

PROPOSED RESIDENTIAL DEVELOPMENT AT
LAND AT LINCOLN ROAD AND MAINWAY EAST,
ALKRINGTON, MIDDLETON M24 1RD

PHASE 2 SITE INVESTIGATION REPORT

Client:
TEC Services Ltd.
Unit 6
3a Eagar Street
Manchester
M24 1LR

Consultant:
Build Vision Ltd
Consulting Engineers
Middle Cottage
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HD9 1EF

REVISION SHEET

Revision	Date	Revision
1 st Issue	September 2022	

EXECUTIVE SUMMARY

Development Proposals	Four new residential properties with associated access road, parking, hard paved, garden and soft landscaped areas.
Site Description	Occupied by former Community Centre building, hard and soft landscaped areas comprising of flagged paths, ramps and grass. Overgrown grass area to the south approx. 0.8m higher than the area to the north retained by large sloping flags. Houses adjacent to site.
Site History	<u>On site:</u> fields, watercourse, domestic garages, EI substation. <u>Adj. site:</u> fields, watercourses, domestic garages, houses.
Geology	Devensian Till drift deposits. Lower Coal Measures Formation solid deposits.
Mining	Coal mining risk considered low.
Surface Water	Tributary watercourse 58m north. Possible culverted watercourse to the north of the site.
Ground Water	Drift – Secondary A Aquifer Bedrock – Secondary A Aquifer
Radon	Lower probability radon area (< 1% homes estimated above Action level). No radon protection measures are necessary.
Contamination	Widespread elevated levels of PAHs and slightly elevated TPHs in HD1 in the made ground. No asbestos.
Landfill Gas	In accordance with BS 8485, no credible pathways from potential sources of landfill gases and made ground <3m over clay and sand drift deposits, gas monitoring not required, but as made ground >1m and peat in infilled watercourse, precautionary CS2 and Amber 1 gas protection measures.
Remediation	Contaminated made ground should be removed or capped with hard cover or 600mm capping layers to gardens. Extent of peat in infilled ditch to be determined and removed. CS2, NHBC Amber 1 gas protection measures.
Contamination Liability	The site is unlikely to be classified by the Local Authority as 'Contaminated Land' or designated a 'Special Site' under the Contaminated Land Regulations, provided remediation measures are carried out.
Foundations	Firm to stiff clay and medium dense sand at depths of 0.40m to 2.00m suitable to support foundations, 100kN/m ² .
Flood Risk	The EA flood risk maps indicate the site is in Flood Zone 1. Surface water flood risk very low. High, medium adj. to site.

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1 INTRODUCTION

1.1 Appointment

1.1.1 Build Vision Consulting Engineers were appointed by TEC Services Ltd. to carry out a Phase 2 Site Investigation comprising of trial pits, sampling and testing on the site.

1.1.2 The Build Vision Phase 1 Desk Study Report, reference 1305, dated March 2022 should be referred to for further information.

1.2 Development Proposals

1.2.1 The proposed development comprises the construction of four new residential properties with associated access road, parking, hard paved, garden and soft landscaped areas as shown on the proposed site plan enclosed in Appendix A.

1.3 Site Location

1.3.1 The site is located at the junction of Lincoln Road and Mainway East in Alkington in Middleton as shown on the site plan enclosed in Appendix A.

1.4 Site Description

1.4.1 The site is an irregular shaped parcel of land occupying approximately 0.12 hectares. The site is occupied by the former Brookside Community Centre, a timber clad single storey building with a corrugated roof surrounded by hard and soft landscaped areas comprising of flagged paths, ramps and grass. The overgrown grass area to the south is approx. 0.8m higher than the area to the north where the community centre is located and the land is retained by large sloping flags. There are iron railings to the north and east boundaries, a concrete post and timber panel fence to the south boundary and a timber fence to the west boundary of the site. The site generally slopes to the north as shown on the topographical survey and the aerial and site photo's enclosed in Appendix A.

1.4.2 There is no evidence of any significant contamination on the site.

1.4.3 There did not appear to be any asbestos containing materials present on the site but properties of this age are often constructed from or lined with asbestos containing materials and an asbestos specialist should be consulted to determine if there are any present and for their safe removal if required.

1.4.4 The site is surrounded by houses to the north, east, south and west of the site.

1.5 Potential Sources of Contamination

1.5.1 The desk study indicates that the site was unoccupied and part of a field with a watercourse crossing the northeast corner prior to the community centre and a row of domestic garages occupying the site adjacent to an electricity substation which have since been removed. The site may have been regraded and filled and therefore made ground deposits may be present beneath the site as general fill and demolition fill.

1.5.2 There is no evidence of any significant contamination on the site.

1.5.3 There did not appear to be any asbestos containing materials present on the site, but properties of this age are often constructed from or lined with asbestos containing materials and an asbestos specialist should be consulted to determine if there are any present and for their safe removal if required.

1.5.4 The site was and is surrounded by fields, watercourses and houses and rows of domestic garages to the west and an electricity substation to the south of the site.

1.5.5 Potential contaminants associated with general fill and demolition fill associated with the former garages and electricity substation and infilled watercourse and regrading of the site that may be present beneath the site are asbestos, heavy metals, polyaromatic hydrocarbons (PAHs), Total Petroleum Hydrocarbons (TPHs) and Polychlorinated Biphenyls (PCBs).

1.5.6 The drift deposits are recorded as Devensian Till (boulder clay) and these and the bedrock are designated as medium vulnerability Secondary A Aquifers. There are no ground water abstractions within 250m and the site is not in a source protection zone. The nearest surface water feature is a tributary watercourse to Wince Brook located 58m north of the site. Historical maps show a watercourse crossing the northeast corner of the site and watercourses to the east, west, north and south that may have been culverted.

1.5.7 The risk to receptors from contamination at the site is therefore considered low to medium.

1.6 Potential Sources of Landfill Gas

- 1.6.1 The desk study indicates that the site was unoccupied and part of a field with a watercourse crossing the northeast corner prior to the community centre and a row of domestic garages occupying the site adjacent to an electricity substation which have since been removed. The site may have been regraded and filled and therefore made ground deposits may be present beneath the site as general fill and demolition fill. The general fill and demolition fill associated with these are unlikely to be significant potential sources of landfill gases. The infilled watercourse may contain organic materials/silts/sediments that are potential sources of landfill gases that could migrate beneath the site.
- 1.6.2 BS 8485 Code of Practice for the characterisation and remediation from ground gas in affected developments and CIRIA C665 Assessing Risks posed by hazardous ground gases to buildings have been used to assess the risk from landfill gases and any sources of landfill gases within 250m are considered to have the potential to migrate to a site.
- 1.6.3 There are no BGS, Historical or Registered Landfill Sites, no Waste Management, Treatment or Disposal Sites, no Mineral Sites and no potentially infilled land (non-water) pit quarry etc. recorded within 250m of the site.
- 1.6.4 There are potentially infilled land (water) pond, marsh, river etc. recorded on site, 11m NW, 23m NW, 65mW, 100mN, 191m SW, 201m N, 201m SE, 212m W, 234m NW and 243m SE, within 250m of the site.
- 1.6.5 Historical maps show watercourses crossing the northeast corner of the site and to the north and approx. 50m east, south and west of the site and ponds approx. 100m south, 200m southeast, southwest and west of the site.
- 1.6.6 Infilled land, watercourses and ponds may contain organic materials/silts/sediments that are potential sources of landfill gases that could migrate to the site.
- 1.6.7 Geology maps indicate devensian till (boulder clay) drift deposit are recorded to be present beneath the site. Glaciofluvial Devensian sands and gravels are indicted to the northeast and may also be present beneath the site. The clay is unlikely to be a pathway for migration but the sands and gravels, if present could be a pathway for landfill gases from off site sources within 250m of the site.

- 1.6.8 The site is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action level). No radon protection measures are necessary in the construction of new dwellings or extensions.
- 1.6.9 The site is not within a surface area that could be affected by historic known underground coal mining, historic known shallow underground coal mining or historical unrecorded shallow underground mining, not in a development high risk area and there are no coal outcrops or probable shallow coal mine workings indicated to be present beneath the site.
- 1.6.10 The risk to receptors from potential landfill gases and mine gases at the site is therefore considered low to medium.

1.7 Site Investigation Objectives

- 1.7.1 The site investigation was carried out in accordance with BS10175 Investigation of potentially contaminated sites and BS5930 Code of practice for site investigations and BS1377 Methods of test for soils for civil engineering purposes.
- 1.7.2 The purpose of the site investigation was to investigate the potential environmental and geotechnical hazards on the site in order to:
- § Undertake environmental risk assessments
 - § Assess the ground conditions and provide recommendations for the design of foundations, floor slabs and pavement construction for the proposed development.
- 1.7.3 The site investigation comprised:
- § Trial pits and sampling carried out by Sub Surface Ltd. in August 2022.
 - § Laboratory analysis carried out by ChemTest in August 2022.
- 1.7.4 The site investigation results are presented and assessed in the following sections and appendices of this report.

2 GROUND INVESTIGATION

2.1 Exploratory Holes

2.1.1 Sub Surface carried out 4 no trial pits to depths of 3.20m to 3.60m and 1 no. hand dug trial pit in the former electricity sub-station area to a depth of 0.7m due to the presence of numerous electricity cables in August 2022.

2.1.2 The trial pits were carried out to provide targeted sampling in the areas of the former garages, electricity sub-station and ditch/watercourse and non-targeted sampling density greater than the 20-25m required for a main site investigation on a low to medium risk site in accordance with BS10175 to enable a contamination assessment of the general made ground and an engineering assessment of the site.

2.2 Results

2.2.1 Detailed descriptions of the strata encountered in the trial pits carried out on the site are given on the logs in Appendix B.

2.2.2 The ground investigation generally identified made ground over interbedded layers of firm to stiff sandy silty clay and medium dense sand.

2.3 Made Ground

2.3.1 Made ground was identified to depths of 0.40m to 1.62m and consisted of grass over sand, stone, brick and concrete fill with occasional glass, metal, roots and rootlets in all of the trial pits and this was over black clayey ash and clinker fill over clay, stone and brick fill in TP2 and TP4.

2.3.2 A slight hydrocarbon odour was noted in the black ash and clinker fill identified from a depth of 0.50m to 0.90m in TP2.

2.3.3 No other visible or olfactory evidence of contamination was identified during the site investigation excavations.

2.4 Drift Deposits

- 2.4.1 Interbedded layers of firm to stiff sandy silty clay with some coal and medium dense sand were identified beneath the made ground at depths of 0.40m to 1.62m.
- 2.4.2 Black silty amorphous peat was identified in TP3 from a depth of 1.80m to 2.00m beneath the sand and clay layers. This trial pit was excavated in the location of the potentially infilled watercourse or ditch and the peat could therefore be the base of the former watercourse or ditch which would indicate that the sand and clay above could be made ground. Historical maps indicate that the watercourse or ditch was infilled between 1848 and 1893.
- 2.4.3 Plasticity Index Results for the clay samples tested were 9 to 19% indicating low shrinkability.

2.5 Solid Deposits

- 2.5.1 No solid deposits were identified to the extent of the intrusive investigation at 3.60m.

2.6 Groundwater

- 2.6.1 Groundwater entries were noted in TP1 at 2.60m and TP3 at 2.36m. No groundwater was identified in TP2, TP4 or HD1.

3 ENVIRONMENTAL ASSESSMENT

3.1 Contamination

- 3.1.1 Made ground was identified to depths of 0.40m to 1.62m and consisted of grass over sand, stone, brick and concrete fill with occasional glass, metal, roots and rootlets in all of the trial pits and this was over black clayey ash and clinker fill over clay, stone and brick fill in TP2 and TP4. A slight hydrocarbon odour was noted in the black ash and clinker fill identified from a depth of 0.50m to 0.90m in TP2. No other visible or olfactory evidence of contamination was identified during the site investigation excavations.
- 3.1.2 Soil samples were taken from the trial pits and 6 no. samples of the made ground were tested for a general suite of contaminants, which included an asbestos ID, heavy metals, Poly Aromatic Hydrocarbons (PAHs) and Total Petroleum Hydrocarbons (TPHs), MTBE and BTEX. The sample taken in HD1 in the former electric substation area was also tested for PCBs.

3.2 Contamination Analysis

- 3.2.1 The current legislative framework and guidance on the assessment of contaminated land acknowledges the need for a risk based approach comprising Tier 1 and Tier 2 assessment.
- 3.2.2 Tier 1 assessment is comparison of site contaminant concentrations against soil guideline values (SGV's), derived using the Contaminated Land Exposure Assessment (CLEA) model and Generic Assessment Criteria (GAC's) and Suitable 4 Use Levels (S4UL's) published by Land Quality Management (LQM) Ltd and the Chartered Institute of Environmental Health (CIEH), where available. A qualitative risk assessment using the source-pathway-receptor model is then carried out. Should Tier 1 assessment prove inconclusive then Tier 2 assessment is carried out. Tier 2 assessment is derivation of site-specific risk assessment criteria and site specific remediation based on the application of quantitative risk assessment.
- 3.2.3 The contamination test results have been assessed using 1%, 2.5% and 6% soil organic matter (SOM) residential land use with plant uptake human health and inhalation only pathway Tier 1 assessment levels for soil and drinking water standards (DWS) and environmental quality standards (EQS) Tier 1 assessment levels for water, where assessment levels are available and are enclosed in Appendix C.
- 3.2.4 The results of samples of the made ground tested indicate widespread elevated levels of PAHs above residential assessment levels and slightly elevated TPHs in HD1 above the 1% and 2.5% SOM residential assessment levels but below the 6% SOM residential assessment levels and the inhalation only pathway assessment levels.
- 3.2.5 The TPH C10-21 test results identified in HD1 exceed the speciated aliphatic C10-12 and C12-16 TPH band assessment levels but as the results are C10-21 totals, the speciated results would be unlikely to exceed the assessment levels.
- 3.2.6 The elevated PAHs are consistent with the black ash identified in the made ground and the slightly elevated TPHs identified in HD1 are consistent with the former electricity substation located in this area.
- 3.2.7 No asbestos was identified in the samples tested and there was no visible evidence of asbestos in the made ground on site during the site investigation.

- 3.2.8 The risk to end user and construction workers from direct contact with the general made ground present beneath the site is therefore considered low to medium.
- 3.2.9 Groundwater samples were unable to be obtained for testing from the trial pits during the excavations as insufficient quantities of groundwater were identified to the extent of the investigations.
- 3.2.10 No significant contamination has been identified in the made ground and it is underlain and surrounded predominantly by low permeability clay drift deposits and lower coal measures bedrock classified as Secondary A Aquifers, there are no surface water features adjacent to the site, the site is not located in a source protection zone and there are no ground water abstractions recorded within 500m of the site, therefore the risk to groundwater and surface water receptors is considered low.
- 3.2.11 The sulphate and pH results indicate Aggressive Chemical Environment for Concrete (ACEC) Classification DS-1 AC-1 for all of the samples. The risk to structures is therefore considered low.
- 3.2.12 The levels are likely to exceed the assessment levels for Water Supply Pipes and the risk to services is therefore considered low to medium.
- 3.2.13 Sampling has been carried out in limited locations for this investigation. Contamination may be present on site in between the sampling locations that has not been identified in this investigation.

3.3 Landfill Gas

- 3.3.1 BS 8485 Code of Practice for the characterisation and remediation from ground gas in affected developments and CIRIA C665 Assessing Risks posed by hazardous ground gases to buildings have been used to assess the risk from landfill gases and any sources of landfill gases within 250m are considered to have the potential to migrate to a site.
- 3.3.2 In accordance with BS 8485 and CIRIA C665 an intrusive ground investigation was recommended to assess ground conditions beneath the site and to identify the level of risk associated with the potential sources of landfill gases and potential pathways for migration and to determine if it is necessary to carry out a landfill gas survey consisting of the

installation of gas standpipes and a minimum of 6 no. gas monitoring visits over a 3 month period initially to assess the gas risk.

- 3.3.3 Made ground was identified to depths of 0.40m to 1.62m and consisted of grass over sand, stone, brick and concrete fill with occasional glass, metal, roots and rootlets in all of the trial pits and this was over black clayey ash and clinker fill over clay, stone and brick fill in TP2 and TP4. A slight hydrocarbon odour was noted in the black ash and clinker fill identified from a depth of 0.50m to 0.90m in TP2. No other visible or olfactory evidence of contamination was identified during the site investigation excavations.
- 3.3.4 Black silty amorphous peat was identified in TP3 from a depth of 1.80m to 2.00m beneath the sand and clay layers. This trial pit was excavated in the location of the potentially infilled watercourse or ditch and the peat could therefore be the base of the infilled watercourse or ditch which would indicate that the sand and clay above could be made ground. Historical maps indicate that the watercourse or ditch was infilled between 1848 and 1893.
- 3.3.5 The general fill and demolition fill identified on site are unlikely to be significant potential sources of landfill gases and no elevated PAHS or TPHs vapours have been identified above inhalation pathway assessment levels that could migrate beneath the site.
- 3.3.6 The peat identified in the location of the infilled watercourse is a potential sources of landfill gases that could migrate beneath the site. If this was organic material at the base of the former watercourse or ditch, due to the age, the degradation of any organic material present should be complete and it is unlikely to be 'gassing'.
- 3.3.7 There are no BGS, Historical or Registered Landfill Sites, no Waste Management, Treatment or Disposal Sites, no Mineral Sites and no potentially infilled land (non-water) pit quarry etc. recorded within 250m of the site.
- 3.3.8 There are potentially infilled land (water) pond, marsh, river etc. recorded on site, 11m NW, 23m NW, 65mW, 100mN, 191m SW, 201m N, 201m SE, 212m W, 234m NW and 243m SE, within 250m of the site.
- 3.3.9 Historical maps show watercourses crossing the northeast corner of the site and to the north and approx. 50m east, south and west of the site and ponds approx. 100m south, 200m southeast, southwest and west of the site.

- 3.3.10 Infilled land, watercourses and ponds may contain organic materials/silts/sediments that are potential sources of landfill gases that could migrate to the site.
- 3.3.11 Interbedded layers of firm to stiff sandy silty clay with some coal and medium dense sand were identified beneath the made ground at depths of 0.40m to 1.62m. The predominantly low permeability clay drift deposits are unlikely to be a pathway for migration but the sand could be a pathway for landfill gases from on site and off site sources within 250m of the site.
- 3.3.12 The site is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action level). No radon protection measures are necessary in the construction of new dwellings or extensions.
- 3.3.13 The site is not within a surface area that could be affected by historic known underground coal mining, historic known shallow underground coal mining or historical unrecorded shallow underground mining, not in a development high risk area and there are no coal outcrops or probable shallow coal mine workings indicated to be present beneath the site.
- 3.3.14 The risk to receptors from potential landfill gases and mine gases at the site is therefore considered low to medium.
- 3.3.15 In accordance with BS 8485, as no credible pathways from potential sources of landfill gases have been identified and made ground <3m over natural deposits of clay and sand have been identified, gas monitoring is not considered to be required for such a small development. However as >1m of made ground is present in some areas and peat has been identified in the infilled watercourse that is a potential source of landfill gases, precautionary CS2 and NHBC Amber 1 gas protection measures are recommended, subject to agreement with the local authority.

3.4 Site Investigation Conceptual Model

3.4.1 A conceptual model of the site has been produced identifying the sources, pathways and receptors with respect to the proposed development and the effects on the environment and summarised in the following table:

3.4.2 Conceptual Model – Source-Pathway-Receptor

	Pathway	Receptor	Risk
<u>Contamination</u> Widespread elevated levels of PAHs and slightly elevated TPHs in HD1 identified in the made ground. No asbestos identified.	Direct contact, Ingestion, Inhalation Direct contact, Ingestion, Inhalation Direct contact Direct Contact Migration Migration Migration	Construction Workers End User Structures Services Adjacent Land Users Groundwater Watercourse	Low/Med Low/Med Low Low/Med Low Low Low
<u>Landfill Gases</u> In accordance with BS 8485, no credible pathways from potential sources of landfill gases and made ground <3m over clay and sand drift deposits, gas monitoring not required, but as made ground >1m and peat in infilled watercourse, precautionary CS2 and Amber 1 gas protection measures. <u>Radon <1% of homes</u> No radon measures necessary	Migration-Asphyxiation, Explosion Migration-Asphyxiation, Explosion Migration-Asphyxiation, Explosion Migration-Asphyxiation, Explosion	Construction Workers End User Construction Workers End User	Low/Med Low/Med Low Low

4 SITE REMEDIATION

4.1 General

- 4.1.1 The Site Investigation Conceptual Model indicates that there are Source-Pathway-Receptor pollution linkages present on the site and therefore the following remediation measures will be required to mitigate the risks identified.

4.2 Contamination

- 4.2.1 Made ground was identified to depths of 0.40m to 1.62m and consisted of grass over sand, stone, brick and concrete fill with occasional glass, metal, roots and rootlets in all of the trial pits and this was over black clayey ash and clinker fill over clay, stone and brick fill in TP2 and TP4. A slight hydrocarbon odour was noted in the black ash and clinker fill identified from a depth of 0.50m to 0.90m in TP2. No other visible or olfactory evidence of contamination was identified during the site investigation excavations.
- 4.2.2 The results of samples of the made ground tested indicate widespread elevated levels of PAHs above residential assessment levels and slightly elevated TPHs in HD1 above the 1% and 2.5% SOM residential assessment levels but below the 6% SOM residential assessment levels and the inhalation only pathway assessment levels.
- 4.2.3 The elevated PAHs are consistent with the black ash identified in the made ground and the slightly elevated TPHs identified in HD1 are consistent with the former electricity substation located in this area.
- 4.2.4 No asbestos was identified in the samples tested and there was no visible evidence of asbestos in the made ground on site during the site investigation.
- 4.2.5 The risk to end user and construction workers from direct contact with the general made ground present beneath the site is therefore considered low to medium.
- 4.2.6 Groundwater samples were unable to be obtained for testing from the trial pits during the excavations as insufficient quantities of groundwater were identified to the extent of the investigations.
- 4.2.7 No significant contamination has been identified in the made ground and it is underlain and surrounded predominantly by low permeability clay drift deposits and lower coal measures

bedrock classified as Secondary A Aquifers, there are no surface water features adjacent to the site, the site is not located in a source protection zone and there are no ground water abstractions recorded within 500m of the site, therefore the risk to groundwater and surface water receptors is considered low.

- 4.2.8 The proposed development comprises the construction of new residential properties with associated access road, hard paved, parking, gardens and soft landscaped areas. A site strip and reduced level excavations will be required for the proposed development due to proposed levels. A watching brief should be carried out by the contractor during these and all excavation works carried out during the construction period and should any contamination not identified by the site investigation be encountered during the construction period, in particular any organic or hydrocarbon contamination, the engineer should be notified immediately.
- 4.2.9 No asbestos has been identified and there did not appear to be any asbestos containing materials present on the site but properties of this age are often constructed from or lined with asbestos containing materials and an asbestos specialist should be consulted to determine if there are any present and for their safe removal if required.
- 4.2.10 Remediation measures to prevent contact with the contaminated made ground are required for end user receptors. Beneath the properties, hard paved, parking and access roads, the made ground identified will be capped. The contaminated made ground present in proposed garden areas should either be removed or capped by minimum 600mm capping layers and in proposed soft landscaped areas by minimum 450mm capping layers, comprising minimum 150mm granular capillary break layer or geotextile membrane and the remainder as 'inert' subsoil and topsoil.
- 4.2.11 The intrusive investigation identified 0.4m to 1.62m of made ground beneath and due to the proposed levels, the made ground is unlikely to be removed, but it may be shallower in areas not investigated. If the contaminated made ground is removed, validation of the removal would be required and should comprise of photographic evidence of excavations during and after and provision of waste transfer notes.
- 4.2.12 Delivery tickets and waste transfer notes will be required for all material imported and disposed off site.

- 4.2.13 Validation sampling and testing of any imported material will be required and should comprise 1 sample per 200m³ of greenfield source topsoil or 50m³ of brownfield source topsoil and subsoil with 3 no. samples minimum of any source of material. Samples to be tested for a general soil suite comprising of asbestos, heavy metals, PAHs and TPHs.
- 4.2.14 Where capping layers are provided to garden areas, validation trial pits will be required at a rate of 1 no. per 2 to 3 plots with 3 no. minimum to confirm the depths of the capping layers and to be recorded by an engineer.
- 4.2.15 Construction workers should adopt appropriate health and safety measures on site and undertake soil gas monitoring prior to and during man entry of below ground voids or confined spaces, as detailed in HSE guidance.
- 4.2.16 Dust suppression measures should be adopted during all earthworks.
- 4.2.17 Surface water control measures should be adopted during construction to limit runoff and infiltration through exposed made ground and to limit siltation of the surface drainage.
- 4.2.18 The sulphate and pH results indicate Aggressive Chemical Environment for Concrete (ACEC) Classification DS-1 AC-1 for all of the samples. The risk to structures is therefore considered low. Buried concrete and services should be designed in accordance with the guidance given in BRE Special Digest 1: Concrete in aggressive ground.
- 4.2.19 The levels are likely to exceed the assessment levels for Water Supply Pipes and the risk to services is therefore considered medium. The advice of service providers should be obtained to ensure that appropriate measures are taken to protect services from contamination and aggressive ground conditions.

4.3 Landfill Gas

- 4.3.1 In accordance with BS 8485, as no credible pathways from potential sources of landfill gases have been identified and made ground <3m over natural deposits of clay and sand have been identified, gas monitoring is not considered to be required for such a small development. However as >1m of made ground is present in some areas and peat has been identified in the infilled watercourse that is a potential source of landfill gases, precautionary CS2 and NHBC Amber 1 gas protection measures are recommended, subject to agreement with the local authority.

- 4.3.2 The extent of the peat identified in TP3 in the location of the infilled watercourse or ditch should be determined and removed.
- 4.3.3 Gas protection measures should be provided in accordance with CS2 and NHBC Amber 1 from CIRIA C665 and BS 8485 and for residential, a score of 3.5 is required, this can be achieved by providing beam and block floor slabs with low permeability gas membranes with taped joints and sealed entries using specialist approved gas prevention tape and underfloor ventilated voids. The gas membranes should be methane gas membranes with integrated aluminium core and should be installed with reasonable level of workmanship in line with current good practice.
- 4.3.4 Validation of the installation of the gas protection measures will be required with photographic evidence of the ventilated voids and the gas membranes with gas taped sealed joints/entries.
- 4.3.5 A watching brief should be carried out by the contractor and should any organic or hydrocarbon contamination be identified during excavations, the engineer should be notified immediately.

4.4 Waste Regulations

- 4.4.1 Consultation should be made with the Environment Agency to confirm whether the transfer of materials should be registered as exempt from Waste Management licensing or require licensing.

4.5 Landfill Tax

- 4.5.1 The general made ground identified is likely to be classified as contaminated but prior to off site disposal of material it will be necessary to undertake waste characterisation with current landfill regulations.

4.6 Liability Statement

- 4.6.1 The site is unlikely to be classified by the Local Authority as 'Contaminated Land' or designated a 'Special Site' under the Contaminated Land Regulations, provided remediation measures are carried out.

5 ENGINEERING ASSESSMENT AND RECOMMENDATIONS

5.1 Foundation Design

- 5.1.1 Made ground was identified to depths of 0.40m to 1.62m and consisted of grass over sand, stone, brick and concrete fill with occasional glass, metal, roots and rootlets in all of the trial pits and this was over black clayey ash and clinker fill over clay, stone and brick fill in TP2 and TP4. The made ground is not considered suitable to support strip foundations.
- 5.1.2 Black silty amorphous peat was identified in TP3 from a depth of 1.80m to 2.00m beneath the sand and clay layers. This trial pit was excavated in the location of the potentially infilled watercourse or ditch and the peat could therefore be the base of the former watercourse or ditch which would indicate that the sand and clay above could be made ground. Historical maps indicate that the watercourse or ditch was infilled between 1848 and 1893. These deposits are not considered suitable to support strip foundations and the extent of the peat identified in the location of the infilled watercourse or ditch should be determined and removed.
- 5.1.3 The Interbedded layers of firm to stiff clay and medium dense sand identified beneath the made ground and peat at depths of 0.40m to 2.00m are considered suitable to support foundations and a bearing capacity of 100kN/m² should be used for design purposes.
- 5.1.4 There are trees present on and adjacent to the site and the intrusive investigations has identified clay drift deposits across the site within influencing depth, therefore it may be necessary to carry out a tree survey and the NHBC Guidance For Building Near Trees should be referred to for foundation requirements.
- 5.1.5 The sulphate and pH results indicate Aggressive Chemical Environment for Concrete (ACEC) Classification DS-1 AC-1 for all of the samples. The risk to structures is therefore considered low. Buried concrete and services should be designed in accordance with the guidance given in BRE Special Digest 1: Concrete in aggressive ground.
- 5.1.6 Gas protection measures should be provided in accordance with CS2 and NHBC Amber 1 from CIRIA C665 and BS 8485 and for residential, a score of 3.5 is required, this can be achieved by providing beam and block floor slabs with low permeability gas membranes with taped joints and sealed entries using specialist approved gas prevention tape and

underfloor ventilated voids. The gas membranes should be methane gas membranes with integrated aluminium core and should be installed with reasonable level of workmanship in line with current good practice. Validation of the installation of the gas protection measures will be required with photographic evidence of the ventilated voids and the gas membranes with gas taped sealed joints/entries.

5.2 Ground Floor Slabs

- 5.2.1 The made ground in its current untreated state is not suitable to support ground bearing floor slabs. Ground floor slabs should be suspended concrete slabs, or pre-cast beam and block.

5.3 Retaining Walls

- 5.3.1 New retaining walls may be required at the site but these should be considered during detailed design.

5.4 Pavement Design

- 5.4.1 Pavement design should be based on CBR values of the formation subgrade, which on this site would be the made ground. An indicative CBR design value of 2% is recommended for the made ground for preliminary costing/design purposes.
- 5.4.2 The design values should be confirmed by undertaking in-situ CBR tests on the formation subgrade prior to construction.

5.5 Temporary Works

- 5.5.1 All excavations at the site will require adequate support, or battering back to a safe angle, to ensure their stability.
- 5.5.2 Allowance should be made for appropriate groundwater control measures.

5.6 Mining

- 5.6.1 The coal mining report confirms that the site is not within a surface area that could be affected by historic known underground coal mining, historic known shallow underground coal mining or historical unrecorded shallow underground mining and there are no recorded coal mine entries within 20m of the site.

- 5.6.2 The coal authority interactive map indicates that the site is in a coal mining reporting area but is not in a development high risk area and there are no coal outcrops, probable or past shallow coal mine workings indicated to be present beneath the site. The nearest coal outcrop shown is approx. 300m north outcropping east to west and the dip is shown to the south of the site.
- 5.6.3 Geology Maps indicate that the Blenfire Mine coal seam is conjectured to outcrop approx. 300m north of the site east to west with dip angles of 1 in 4.5 to the south noted in the area indicating that the coal seam could be present at depths of 67 to 77m beneath the drift deposits beneath the site.
- 5.6.4 Coal workings with ten times the thickness of the worked coal seam of rock are considered to have adequate rock cover, if the coal seam had been worked and if collapse did occur it would be unlikely to cause settlement at the surface.
- 5.6.5 This concurs with the coal authority interactive map which indicates that the site is not within a probable shallow coal mining or development high risk area. The risk from mining at the site is therefore considered low..
- 5.7 Flood Risk
- 5.7.1 The Environment Agency flood risk maps for planning indicate that the site is in Flood Zone 1. Flood Zone 1 is classified as having a 'Very Low' risk of flooding with a flood risk of less than 1 in 1000 (0.1%).
- 5.7.2 The EA surface water flood risk maps indicate that the site is in a very low risk of surface water flooding area. There are high risk area to the north on Mainway East and medium and low risk areas to the east on Lincoln Road.
- 5.7.3 Groundwater vulnerability maps indicate limited potential for groundwater flooding to occur on the site.
- 5.7.4 The local authority and/or the Environment Agency should be consulted to determine if a flood risk assessment is required for the site in accordance with flood risk planning policy and guidance.

5.8 Drainage

- 5.8.1 The community centre has drains and sewers and it is assumed that these discharge to the public sewers in Lincoln Road and Mainway East and these should be investigated further and details confirmed on site.
- 5.8.2 The use of sustainable drainage systems (SUDS) such as soakaways, permeable pavements, infiltration basins, ponds and swales should be incorporated where possible into the surface water drainage design to reduce surface water runoff from the development. The clay is unlikely to be suitable for soakaways and the sand is underlain by the clay. Soakaway tests should be carried out in accordance with BRE365 to determine infiltration co-efficients and confirm whether the site is suitable for infiltration methods of SUDS. Should these prove inadequate, permeable pavements and other forms of SUDs should still be considered as attenuation and to slow down flows and flow control and attenuation within the site.

6 FURTHER WORKS

- 6.1.1 The site investigation should be submitted to the local authority for comment/approval.
- 6.1.2 Validation of the remediation measures should be carried out in accordance with the recommendations and submitted to the local authority for approval.

DISCLAIMER

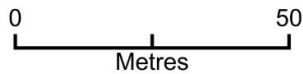
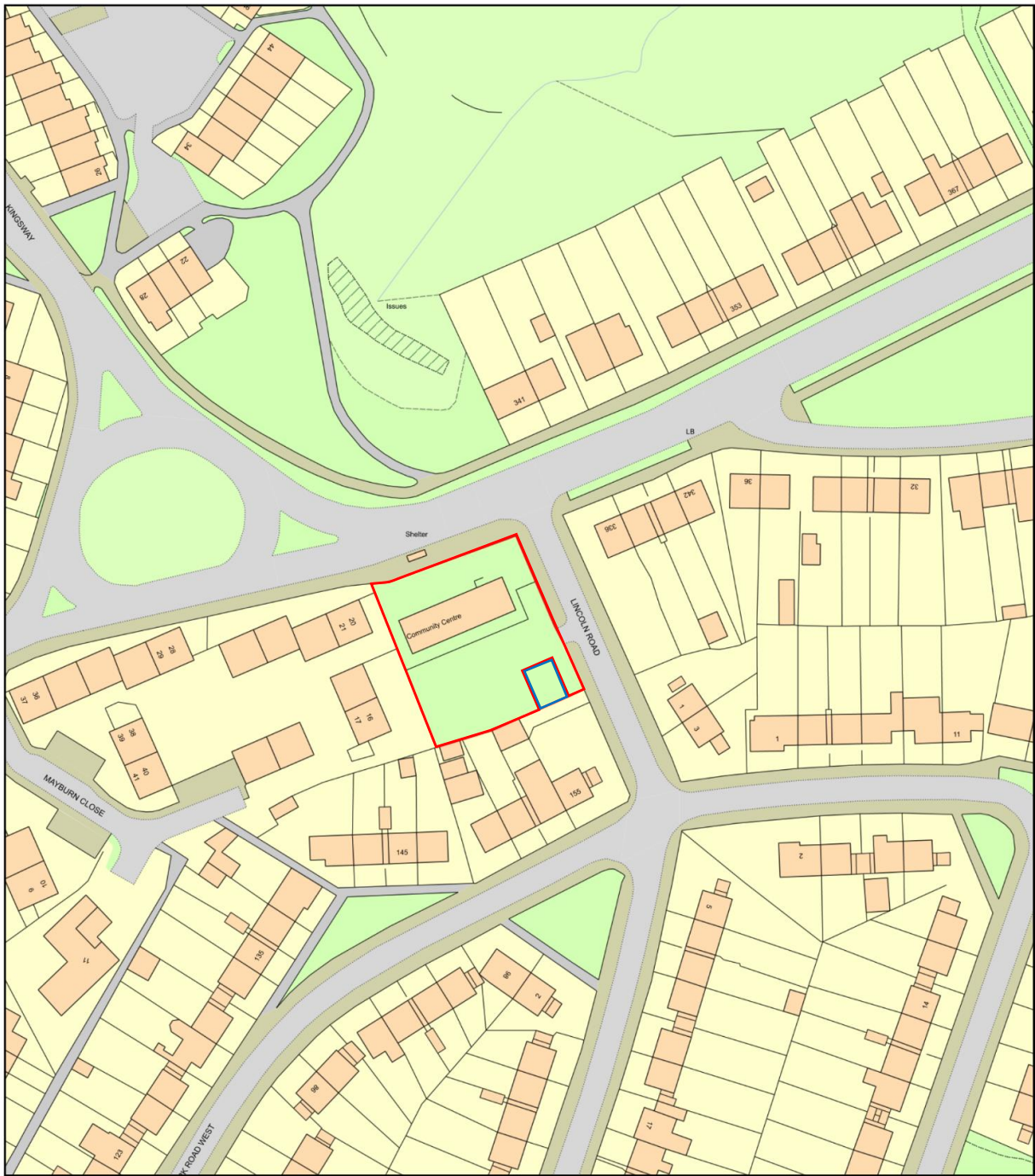
The recommendations made and the opinions expressed in this report are based on the borehole and/or trial pit records, examination of samples and the results of the site and laboratory tests. The report is issued on the condition that Build Vision Consulting Engineers, will in no circumstances be liable for any loss arising directly or indirectly from ground conditions between the boreholes or trial pits which have not been shown by the borehole, trial pits or other tests carried out during the investigation, nor for any loss whatsoever arising directly or indirectly from any opinion given on the possible configuration of strata both between the borehole and/or trial pit positions and/or below the maximum depth of the investigation : such opinions, where given, are for guidance only. This report is confidential, personal to the client, non-assignable and not for the benefit of third parties.

APPENDIX A

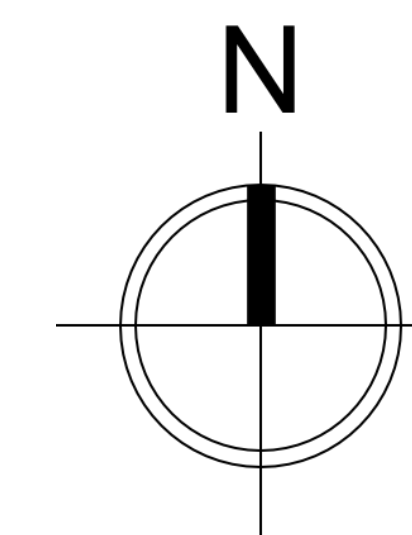
SITE PLANS

- § Site Location Plan
- § Proposed Site Plan
- § Topographical Survey
- § Site photos

Lincoln Court Proposals



Plan Produced for: watergrove CGI
Date Produced: 29 Oct 2021
Plan Reference Number: TQRQM21302155336511
Scale: 1:1250 @ A4



LINCOLN COURT SITE PLAN

CLIENT Mr. T. CONNOR
PROJECT PROPOSED RESIDENTIAL DEVELOPMENT TWO SEMI-DETACHED HOUSES
DRAWING LAND AT LINCOLN ROAD, MIDDLETON M24 1RD
DATE 4.1.2022 SCALE 1:100@A1 DWG. NO: 6383_LC_2

watergrove **CGI**
architectural visuals
07904 971504
3d@watergrove.co.uk
www.watergrove.co.uk







APPENDIX B

GROUND INVESTIGATION INFORMATION

- § Sub Surface Trial Pit Logs, Test Results and Location Plan
- § Sub Surface TP photos



LINCOLN ROAD AND MAINWAY EAST, ALKRINGTON,
MIDDLETON

**Trial Pit
Number**
TP1

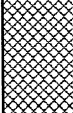
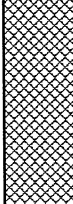
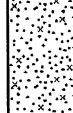
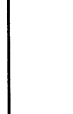
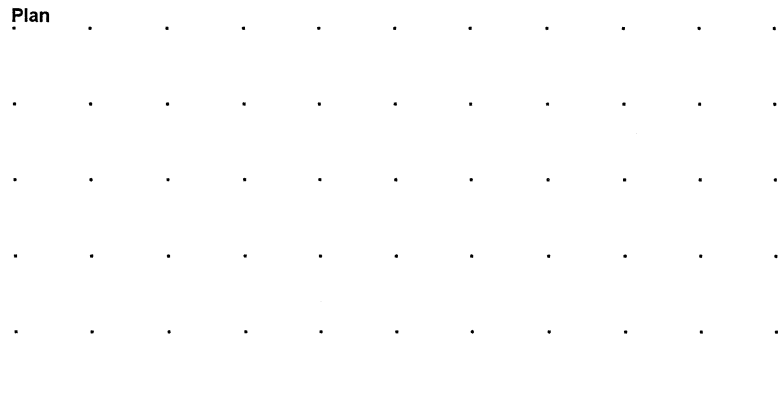
Job
Number
7567

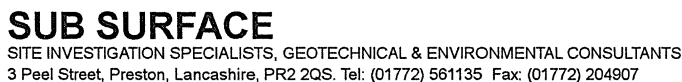
Sheet
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▽

Remarks	
	Pit sides remained vertical and stable.
	Groundwater inflow at 2.60m.
	On completion backfilled with arisings.

Scale (approx)	Logged By	Figure No.
1:25	CB/WP/WW	7567.TP1

 SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907						Site LINCOLN ROAD AND MAINWAY EAST, ALKRINGTON, MIDDLETON		Trial Pit Number TP2	
Excavation Method MECHANICAL EXCAVATOR		Dimensions 0.38m x 1.52m		Ground Level (mOD)		Client ALKEN C/O TECH SERVICES		Job Number 7567	
		Location AS PLAN		Dates 17/08/2022		Engineer BUILD VISION CONSULTING ENGINEERS		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.00-0.10 0.00-0.10 0.00-0.10 0.00-0.10	B D DAV DAV				(0.15) 0.15	Grass over MADE GROUND: dark brown sandy silty gravel sized fragments of medium to coarse stone.			
0.30-0.40 0.30-0.40 0.30-0.40 0.30-0.40	B D DAV DAV				(0.35) 0.50	MADE GROUND: firm orangish brown and occasionally grey mottled slightly gravelly slightly sandy silty clay with occasional roots and rootlets. Gravel sized fragments of fine to coarse stone.			
0.65	DAV				(0.40) 0.90	MADE GROUND: black clayey sand sized ash and fine to coarse gravel sized fragments of fine to medium clinker (slight hydrocarbon odour).			
1.10-1.30 1.10-1.30 1.10-1.30 1.10-1.30	B D DAV DAV		HV at 1.00m c=22kPa		(0.72)	MADE GROUND: dark brown slightly gravelly slightly sandy silty clay with medium brick cobble content. Gravel sized fragments are fine to coarse brick and stone.			
1.60-1.80 1.60-1.80 1.60-1.80 1.60-1.80	B D DAV DAV		HV at 1.65m c=49kPa		1.62	Firm dark brown and occasional grey mottled slightly gravelly slightly sandy silty CLAY. Gravel is subangular to rounded fine to coarse sandstone, siltstone and quartz. ...at 1.65m: medium strength.			
2.10-2.20	D				(1.18)				
2.50	D		HV at 2.50m c=80kPa		2.80	...at 2.50m: high strength. ...at 2.70m: 50mm tree root.			
3.20	D		17/08/2022: DRY		3.20	Greyish brown and occasionally grey mottled silty fine to medium SAND.			
						Complete at 3.20m			
Plan 						Remarks Pit sides remained vertical and stable. No groundwater encountered. On completion backfilled with arisings.			
						Scale (approx)	Logged By	Figure No.	
						1:25	CB/WP/VW	7567.TP2	



Site

LINCOLN ROAD AND MAINWAY EAST, ALKRINGTON,
MIDDLETON

**Trial Pit
Number**
TP3

Excavation Method
MECHANICAL EXCAVATOR

Dimensions
0.41m x 1.28m

Ground Level (mOD)

Client
ALKEN C/O TECH SERVICES

Job
Number
7567

Location
AS PLAN

Dates	17/08/2022
-------	------------

Engineer
BUILD VISION CONSULTING ENGINEERS

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.40-0.50 0.40-0.50 0.40-0.50 0.40-0.50	B D DAV DAV				(0.90)	Grass over MADE GROUND: very gravelly silty fine to coarse sand. Gravel sized fragments are fine to coarse stone, brick, concrete, glass and cobble sized fragments of metal.		
1.10-1.20	B				0.90 (0.80)	Light brown fine to medium SAND.		
1.80-1.90	B		HV at 1.80m c=47kPa		1.70 (0.10) 1.80 (0.20) 2.00	Firm medium strength brown and occasionally grey mottled slightly gravelly silty CLAY. Gravel is subangular to subrounded fine siltstone and sandstone. Black silty amorphous PEAT.	 	
2.10-2.20	B		Water inflow(1) at 2.36m. HV at 2.50m c=73kPa HV at 3.00m c=70kPa 17/08/2022:		(1.20) 3.20	Firm orangish brown and occasional grey mottled slightly sandy silty CLAY with pockets of sand. ...at 2.50m: medium strength. ...at 3.00m: medium strength.		
						Complete at 3.20m		

Plan

Remarks

Pit sides remained vertical and stable.
Groundwater inflow at 2.36m.
On completion backfilled with arisings.

Scale (approx)

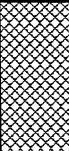
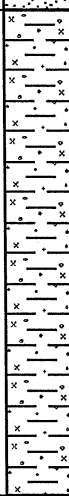
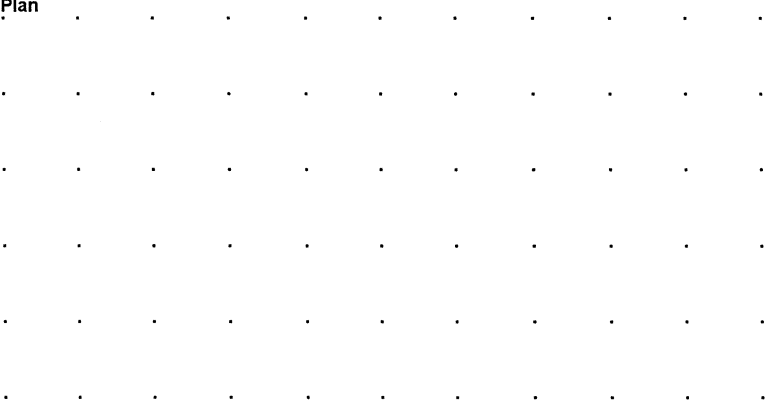
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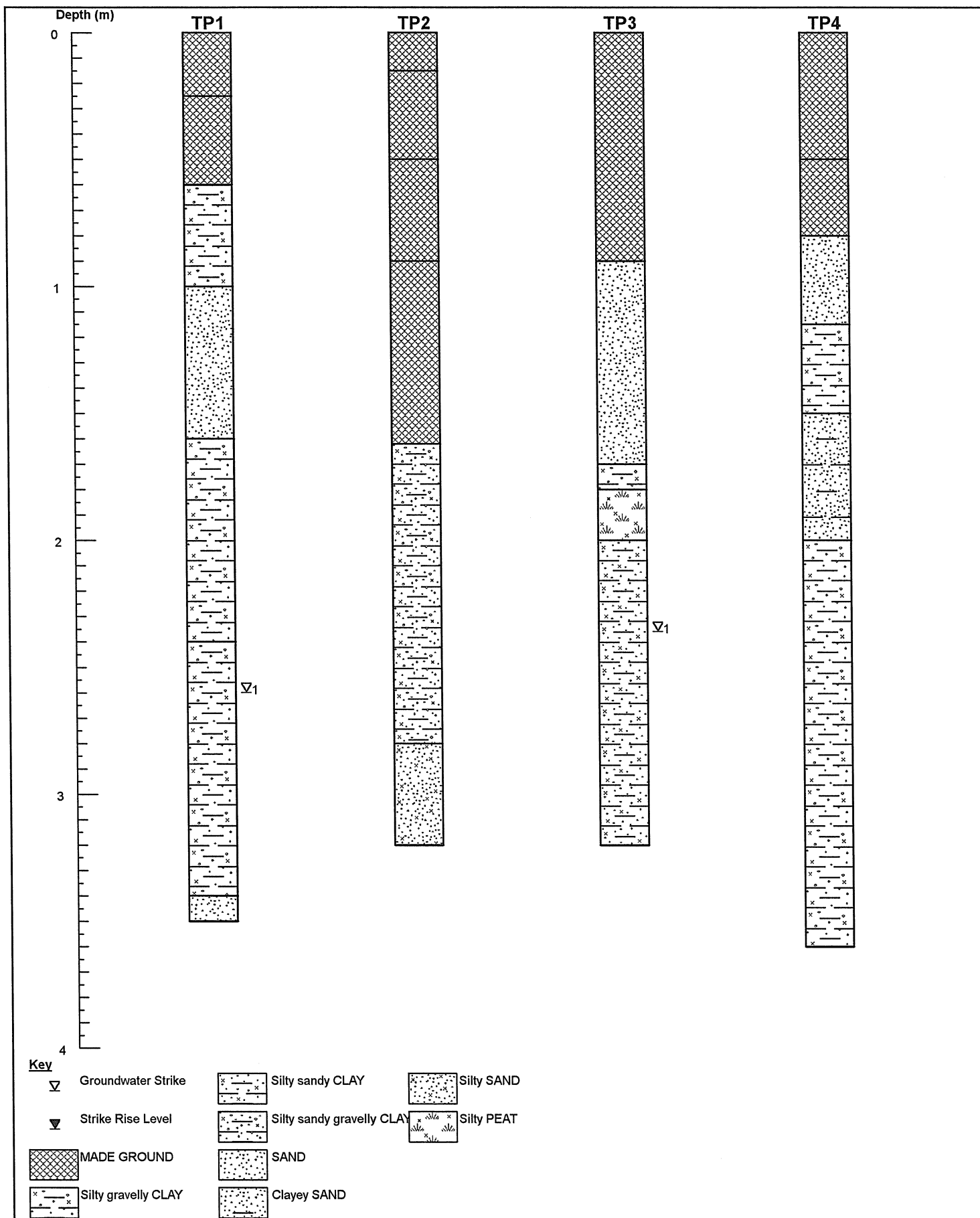
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Figure No.

7567.TP3

 SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907					Site LINCOLN ROAD AND MAINWAY EAST, ALKRINGTON, MIDDLETON		Trial Pit Number TP4		
Excavation Method MECHANICAL EXCAVATOR		Dimensions 1.15m x 0.52m		Ground Level (mOD)		Client ALKEN C/O TECH SERVICES		Job Number 7567	
		Location AS PLAN		Dates 17/08/2022		Engineer BUILD VISION CONSULTING ENGINEERS		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.10-0.30 0.10-0.30 0.10-0.30 0.10-0.30	B D DAV DAV				(0.50)	Grass over MADE GROUND: dark brown very gravelly clayey silty fine to coarse sand with rootlets. Gravel is fine to coarse brick, stone, concrete and glass.			
0.60-0.70 0.60-0.70 0.60-0.70 0.60-0.70 0.90-1.00	B D DAV DAV B				0.50 (0.30) 0.80 (0.35)	MADE GROUND: fine to coarse sand sized fragments of ash and gravel sized fragments of clinker.			
1.20-1.40	B		HV at 1.20m c=45kPa		1.15 (0.35)	Firm brown and occasional grey slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse siltstone and sandstone. ...at 1.20m: medium strength.			
2.00	D				1.50 (0.50)	Brown fine to medium slightly clayey SAND.			
3.50	D				2.00 (1.60)	Firm dark brown and grey slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse siltstone, sandstone and quartz. ...at 2.50m: high strength. ...at 3.00m: high strength.			
			17/08/2022: DRY		3.60	Complete at 3.60m			
Plan 					Remarks Pit sides remained vertical and stable. No groundwater encountered. On completion backfilled with arisings.				
					Scale (approx) 1:25		Logged By CB/WP/VW		
							Figure No. 7567.TP4		



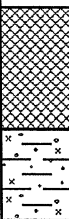
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 SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS
 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907

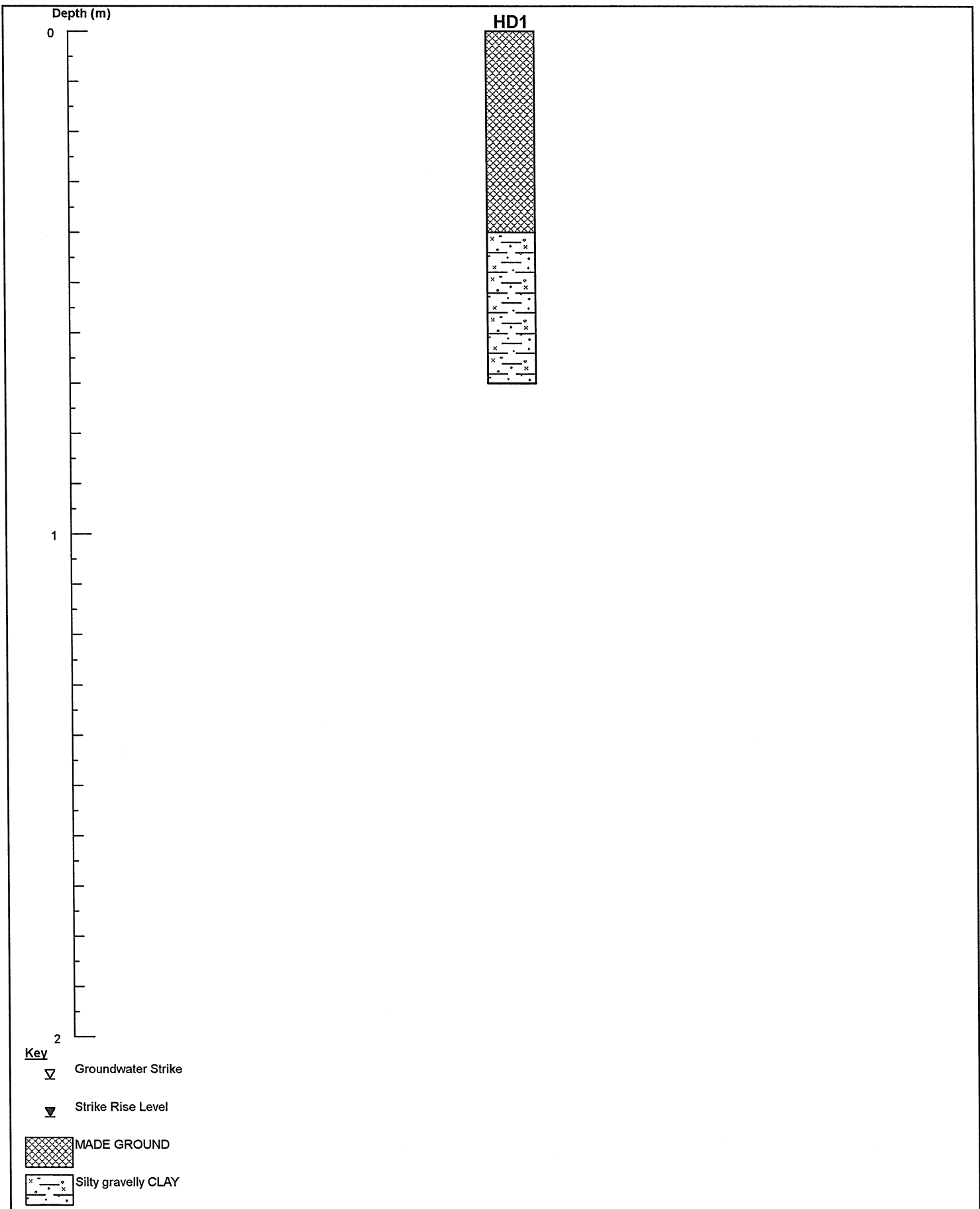
Site
 LINCOLN ROAD AND MAINWAY EAST, ALKRINGTON, MIDDLETON

Client
 ALKEN C/O TECH SERVICES

Nominal Section

Date Drawn 13/09/2022	Date Checked	Sheet 1/1	Job Number 7567
Drawn By	Checked By	Scale 1:20[V]	Figure No. NE4120C.1

 SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907					Site LINCOLN ROAD AND MAINWAY EAST, ALKRINGTON, MIDDLETON		Trial Pit Number HD1		
Excavation Method HAND DUG		Dimensions 0.90m x 0.50m		Ground Level (mOD)		Client ALKEN C/O TECH SERVICES		Job Number 7567	
		Location AS PLAN		Dates 17/08/2022		Engineer BUILD VISION CONSULTING ENGINEERS		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water
0.10-0.30	B				(0.40)	Grass over MADE GROUND: dark brown gravelly silty fine to medium sand. Gravel sized fragments are stone, brick and concrete.			
0.50-0.70	B		17/08/2022: DRY		0.40 (0.30) 0.70	Stiff brown and occasional grey mottled slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to medium sandstone and siltstone.			
						Complete at 0.70m			
Plan 						Remarks Pit sides remained vertical and stable. No groundwater encountered. On completion backfilled with arisings.			
						Scale (approx) 1:25		Logged By CB/WP/VW	
						Figure No. 7567.HD1			



SUB SURFACE

SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS
3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907

Nominal Section				
Site LINCOLN ROAD AND MAINWAY EAST, ALKRINGTON, MIDDLETON	Date Drawn	Date Checked	Sheet	Job Number
	13/09/2022		1/1	7567
Client ALKEN C/O TECH SERVICES	Drawn By	Checked By	Scale	Figure No.
			1:10[V]	NE4120C.1



Site : LINCOLN ROAD AND MAINWAY EAST, ALKRINGTON, MIDDLETON	Job Number 7567
Client : ALKEN C/O TECH SERVICES	Sheet 1 / 1
Engineer : BUILD VISION CONSULTING ENGINEERS	

Borehole/ Trial Pit	Depth (m)	Sample	Natural Moisture Content %	Sample Passing 425µm Sieve		Liquid Limit %	Plastic Limit %	Plasticity Index %	Liquidity Index	Group Symbol	Laboratory Description
				Percentage %	Moisture Content %						
TP2	1.70	D	23	69	33	25	16	9	1.89	CL	Firm dark brown and occasional grey mottled slightly gravelly slightly sandy silty CLAY. Gravel is subangular to rounded fine to coarse sandstone, siltstone and quartz.
TP2	2.10	B	28	96	29	38	24	14	0.36	CI	Firm dark brown and occasional grey mottled slightly gravelly slightly sandy silty CLAY. Gravel is subangular to rounded fine to coarse sandstone, siltstone and quartz.
TP3	1.80	B	26	73	36	40	21	19	0.79	CI	Firm medium strength brown and occasionally grey mottled slightly gravelly silty CLAY. Gravel is subangular to subrounded fine siltstone and sandstone.
TP4	1.20	B	18	96	19	24	15	9	0.44	CL	Firm brown and occasional grey slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse siltstone and sandstone.

Remarks :



Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL

Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.: 22-32144-1

Initial Date of Issue: 01-Sep-2022

Client Sub Surface

Client Address: 3 Peel Street
Preston
Lancashire
PR2 2QS

Contact(s): Simon Gabbatt

Project 7567 Lincoln Road, Alkrington

Quotation No.: **Date Received:** 23-Aug-2022

Order No.: **Date Instructed:** 23-Aug-2022

No. of Samples: 9

Turnaround (Wkdays): 7 **Results Due:** 01-Sep-2022

Date Approved: 01-Sep-2022

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: 7567 Lincoln Road, Alkrington

Client: Sub Surface		Chemtest Job No.:		22-32144	22-32144	22-32144	22-32144	22-32144	22-32144	22-32144	22-32144	22-32144
Quotation No.:		Chemtest Sample ID.:		1492725	1492726	1492727	1492728	1492729	1492730	1492731	1492732	1492732
		Client Sample ID.:		720	727 728 729	740 741 742	90 91 92	748	755 756 757	759	767 768 769	1492732
		Sample Location:		HD1	TP1	TP2	TP2	TP2	TP3	TP3	TP4	TP4
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.10	0.30	0.00	0.65	1.60	0.40	1.80	0.60	0.60
		Bottom Depth (m):		0.30	0.45	0.10		1.80	0.50	1.90	0.70	0.70
		Date Sampled:		18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD								
ACM Type	U	2192		N/A								
Asbestos Identification	U	2192		N/A								
Moisture	N	2030	%	0.020	No Asbestos Detected	14	15	17	14	19	11	11
pH	M	2010		4.0	8.2	7.9	8.0	7.8	7.8	7.8	7.9	7.9
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40		< 0.40		< 0.40		< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010				0.043		< 0.010		
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50		< 0.50		< 0.50		< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	1.6	4.2	1.7		2.6		14	14
Sulphate (Total)	U	2430	%	0.010	0.077	0.048	0.13		0.13		0.067	0.067
Arsenic	M	2455	mg/kg	0.5	11	11	19		6.3		12	12
Cadmium	M	2455	mg/kg	0.10	0.23	0.11	0.24		< 0.10		0.18	0.18
Chromium	M	2455	mg/kg	0.5	17	18	24		10		16	16
Molybdenum	M	2455	mg/kg	0.5	1.4	1.4			0.9		1.9	1.9
Copper	M	2455	mg/kg	0.50	28	35	100		27		35	35
Mercury	M	2455	mg/kg	0.05	0.24	0.06	0.15		0.05		0.11	0.11
Nickel	M	2455	mg/kg	0.50	17	18	25		12		20	20
Lead	M	2455	mg/kg	0.50	63	39	98		25		59	59
Selenium	M	2455	mg/kg	0.25	0.56	0.70	1.0		0.45		0.66	0.66
Zinc	M	2455	mg/kg	0.50	72	51	69		40		70	70
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50		< 0.50		< 0.50	< 0.50
TPH >C6-C10	N	2670	mg/kg	1.0	< 1.0	< 1.0			< 1.0		< 1.0	< 1.0
TPH >C10-C21	N	2670	mg/kg	1.0	60	21			15		< 1.0	< 1.0
TPH >C21-C40	N	2670	mg/kg	1.0	290	100			10		< 1.0	< 1.0
Total TPH >C6-C40	M	2670	mg/kg	10	350	120			25		< 1.0	< 1.0
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0			< 1.0					
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0			< 1.0					
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0			< 1.0					
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0			< 1.0					
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0			< 1.0					
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0			< 1.0					
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0			< 1.0					
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0			< 1.0					
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0			< 5.0					
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0			< 1.0					
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0			< 1.0					
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0			< 1.0					

Results - Soil

Project: 7567 Lincoln Road, Alkrington

Project: 1967 Lincom Road, Huntington																			
Client: Sub Surface		Chemtest Job No.:		22-32144		22-32144		22-32144		22-32144		22-32144		22-32144		22-32144		22-32144	
Quotation No.:		Chemtest Sample ID.:		1492725		1492726		1492727		1492728		1492729		1492730		1492731		1492732	
		Client Sample ID.:		720		727 728 729		740 741 742		90 91 92		748		755 756 757		759		767 768 769	
		Sample Location:		HD1		TP1		TP2		TP2		TP2		TP3		TP3		TP4	
		Sample Type:		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
		Top Depth (m):		0.10		0.30		0.45		0.00		1.60		0.40		1.80		0.60	
		Bottom Depth (m):		0.30		0.45		0.10		0.65		1.80		0.50		1.90		0.70	
		Date Sampled:		18-Aug-2022		18-Aug-2022		18-Aug-2022		18-Aug-2022		18-Aug-2022		18-Aug-2022		18-Aug-2022		18-Aug-2022	
		Asbestos Lab:		COVENTRY		COVENTRY		COVENTRY		COVENTRY		COVENTRY		COVENTRY		COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD															
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0															
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0															
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0															
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0															
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0															
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0															
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0															
Naphthalene	M	2700	mg/kg	0.10	< 0.10	0.76	3.3	0.50	< 0.10	< 1.0							< 0.10	< 0.10	
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	0.26	1.6	0.37	< 0.10	< 1.0							< 0.10	< 0.10	
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.73	12	0.46	< 0.10	89							< 0.10	< 0.10	
Fluorene	M	2700	mg/kg	0.10	< 0.10	0.50	8.7	0.38	< 0.10	330							< 0.10	< 0.10	
Phenanthrene	M	2700	mg/kg	0.10	1.5	3.9	70	3.2	3.9	< 1.0							< 0.10	< 0.10	
Anthracene	M	2700	mg/kg	0.10	0.57	0.84	16	0.74	0.84	16							< 0.10	< 0.10	
Fluoranthene	M	2700	mg/kg	0.10	8.7	6.6	73	6.3	6.6	73							0.32	0.31	
Pyrene	M	2700	mg/kg	0.10	9.1	7.1	75	6.7	7.1	75							< 0.10	< 0.10	
Benzo[a]anthracene	M	2700	mg/kg	0.10	5.6	3.0	29	2.7	3.0	29							< 0.10	< 0.10	
Chrysene	M	2700	mg/kg	0.10	7.1	4.1	38	3.9	4.1	38							< 0.10	< 0.10	
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	9.5	4.4	36	3.7	4.4	36							< 0.10	< 0.10	
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	3.8	1.8	14	1.7	1.8	14							< 0.10	< 0.10	
Benzo[a]pyrene	M	2700	mg/kg	0.10	8.7	3.9	31	3.2	3.9	31							< 0.10	< 0.10	
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	5.0	< 0.10	17	1.9	< 0.10	17							< 0.10	< 0.10	
Dibenz[a,h]Anthracene	M	2700	mg/kg	0.10	1.3	< 0.10	4.9	0.75	< 0.10	4.9							< 0.10	< 0.10	
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	6.6	< 0.10	18	1.5	< 0.10	18							< 2.0	< 2.0	
Total Of 16 PAH's	M	2700	mg/kg	2.0	73	38	450	38	< 0.10	450							< 1.0	< 1.0	
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0							< 1.0	< 1.0	
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0							< 1.0	< 1.0	
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0							< 1.0	< 1.0	
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0							< 1.0	< 1.0	
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0							< 1.0	< 1.0	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0							< 1.0	< 1.0	
PCB 28	U	2815	mg/kg	0.010	< 0.010														
PCB 52	U	2815	mg/kg	0.010	< 0.010														
PCB 90+101	U	2815	mg/kg	0.010	< 0.010														
PCB 118	U	2815	mg/kg	0.010	< 0.010														
PCB 153	U	2815	mg/kg	0.010	< 0.010														
PCB 138	U	2815	mg/kg	0.010	< 0.010														
PCB 180	U	2815	mg/kg	0.010	< 0.010														

Results - Soil

Project: 7567 Lincoln Road, Alkrington

Project: Sub-Surface Investigation / Remediation												
Client: Rob Surface		Chemtest Job No.:		22-32144	22-32144	22-32144	22-32144	22-32144	22-32144	22-32144	22-32144	22-32144
Quotation No.:		Chemtest Sample ID.:		1492725	1492726	1492727	1492728	1492729	1492730	1492731	1492732	1492733
		Client Sample ID.:		720	727 728 729	740 741 742	90 91 92	748	755 756 757	759	767 768 769	
		Sample Location:		HD1	TP1	TP2	TP2	TP2	TP3	TP3	TP4	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		0.10	0.30	0.00	0.65	1.60	0.40	1.80	0.60	
		Bottom Depth (m):		0.30	0.45	0.10		1.80	0.50	1.90	0.70	
		Date Sampled:		18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand		Accred.	SOP	LOD								
Total PCBs (7 Congeners)		U	2815	mg/kg	0.10							
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	

Results - Soil

Project: 7567 Lincoln Road, Alkrington

Client: Sub Surface		Chemtest Job No.:		22-32144
Quotation No.:		Chemtest Sample ID.:	1492733	
		Client Sample ID.:	771	
		Sample Location:	TP4	
		Sample Type:	SOIL	
		Top Depth (m):	1.20	
		Bottom Depth (m):	1.40	
		Date Sampled:	18-Aug-2022	
		Asbestos Lab:		
Determinand	Accred.	SOP	Units	LOD
ACM Type	U	2192		N/A
Asbestos Identification	U	2192		N/A
Moisture	N	2030	%	0.020
pH	M	2010		4.0
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40
Sulphate (2:1 Water Soluble) as SO ₄	M	2120	g/l	0.010
Cyanide (Total)	M	2300	mg/kg	0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50
Sulphate (Total)	U	2430	%	0.010
Arsenic	M	2455	mg/kg	0.5
Cadmium	M	2455	mg/kg	0.10
Chromium	M	2455	mg/kg	0.5
Molybdenum	M	2455	mg/kg	0.5
Copper	M	2455	mg/kg	0.50
Mercury	M	2455	mg/kg	0.05
Nickel	M	2455	mg/kg	0.50
Lead	M	2455	mg/kg	0.50
Selenium	M	2455	mg/kg	0.25
Zinc	M	2455	mg/kg	0.50
Chromium (Hexavalent)	N	2490	mg/kg	0.50
TPH >C6-C10	N	2670	mg/kg	1.0
TPH >C10-C21	N	2670	mg/kg	1.0
TPH >C21-C40	N	2670	mg/kg	1.0
Total TPH >C6-C40	M	2670	mg/kg	10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0

Results - Soil

Project: 7567 Lincoln Road, Alkington

Client: Sub Surface		Chemtest Job No.:		22-32144
Quotation No.:		Chemtest Sample ID.:	1492733	
		Client Sample ID.:	771	
		Sample Location:	TP4	
		Sample Type:	SOIL	
		Top Depth (m):	1.20	
		Bottom Depth (m):	1.40	
		Date Sampled:	18-Aug-2022	
		Asbestos Lab:		
Determinand	Accred.	SOP	Units	LOD
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0
Naphthalene	M	2700	mg/kg	0.10
Acenaphthylene	M	2700	mg/kg	0.10
Acenaphthene	M	2700	mg/kg	0.10
Fluorene	M	2700	mg/kg	0.10
Phenanthrene	M	2700	mg/kg	0.10
Anthracene	M	2700	mg/kg	0.10
Fluoranthene	M	2700	mg/kg	0.10
Pyrene	M	2700	mg/kg	0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10
Chrysene	M	2700	mg/kg	0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0
Benzene	M	2760	µg/kg	1.0
Toluene	M	2760	µg/kg	1.0
Ethylbenzene	M	2760	µg/kg	1.0
m & p-Xylene	M	2760	µg/kg	1.0
o-Xylene	M	2760	µg/kg	1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0
PCB 28	U	2815	mg/kg	0.010
PCB 52	U	2815	mg/kg	0.010
PCB 90+101	U	2815	mg/kg	0.010
PCB 118	U	2815	mg/kg	0.010
PCB 153	U	2815	mg/kg	0.010
PCB 138	U	2815	mg/kg	0.010
PCB 180	U	2815	mg/kg	0.010

Results - Soil

Project: 7567 Lincoln Road, Alkrington			
Client: Sub Surface	Chemtest Job No.:	22-32144	
Quotation No.:	Chemtest Sample ID.:	1492733	
	Client Sample ID.:	771	
	Sample Location:	TP4	
	Sample Type:	SOIL	
	Top Depth (m):	1.20	
	Bottom Depth (m):	1.40	
	Date Sampled:	18-Aug-2022	
	Asbestos Lab:		
Determinand	Accred.	SOP	LOD
	U	2815	mg/kg 0.10
Total PCBs (7 Congeners)	M	2920	mg/kg 0.10
Total Phenols			

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

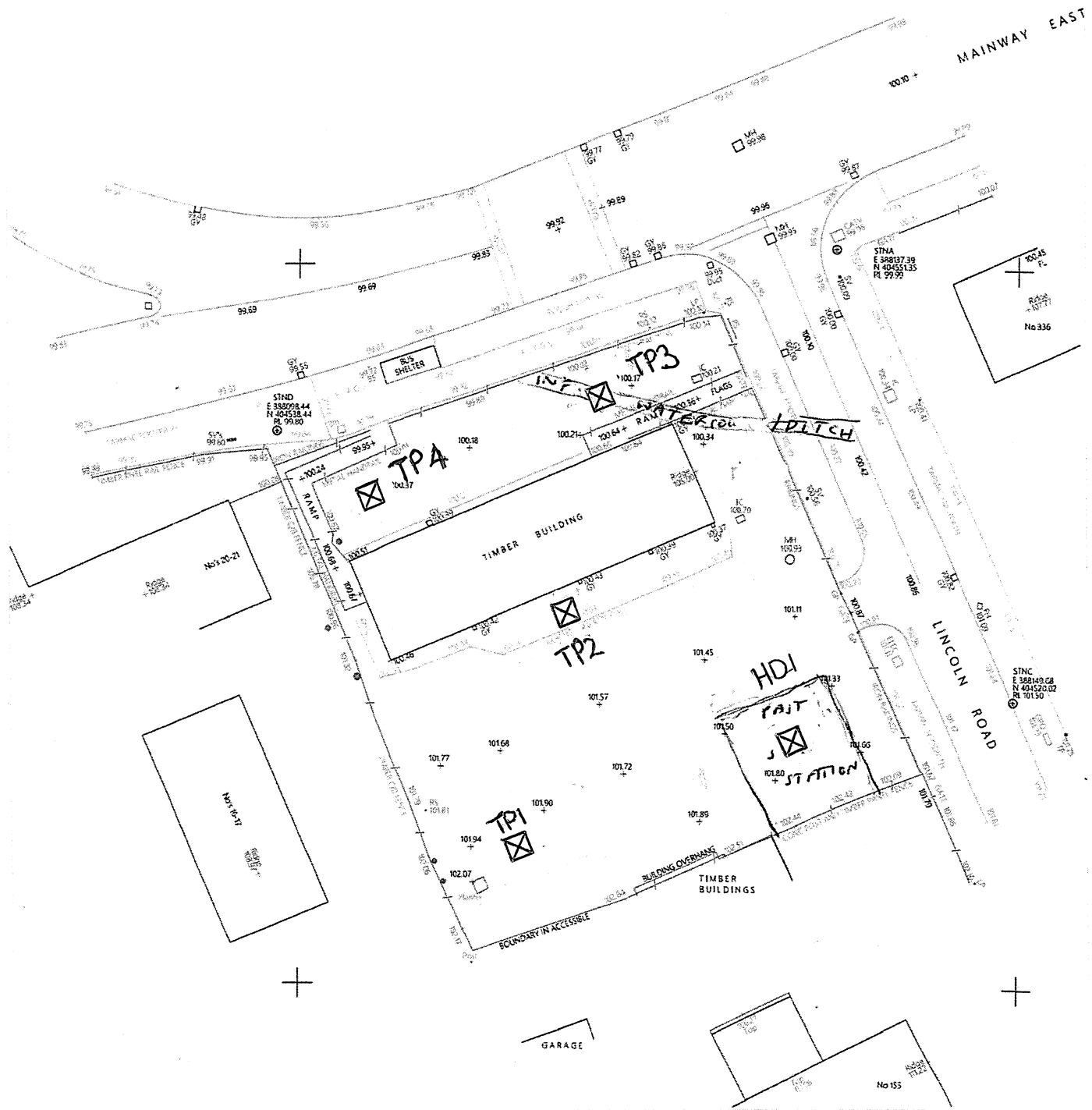
All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



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SUB SURFACE

SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

TRIAL PIT LOCATION PLAN

Site LINCOLN ROAD, AND MAINWAY EAST, MIDDLETON	Date Drawn 09/09/2022	Date Checked 12/09/2022	Orientation 	Job No. 7567
Client ALKEN C/O TECH SERVICES	Drawn By CB	Checked By CAM	Scale NTS	Figure No. 1







APPENDIX C

ENVIRONMENTAL INFORMATION

- § Human Health GAC's
- § Residential GAC's
- § Inhalation Pathway GAC's

Human Health GAC's for Soil

Human Health Generic Assessment Criteria (mg/kg)																	
Contaminant	Source of GAC	Human health- residential with plant uptake (1% SOM)	Human health- residential with plant uptake (2.5% SOM)	Human health- residential with plant uptake (6% SOM)	Human health- residential without plant uptake (1% SOM)	Human health- residential without plant uptake (2.5% SOM)	Human health- residential without plant uptake (6% SOM)	Human health- allotments (1% SOM)	Human health- allotments (2.5% SOM)	Human health- allotments (6% SOM)	Human health- commercial (1% SOM)	Human health- commercial (2.5% SOM)	Human health- commercial (6% SOM)	Human health- open space (1% SOM)	Human health- open space (2.5% SOM)	Human health- open space (6% SOM)	
General Suite																	
Arsenic	C4SL	37	37	37	40	40	40	43	43	43	640	640	640	79	79	79	
Boron	LQM/CIEH + CLEA 1.07	290	290	290	11000	11000	11000	45	45	45	240000	240000	240000	21000	21000	21000	
Cadmium	LQM/CIEH + CLEA 1.07	11	11	11	85	85	85	1.9	1.9	1.90	190	190	190	120	120	120	
Chromium (III)	LQM/CIEH + CLEA 1.07	910	910	910	910	910	910	18000	18000	18000	8600	8600	8600	1500	1500	1500	
Chromium (VI)	LQM/CIEH + CLEA 1.07	6	6	6	6	6	6	1.8	1.8	1.8	33	33	33	7.7	7.7	7.7	
Copper	LQM/CIEH + CLEA 1.07	2400	2400	2400	7100	7100	7100	520	520	520	68000	68000	68000	12000	12000	12000	
Lead	C4SL	200	200	200	310	310	310	80	80	80	2300	2300	2300	630	630	630	
Mercury, inorganic	LQM/CIEH + CLEA 1.07	40	40	40	56	56	56	19	19	19	1100	1100	1100	120	120	120	
Mercury elemental	LQM/CIEH + CLEA 1.07	1.2	1.2	1.2	1.2	1.2	1.2	21	21	21	25.8	25.8	25.8	16	16	16	
Mercury Methyl	LQM/CIEH + CLEA 1.07	11	11	11	15	15	15	6	6.0	6.0	320	320	320	40	40	40	
Nickel	SGV report + CLEA 1.07	130	130	130	180	180	180	53	53	53	980	980	980	230	230	230	
Selenium	LQM/CIEH + CLEA 1.07	250	250	250	430	430	430	88	88	88	12000	12000	12000	1100	1100	1100	
Zinc	LQM/CIEH + CLEA 1.07	3700	3700	3700	40000	40000	40000	620	620	620	730000	730000	73000	81000	81000	81000	
Cyanide	CLEA 1.07	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	
Phenol	LQM/CIEH + CLEA 1.07	120	200	380	440	690	1200	23	42	83	440	690	1300	440	690	1300	
Acenaphthene	LQM/CIEH + CLEA 1.07	210	480	1000	3000	4700	6000	34	85	200	84000	97000	100000	15000	15000	15000	
Acenaphthylene	LQM/CIEH + CLEA 1.07	170	420	920	2900	4600	6000	28	69	160	83000	97000	100000	15000	15000	15000	
Anthracene	LQM/CIEH + CLEA 1.07	2400	5400	11000	31000	35000	37000	380	950	2200	520000	540000	540000	74000	74000	74000	
Benzo(a)anthracene	LQM/CIEH + CLEA 1.07	7.2	11	13	11	14	15	2.9	6.5	13	170	170	180	29	29	29	
Benzo(a)pyrene	LQM/CIEH + CLEA 1.07	2.2	2.7	3.0	3.2	3.2	3.2	0.97	2	3.5	35	35	36	5.7	5.7	5.7	
Benzo(b)fluoranthene	LQM/CIEH + CLEA 1.07	2.6	3.3	3.7	3.9	4	4	0.99	2.1	3.9	44	44	45	7.1	7.2	7.2	
Benzo(ghi)perylene	LQM/CIEH + CLEA 1.07	320	340	350	360	360	360	290	470	640	3900	4000	4000	640	640	640	
Benzo(k)fluoranthene	LQM/CIEH + CLEA 1.07	77	93	100	110	110	110	37	75	130	1200	1200	1200	190	190	190	
Chrysene	LQM/CIEH + CLEA 1.07	15.0	22.0	27	30	31	32	4.1	9.4	19	350	350	350	57	57	57	
Dibenz(ah)anthracene	LQM/CIEH + CLEA 1.07	0.24	0.28	0.3	0.31	0.32	0.32	0.14	0.27	0.43	3.5	3.6	3.6	0.6	0.6	0.6	
Fluoranthene	LQM/CIEH + CLEA 1.07	280	560	890	1500	1600	1600	52	130	290	23000	23000	23000	3100	3100	3100	
Fluorene	LQM/CIEH + CLEA 1.07	170	400	860	2800	3800	4500	27	67	160	63000	68000	71000	9900	9900	9900	
Indeno(123cd)pyrene	LQM/CIEH + CLEA 1.07	27	36	41	45	46	46	9.5	21	39	500	510	510	82	82	82	
Naphthalene	LQM/CIEH + CLEA 1.07	2.3	5.6	13	2.3	5.6	13	4.1	10	24	190	460	1100	4900	4900	4900	
Phenanthrene	LQM/CIEH + CLEA 1.07	95	220	440	1300	1500	1500	15	38	90	22000	22000	23000	3100	3100	3100	
Pyrene	LQM/CIEH + CLEA 1.07	620	1200	2000	3700	3800	3800	110	270	620	54000	54000	55000	7400	7400	7400	
VOCs-BTEX & MTBE																	
Benzene	LQM/CIEH + CLEA 1.07	0.087	0.17	0.37	0.38	0.7	1.4	0.017	0.034	0.075	27	47	90	72	72	73	
Toluene	LQM/CIEH + CLEA 1.07	130	290	660	869	1900	3900	22	51	120	869	1920	4360	56000	56000	56000	
Ethylbenzene	LQM/CIEH + CLEA 1.07	47	110	260	83	190	440	16	39	91	518	1220	2840	518	1220	2840	
Xylene o-	LQM/CIEH + CLEA 1.07	60	140	330	88	210	480	28	67	160	478	1120	2620	478	1120	2620	
Xylene m-	LQM/CIEH + CLEA 1.07	59	140	320	82	190	450	31	74	170	625	1470	3460	625	1470	3460	
Xylene p-	LQM/CIEH + CLEA 1.07	56	130	310	79	180	430	29	69	160	576	1350	3170	576	1350	3170	
MTBE	EIC/AGS/CLA:IRE + CLEA 1.07	49	84	160	73	120	220	23	44	90	7900	13000	24000	240000	240000	240000	
TPH Fractions																	
TPH ali EC05-EC06	LQM/CIEH + CLEA 1.07	42	78	160	42	78	160	730	1700	3900	304	558	1150	570000	590000	600000	
TPH ali >EC06-EC08	LQM/CIEH + CLEA 1.07	100	230	530	100	230	530	2300	5600	13000	144	322	736	600000	610000	620000	
TPH ali >EC08-EC10	LQM/CIEH + CLEA 1.07	27	65	150	27	65	150	320	770	1700	78	190	451	13000	13000	13000	
TPH ali >EC10-EC12	LQM/CIEH + CLEA 1.07	48	118	283	48	118	283	2200	4400	7300	48	118	283	13000	13000	13000	
TPH ali >EC12-EC16	LQM/CIEH + CLEA 1.07	24	59	142	24	59	142	11000	13000	13000	24	59	142	13000	13000	13000	
TPH ali >EC16-EC35	LQM/CIEH + CLEA 1.07	65000	92000	110000	65000	92000	110000	260000	270000	270000	1600000	1700000	1800000	250000	250000	250000	
TPH ali >EC35-EC44	LQM/CIEH + CLEA 1.07	65000	92000	110000	65000	92000	110000	260000	270000	270000	1600000	1700000	1800000	250000	250000	250000	
TPH aro EC05-EC07	LQM/CIEH + CLEA 1.07	70	140	300	370	690	1400	13	27	57	1120	2260	4710	56000	56000	56000	
TPH aro >EC07-EC08	LQM/CIEH + CLEA 1.07	130	290	660	860	1800	3900	22	51	120	869	1920	4360	56000	56000	56000	
TPH aro >EC08-EC10	LQM/CIEH + CLEA 1.07	34	83	190	47	110	270	8.6	21	51	613	1500	3580	5000	5000	5000	
TPH aro >EC10-EC12	LQM/CIEH + CLEA 1.07	74	180	380	250	590	1200	13	31	74	364	899	2150	5000	5000	5000	
TPH aro >EC12-EC16	LQM/CIEH + CLEA 1.07	140	330	660	1800	2300	2500	23	57	130	36000	37000	38000	5100	5100	5000	
TPH aro >EC16-EC21	LQM/CIEH + CLEA 1.07	260	540	930	1900	1900	1900	46	110	260	28000	28000	28000	3800	3800	3800	
TPH aro >EC21-EC35	LQM/CIEH + CLEA 1.07	1100	1500	1700	1900	1900	1900	370	820	1600	28000	28000	28000	3800	3800	3800	
TPH aro >EC35-EC44	LQM/CIEH + CLEA 1.07	1100	1500	1700	1900	1900	1900	370	820	1600	28000	28000	28000	3800	3800	3800	
TPH >EC44-EC70	LQM/CIEH + CLEA 1.07	1600	1800	1900	1900	1900	1900	1200	2100	3000	28000	28000	28000	3800	3800	3800	
Dioxins, furans & dioxin-like-PCBs																	
Total Dioxins, furans & DL-PCB (aerial dep)	SGV report + CLEA 1.07	0.0085	0.0087	0.0087	0.0099	0.0099	0.0099	0.0073	0.008	0.0083	0.24	0.24	0.24	0.15	0.15	0.15	
Non-dioxin-like PCBs																	
PCB-28	CLEA 1.07	0.20	0.27	0.32	0.39	0.39	0.39	0.058	0.13	0.23	9.0	9.0	9.0	3	3	3	
PCB-52	CLEA 1.07	0.20	0.28	0.34	0.39	0.39	0.39	0.062	0.14	0.28	9.0	9.0	9.0	3	3	3	
PCB-101	CLEA 1.07	0.34	0.37	0.38	0.39	0.39	0.39	0.03	0.53	0.76	9.0	9.0	9.0	3	3	3	
PCB-138	CLEA 1.07	0.36	0.37	0.38	0.39	0.39	0.39	0.41	0.67	0.89	9.0	9.0	9.0	3	3	3	
PCB-153	CLEA 1.07	0.36	0.38	0.38	0.39	0.39	0.39	0.51	0.77	0.96	9.0	9.0	9.0	3	3	3	
PCB-180	CLEA 1.07	0.37	0.38	0.39	0.39	0.39	0.39	0.60	0.87	1.1	9.0	9.0	9.0	3	3	3	

NOTES

if >1,000,000 is calculated, 1,000,000 is adopted.

where calculated GAC exceeds saturation value in CLEA - saturation value adopted for GAC

Risk Parameter: Human Health - residential with plant uptake (1.0% SOM)
Data set: ALL

Project No: 1305 Client: TEC Services Ltd.
Project: Lincoln Road, Alkington, Middleton

All values in mg/kg unless otherwise stated							Soil Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL						
							Location:	HD1	TP1	TP2	TP2	TP3	TP4						
							Depth:	0.1-03	0.3-0.45	0-0.1	0.65	0.4-05	0.6-0.7						
							Lab	S	S	S	S	S	S						
Chemicals of Potential Concern	No Samples	Min. Value	Max. Value	No. Samples >or = GAC	GAC	US ₉₅	Result of Significance Test												
								Potentially Suitable For Use	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.					
General Suite																			
Arsenic	6	4.4	19		37	14.442	Potentially Suitable For Use	11	4.4	11	19	6.3	12						
Boron	6	0.4	<1		290	0.452	Potentially Suitable For Use	0.51	0.40	0.40	0.40	0.40	0.40						
Cadmium	6	0.1	0.2		11	0.209	Potentially Suitable For Use	0.23	0.10	0.11	0.24	0.10	0.18						
Chromium (III)	6	7.1	24		910	19.877	Potentially Suitable For Use	17	7.1	18	24	10	16						
Chromium (VI)	6	0.5	0.5		6	0.500	Potentially Suitable For Use	0.5	0.5	0.5	0.5	0.5	0.5						
Copper	6	13	100		2400	62.669	Potentially Suitable For Use	28	13	35	100	27	35						
Lead	6	23	98		200	72.462	Potentially Suitable For Use	63	23	39	98	25	59						
Mercury, inorganic	6	0.05	0.24		40	0.166	Potentially Suitable For Use	0.24	0.05	0.06	0.15	0.05	0.11						
Mercury elemental	6	0.05	0.24		1.2	0.155	Potentially Suitable For Use	0.24	0.05	0.06	0.15	0.05	0.11						
Mercury Methyl	6	0.05	0.24		11	0.155	Potentially Suitable For Use	0.24	0.05	0.06	0.15	0.05	0.11						
Nickel	6	10	25		130	21.086	Potentially Suitable For Use	17	10	18	25	12	20						
Selenium	6	0.25	1		250	0.793	Potentially Suitable For Use	0.56	0.25	0.70	1	0.45	0.66						
Zinc	6	38	72		3700	68.413	Potentially Suitable For Use	72	38	51	69	40	70						
Cyanide (free)	6	0.5	0.5		24	0.500	Potentially Suitable For Use	0.50	0.50	0.50	0.50	0.50	0.50						
Phenol (total)	6	0.1	0.1		120	0.100	Potentially Suitable For Use	0.10	0.10	0.10	0.10	0.10	0.10						
Acenaphthene	6	0.1	12		210	5.901	Potentially Suitable For Use	0.66	0.1	0.73	12	0.46	0.1						
Acenaphthylene	6	0.1	1.6		170	0.873	Potentially Suitable For Use	0.2	0.1	0.26	1.6	0.37	0.1						
Anthracene	6	0.1	16		2400	7.967	Potentially Suitable For Use	1.4	0.57	0.84	16	0.74	0.1						
Benzo(a)anthracene	6	0.1	29	1	7.2	15.265	Further Assessment Required	5.6	2.2	3	29.00	2.70	0.1						
Benzo(a)pyrene	6	0.1	31	5	2.2	16.919	Further Assessment Required	8.7	3	3.9	31	3.2	0.1						
Benzo(b)fluoranthene	6	0.1	36	5	2.6	19.512	Further Assessment Required	9.5	3.3	4.4	36	3.7	0.1						
Benzo(ghi)perylene	6	0.1	18		320	10.311	Potentially Suitable For Use	6.6	4.9	0.1	18	1.5	0.1						
Benzo(k)fluoranthene	6	0.1	14		77	7.657	Potentially Suitable For Use	3.8	1.4	1.8	14	1.7	0.1						
Chrysene	6	0.1	38	1	15	20.015	Further Assessment Required	7.1	2.8	4.1	38.00	3.9	0.1						
Dibenz(a,h)anthracene	6	0.1	4.9	4	0.24	2.657	Further Assessment Required	1.3	0.56	0.1	4.90	0.75	0.1						
Fluoranthene	6	0.32	73		280	37.377	Potentially Suitable For Use	8.7	3.9	6.6	73	6.3	0.32						
Fluorene	6	0.1	8.7		170	4.296	Potentially Suitable For Use	0.58	0.1	0.5	8.7	0.38	0.1						
Indeno(1,2,3,cd)pyrene	6	0.1	17		27	9.173	Potentially Suitable For Use	5	1.8	0.1	17	1.9	0.1						
Napthalene	6	0.1	3.3	1	2.3	1.769	Further Assessment Required	0.32	0.1	0.76	3.30	0.5	0.1						
Phenanthrene	6	0.1	70		95	34.576	Potentially Suitable For Use	4.7	1.5	3.9	70	3.2	0.1						
Pyrene	6	0.31	75		620	38.491	Potentially Suitable For Use	9.1	4.1	7.1	75	6.7	0.31						
VOCs-BTEX & MTBE																			
Benzene	6	0.001	0.001		0.087	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001						
Toluene	6	0.001	0.001		130	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001						
Ethylbenzene	6	0.001	0.001		47	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001						
Xylene o-	6	0.001	0.001		60	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001						
Xylene m-	6	0.001	0.001		59	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001						
Xylene p-	6	0.001	0.001		56	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001						
MTBE	6	0.001	0.001		49	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001						
TPH Fractions																			
TPH ali EC05-EC06	6	1	1		42	1.000	Potentially Suitable For Use	1	1	1	1	1	1						
TPH ali >EC06-EC08	6	1	1		100	1.145	Potentially Suitable For Use	1	1	1	1	1	1						
TPH ali >EC08-EC10	6	1	1		27	1.145	Potentially Suitable For Use	1	1	1	1	1	1						
TPH ali >EC10-EC12	6	1	60	1	48	33.741	Further Assessment Required	60	1	21	1	15	1						
TPH ali >EC12-EC16	6	1	60	1	24	30.796	Further Assessment Required	60	1	21	1	15	1						
TPH ali >EC16-EC35	6	2	350		65000	170.682	Potentially Suitable For Use	350	1	121	1	25	1						
TPH ali >EC35-EC44	6	1	290		65000	154.182	Potentially Suitable For Use	290	1	100	1	10	1						
TPH aro EC05-EC07	6	1	1		70	1.145	Potentially Suitable For Use	1	1	1	1	1	1						
TPH aro >EC07-EC08	6	1	1		130	1.145	Potentially Suitable For Use	1	1	1	1	1	1						
TPH aro >EC08-EC10	6	1	1		34	1.145	Potentially Suitable For Use	1	1	1	1	1	1						
TPH aro >EC10-EC12	6	1	60		74	30.796	Potentially Suitable For Use	60	1	21	1	15	1						
TPH aro >EC12-EC16	6	1	60		140	30.796	Potentially Suitable For Use	60	1	21	1	15	1						
TPH aro >EC16-EC21	6	2	89		260	53.085	Potentially Suitable For Use	60	1	21	89	15	1						
TPH aro >EC21-EC35	6	1	330		1100	215.181	Potentially Suitable For Use	290	1	100	330	10	1						
TPH aro >EC35-EC44	6	1	290		1100	140.420	Potentially Suitable For Use	290	1	100	1	10	1						
TPH >EC44-EC70					1600														
Dioxins, furans & dioxin-like-PCBs																			
Total Dioxins, furans & DL-PCB (aerial dep)					0.0085														
Non-dioxin-like PCBs																			
PCB-28	1	0.01	0.01		0.2		Potentially Suitable For Use	0.01											
PCB-52	1	0.01	0.01		0.2		Potentially Suitable For Use	0.01											
PCB-101	1	0.01	0.01		0.34		Potentially Suitable For Use	0.01											
PCB-138	1	0.01	0.01		0.36		Potentially Suitable For Use	0.01											
PCB-153	1	0.01	0.01		0.36		Potentially Suitable For Use	0.01											
PCB-180	1	0.01	0.01		0.37		Potentially Suitable For Use	0.01											

Legend: MG denotes Made Ground, NAT denotes Natural Ground

Risk Parameter: Human Health - residential with plant uptake (2.5% SOM);
Data set: ALL

Project No: 1305 Client: TEC Services Ltd.
Project: Lincoln Road, Alkington, Middleton

All values in mg/kg unless otherwise stated							Soil Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL						
							Location:	HD1	TP1	TP2	TP2	TP3	TP4						
							Depth:	0.1-03	0.3-0.45	0-0.1	0.65	0.4-05	0.6-0.7						
							Lab	S	S	S	S	S	S						
Chemicals of Potential Concern	No Samples	Min. Value	Max. Value	No. Samples >or = GAC	GAC	US ₉₅	Result of Significance Test												
							Potentially Suitable For Use	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.						
Asbestos	6	-	-		-	-													
General Suite																			
Arsenic	6	4.4	19		37	14.442	Potentially Suitable For Use	11	4.4	11	19	6.3	12						
Boron	6	0.4	0.51		290	0.452	Potentially Suitable For Use	0.51	0.40	0.40	0.40	0.40	0.40						
Cadmium	6	0.1	0.24		11	0.209	Potentially Suitable For Use	0.23	<0	0.11	0.24	0.10	0.18						
Chromium (III)	6	7.1	24		910	19.877	Potentially Suitable For Use	17	7.1	18	24	10	16						
Chromium (VI)	6	0.5	0.5		6	0.500	Potentially Suitable For Use	0.5	0.5	0.5	0.5	0.5	0.5						
Copper	6	13	100		2400	62.669	Potentially Suitable For Use	28	13	35	100	27	35						
Lead	6	23	98		200	72.462	Potentially Suitable For Use	63	23	39	98	25	59						
Mercury, inorganic	6	0.05	0.24		40	0.166	Potentially Suitable For Use	0.24	0.05	0.06	0.15	0.05	0.11						
Mercury elemental	6	0.05	0.24		1.2	0.155	Potentially Suitable For Use	0.24	0.05	0.06	0.15	0.05	0.11						
Mercury Methyl	6	0.05	0.24		11	0.155	Potentially Suitable For Use	0.24	0.05	0.06	0.15	0.05	0.11						
Nickel	6	10	25		130	21.086	Potentially Suitable For Use	17	10	18	25	12	20						
Selenium	6	0.25	1		250	0.793	Potentially Suitable For Use	0.56	0.25	0.70	1	0.45	0.66						
Zinc	6	38	72		3700	68.413	Potentially Suitable For Use	72	38	51	69	40	70						
Cyanide (free)	6	0.5	0.5		24	0.500	Potentially Suitable For Use	0.50	0.50	0.50	0.50	0.50	0.50						
Phenol (total)	6	0.1	<0		200	0.100	Potentially Suitable For Use	0.10	0.10	0.10	0.10	0.10	0.10						
Acenaphthene	6	0.1	12		480	5.901	Potentially Suitable For Use	0.66	0.1	0.73	12	0.46	0.1						
Acenaphthylene	6	0.1	1.6		420	0.873	Potentially Suitable For Use	0.2	0.1	0.26	1.6	0.37	0.1						
Anthracene	6	0.1	16		5400	7.967	Potentially Suitable For Use	1.4	0.57	0.84	16	0.74	0.1						
Benzo(a)anthracene	6	0.1	29	1	11	15.265	Further Assessment Required	5.6	2.2	3	29	2.7	0.1						
Benzo(a)pyrene	6	0.1	31	5	2.7	16.919	Further Assessment Required	8.7	3	3.9	31	3.2	0.1						
Benzo(b)fluoranthene	6	0.1	36	5	3.3	19.512	Further Assessment Required	9.5	3.3	4.4	36	3.7	0.1						
Benzo(ghi)perylene	6	0.1	18		340	10.311	Potentially Suitable For Use	6.6	4.9	0.1	18	1.5	0.1						
Benzo(k)fluoranthene	6	0.1	14		93	7.657	Potentially Suitable For Use	3.8	1.4	1.8	14	1.7	0.1						
Chrysene	6	0.1	38	1	22	20.015	Further Assessment Required	7.1	2.8	4.1	38	3.9	0.1						
Dibenz(a,h)anthracene	6	0.1	4.9	4	0.28	2.657	Further Assessment Required	1.3	0.56	0.1	4.9	0.75	0.1						
Fluoranthene	6	0.32	73		560	37.377	Potentially Suitable For Use	8.7	3.9	6.6	73	6.3	0.32						
Fluorene	6	0.1	8.7		400	4.296	Potentially Suitable For Use	0.58	0.1	0.5	8.7	0.38	0.1						
Indeno(1,2,3,cd)pyrene	6	0.1	17		36	9.173	Potentially Suitable For Use	5	1.8	0.1	17	1.9	0.1						
Napthalene	6	0.1	3.3		5.6	1.769	Potentially Suitable For Use	0.32	0.1	0.76	3.3	0.5	0.1						
Phenanthrene	6	0.1	70		220	34.576	Potentially Suitable For Use	4.7	1.5	3.9	70	3.2	0.1						
Pyrene	6	0.31	75		1200	38.491	Potentially Suitable For Use	9.1	4.1	7.1	75	6.7	0.31						
VOCs-BTEX & MTBE																			
Benzene	6	0.001	0.001		0.17	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001						
Toluene	6	0.001	0.001		290	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001						
Ethylbenzene	6	0.001	0.001		110	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001						
Xylene o-	6	0.001	0.001		140	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001						
Xylene m-	6	0.001	0.001		140	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001						
Xylene p-	6	0.001	0.001		130	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001						
MTBE	6	0.001	0.001		84	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001						
TPH Fractions																			
TPH ali EC05-EC06	6	1	1		78	1.000	Potentially Suitable For Use	1	1	1	1	1	1						
TPH ali >EC06-EC08	6	1	1		230	1.145	Potentially Suitable For Use	1	1	1	1	1	1						
TPH ali >EC08-EC10	6	1	1		65	1.145	Potentially Suitable For Use	1	1	1	1	1	1						
TPH ali >EC10-EC12	6	1	60		118	33.741	Potentially Suitable For Use	60	1	21	1	15	1						
TPH ali >EC12-EC16	6	1	60	1	59	30.796	Further Assessment Required	60	1	21	1	15	1						
TPH ali >EC16-EC35	6	2	350		92000	170.682	Potentially Suitable For Use	350	1	121	1	25	1						
TPH ali >EC35-EC44	6	1	290		92000	154.182	Potentially Suitable For Use	290	1	100	1	10	1						
TPH aro EC05-EC07	6	1	1		140	1.145	Potentially Suitable For Use	1	1	1	1	1	1						
TPH aro >EC07-EC08	6	1	1		290	1.145	Potentially Suitable For Use	1	1	1	1	1	1						
TPH aro >EC08-EC10	6	1	1		83	1.145	Potentially Suitable For Use	1	1	1	1	1	1						
TPH aro >EC10-EC12	6	1	60		180	30.796	Potentially Suitable For Use	60	1	21	1	15	1						
TPH aro >EC12-EC16	6	1	60		330	30.796	Potentially Suitable For Use	60	1	21	1	15	1						
TPH aro >EC16-EC21	6	2	89		540	53.085	Potentially Suitable For Use	60	1	21	89	15	1						
TPH aro >EC21-EC35	6	1	330		1500	215.181	Potentially Suitable For Use	290	1	100	330	10	1						
TPH aro >EC35-EC44	6	1	290		1500	140.420	Potentially Suitable For Use	290	1	100	1	10	1						
TPH >EC44-EC70					1800														
Dioxins, furans & dioxin-like-PCBs																			
Total Dioxins, furans & DL-PCB (aerial dep)					0.0087														
Non-dioxin-like PCBs																			
PCB-28	1	0.01	0.01		0.27		Potentially Suitable For Use	0.01											
PCB-52	1	0.01	0.01		0.28		Potentially Suitable For Use	0.01											
PCB-101	1	0.01	0.01		0.37		Potentially Suitable For Use	0.01											
PCB-138	1	0.01	0.01		0.37		Potentially Suitable For Use	0.01											
PCB-153	1	0.01	0.01		0.38		Potentially Suitable For Use	0.01											
PCB-180	1	0.01	0.01		0.38		Potentially Suitable For Use	0.01											

Legend: MG denotes Made Ground, NAT denotes Natural Ground

Risk Parameter: Human Health - residential with plant uptake (6.0% SOM);
Data set: ALL

Project No: 1305 Client: TEC Services Ltd.
Project: Lincoln Road, Alkington, Middleton

All values in mg/kg unless otherwise stated							Soil Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL						
							Location:	HD1	TP1	TP2	TP2	TP3	TP4						
							Depth:	0.1-0.3	0.3-0.45	0-0.1	0.65	0.4-0.5	0.6-0.7						
							Lab	S	S	S	S	S	S						
Chemicals of Potential Concern	No Samples	Min. Value	Max. Value	No. Samples >or = GAC	GAC	US ₉₅	Result of Significance Test												
								Asbestos	6	-	-	-	-	Potentially Suitable For Use	N.D.	N.D.	N.D.	N.D.	N.D.
General Suite																			
Arsenic	6	4.4	19			37	14.442	Potentially Suitable For Use	11	4.4	11	19	6.3	12					
Boron	6	0.4	0.51			290	0.452	Potentially Suitable For Use	0.51	0.40	0.40	0.40	0.40	0.40					
Cadmium	6	0.1	0.24			11	0.209	Potentially Suitable For Use	0.23	0.10	0.11	0.24	0.10	0.18					
Chromium (III)	6	7.1	24			910	19.877	Potentially Suitable For Use	17	7.1	18	24	10	16					
Chromium (VI)	6	0.5	0.5			6	0.500	Potentially Suitable For Use	0.5	0.5	0.5	0.5	0.5	0.5					
Copper	6	13	100			2400	62.669	Potentially Suitable For Use	28	13	35	100	27	35					
Lead	6	23	98			200	72.462	Potentially Suitable For Use	63	23	39	98	25	59					
Mercury, inorganic	6	0.05	0.24			40	0.166	Potentially Suitable For Use	0.24	0.05	0.06	0.15	0.05	0.11					
Mercury elemental	6	0.05	0.24			1.2	0.155	Potentially Suitable For Use	0.24	0.05	0.06	0.15	0.05	0.11					
Mercury Methyl	6	0.05	0.24			11	0.155	Potentially Suitable For Use	0.24	0.05	0.06	0.15	0.05	0.11					
Nickel	6	10	25			130	21.086	Potentially Suitable For Use	17	10	18	25	12	20					
Selenium	6	0.25	1			250	0.793	Potentially Suitable For Use	0.56	0.25	0.70	1	0.45	0.66					
Zinc	6	38	72			3700	68.413	Potentially Suitable For Use	72	38	51	69	40	70					
Cyanide (free)	6	0.5	0.5			24	0.500	Potentially Suitable For Use	0.50	0.50	0.50	0.50	0.50	0.50					
Phenol (total)	6	0.1	0.1			380	0.100	Potentially Suitable For Use	0.10	0.10	0.10	0.10	0.10	0.10					
Acenaphthene	6	0.1	12			1000	5.901	Potentially Suitable For Use	0.66	0.1	0.73	12	0.46	0.1					
Acenaphthylene	6	0.1	1.6			920	0.873	Potentially Suitable For Use	0.2	0.1	0.26	1.6	0.37	0.1					
Anthracene	6	0.1	16			11000	7.967	Potentially Suitable For Use	1.4	0.57	0.84	16	0.74	0.1					
Benzo(a)anthracene	6	0.1	29	1	13	15.265	Further Assessment Required	5.6	2.2	3	29	2.7	0.1						
Benzo(a)pyrene	6	0.1	31	5	3	16.919	Further Assessment Required	8.7	3	3.9	31	3.2	0.1						
Benzo(b)fluoranthene	6	0.1	36	4	3.7	19.512	Further Assessment Required	9.5	3.3	4.4	36	3.7	0.1						
Benzo(ghi)perylene	6	0.1	18			350	10.311	Potentially Suitable For Use	6.6	4.9	0.1	18	1.5	0.1					
Benzo(k)fluoranthene	6	0.1	14			100	7.657	Potentially Suitable For Use	3.8	1.4	1.8	14	1.7	0.1					
Chrysene	6	0.1	38	1	27	20.015	Further Assessment Required	7.1	2.8	4.1	38	3.9	0.1						
Dibenz(a,h)anthracene	6	0.1	4.9	4	0.3	2.657	Further Assessment Required	1.3	0.56	0.1	4.9	0.75	0.1						
Fluoranthene	6	0.32	73			890	37.377	Potentially Suitable For Use	8.7	3.9	6.6	73	6.3	0.32					
Fluorene	6	0.1	8.7			860	4.296	Potentially Suitable For Use	0.58	0.1	0.5	8.7	0.38	0.1					
Indeno(1,2,3,cd)pyrene	6	0.1	17			41	9.173	Potentially Suitable For Use	5	1.8	0.1	17	1.9	0.1					
Napthalene	6	0.1	3.3			13	1.769	Potentially Suitable For Use	0.32	0.1	0.76	3.3	0.5	0.1					
Phenanthrene	6	0.1	70			440	34.576	Potentially Suitable For Use	4.7	1.5	3.9	70	3.2	0.1					
Pyrene	6	0.31	75			2000	38.491	Potentially Suitable For Use	9.1	4.1	7.1	75	6.7	0.31					
VOCs-BTEX & MTBE																			
Benzene	6	0.001	0.001			0.37	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001					
Toluene	6	0.001	0.001			660	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001					
Ethylbenzene	6	0.001	0.001			260	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001					
Xylene o-	6	0.001	0.001			330	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001					
Xylene m-	6	0.001	0.001			320	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001					
Xylene p-	6	0.001	0.001			310	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001					
MTBE	6	0.001	0.001			160	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001					
TPH Fractions																			
TPH ali EC05-EC06	6	1	1			160	1.000	Potentially Suitable For Use	1	1	1	1	1	1					
TPH ali >EC06-EC08	6	1	1			530	1.145	Potentially Suitable For Use	1	1	1	1	1	1					
TPH ali >EC08-EC10	6	1	1			150	1.145	Potentially Suitable For Use	1	1	1	1	1	1					
TPH ali >EC10-EC12	6	1	60			283	33.741	Potentially Suitable For Use	60	1	21	1	15	1					
TPH ali >EC12-EC16	6	1	60			142	30.796	Potentially Suitable For Use	60	1	21	1	15	1					
TPH ali >EC16-EC35	6	2	350			110000	170.682	Potentially Suitable For Use	350	1	121	1	25	1					
TPH ali >EC35-EC44	6	1	290			110000	154.182	Potentially Suitable For Use	290	1	100	1	10	1					
TPH aro EC05-EC07	6	1	1			300	1.145	Potentially Suitable For Use	1	1	1	1	1	1					
TPH aro >EC07-EC08	6	1	1			660	1.145	Potentially Suitable For Use	1	1	1	1	1	1					
TPH aro >EC08-EC10	6	1	1			190	1.145	Potentially Suitable For Use	1	1	1	1	1	1					
TPH aro >EC10-EC12	6	1	60			380	30.796	Potentially Suitable For Use	60	1	21	1	15	1					
TPH aro >EC12-EC16	6	1	60			660	30.796	Potentially Suitable For Use	60	1	21	1	15	1					
TPH aro >EC16-EC21	6	2	89			930	53.085	Potentially Suitable For Use	60	1	21	89	15	1					
TPH aro >EC21-EC35	6	1	330			1700	215.181	Potentially Suitable For Use	290	1	100	330	10	1					
TPH aro >EC35-EC44	6	1	290			1700	140.420	Potentially Suitable For Use	290	1	100	1	10	1					
TPH >EC44-EC70						1900													
Dioxins, furans & dioxin-like-PCBs																			
Total Dioxins, furans & DL-PCB (aerial dep)						0.0087													
Non-dioxin-like PCBs																			
PCB-28	1	0.01	0.01			0.32		Potentially Suitable For Use	0.01										
PCB-52	1	0.01	0.01			0.34		Potentially Suitable For Use	0.01										
PCB-101	1	0.01	0.01			0.38		Potentially Suitable For Use	0.01										
PCB-138	1	0.01	0.01			0.38		Potentially Suitable For Use	0.01										
PCB-153	1	0.01	0.01			0.38		Potentially Suitable For Use	0.01										
PCB-180	1	0.01	0.01			0.39		Potentially Suitable For Use	0.01										

Legend: MG denotes Made Ground, NAT denotes Natural Ground

Risk Parameter: Residential SOM 1% Inhalation Pathway only for Volatile PAH's and
Data set: ALL

Project No: 1305 Client: TEC Services Ltd.
Project: Lincoln Road, Alkington, Middleton

All values in mg/kg unless otherwise stated								Soil Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL							
								Location:	HD1	TP1	TP2	TP2	TP3	TP4							
								Depth:	0.1-03	0.3-0.45	0-0.1	0.65	0.4-05	0.6-0.7							
								Lab	S	S	S	S	S	S							
Chemicals of Potential Concern	No Samples	Min. Value	Max. Value	No. Samples >or = GAC	GAC	Cheby chev US ₉₅	US ₉₅	Result of Significance Test													
General Suite																					
Napthalene	6	0.1	3.3		16	2.842	1.769	Potentially Suitable For Use	0.32	0.1	0.76	3.3	0.5	0.1							
VOCs-BTEX & MTBE																					
Benzene	6	0.001	0.001		0.27	0.001	0.001	Potentially Suitable For Use	0.001	0.001	0.001	0.001	0.001	0.001							
TPH Fractions																					
TPH ali EC05-EC06	6	1	1		30	1.000	1.000	Potentially Suitable For Use	1	1	1	1	1	1							
TPH ali >EC06-EC08	6	1	1		73	1.480	1.145	Potentially Suitable For Use	1	1	1	1	1	1							
TPH ali >EC08-EC10	6	1	1		19	1.480	1.145	Potentially Suitable For Use	1	1	1	1	1	1							
TPH ali >EC10-EC12	6	1	60		93	53.805	33.741	Potentially Suitable For Use	60	1	21	1	15	1							
TPH ali >EC12-EC16	6	1	60		782	50.177	30.796	Potentially Suitable For Use	60	1	21	1	15	1							
TPH aro EC05-EC07	6	1	1		266	1.480	1.145	Potentially Suitable For Use	1	1	1	1	1	1							
TPH aro >EC07-EC08	6	1	1		626	1.480	1.145	Potentially Suitable For Use	1	1	1	1	1	1							
TPH aro >EC08-EC10	6	1	1		33	1.480	1.145	Potentially Suitable For Use	1	1	1	1	1	1							
TPH aro >EC10-EC12	6	1	60		182	50.177	30.796	Potentially Suitable For Use	60	1	21	1	15	1							
TPH aro >EC12-EC16	6	1	60		2000	50.177	30.796	Potentially Suitable For Use	60	1	21	1	15	1							

Legend: MG denotes Made Ground, NAT denotes Natural Ground