2.5%	1.0	1.2	0.67	15	2.2	5	LQM S4UL
		6%	1.1	1.2	1.20	15	2.2	5	LQM S4UL
	Benzo(b)fluoranthene	1%	2.6	3.9	0.99	44	7.1	13	LQM S4UL
		2.5%	3.3	4.0	2.1	44	7.2	15	LQM S4UL
		6%	3.7	4.0	3.9	45	7.2	16	LQM S4UL
	Benzo(ghi)perylene	1%	320	360	290	3,900	640	1,400	LQM S4UL
		2.5%	340	360	470	4,000	640	1,500	LQM S4UL
		6%	350	360	640	4,000	640	1,600	LQM S4UL
	Benzo(k)fluoranthene	1%	77	110	37	1,200	190	370	LQM S4UL
		2.5%	93	110	75	1,200	190	410	LQM S4UL
		6%	100	110	130	1,200	190	440	LQM S4UL
	Chrysene	1%	15	30	4.1	350	57	93	LQM S4UL
		2.5%	22	31	9.4	350	57	110	LQM S4UL
		6%	27	32	19	350	57	120	LQM S4UL
	Dibenzo(ah)anthracene	1%	0.24	0.31	0.14	3.5	0.57	1.1	LQM S4UL
		2.5%	0.28	0.32	0.27	3.6	0.58	1.3	LQM S4UL
		6%	0.3	0.32	0.43	3.6	0.58	1.4	LQM S4UL
	Fluoranthene	1%	280	1,500	52	23,000	3,100	6,300	LQM S4UL
		2.5%	560	1,600	130	23,000	3,100	6,300	LQM S4UL
		6%	890	1,600	290	23,000	3,100	6,400	LQM S4UL
	Fluorene	1%	170	2,800 (36.0) ^{sol}	27	63,000 (30.9) ^{sol}	9,900	20,000	LQM S4UL
		2.5%	400	3,800 (76.5) ^{sol}	67	68,000	9,900	20,000	LQM S4UL
		6%	860	4,500 (183) ^{sol}	160	71,000	9,900	20,000	LQM S4UL
	Indeno(123-cd)pyrene	1%	27	45	9.5	500	82	150	LQM S4UL
		2.5%	36	46	21	510	82	170	LQM S4UL
		6%	41	46	39	510	82	180	LQM S4UL
	Naphthalene	1%	15	15	65	1600 f	11000 f	800 f	C4SL
		2.5%	36	36	130	3700 f	15000 f	1200 f	C4SL
		6%	85	85	200	8400 f	17000 f	1900 f	C4SL
	Phenanthrene	1%	95	1,300 (36.0) ^{sol}	15	22,000	3,100	6,200	LQM S4UL
		2.5%	220	1,500	38	22,000	3,100	6,200	LQM S4UL
		6%	440	1,500	90	22,000	3,100	6,300	LQM S4UL
	Pyrene	1%	620	3,700	110	54,000	7,400	15,000	LQM S4UL
		2.5%	1,200	3,800	270	54,000	7,400	15,000	LQM S4UL
		6%	2,000	3,800	620	54,000	7,400	15,000	LQM S4UL
	Coal Tar (B(a)P as surrogate marker)	1%	0.79	1.2	0.32	15	2.2	4.4	LQM S4UL
		2.5%	0.98	1.2	0.67	15	2.2	4.7	LQM S4UL
		6%	1.1	1.2	1.2	15	2.2	4.8	LQM S4UL

Generic Assessment Criteria Values

	Contaminant	SOM	Res +	Res -	Allot.	Comm.	^{POS}resi	^{POS}park	Source
BTEX Compounds	Benzene	1%	0.087	0.38	0.017	27	72	90	LQM S4UL
		2.5%	0.17	0.70	0.034	47	72	100	LQM S4UL
		6%	0.37	1.4	0.075	90	73	110	LQM S4UL
		6%	0.87	3.3	0.180	98	140	230	C4SL
	Toluene	1%	130	880 (869) [vap]	22	56,000 (869) [vap]	56,000	87,000 (869) [vap]	LQM S4UL
		2.5%	290	1,900	51	110,000 (1,920) [vap]	56,000	95,000 (1,920) [vap]	LQM S4UL
		6%	660	3,900	120	180,000 (4,360) [vap]	56,000	100,000 (4,360)	LQM S4UL
	Ethylbenzene	1%	47	83	16	5,700 (518) [vap]	24,000	17,000 (518) [vap]	LQM S4UL
		2.5%	110	190	39	13,000 (1,220) [vap]	24,000	22,000 (1,220) [vap]	LQM S4UL
		6%	260	440	91	27,000 (2,840) [vap]	25,000	27,000 (2,840) [vap]	LQM S4UL
	o-xylene	1%	60	88	28	6,600 (478) [sol]	41,000	17,000 (478) [sol]	LQM S4UL
		2.5%	140	210	67	15,000 (1,120) [sol]	42,000	24,000 (1,120) [sol]	LQM S4UL
		6%	330	480	160	33,000 (2,620) [sol]	43,000	33,000 (2,620) [sol]	LQM S4UL
	m-xylene	1%	59	82	31	6,200 (625) [vap]	41,000	17,000 (625) [vap]	LQM S4UL
		2.5%	140	190	74	14,000 (1,470) [vap]	42,000	24,000 (1,470) [vap]	LQM S4UL
		6%	320	450	170	31,000 (3,460) [vap]	43,000	32,000 (3,460) [vap]	LQM S4UL
	p-xylene	1%	56	79	29	5,900 (576) [sol]	41,000	17,000 (576) [sol]	LQM S4UL
		2.5%	130	180	69	14,000 (1,350) [sol]	42,000	23,000 (1,350) [sol]	LQM S4UL
		6%	310	430	160	30,000 (3,170) [sol]	43,000	31,000 (3,170) [sol]	LQM S4UL
Petroleum Hydrocarbons	**Aliphatic**								
	EC 5-6	1%	42	42	730	3,200 (304) [sol]	570,000(304)[sol]	95,000 (304) [sol]	LQM S4UL
	EC>6-8	1%	100	100	2,300	7,800 (144) [sol]	600,000	150,000 (144) [sol]	LQM S4UL
	EC>8-10	1%	27	27	320	2,000 (78) [sol]	13,000	14,000 (78) [vap]	LQM S4UL
	EC>10-12	1%	130 (48) [vap]	130 (48) [vap]	2,200	9,700 (48) [sol]	13,000	21,000 (48) [vap]	LQM S4UL
	EC>12-16	1%	1,100 (24) [sol]	1,100 (24) [sol]	11,000	59,000 (24) [sol]	13,000	25,000 (24) [sol]	LQM S4UL
	EC>16-35	1%	65,000 (8.48)	65,000 (8.48) [f,sol]	260,000 [f]	160,000 [f]	250,000 [f]	450,000 [f]	LQM S4UL
	EC>35-44	1%	65,000 (8.48)	65,000 (8.48) [f,sol]	260,000 [f]	160,000 [f]	250,000 [f]	450,000 [f]	LQM S4UL
	Aliphatic								
	EC 5-6	2.5%	78	78	1,700	5,900 (558) [sol]	590,000	130,000 (558) [sol]	LQM S4UL
	EC>6-8	2.5%	230	230	5,600	17,000 (322) [sol]	610,000	220,000 (322) [sol]	LQM S4UL
	EC>8-10	2.5%	65	65	770	4,800 (190) [vap]	13,000	18,000 (190) [vap]	LQM S4UL
	EC>10-12	2.5%	330 (118) [vap]	330 (118) [vap]	4,400	23,000 (118) [vap]	13,000	23,000 (118) [vap]	LQM S4UL
	EC>12-16	2.5%	2,400 (59) [sol]	2,400 (59) [sol]	13,000	82,000 (59) [sol]	13,000	25,000 (59) [sol]	LQM S4UL
	EC>16-35	2.5%	92,000 (21)	92,000 (21) [f,sol]	270,000 [f]	1,700,000 [f]	250,000 [f]	480,000 [f]	LQM S4UL
	EC>35-44	2.5%	92,000 (21)	92,000 (21) [f,sol]	270,000 [f]	1,700,000 [f]	250,000 [f]	480,000 [f]	LQM S4UL
	Aliphatic								
	EC 5-6	6%	160	160	3,900	12,000 (1,150) [sol]	600,000	180,000 (1,150)	LQM S4UL
	EC>6-8	6%	530	530	13,000	40,000 (736) [sol]	620,000	320,000 (736) [sol]	LQM S4UL
	EC>8-10	6%	150	150	1,700	11,000 (451) [vap]	13,000	21,000 (451) [vap]	LQM S4UL
	EC>10-12	6%	760 (283) [vap]	760 (283) [vap]	7,300	47,000 (283) [vap]	13,000	24,000 (283) [vap]	LQM S4UL
	EC>12-16	6%	4,300 (142) [sol]	4,400 (142) [sol]	13,000	90,000 (142) [sol]	13,000	26,000 (142) [sol]	LQM S4UL
	EC>16-35	6%	110,000 [f]	110,000 [f]	270,000 [f]	1,800,000 [f]	250,000 [f]	490,000 [f]	LQM S4UL
	EC>35-44	6%	110,000 [f]	110,000 [f]	270,000 [f]	1,800,000 [f]	250,000 [f]	490,000 [f]	LQM S4UL
	Aromatic								
	EC5-7(benzene as non-	1%	70	370	13	26,000 (1,220) [sol]	56,000	76,000 (1,220) [sol]	LQM S4UL
	EC>7-8(toluene)	1%	130	860	22	56,000 (869) [vap]	56,000	87,000 (869) [vap]	LQM S4UL
	EC>8-10	1%	34	47	8.6	3,500 (613) [vap]	5,000	7,200 (613) [vap]	LQM S4UL
	EC>10-12	1%	74	250	13	16,000 (364) [sol]	5,000	9,200 (364) [sol]	LQM S4UL
	EC>12-16	1%	140	1,800	23	36,000 (169) [sol]	5,100	10,000	LQM S4UL
	EC>16-21	1%	260 [f]	1,900 [f]	46 [f]	28,000 [f]	3,800 [f]	7,600 [f]	LQM S4UL
	EC>21-35	1%	1,100 [f]	1,900 [f]	370 [f]	28,000 [f]	3,800 [f]	7,800 [f]	LQM S4UL
	EC>35-44	1%	1,100 [f]	1,900 [f]	370 [f]	28,000 [f]	3,800 [f]	7,800 [f]	LQM S4UL
	Aromatic								
	EC5-7(benzene as non-	2.5%	140	690	27	46,000 (2,260) [sol]	56,000	84,000 (2,260) [sol]	LQM S4UL
	EC>7-8(toluene)	2.5%	290	1,800	51	110,000 (1,920) [sol]	56,000	95,000 (1,920) [sol]	LQM S4UL
	EC>8-10	2.5%	83	110	21	8,100 (1,500) [vap]	5,000	8,500 (1,500) [vap]	LQM S4UL
	EC>10-12	2.5%	180	590	31	28,000 (899) [sol]	5,000	9,700 (899) [sol]	LQM S4UL
	EC>12-16	2.5%	330	2,300 (419) [sol]	57	37,000	5,100	10,000	LQM S4UL
	EC>16-21	2.5%	540 [f]	1,900 [f]	110 [f]	28,000 [f]	3,800 [f]	7,700 [f]	LQM S4UL
	EC>21-35	2.5%	1,500 [f]	1,900 [f]	820 [f]	28,000 [f]	3,800 [f]	7,800 [f]	LQM S4UL
	EC>35-44	2.5%	1,500 [f]	1,900 [f]	820 [f]	28,000 [f]	3,800 [f]	7,800 [f]	LQM S4UL
	Aromatic								
	EC5-7(benzene as non-	6%	300	1,400	57	86,000 (4,710) [sol]	56,000	92,000 (4,710) [sol]	LQM S4UL
	EC>7-8(toluene)	6%	660	3,900	120	180,000 (4,360)[vap]	56,000	100,000 (4,360)	LQM S4UL
	EC>8-10	6%	190	270	51	17,000 (3,580) [vap]	5,000	9,300 (3,580) [vap]	LQM S4UL
	EC>10-12	6%	380	1,200	4	34,000 (2,150) [sol]	5,000	10,000	LQM S4UL
	EC>12-16	6%	660	2,500	130	38,000	5,100	10,000	LQM S4UL
	EC>16-21	6%	930 [f]	1,900 [f]	260 [f]	28,000 [f]	3,800 [f]	7,800 [f]	LQM S4UL
	EC>21-35	6%	1,700 [f]	1,900 [f]	1,600 [f]	28,000 [f]	3,800 [f]	7,900 [f]	LQM S4UL
	EC>35-44	6%	1,700 [f]	1,900 [f]	1,600 [f]	28,000 [f]	3,800 [f]	7,900 [f]	LQM S4UL
	Aliphatic +Aromatic >EC44	1%	1,600 [f]	1,900 [f]	1,200 [f]	28,000 [f]	3,800 [f]	7,800 [f]	LQM S4UL
		2.5%	1,800 [f]	1,900 [f]	2,100 [f]	28,000 [f]	3,800 [f]	7,800 [f]	LQM S4UL
		6%	1,900 [f]	1,900 [f]	3,000 [f]	28,000 [f]	3,800 [f]	7,900 [f]	LQM S4UL

Generic Assessment Criteria Values

	Contaminant	SOM	Res +	Res -	Allot.	Comm.	^{POS}resi	^{POS}park	Source
Chloalkanes and Alkenes & Explosives	1,2 Dichloroethane (DCA)	1%	0.11	0.16	0.05	12.0	300	300	DEFRA C4SL
		2.5%	0.18	0.24	0.10	17.0	310	330	DEFRA C4SL
		6%	0.31	0.41	0.19	29.0	310	330	DEFRA C4SL
	1,1,1 Trichloroethane (TCA)	1%	8.8	9.0	48	660	140,000	57,000 (1,425) ^{vap}	LQM S4UL
		2.5%	18	18	110	1,300	140,000	76,000 (2,915) ^{vap}	LQM S4UL
		6%	39	40	240	3,000	140,000	100,000 (6,392)	LQM S4UL
	1,1,2,2-Tetrachloroethanes (PCA)	1%	1.6	3.9	0.41	270	1,400	1,800	LQM S4UL
		2.5%	3.4	8.0	0.89	550	1,400	2,100	LQM S4UL
		6%	7.5	17	2.0	1,100	1,400	2,300	LQM S4UL
	1,1,1,2-Tetrachloroethanes (PCA)	1%	1.2	1.5	0.79	110	1,400	1,500	LQM S4UL
		2.5%	2.8	3.5	1.9	250	1,400	1,800	LQM S4UL
		6%	6.4	8.2	4.4	560	1,400	2,100	LQM S4UL
	Tetrachloroethene (PCE)	1%	0.31	0.32	2.00	24	3,200	1400	DEFRA C4SL
		2.5%	0.70	0.71	4.8	55	3,300	1900	DEFRA C4SL
		6%	1.60	1.60	11.0	130	3,400	2,500	DEFRA C4SL
	Tetrachloromethane (carbon tetrachloride)	1%	0.03	0.03	0.45	2.9	890	190	LQM S4UL
		2.5%	0.06	0.06	1.0	6.3	920	270	LQM S4UL
		6%	0.13	0.13	2.4	14	950	400	LQM S4UL
	Trichloroethene (TCE)	1%	0.009	0.010	0.032	0.7	76.0	41.0	DEFRA C4SL
		2.5%	0.020	0.020	0.072	1.5	78.0	51.0	DEFRA C4SL
		6%	0.043	0.045	0.160	3.4	79.0	69.0	DEFRA C4SL
	cis 1,2-dichloroethene	1%	0.46	0.50	0.890	38	3,800	2,000	DEFRA C4SL
		2.5%	0.78	0.84	1.70	64	3,800	2,400	DEFRA C4SL
		6%	1.50	1.60	3.60	120	3,900	3,100	DEFRA C4SL
	Trichloromethane (chloroform)	1%	0.91	1.2	0.42	99	2,500	2,600	LQM S4UL
		2.5%	1.7	2.1	0.83	170	2,500	2,800	LQM S4UL
		6%	3.4	4.2	1.7	350	2,500	3,100	LQM S4UL
	Trans-1,2 Dichloroethene	1%	0.9	0.9	3.7	69	13,000	5,600	DEFRA C4SL
		2.5%	1.6	1.7	7.5	120	13,000	7,000	DEFRA C4SL
		6%	3.3	3.4	16.0	260	13,000	9,100	DEFRA C4SL
	Chloroethene (vinyl chloride)	1%	0.006	0.015	0.0017	1.1E+00	7.8	18.0	DEFRA C4SL
		2.5%	0.010	0.019	0.0031	1.4E+00	7.8	19.0	DEFRA C4SL
		6%	0.017	0.029	0.0058	2.20	7.8	19.0	DEFRA C4SL
	2,4,6-Trinitritoluene (TNT)	1%	1.6	65	0.24	1,000	130	260	LQM S4UL
		2.5%	3.7	66	0.58	1,000	130	270	LQM S4UL
		6%	8.1	66	1.4	1,000	130	270	LQM S4UL
	RDX	1%	120	13,000	17	210,000	26,000	49,000 (18.7) ^{sol}	LQM S4UL
		2.5%	250	13,000	38	210,000	26,000	51,000	LQM S4UL
		6%	540	13,000	85	210,000	27,000	53,000	LQM S4UL
	HMX	1%	5.7	6,700	0.86	110,000	13,000	23,000 (0.35) ^{vap}	LQM S4UL
		2.5%	13	6,700	1.9	110,000	13,000	23,000 (0.39) ^{vap}	LQM S4UL
		6%	26	6,700	3.9	110,000	13,000	24,000 (0.48) ^{vap}	LQM S4UL
Pesticides	Aldrin	1%	5.7	7.3	3.2	170	18	30	LQM S4UL
		2.5%	6.6	7.4	6.1	170	18	31	LQM S4UL
		6%	7.1	7.5	9.8	170	18	31	LQM S4UL
	Dieldrin	1%	0.97	7.0	0.17	170	18	30	LQM S4UL
		2.5%	2.0	7.3	0.41	170	18	30	LQM S4UL
		6%	3.5	7.4	0.96	170	18	31	LQM S4UL
	Atrazine	1%	3.3	610	0.5	9,300	1,200	2,300	LQM S4UL
		2.5%	7.8	620	1.2	9,400	1,200	2,400	LQM S4UL
		6%	17.4	620	2.7	9,400	1,200	2,400	LQM S4UL
	Dichlorvos	1%	3.2E-02	6.4	4.9E-03	140	16	26	LQM S4UL
		2.5%	6.6E-02	6.5	1.0E-02	140	16	26	LQM S4UL
		6%	0.14	6.6	2.2E-02	140	16	27	LQM S4UL
	Endosulfanns (2 isomers)	1%	7.4	160 (3.0E-03) ^{vap}	1.2	5,600 (3.0E-03) ^{vap}	1,200	2,300	LQM S4UL
		2.5%	18	280 (7.0E-03) ^{vap}	2.9	7,400 (7.0E-03) ^{vap}	1,200	2,400	LQM S4UL
		6%	41	410 (1.6E-02) ^{vap}	6.8	8,400 (1.6E-02) ^{vap}	1,200	2,500	LQM S4UL
	Hexachlorocyclohexane (3 isomers), inc Lindane	1%	8.5E-02	3.7	1.3E-02	65	8.1	15	LQM S4UL
		2.5%	0.2	3.8	3.2E-02	65	8.1	15	LQM S4UL
		6%	0.46	3.8	7.7E-02	65	8.1	16	LQM S4UL
Chlorobenzenes	Chlorobenzene	1%	0.46	0.46	5.9	56	11,000	1,300 (675) ^{sol}	LQM S4UL
		2.5%	1.0	1.0	14	130	13,000	2,000 (1,520) ^{sol}	LQM S4UL
		6%	2.4	2.4	32	290	14,000	2,900	LQM S4UL
	Dichlorobenzenes (3 isomers)	1%	23	24	94	2,000 (571) ^{sol}	90,000	24,000 (571) ^{sol}	LQM S4UL
		2.5%	55	57	230	4,800 (1,370) ^{sol}	95,000	36,000 (1,370) ^{sol}	LQM S4UL
		6%	130	130	540	11,000 (3,240) ^{sol}	98,000	51,000 (3,270) ^{sol}	LQM S4UL
	Trichlorobenzenes (3 isomers)	1%	2.6	2.6	55	220	15,000	1,700 (318) ^{vap}	LQM S4UL
		2.5%	6.4	6.4	140	530	17,000	2,600 (786) ^{vap}	LQM S4UL
		6%	15	15	320	1,300	19,000	4,000 (1,880) ^{vap}	LQM S4UL
	Tetrachlorobenzenes (3 isomers)	1%	0.66	0.75	0.38	49 (39.4) ^{vap}	78	110 (39) ^{vap}	LQM S4UL
		2.5%	1.6	1.9	0.90	120 (98.1) ^{vap}	79	120	LQM S4UL
		6%	3.7	4.3	2.2	240 (235) ^{vap}	79	130	LQM S4UL
	Pentachlorobenzene	1%	5.8	19	1.2	640 (43.0) ^{sol}	100	190	LQM S4UL
		2.5%	12	30	3.1	770 (107) ^{sol}	100	190	LQM S4UL
		6%	22	38	7.0	830	100	190	LQM S4UL
	Hexachlorobenzene	1%	1.8 (0.20) ^{vap}	4.1 (0.20) ^{vap}	0.47	110 (0.20) ^{vap}	16	30	LQM S4UL
		2.5%	3.3 (0.50) ^{vap}	5.7 (0.50) ^{vap}	1.1	120	16	30	LQM S4UL
		6%	4.9	6.7 (1.2) ^{vap}	2.5	120	16	30	LQM S4UL

Generic Assessment Criteria Values

	Contaminant	SOM	Res +	Res -	Allot.	Comm.	^{POS}resi	^{POS}park	Source
Chlorophenol	Chlorophenols (4 congeners)	1%	0.87 [g]	94	0.13 [g]	3,500	620	1,100	LQM S4UL
		2.5%	2.0	150	0.30	4,000	620	1,100	LQM S4UL
		6%	4.5	210	0.70	4,300	620	1,100	LQM S4UL
	Pentachlorophenol	1%	0.22	27 (16.4) [vap]	3.0E-02	400	60	110	LQM S4UL
		2.5%	0.52	29	8.0E-02	400	60	120	LQM S4UL
		6%	1.2	31	0.19	400	60	120	LQM S4UL
Others	Carbon Disulphide	1%	0.14	0.14	4.8	11	11,000	1,300	LQM S4UL
		2.5%	0.29	0.29	10	22	11,000	1,900	LQM S4UL
		6%	0.62	0.62	23	47	11,000	2,700	LQM S4UL
	Hexachlorobutadiene	1%	0.29	0.32	0.25	31	25	48	LQM S4UL
		2.5%	0.7	0.78	0.61	66	25	50	LQM S4UL
		6%	1.6	1.8	1.4	120	25	51	LQM S4UL
	Phenol	1%	120	440 (460)	23	440 [dir] (26,000)	440 [dir] (10,000)	440 [dir] (7,600)	LQM S4UL
		2.5%	200	690	42	690 [dir] (30,000)	690 [dir] (10,000)	690 [dir] (8,300)	LQM S4UL
		6%	380	1,200	83	1,300 [dir] (34,000)	1,300 [dir] (10,000)	1,300 [dir] (9,300)	LQM S4UL

sol/vap = solubility/vapour limit (potentially use if free product identified, although highly conservative)
f=naphthalene is based on comparison of inhalation exposure with TDI(inhal) for localised effect
f = oral, dermal and inhalation exposures compared to oral HCV
dir = S4ULs based on threshold protective of direct skin contact with phenol)brackets long term exposure for illustration purposes)
g = derived based on 2,3,4-tetrachlorophenol

Appendix G – Joint Industry Working Group Assessment (Prior to Remediation)

JIWG

Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Decision Support Tool for Receptor Risk Ranking

Stage 1

Hazard Identification		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Free dispersed fibres/fibre bundles	2
Extent of degradation of ACMs	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Asbestos fibre type	Mainly amphibole and chrysotile mixtures, including trace crocidolite	2
Sub-total		12
Hazard ranking		Medium

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.
It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

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Version 2, February 2017

Stage 2

Emission Factors		Score
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Moderate quantities - 0.05 to <0.1 %wt/wt	3
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Medium	3
Activity type and effect on deterioration of ACMs	Moderate disturbance, slight deterioration expected	3
Best description of primary host material matrix	Fine Silt and/or Clay	1
Sub-total		**10**
Exposure ranking		**Medium**

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Stage 3

Pathway and Receptor Sensitivity		Score	
Receptor category	Residential	No score required	
Age of Receptor	Infant (under 5)	4	
Duration of exposure/site occupancy	>> 10 hours per day (e.g. 24 hour residential exposure)	4	
Receptor ranking		8	High
Combined hazard, exposure and receptor ranking			Medium
Pathway: Distance of Receptor from Source	In or within 10m of area of disturbance	4	
Pathway: Depth to impacted material	Material present near the surface, potential to be disturbed during non-construction/routine use of land	D	
Pathway ranking		4D	Medium
Overall ranking			Medium

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Project Reference	LKC261050

Site Name	White Moss Road
Client	Chapterre

Run by	R. Cummings
Date	8th July 2026
Reviewed by	

Characterisation of scenario being evaluated	Three storey residential apartments with soft landscaping and shared gardens

Interpretation of scenario ranking by DST	Very low risk when incorporating 450mm cover system

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Appendix H – Joint Industry Working Group Assessment (Post Remediation)

JIWG

Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Decision Support Tool for Receptor Risk Ranking

Stage 1

Hazard Identification		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Free dispersed fibres/fibre bundles	2
Extent of degradation of ACMs	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Asbestos fibre type	Mainly amphibole and chrysotile mixtures, including trace crocidolite	2
Sub-total		12
Hazard ranking		Medium

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.
It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

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Stage 2

Emission Factors		Score
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Moderate quantities - 0.05 to <0.1 %wt/wt	3
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Medium	3
Activity type and effect on deterioration of ACMs	Low disturbance, minimal deterioration expected	2
Best description of primary host material matrix	Fine Silt and/or Clay	1
Sub-total		**9**
Exposure ranking		**Low**

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Stage 3

Pathway and Receptor Sensitivity		Score	
Receptor category	Residential	No score required	
Age of Receptor	Infant (under 5)	4	
Duration of exposure/site occupancy	>> 10 hours per day (e.g. 24 hour residential exposure)	4	
Receptor ranking		8	High
Combined hazard, exposure and receptor ranking			Medium
Pathway: Distance of Receptor from Source	In or within 10m of area of disturbance	4	
Pathway: Depth to impacted material	Material buried at depth, unlikely to be disturbed except for deeper construction related excavation	B	
Pathway ranking		4B	Very Low
Overall ranking			Very Low

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Project Reference	LKC261050

Site Name	White Moss Road
Client	Chapterre

Run by	R. Cummings
Date	8th July 2026
Reviewed by	

Characterisation of scenario being evaluated	Theree storey residential apartments with shared gardens and soft landscaping. Model assumes 450mm cover system to be installed.

Interpretation of scenario ranking by DST	Very low risk when incorporating 450mm cover system

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Appendix H – References

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