WML CONSULTING
Civil, Structural and Geotechnical Engineers

Geo-Environmental Investigation & Assessment

For a site at

Process Facility, Axion Trafford

Undertaken on behalf of

Axion Polymers Ltd

Report No. 10785G-WML-XX-ZZ RP-G-0001

January 2023

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Executive Summary

Site Location	The site comprises a plot of land to the west of S. Norton, and east of Tenax Road, Trafford. The site is centred on approximate Ordnance Survey National Grid Reference (NGR) 378586E, 397236N and has an indicative postcode of M17 1JT.
Development Proposals	The proposed development is understood to comprise the construction of a new steel framed process building of as-yet undetermined size.
Ground Conditions	Ground conditions comprised made ground to depths of between 0.30 and 1.25 metres below ground level (mbgl). This was underlain by grey-brown silty fine sand to a maximum depth of 5.50 mbgl. A horizon of peaty clay with an organic odour was encountered in one location (WS04) between 0.70 and 1.00 mbgl. Below these depths a stiff cohesive Glacial Till with occasional sand horizons was encountered, which extended to a proven depth of 12.00mbgl.
Site Preparation	Where buried structures are locally encountered, they should be broken out to suitable depths below formation levels where they are to impinge on the proposed redevelopment. Any asphalt/concrete hardstanding and below ground foundations removed as part of the clearance work, subject to appropriate screening and crushing, will be suitable for re-use as bulk fill beneath hard cover areas. Existing underground services crossing the proposed areas of construction will need to be accurately located, identified and diverted prior to any works commencing. In consideration of site levels, no significant reprofiling earthworks are anticipated.
Foundations and Floor Slabs	The use of shallow foundations for the new development may not be practicable. However, this would depend on the structures location and required loads. At this stage consideration could be given to ground improvement by vibro-compaction to achieve a relatively consistent state of compaction throughout the made ground and Glaciofluvial Sheet Deposits. Under such circumstances, a minimum net allowable bearing pressure of 150kN/m^2 would usually be assumed. It cannot be ruled out that new structure may need to be supported on piles. Pile design should assume no side support (skin friction) for the pile sections surrounded by made ground and any organic strata and may need to be designed to withstand potentially negative skin friction effects within the cohesive strata. If the groundworks are required to extend to within the easement of the high-pressure gas main present beneath Tenax Road, guidance should be sought from the utility owner.
Groundwater and Excavations	No groundwater strikes or seepages were noted during drilling of any of the majority exploratory holes with the exception of WS02 and WS03 where groundwater was encountered at 3.00mbgl.
Drainage	In consideration of the site being immediately underlain by granular deposits, soakaways may be a viable drainage solution for the development.
Concrete Classification	Typical design sulphate (DS) class and "Aggressive Chemical Environment for Concrete" (ACEC) class for the site are DS-1 and AC-1 respectively.
Pavements/Roads	New pavements should be designed on a CBR value for formation soils of no more that 2.5% where made ground is exposed at formation level. However, the CBR may be increased to at least 5% where the sub-grade is formed by well compacted granular fill or unsaturated Glaciofluvial deposits.
Ground Gas	In consideration of the proposed nature of the process facility, which would include a large open structure with a reinforced industrial ground bearing slab, the risk from ground gas arising from and migrating to the site is assessed as low with no further action necessary in this respect. However, this may need to be confirmed once the exact location and type of structure have been confirmed. Therefore, it cannot be ruled out that smaller offices or staff amenities such as toilets, canteens within the larger structure may require the installation of a suitable gas protection membrane.

Ground Contamination	In consideration of the chemical test results, it is concluded that the made ground on the site does not contain chemical contaminants at concentrations which are considered likely to pose a significant risk to site end users. However a single sample of made ground contained asbestos fibres (WS05 at 0.50mbgl). Where surfaced with buildings and hardstanding, there will be no mechanism for a direct contact pollution linkage between the soils, residual unidentified contaminants or for any asbestos fibres to become airborne. Therefore the risk to end-users and to the general public will be negligible in such areas. However, a direct contact pollution linkage may be plausible in any proposed landscaped areas. Therefore, new landscaped areas should be capped with a 300mm horizon of clean sub-soil and topsoil thus removing any perceived pollution linkage.
Waste Soils	For guidance and based on the current information, it is likely that the majority of made ground would be classified as Non-Hazardous with natural deposits, classified as Inert for landfill disposal. This would need to be confirmed with the landfill operator.

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APPENDICES

1.0 INTRODUCTION

Appointment

1.1 WML Consulting has been commissioned by Axion Polymers Ltd to undertake a Geo-environmental Investigation and Assessment on a currently disused area to the south of the Axion Polymers site in Trafford Park, Manchester.

Proposed Development

1.2 The site is currently being assessed for its potential to be developed for use as part of the larger S. Norton site to the east.

1.3 The site, if developed, is likely to include a portal frame structure to approximately half to two-thirds of the site area, to house recycling equipment. External areas are likely to comprise mainly concrete hardstanding for access routes, parking and outdoor storage.

Objective

1.4 The objective of the ground investigation and assessment was to provide geotechnical recommendations for construction design purposes together with a geo-environmental risk assessment in terms of possible ground contamination.

1.5 To achieve the objective, the following tasks were undertaken:

- Design a Phase 2 Ground Investigation in accordance with the Environment Agency (2004) Land Contamination Risk Management (LCRM), April 2021.
- Characterise the ground conditions in terms of geology, existing foundation design detail, soil geotechnical parameters and ground contamination from information provided by the ground investigation.
- Provide recommendations regarding suitable foundations and floor slabs, together with any other geotechnical considerations that could affect possible future development.
- Determine a ground conceptual model for the site so as to undertake a ground contamination Generic Quantitative Risk Assessment (GQRA).

Scope

1.6 As a Phase 1 Desk Study for the site has not been requested, a limited review of publicly available environmental setting information has been carried out.

1.7 The ground investigation comprised the formation of foundation inspection pits and window sample probeholes undertaken with reference to BS5930:2015 + A1:2020 Code of Practice for Ground Investigation and BS10175:2011 together with A1:2013, "Investigation of Potentially Contaminated Sites - Code of Practice" except where superseded by EN ISO 22475-1 "Geotechnical Investigation and Assessment – Sampling by Drilling and Excavation and Groundwater Measurements".

1.8 Geotechnical soil testing has been undertaken in general accordance with guidelines provided in BS1377:1990 – Parts 1-9, "Method of Test for Soils for Civil Engineering Purposes". Samples for chemical analysis were obtained and handled generally in accordance with the current guidelines (BS10175: 2011 and A2:2017).

2.0 SITE LOCATION AND DESCRIPTION

Site Location

2.1 The site comprises an approximately rectangular area of approximately 9,200m^2, situated to the west of the existing S. Norton Facility and to the immediate east of Tenax Road. The site is centred on approximate Ordnance Survey National Grid Reference (NGR) 378586E, 397236N and has an indicative postcode of M17 1JT.

2.2 The site is bounded to the north by an area of hardstanding used for staff vehicle parking at the Axion Polymers site; to the east by a yard and steel framed warehouse building operated by FMG Repair Services. To the south the site is bounded by the S. Norton access road, and B.H. House with Tenax Road to the west.

2.3 The site location and existing site layout referenced SK01 and SK02 respectively, are included within Appendix 01.

Site Description

2.4 At the time of the intrusive investigation on 3rd November 2022, the site was demarcated into three zone by metal fencing. The northern area of the site was not in use, and comprised soft landscaping, surfaced with self-seeded vegetation.

2.5 The majority of the central, eastern and southern sections of the site were surfaced with unmaintained low lying vegetation and areas of concrete hardstanding which is used sporadically for materials storage and vehicle parking. However, no materials storage was in evidence at the time of the investigation.

2.6 Low level relict brick walls, assumed to indicate the locations of historic buildings, were present in the central section of the eastern site area, typically one to three courses high.

2.7 The western area of the site was surfaced with concrete hardstanding and in use by Kelly Ltd for parking of freight vehicles.

2.8 A stand of semi-mature trees extended along the northern site boundary, adjoining the Axion Polymers staff car park. Additional immature trees and shrubs were also located along the site boundaries and sporadically around the site where hardstanding was absent or in a poor state of repair.

Topography

2.9 A topographic survey of the site was not available prior to the issue of this report, however online mapping provided by https://en-gb.topographic-map.com, indicates the site to be relatively level with elevations ranging somewhere between 25 and 28 metres Above Ordnance Datum (AOD).

2.10 A change in elevation in the southern section of the site was accommodated by a low retaining wall of approximately 0.5m in height, beyond which the site appeared approximately level. The western part of the site appeared to slightly reduce in elevation from north to south.

3.0 SUMMARY OF ENVIRONMENTAL AND HISTORICAL SETTING

3.1 The following paragraphs summarise the findings of the outline environmental setting data review.

Geology

3.2 British Geological Survey (BGS) 1:50,000 scale plans indicate that the site is underlain by undivided artificial ground. BGS mapping shows the site to be underlain by superficial deposits comprising Glaciofluvial Sheet Deposits (Devensian Sand and Gravel). The underlying solid strata is indicated to comprise Chester Formation Sandstone deposits.

3.3 No faults are recorded within 250m of the site according to BGS online mapping.

Radon

3.4 The property is in an area as defined by the UK Health Security Agency where less than 1% of properties are above the radon action level of exposure. Therefore, no radon protection measures are necessary for new structures as described in publication BR211 by the Building Research Establishment.

Mining and Subsidence

3.5 Although the site is situated within the Lancashire Coal Mining Reporting Area, there are no records of mine entries, abandoned mines catalogue entries, surface coal resource areas, mine entry potential zone of influence sites, fissures and breaklines, past or probable shallow coal mine workings or coal outcrops within 250m of the site.

3.6 The site also does not lie within a development high risk area according to the Coal Authority.

3.7 Therefore, on the basis of the indicated geology, risks to the development from subsidence relating to shallow, unrecorded mine workings or from non-coal mining activity at the site are considered to be low and can be discounted.

Environmental Setting

3.8 The superficial deposits underlying the site is classified as a 'Secondary A' Aquifer, and the bedrock underlying the site is classified as a Principal Aquifer. The site does not lie within a designated groundwater Source Protection Zone (SPZ). Online groundwater vulnerability mapping provided by Defra shows the site to be of medium to high groundwater vulnerability.

3.9 There are no main river watercourses situated within 250m of the site.

3.10 There are no active or historic landfills recorded within 250m of the site.

Site History

3.11 The earliest publicly available map dated 1885-1900 indicates the site to comprise an area of undeveloped agricultural land to the south of Trafford Park. By 1897-1907, a narrow roadway was indicated to pass through the southern part of the site, and Trafford Park was no longer indicated to be present to the north. By 1920-1940, the site was marked as undeveloped with the previously identified road. By this time the areas to the north-east and east were indicated to have been developed with large industrial buildings.

3.12 Between 1937 and 1961 the industrial buildings were described as Mills, with an additional industrial building to the north. A railway line was also indicated approximately 100m south of the site. Between 1945 and 1965 the Ocean Iron Works was indicated to be present to the north-east of the site, and the development immediately north of the site was no longer shown. Maps dated 1949-1971 indicate the site to have remained undeveloped, however an area of ground working is indicated to the south-east

of the site, extending up to and possibly onto the site boundary. Nearby off-site industrial development is indicated to comprise a mixture of engineering works, ironworks, wool works, a brass foundry, and Anaconda Mills.

3.13 No historic development within the site is shown on publicly available Ordnance Survey mapping, however Aerial imagery of the site dating to 2000 shows a large rectangular building with an approximate footprint of 1,700m^2 in the southern area of the site, with outbuildings to the east, which is shown in 2017 imagery to have been demolished. The concrete area to the west of the site was still evident and currently in use for road freight parking.

Preliminary Contamination Risk Assessment

3.14 Under the proposed development scenario, potential pollution linkages are tentatively considered low to moderate, with associated preliminary risks being assessed as low.

3.15 The approach at the initial Desk Study stage must, however, be precautionary until such time as uncertainties in the conceptual model can be verified by appropriate site investigation.

3.16 Such uncertainties relate in the main to the potential for ACM and asbestos fibres to be present within shallow soils resulting from historical development and demolition activities, and the potential for metals, metalloids and hydrocarbon contamination to be present associated with the historic use of the site.

4.0 SITE INVESTIGATION

Rationale

4.1 Intrusive investigations were undertaken primarily to provide geotechnical parameters for structural design purposes but also to verify the anticipated low environmental risk.

4.2 At the time of the investigation the western section of the site was still in use and cannot be investigated until the current lease expires. The extreme west of this area may also within the easement for a high pressure gas main which extends north-south along the edge of Tenax Road and the western site boundary.

4.3 Windowless sampling probeholes were undertaken to provide information on near surface deposits and to obtain samples for chemical and geotechnical analysis. Due to the small diameter of the probing equipment, the depth of penetration achieved is dependent on favourable ground conditions. As such, ground penetration may be restricted in circumstances where the ground is particularly strong or contains relatively large obstructions such as cobbles and/or boulders. These were supplemented by the drilling of two cable-percussive boreholes, a method with improved ground penetration potential compared with windowless sampling probeholes.

4.4 Where fencing or historic walls limited access with the window sampling rig, these were replaced with hand pits in order to obtain samples of made ground and surface soils for chemical analyses. These are referenced WS04 and WS05 on the logs.

4.5 Two of the windowless sampling probeholes were installed with groundwater monitoring standpipes for the measurement of groundwater rest levels following the completion of the ground investigation works where required.

4.6 Cable percussive boreholes were formed close to anticipated building footprints in order to assess the deeper ground conditions in case structural loads or ground conditions require consideration of piled foundations.

4.7 Chemical analysis of a general suite of contaminants was undertaken on selected samples of shallow soil to confirm the low-moderate contamination risk.

Intrusive Works

4.8 Ground investigation work was undertaken by Dynamic Sampling Ltd and Paul Blackledge Limited on the 3rd and 4th November 2022. This comprised the formation of 3no. windowless sample probeholes and 2no. hand dug pits to a maximum depth of 5.00 metres below ground level (mbgl), and the formation of 2no cable-percussion boreholes to a maximum depth of 12.00 mbgl.

4.9 The exploratory hole records are presented in Appendix 03 whilst the exploratory hole locations are shown on drawing SK-01 in Appendix 01.

4.10 Site investigation photographs are presented within Appendix 02.

Geotechnical and Chemical Testing

4.11 In-situ geotechnical testing was undertaken at regular intervals during the formation of the probeholes and cable percussive boreholes in the form of Standard Penetration Tests (SPTs). The results for these are presented on the descriptive logs in Appendix 03.

4.12 Geotechnical soils testing was undertaken on selected samples for the following:

- Natural moisture content
- Liquid and plastic limits.

4.13 The results of geotechnical testing are presented in Appendix 05.

4.14 Chemical analysis was undertaken on selected soil samples for the following contaminants of concern:

- Total Arsenic, Boron, Cadmium, Chromium VI, Copper, Lead, Mercury, Nickel, Selenium, Vanadium, Zinc.
- Total Cyanide, Phenols, Sulphur, Sulphate.
- Speciated USEPA Polyaromatic Hydrocarbons (PAH).
- Total petroleum hydrocarbons (TPHCWG).
- BTEX & MTBE.
- Asbestos Screen and Identification.
- 2:1 water/soil sulphate extract, pH.

4.15 The results of chemical analysis are presented in Appendix 04.

5.0 GROUND CONDITIONS

Stratigraphy

5.1 Ground conditions comprised made ground to depths of between 0.30 and 1.25 metres below ground level (mbgl). This was underlain by grey-brown silty fine sand to a maximum depth of 5.50 mbgl. A horizon of peaty clay with an organic odour was encountered in one location (WS04) between 0.70 and 1.00 mbgl. Below these depths a firm becoming stiff cohesive Glacial Till with occasional sand horizons was encountered, which extended to a proven depth of 12.00mbgl.

Made Ground

5.2 Concrete hardstanding was encountered from the surface in exploratory holes WS01, WS02, WS03 and BH02. This was noted to extend to depths of between 0.16 and 0.20 mbgl.

5.3 Made ground was encountered within all of the exploratory holes, extending to depths of between 0.30m and 1.25 mbgl and generally comprised a grey/brown slightly silty slightly clayey gravelly, slightly cobbly sand with variable content of typically limestone and concrete gravel.

5.4 However, within BH01 this comprised granualr demolition material of limestone, brick and concrete, overlying a loose black ash and brick fill. Within BH02 the made ground comprised limestone gravel to a depth of 0.30 mbgl.

5.5 Within WS01 to WS03 the made ground was noted to comprise dark brown slightly silty fine sand with a low content of concrete cobbles and boulders.

5.6 Exploratory hole WS05 was excavated to a maximum depth of 0.90 mbgl as a service inspection pit prior to termination due to time limitations. The full thickness of made ground in that location was not proven.

5.7 No SPTs were undertaken in the made ground due to the requirement to excavate service inspection pits to 1.20mbgl or into hard natural ground.

5.8 The SPT at 1.20mbgl within BH01 extend into the underlying natural strata, therefore the test result is not considered to be reflective of either the made ground or underlying strata.

Recent Organic Deposits

5.9 Within WS04 a thin horizon of peaty clay was encountered between 0.70 and 1.00 mbgl within the service inspection pit.

5.10 This comprised a dark brown peaty clay noted to have a slight odour of decaying organic matter, and included a significant content of plant fibres.

5.11 No additional horizons of organic soils were noted across the site area.

Glaciofluvial Deposits

5.12 Underlying the Made Ground and Recent Deposits strata considered to represent Glaciofluvial strata was encountered to depths of between 4.60 and 5.50 mbgl.

5.13 These generally comprised pale grey/brown slightly silty fine to medium sand, with occasional laterally impersistent gravel deposits.

5.14 SPT 'N' values within the glaciofluvial deposits ranged between 5 and 25, indicating these to be loose to be of medium dense compaction.

Glacial Till

5.15 Glacial Till was encountered within WS01, BH01 and BH02, typically comprising brown slightly sandy slightly clayey slightly silty slightly gravelly soft to stiff clay.

5.16 A horizon of dense brown coarse sand was encountered from 7.90 to 9.55 mbgl in BH01, and a horizon of fine, silty brown sand was encountered from 11.50 to 12.30 mbgl in BH02.

5.17 SPT 'N' values within the cohesive Glacial Till ranged from 4 to 27, indicating a range from soft to very stiff. However, these were typically greater than 10, indicating stiff to very stiff consistency. The recorded 'N' value of 4 corresponded to a 1.1m thick horizon of soft clay which was encountered at 6.10 mbgl in BH01 only and therefore may not be laterally extensive.

5.18 Within the cohesive soils natural moisture contents of 15% and 17% were recorded within the glacial till with liquid limits of 16% and 20%, together with corresponding plasticity indices of 15% and 20% (modified to 13% and 18%) indicating clay of low and intermediate plasticity and low volume change potential.

5.19 Natural moisture contents within the granular horizon were record at 13 and 15%.

Visual/Olfactory Evidence of Contamination

5.20 With the exception of ashy fragments within made ground in BH01, no visual/olfactory evidence of contamination were noted during the ground investigation.

5.21 An organic odour was noted from the peaty clay arisings within WS04 however this is considered due to its localised organic content.

Groundwater

5.22 No groundwater strikes or seepages were noted during drilling of the majority exploratory holes with the exception of WS02 and WS03 where groundwater was encountered at 3.00mbgl.

5.23 However, water was added to aid drilling of the cable percussive boreholes, which is likely to have masked any groundwater which may have been encountered at depth.

5.24 It should be appreciated that the groundwater observations described above have been undertaken during a very short period of time. Significant variations in the long-term groundwater regime may occur at other times, particularly with prolonged, extreme weather conditions, and that no account can be taken of such in this report.

General

5.25 It should also be appreciated that ground conditions may vary between and away from the exploratory hole positions, and that no account can be taken in this report of such variations.

6.0 GEOTECHNICAL APPRAISAL

Site Preparation

6.1 Although considered unlikely construction near any retained trees and importantly within any RPA's should be undertaken with due regard to guidance provided in BS5837:2012 'Trees in Relation to Design, demolition and construction – recommendations'.

6.2 Historical/existing foundations, ground floor slabs and other buried concrete/brick obstructions associated with the sites former use may need to be broken out to suitable depths below formation levels where they are to impinge on any proposed structures. Such materials removed as part of the clearance work, subject to appropriate screening and crushing, will be suitable for re-use as bulk fill beneath hard cover areas.

6.3 No significant quantities of suitable topsoil have been encountered at the site, so it is anticipated that any topsoil required for capping to landscaped areas will need to be imported to site, subject to suitability testing.

6.4 Site enabling works and subsequent excavations should take account of the need to maintain the integrity of adjacent infrastructure such as roads and adjacent property. Depending upon the final proposals this may need to include support measures in this respect, especially along the western site boundary with Tenax Road and the gas main.

6.5 No significant earthworks are anticipated to facilitate redevelopment of the site with the exception of localised re-grading.

Foundations

6.6 Any made ground and incompetent natural strata such as the shallow peaty clay within WS04, is considered unsuitable for the direct support of structural loads as their generally incompetent nature could result in unacceptable total and differential settlements.

6.7 Details of the proposed development structure have not been provided at the time of reporting, but is presumed to comprise a single storey steel framed structure with unknown, but presumed fairly high loading. Therefore, based on the thickness of made ground and the variable competency of shallow natural strata, the use of shallow foundations for the new development may not be practicable across the whole site. However, this would depend on the structures location and required loads.

6.8 At this stage consideration could be given to ground improvement by vibro-compaction to achieve a relatively consistent state of compaction throughout the made ground and Glaciofluvial Sheet Deposits. Under such circumstances, a minimum net allowable bearing pressure of 150kN/m^2 is anticipated although this should be confirmed by consultation with a reputable specialist contractor. This would also need to take into consideration removal of any obstructions and any easement due to vibration associated with the gas main close to the western site boundary.

6.9 Alternatively any new structures may need to be supported on piles. Pile design should assume no side support (skin friction) for the pile sections surrounded by made ground and any organic strata and may need to be designed to withstand potentially negative skin friction effects within the cohesive strata.

6.10 However, for preliminary considerations, a pre-cast driven concrete pile would minimise waste soil arisings. However, pile type, selection and design should to be undertaken in conjunction with a reputable, specialist piling contractor, ideally with experience of the local ground conditions.

6.11 Notwithstanding the above, all formations will need to be carefully inspected to confirm the anticipated soil strength. Any soft/loose or otherwise incompetent soils so encountered should be excavated and replaced with foundation concrete.

6.12 Foundation construction will need to take account of any remaining services and, where they are in close proximity, may need to be taken down to beneath the lowest level of the service trench so that their structural integrity is maintained.

6.13 If the groundworks are required to extend to within the easement of the high-pressure gas main present beneath Tenax Road, guidance should be sought from the utility owner.

Floor Slabs

6.14 In consideration of the proposed end use it is anticipated that ground bearing floor slabs would be formed on treated and/or compacted ground.

Excavations and Groundwater

6.15 Excavations at the site will be feasible using conventional hydraulic plant.

6.16 All excavations deeper than around 1.20mbgl and requiring man-entry will require adequate lateral support, or will need to be battering back to a safe angle to ensure their stability.

6.17 Groundwater inflows should be anticipated in excavations beyond a depth of around 3.00mbgl. It cannot be discounted that exclusion measures such as interlocking sheet piles will be required to prevent excessive ingress of groundwater into excavations during de-watering operations if/where excavations extend beyond 3.00mbgl.

6.18 Such support measures will also reduce the risk of 'running sand' conditions leading to loss of ground beneath nearby adjacent structures or infrastructure.

6.19 Excavations for foundations should be protected from the ingress of surface water run-off during times of heavy and or prolonged rainfall to reduce the potential for softening of formation levels.

Concrete Design

6.20 Design/mix of buried concrete should be undertaken in accordance with the "Aggressive Chemical Environment for Concrete" (ACEC) classification, of BRE Special Digest 1:2005 (Concrete in Aggressive Ground). With reference to the site history, it is deemed appropriate to classify the site as "Brownfield", with respect to BRE Special Digest.

6.21 The values of 2:1 water/soil extract for sulphate at/below foundation depths range between 40 and 50mg/l.

6.22 Values of pH at similar depths range from 8.67 to 9.08 indicating slightly to moderately alkaline conditions.

6.23 Based on the results of chemical analysis, the typical design sulphate (DS) class and "Aggressive Chemical Environment for Concrete" (ACEC) class for the site are DS-1 and AC-1 respectively.

Pavement Design

6.24 It is recommended that new pavements should be designed on a CBR value for formation soils of no more that 2.5% where made ground is exposed at formation level. However, the CBR may be increased to at least 5% where the sub-grade is formed by well compacted granular fill or unsaturated Glaciofluvial deposits.

6.25 Due to the potential variation in ground conditions across the site, the design value will need to be reviewed and confirmed by suitable in-situ testing at formation levels following any earthwork operations and prior to pavement construction.

6.26 Notwithstanding this, the formation at all levels should be proof-rolled prior to pavement construction, and any soft zones thus revealed should be excavated out, with the resulting excavation in-filled with appropriately graded engineered granular fill.

Drainage and Soakaways

6.27 In consideration of the site being immediately underlain by a significant thickness of granular strata, soakaways may be a viable drainage solution for the development. Should this be a requirement of the development, the suitability of soakaway drainage should be verified by suitable permeability testing and consideration of longer term groundwater levels.

7.0 GENERIC QUANTITATIVE RISK ASSESSMENT (GQRA)

7.1 Preliminary assessment has concluded that, under the proposed commercial end-use, potentially significant pollution linkages are not envisaged or are considered unlikely, with associated preliminary risks to human health being generally assessed as low.

7.2 No visual or olfactory evidence of significant ground contamination has been recorded from the intrusive investigations.

7.3 It has been considered prudent to adopt a precautionary principal and undertake chemical analysis of the sub-surface soils to confirm the human health risk status of the site.

Human Health

7.4 Selected samples have been analysed for a general suite of contaminants of concern and compared against Screening Levels (SL's) for human health to determine the significance of the measured concentrations in relation to the site conceptual model. Thus, a Generic Quantitative Risk Assessment has been undertaken in line with guidelines provided in the Environment Agencies Model Procedures for the Land Contamination Risk Management (LCRM), April 2021.

7.5 The criteria for a limited number of contaminants have been derived by DEFRA in their document entitled SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination, April 2014.

7.6 Within the document, Category 4 Screening Levels (C4SL's) are described as being more pragmatic than previous screening criteria and represent concentrations in soil that present an 'acceptable' level of risk within the context of Part 2A.

7.7 The National Planning Policy Framework states that 'after development, as a minimum, land should not be capable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990'. Therefore, by inference, the C4SL's are appropriate for use in the planning context.

7.8 Although the SP1010 document states that C4SL only apply for a 'sandy loam soil with 6% soil organic matter', it is generally accepted that assessment criteria for metals are not sensitive to changes in soil organic content (SOM). The C4SL's have therefore been adopted as assessment criteria in this report for the listed metals within the SP1010.

7.9 Subsequent to SP1010, LQM/CIEH have published a document entitled 'The LQM/CIEH S4ULs for Human Health Risk Assessment' 2015. In brief, the document provides updated assessment criteria which have been derived in accordance with UK legislation, national as well as EA policy and using a modified version of the CLEA software and available guidance. The new screening criteria, or Suitable 4 Use Levels (S4ULs), are intended to provide a complete and updated replacement to the previous LQM/CIEH GAC of 2009. As such they are considered appropriate for use in this assessment for other contaminants not covered by C4SL's and/or for organic contaminants assuming a worst-case Soil Organic Matter (SOM) of 1% as an initial conservative assessment.

7.10 For each contaminant, S4UL's and C4SL's have been calculated for six land use scenarios, namely:

- Residential with homegrown produce.
- Residential without homegrown produce.
- Allotments.
- Commercial.
- Public Open Space, near residential housing.
- Public Parks, remote from residential housing.

7.11 In light of the proposed development, the SLs for a "Commercial" end-use are considered appropriate for the assessment, based on the proposed use of the property as a new process facility.

7.12 A table of relevant SL's are provided in Appendix 06.

Soil Test Results

7.13 10no soil samples were analysed for a suite of typical brownfield Contaminants of Concern (CoC). No exceedances of the SL's for a Commercial end-use scenario were recorded for any of the soil samples.

7.14 An additional 2no samples of made ground were analysed for speciated TPH, all of which recorded concentrations below the SL's for a "Commercial" end-use.

7.15 Screening for the presence of asbestos fibres was carried out on ten soil samples. One soil sample (WS05, taken from 0.50 to 0.60 mbgl), was found to contain loose fibres and insulation, confirmed by laboratory testing to include chrysotile and amosite fibres. Quantification was carried out on the sample, with a result of 0.098% asbestos by weight.

Discussion and Conclusions

Human Health

7.16 In consideration of the chemical test results, it is concluded that the made ground on the site does not contain chemical contaminants at concentrations which are considered likely to pose a significant risk to site end users.

7.17 Asbestos fibres were encountered within a single sample of the made ground (WS05 at 0.50mbgl) and as such it cannot be wholly discounted that made ground beneath other areas of the site could contain ACM and/or free fibres together with other unidentified contamination.

7.18 Notwithstanding this, where surfaced with buildings and hardstanding, there will be no mechanism for a direct contact pollution linkage between the soils, residual unidentified contaminants or for any asbestos fibres to become airborne. Therefore the risk to end-users and to the general public will be negligible in such areas.

7.19 However, a direct contact pollution linkage may be plausible in any proposed landscaped areas. Therefore, new landscaped areas should be capped with a 300mm horizon of clean sub-soil and topsoil thus removing any perceived pollution linkage.

8.0 GROUND GAS RISK ASSESSMENT

Ground Gas Conceptual Model

8.1 The site is not within a Radon Affected Area as defined by the Health Security Agency.

8.2 There are no recorded current or historic landfills within influencing distance of the site.

8.3 In consideration of the underlying geology, risks of shallow abandoned mine workings which could contain hazardous gases are considered unlikely.

8.4 No appreciable thickness of made ground or other soil with significant organic content has been encountered beneath the site.

8.5 However, previous gas monitoring on surrounding sites, within the clients control, have recorded the presence of elevated concentrations of carbon dioxide up to 3.1% with methane below detectable limits and no positive gas flows.

Results and Recommendations

8.6 In consideration of the conceptual model and the proposed nature of the process facility, which would include a large open structure with a reinforced industrial ground bearing slab, the risk from ground gas arising from and migrating to the site is assessed as low with no further action necessary in this respect.

8.7 However, this may need to be confirmed once the exact location and type of structure have been confirmed. Therefore, it cannot be ruled out that smaller offices or staff amenities such as toilets, canteens within the larger structure may require the installation of a suitable gas protection membrane.

9.0 OTHER POTENTIAL DEVELOPMENT CONSIDERATIONS

Excavated Soils

9.1 Groundworks undertaken during the development will produce excavated soil which will require appropriate site management. Principally, and in line with the sustainable development agenda, any soils arising from site excavations should firstly be considered for re-use where possible by incorporation into the development.

9.2 However, it is anticipated that all site won soils will likely be surplus to requirements and will need to be removed under appropriate duty of care.

9.3 For guidance and based on the current information, it is likely that the majority of made ground would be classified as Non-Hazardous and natural strata Inert, for landfill disposal. This would need to be confirmed with the landfill operator.

9.4 The presence of asbestos containing materials (ACM), comprising loose fibres and insulation within shallow made ground has been confirmed in one location (WS05 at 0.50mbgl). Quantification analysis indicated that the sample contained Asbestos fibres (amosite and chrysotile), at a reported concentration of 0.098% by weight. A watching brief for the presence of suspected asbestos containing materials should be carried out during preparatory development earthworks, and a management plan put into place for the management and disposal of this material.

9.5 It should be noted that the chemical analysis results for disposal classification are assessed against different assessment criteria to those relating to contamination risk assessment. Soils that are deemed suitable for use in terms of risk to human health and the environment may not necessary be un-contaminated for disposal purposes.

9.6 It will be the responsibility of the waste producer to undertake testing and classification of any waste soils for disposal to an appropriately licenced landfill in accordance with current guidelines.

Imported Fill

9.7 Imported fill will be subject to specific quality requirements and should be accompanied by appropriate certification to confirm its suitability. Allowance should also be made for testing imported fill materials prior to placement to ensure suitability.

Water Supply Pipes

9.8 The relevant water supply provider will need to be consulted with regards the selection of suitable water supply pipe materials for the development, should these be required. In light of the ground conditions encountered, the requirement for specific materials and measures to protect the water supply from ground contamination are not anticipated.

APPENDIX 01

Drawings

Project: Process Facility, Axion Trafford					
Title: Ground Investigation Layout					
Job No. 10785G	Drawing No. SK01	Drawn T SHEEN	Checked S SEDDON	Date 20/01/2022	Scale DO NOT SCALE

WML CONSULTING
Civil, Structural & Geotechnical Engineers

No.8 Oak Green
Earl Road
Stanley Green Business Park
Cheadle Hulme
Cheshire SK8 6QL
Tel 0161 482 0600
Fax 0161 486 9210
e-mail info@wmlconsulting.com
www.wmlconsulting.com

Key:

- Windowless Sampling Hole
- Cable Percussion Borehole

North

APPENDIX 02

Site Investigation Photographs

Photograph 1
BH02 inspection pit arisings and concrete core detail.

Photograph 2
WS01 detail of concrete core.

Photograph 3
WS02 detail of concrete core.

APPENDIX 03

Exploratory Hole Records

WML CONSULTING	Project Title: Process Facility, Axion		BH01
	Project Number: 10785G	Client: Axion Polymers	Sheet 1 Of 2
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 04/11/2022	Method: Cable Percussion	Driller:	Logged By: PBD

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
					0.55	Grey gravel of limestone brick and concrete. (MADE GROUND)		
					1.00	Loose black, gravel sized fragments of ash and brick. (MADE GROUND)		
1.20 - 1.65	SPT	N=19			1.25	Medium dense, dark brown, coarse SAND. (GLACIOFLUVIAL DEPOSITS)		
2.00 - 2.45	SPT	N=18			2.00			
					2.80			
3.00 - 3.45	SPT	N=16			3.00	Medium dense, brown, coarse SAND with mixed gravels. (GLACIOFLUVIAL DEPOSITS)		
4.00 - 4.45	SPT	N=12			4.00			
5.00 - 5.45	SPT	N=13			5.00			
					5.50	Stiff, brown, boulder CLAY. (GLACIAL TILL)		
6.00 - 6.45	SPT	N=4			6.00			
					6.10	Soft locally very soft, brown, silty, laminated CLAY. (GLACIAL TILL)		
					7.00			
					7.20	Stiff, brown, boulder CLAY. (GLACIAL TILL)		
7.50 - 7.95	SPT	N=21			7.90			
					8.00	Dense, brown, coarse SAND. (GLACIAL TILL)		
						Borehole Continues		

KEY

D - Disturbed Sample
B - Bulk Sample
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W - Water Sample
S - Standard Penetration Test
C - Cone Penetration Test
N - Penetration Test 'N' Value
V - Hand Shear Vane kPa
▽ - Groundwater Strike
▼ - Groundwater Level

AGS

REMARKS

No Groundwater Encountered

Scale: 1:50

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed

Daily Log Of Depths

Date	Casing	Water

Chiselling

From	To	Hours

WML CONSULTING	Project Title: Process Facility, Axion		BH01
	Project Number: 10785G	Client: Axion Polymers	Sheet 2 Of 2
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 04/11/2022	Method: Cable Percussion	Driller:	Logged By: PBD

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
9.00 - 9.45	SPT	N=35			9.00	Dense, brown, coarse SAND. (GLACIAL TILL)		
					9.55			
					10.00	Stiff, brown, boulder CLAY. (GLACIAL TILL)		
10.50 - 10.95	SPT	N=24			11.00			
12.00 - 12.45	SPT	N=27			12.00			
					12.45	End Of Borehole At 12.45 m		
					13.00			
					14.00			
					15.00			
					16.00			

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AGS

REMARKS

No Groundwater Encountered

Scale: 1:50

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed

Daily Log Of Depths

Date	Casing	Water

Chiselling

From	To	Hours

WML CONSULTING	Project Title: Process Facility, Axion		BH02
	Project Number: 10785G	Client: Axion Polymers	Sheet 1 Of 2
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 03/11/2022	Method: Cable Percussion	Driller:	Logged By: PBD

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
					0.20	Concrete. (CONCRETE)		
					0.30	Limestone gravel. (MADE GROUND)		
1.20 - 1.65	SPT	N=10			1.00	Loose to medium dense, dark grey, fine silty SAND. (GLACIOFLUVIAL DEPOSITS)		
					1.55			
2.00 - 2.45	SPT	N=16			2.00	Loose to medium dense dark brown, coarse SAND. (GLACIOFLUVIAL DEPOSITS)		
3.00 - 3.45	SPT	N=7			3.00			
					3.50			
4.00 - 4.45	SPT	N=12			4.00	Medium dense, brown, fine to coarse SAND and GRAVEL. (GLACIOFLUVIAL DEPOSITS)		
5.00 - 5.45	SPT	N=13			5.00			
					5.30	Firm, brown, boulder CLAY. (GLACIAL TILL)		
6.00 - 6.45	SPT	N=13			6.00			
					6.40	Firm, brown, silty, laminated CLAY. (GLACIAL TILL)		
					7.00			
7.50 - 7.95	SPT	N=12			7.90			
					8.00	Firm to stiff, brown, boulder CLAY. (GLACIAL TILL)		
						Borehole Continues		

KEY

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AGS

REMARKS

No Groundwater Encountered

Scale: 1:50

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed

Daily Log Of Depths

Date	Casing	Water

Chiselling

From	To	Hours

WML CONSULTING	Project Title: Process Facility, Axion		BH02
	Project Number: 10785G	Client: Axion Polymers	Sheet 2 Of 2
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 03/11/2022	Method: Cable Percussion	Driller:	Logged By: PBD

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
9.00 - 9.45	SPT	N=15			9.00	Firm to stiff, brown, boulder CLAY. (GLACIAL TILL)		
10.50 - 10.95	SPT	N=16			10.00			
					11.00			
					11.50	Brown, silty, fine SAND. (GLACIAL TILL)		
12.00 - 12.45	SPT	N=12			12.00			
					12.30			
					12.45	Firm, brown, boulder CLAY. (GLACIAL TILL)		
					13.00	End Of Borehole At 12.45 m		
					14.00			
					15.00			
					16.00			

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AGS

REMARKS

No Groundwater Encountered

Scale: 1:50

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed

Daily Log Of Depths

Date	Casing	Water

Chiselling

From	To	Hours

WML CONSULTING	Project Title: Process Facility, Axion		WS01
	Project Number: 10785G	Client: Axion Polymers	Sheet 1 Of 1
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 03/11/2022	Method: Window Sample	Driller: Dynamic Sampling	Logged By: TJS

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.30 - 0.40	ES				0.17	Concrete with rebar at 0.11m. (CONCRETE)		
					0.50	Dark brown slightly silty fine sand. Low content of concrete cobbles and boulders. (MADE GROUND)		
		N=25			1.00	Medium dense dark brown, slightly silty, fine to medium SAND. (GLACIOFLUVIAL DEPOSITS)		
1.30 - 1.40	ES							
		N=12			2.00			
					2.20	Loose to medium dense dark brown fine to medium SAND. (GLACIOFLUVIAL DEPOSITS)		
		N=5			2.90			
					3.00	Dark brown mottled grey fine to medium SAND. (GLACIOFLUVIAL DEPOSITS)		
						Loose dark brown slightly silty fine to medium SAND. (GLACIOFLUVIAL DEPOSITS)		
		N=5			4.00			
					4.30	Loose dark brown fine grained SAND. (GLACIOFLUVIAL DEPOSITS)		
					4.60	Loose dark brown fine to medium SAND. (GLACIOFLUVIAL DEPOSITS)		
		N=24			5.00	Stiff brown slightly sandy CLAY. (GLACIAL TILL)		
						End Of Borehole At 5.00 m		
					6.00			

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REMARKS

No Groundwater Encountered

Scale: 1:40

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed

Daily Log Of Depths

Date	Casing	Water

Chiselling

From	To	Hours

WML CONSULTING	Project Title: Process Facility, Axion		WS02
	Project Number: 10785G	Client: Axion Polymers	Sheet 1 Of 1
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 03/11/2022	Method: Window Sample	Driller: Dynamic Sampling	Logged By: TJS

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
					0.17	Concrete with rebar at base. (CONCRETE)		
					0.70	Pale grey/brown slightly silty sandy, subangular, fine to coarse gravel of mixed lithologies. (MADE GROUND)		
1.00 - 1.20	ES	N=17			1.00	Pale greyish brown slightly silty, very sandy, fine to coarse gravel of mixed lithologies. (MADE GROUND)		
					1.70	Medium dense dark greyish brown slightly silty, fine to medium SAND. (GLACIOFLUVIAL DEPOSITS)		
		N=15			2.00			
					2.10	Medium dense dark brown slightly silty, fine to coarse SAND. (GLACIOFLUVIAL DEPOSITS)		
					2.90	Medium dense dark brown slightly silty, fine to medium SAND. (GLACIOFLUVIAL DEPOSITS)		
		N=10			3.00		▼	
						Medium dense brown slightly silty, fine to coarse SAND. (GLACIOFLUVIAL DEPOSITS)		
		N=13			4.00			
		N=11			5.00	End Of Borehole At 5.00 m		
					6.00			

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▼ - Groundwater Level

AGS

REMARKS

Scale: 1:40

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed
03/11/2022	3				

Daily Log Of Depths

Date	Casing	Water

Chiselling

From	To	Hours

WML CONSULTING	Project Title: Process Facility, Axion		WS03
	Project Number: 10785G	Client: Axion Polymers	Sheet 1 Of 1
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 03/11/2022	Method: Window Sample	Driller:	Logged By: TJS

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.30 - 0.40	ES				0.16	Concrete with rebar at base. (CONCRETE)		
					0.50	Dark grey/brown slightly silty, fine to medium grained sand with low content of angular concrete and limestone. (MADE GROUND)		
		N=14			1.00	Medium dense dark grey/brown slightly silty, fine to medium SAND. (GLACIOFLUVIAL DEPOSITS)		
1.40 - 1.50	ES							
		N=10			2.00			
					2.10	Loose brown slightly silty, fine to coarse SAND. (GLACIOFLUVIAL DEPOSITS) 2.50 Thin band of fine gravel of mixed lithologies		
		N=5			3.00		▼	
					3.40	Loose greyish brown silty, fine to coarse SAND. (GLACIOFLUVIAL DEPOSITS)		
		N=10			4.00	Loose to medium dense brown slightly silty, slightly gravelly, fine to coarse SAND. Gravel is fine to medium subrounded to subangular of mixed lithologies. (GLACIOFLUVIAL DEPOSITS)		
		N=15			5.00	End Of Borehole At 5.00 m		
					6.00			

KEY

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V - Hand Shear Vane kPa
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AGS

REMARKS

Scale: 1:40

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed
03/11/2022	3				

Daily Log Of Depths

Date	Casing	Water

Chiselling

From	To	Hours

WML CONSULTING	Project Title: Process Facility, Axion		WS04
	Project Number: 10785G	Client: Axion Polymers	Sheet 1 Of 1
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 03/11/2022	Method: Hand Dug	Logged By: TJS	Scale: 1:40

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water
0.30 - 0.40	ES				0.25	Dark brown slightly silty, very gravelly sand with a high cobble content of concrete. Gravel sized fragments comprise concrete, brick and mixed lithologies. (MADE GROUND)	
0.80 - 0.90	ES				0.70	Dark brown/black slightly silty, fine to coarse SAND. (MADE GROUND)	
					1.00	Black/dark brown slightly silty, sandy, peaty CLAY with a slight organic odour. (PEATY CLAY)	
					1.20	Pale grey/brown slightly silty fine to medium SAND. (GLACIOFLUVIAL DEPOSITS)	
					2.00	End Of Trial Pit At 1.20 m	
					3.00		
					4.00		
					5.00		
					6.00		
					7.00		
					8.00		

KEY

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▽ - Groundwater Strike
▼ - Groundwater Level

AGS

REMARKS

No Groundwater Encountered

WML CONSULTING	Project Title: Process Facility, Axion		WS05
	Project Number: 10785G	Client: Axion Polymers	Sheet 1 Of 1
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 03/11/2022	Method: Hand Dug	Logged By:	Scale: 1:40

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water
0.50 - 0.60	ES					Dark brown slightly silty, very gravelly sand with a high cobble content of concrete. Gravel sized fragments comprise concrete, brick and mixed lithologies. (MADE GROUND)	
0.80 - 0.90	ES				0.90		
					1.00	End Of Trial Pit At 0.90 m	
					2.00		
					3.00		
					4.00		
					5.00		
					6.00		
					7.00		
					8.00		

KEY

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▽ - Groundwater Strike
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AGS

REMARKS

No Groundwater Encountered

APPENDIX 04

Chemical Testing Results

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/10943
Issue Number: 1 **Date:** 16 November, 2022

Client:
WML Construction
No 8 Oak Green
Earl Road
Stanley Green Business Park
Cheadle Hulme
Cheshire
SK8 6QL

Project Manager: Thomas Sheen
Project Name: Axion Trafford
Project Ref: 10785G
Order No: 10785G
Date Samples Received: 04/11/22
Date Instructions Received: 07/11/22
Date Analysis Completed: 16/11/22

Approved by:

Richard Wong
Client Manager

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 22/10943

Client Project Name: Axion Trafford

Client Project Ref: 10785G

Lab Sample ID	22/10943/1	22/10943/2	22/10943/3	22/10943/4	22/10943/5	22/10943/6	22/10943/7	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	1	2	1	2			
Client Sample ID	WS01	WS01	WS02	WS03	WS03	WS04	WS04			
Depth to Top	0.30	1.30	1.00	0.30	1.40	0.30	0.80			
Depth To Bottom	0.40	1.40	1.20	0.40	1.50	0.40	0.90			
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4A	4A	4A	4A	4A	4A	4A			
% Stones >10mm$_A$	6.5	<0.1	<0.1	16.5	<0.1	9.4	<0.1	% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	9.84	9.08	8.67	8.94	8.99	7.23	5.41	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.10	0.04	0.04	0.58	0.05	0.05	0.34	g/l	0.01	A-T-026s
Sulphate (acid soluble)$_D$$^{M\#}$	900	530	370	1600	540	760	2500	mg/kg	200	A-T-028s
Sulphur (total)$_D$	753	596	360	1110	635	668	4310	mg/kg	50	A-T-024s
Cyanide (total)$_A$$^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	0.2	A-T-050s
Organic Matter$_D$$^{M\#}$	13.4	14.5	12.5	8.6	11.2	10.0	58.9	% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	24	22	46	15	23	6	8	mg/kg	1	A-T-024s
Boron (water soluble)$_D$	1.1	1.9	<1.0	3.4	1.9	<1.0	11.2	mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	1.0	1.3	1.3	1.1	1.4	1.3	1.5	mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	60	65	77	64	73	653	70	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	15	12	26	10	12	61	67	mg/kg	1	A-T-024s
Mercury$_D$	0.61	<0.17	<0.17	0.18	0.64	0.29	<0.17	mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	43	46	50	41	44	15	16	mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	2	<1	<1	2	<1	<1	<1	mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	43	50	66	36	51	20	12	mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	50	44	56	36	39	122	115	mg/kg	5	A-T-024s

Envirolab Job Number: 22/10943

Client Project Name: Axion Trafford

Client Project Ref: 10785G

Lab Sample ID	22/10943/1	22/10943/2	22/10943/3	22/10943/4	22/10943/5	22/10943/6	22/10943/7	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	1	2	1	2			
Client Sample ID	WS01	WS01	WS02	WS03	WS03	WS04	WS04			
Depth to Top	0.30	1.30	1.00	0.30	1.40	0.30	0.80			
Depth To Bottom	0.40	1.40	1.20	0.40	1.50	0.40	0.90			
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4A	4A	4A	4A	4A	4A	4A			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	NAD	NAD	NAD	NAD	NAD	NAD	NAD			A-T-045
Asbestos Matrix (visual)$_{D}$	-	-	-	-	-	-	-			A-T-045
Asbestos Matrix (microscope)$_{D}$	-	-	-	-	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	N/A	N/A	N/A	N/A	N/A	N/A			A-T-045

Envirolab Job Number: 22/10943

Client Project Name: Axion Trafford

Client Project Ref: 10785G

Lab Sample ID	22/10943/1	22/10943/2	22/10943/3	22/10943/4	22/10943/5	22/10943/6	22/10943/7	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	1	2	1	2			
Client Sample ID	WS01	WS01	WS02	WS03	WS03	WS04	WS04			
Depth to Top	0.30	1.30	1.00	0.30	1.40	0.30	0.80			
Depth To Bottom	0.40	1.40	1.20	0.40	1.50	0.40	0.90			
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4A	4A	4A	4A	4A	4A	4A			
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	0.12	<0.04	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	0.12	<0.04	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	0.14	<0.05	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	<0.06	<0.06	0.15	<0.06	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	0.29	<0.08	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	0.07	<0.03	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	0.06	0.08	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	0.04	0.04	<0.03	<0.03	<0.03	0.21	<0.03	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	0.26	<0.07	mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	0.10	0.12	<0.08	<0.08	<0.08	1.45	<0.08	mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/10943

Client Project Name: Axion Trafford

Client Project Ref: 10785G

Lab Sample ID	22/10943/1	22/10943/2	22/10943/3	22/10943/4	22/10943/5	22/10943/6	22/10943/7	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	1	2	1	2			
Client Sample ID	WS01	WS01	WS02	WS03	WS03	WS04	WS04			
Depth to Top	0.30	1.30	1.00	0.30	1.40	0.30	0.80			
Depth To Bottom	0.40	1.40	1.20	0.40	1.50	0.40	0.90			
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4A	4A	4A	4A	4A	4A	4A			
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	-	-	-	<0.01	-	-	<0.05	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	-	-	-	<0.01	-	-	<0.05	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	-	-	-	<1	-	-	<1	mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	-	-	-	<1	-	-	<1	mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	-	-	-	<1	-	-	<1	mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	-	-	-	2	-	-	14	mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	-	-	-	3	-	-	131	mg/kg	1	A-T-055s
Total Aliphatics$_A$	-	-	-	5	-	-	145	mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	-	-	-	<0.01	-	-	<0.05	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	-	-	-	<0.01	-	-	<0.05	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	-	-	-	<2	-	-	<2	mg/kg	1	A-T-055s
Aro >C10-C12$_A$	-	-	-	<1	-	-	3	mg/kg	1	A-T-055s
Aro >C12-C16$_A$	-	-	-	2	-	-	10	mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	-	-	-	<1	-	-	17	mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	-	-	-	<1	-	-	66	mg/kg	1	A-T-055s
Total Aromatics$_A$	-	-	-	4	-	-	97	mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	-	-	-	9	-	-	242	mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	-	-	-	<0.01	-	-	<0.05	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	-	-	-	<0.01	-	-	<0.05	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	-	-	-	<0.01	-	-	<0.05	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	-	-	-	<0.01	-	-	<0.05	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	-	-	-	<0.01	-	-	<0.05	mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	-	-	-	<0.01	-	-	<0.05	mg/kg	0.01	A-T-022s

Envirolab Job Number: 22/10943

Client Project Name: Axion Trafford

Client Project Ref: 10785G

Lab Sample ID	22/10943/8	22/10943/9	22/10943/10					Units	Limit of Detection	Method ref
Client Sample No	1	2	1							
Client Sample ID	WS05	WS05	BH02							
Depth to Top	0.50	0.80	0.30							
Depth To Bottom	0.60	0.90	0.40							
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	4AE	4A							
% Stones >10mm$_A$	<0.1	2.6	1.4					% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	7.98	8.22	8.86					pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.03	0.06	0.09					g/l	0.01	A-T-026s
Sulphate (acid soluble)$_D$$^{M\#}$	620	830	570					mg/kg	200	A-T-028s
Sulphur (total)$_D$	481	628	775					mg/kg	50	A-T-024s
Cyanide (total)$_A$$^{M\#}$	<1	<1	<1					mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	<0.2	<0.2	<0.2					mg/kg	0.2	A-T-050s
Organic Matter$_D$$^{M\#}$	8.7	9.0	11.3					% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	25	20	22					mg/kg	1	A-T-024s
Boron (water soluble)$_D$	2.2	3.0	<1.0					mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	2.8	3.4	1.5					mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	1090	1340	88					mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1					mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	87	99	12					mg/kg	1	A-T-024s
Mercury$_D$	0.62	0.76	<0.17					mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	25	30	57					mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1					mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	30	42	51					mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	85	122	43					mg/kg	5	A-T-024s

Envirolab Job Number: 22/10943

Client Project Name: Axion Trafford

Client Project Ref: 10785G

Lab Sample ID	22/10943/8	22/10943/9	22/10943/10					Units	Limit of Detection	Method ref
Client Sample No	1	2	1							
Client Sample ID	WS05	WS05	BH02							
Depth to Top	0.50	0.80	0.30							
Depth To Bottom	0.60	0.90	0.40							
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	4AE	4A							
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	Chrysotile & Amosite	NAD	NAD							A-T-045
Asbestos Matrix (visual)$_{D}$	Loose Insulation & Loose Fibres	-	-							A-T-045
Asbestos Matrix (microscope)$_{D}$	-	-	-							A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	N/A	N/A							A-T-045
Asbestos in Soil Quantification % (Hand Picking & Weighing)										
Asbestos in soil % composition (hand picking and weighing)$_{D}$	0.098	-	-					% w/w	0.001	A-T-054

Envirolab Job Number: 22/10943

Client Project Name: Axion Trafford

Client Project Ref: 10785G

Lab Sample ID	22/10943/8	22/10943/9	22/10943/10					Units	Limit of Detection	Method ref
Client Sample No	1	2	1							
Client Sample ID	WS05	WS05	BH02							
Depth to Top	0.50	0.80	0.30							
Depth To Bottom	0.60	0.90	0.40							
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	4AE	4A							
PAH-16MS										
Acenaphthene$_A^{M\#}$	0.11	0.02	<0.01					mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	0.08	<0.01	<0.01					mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	0.39	0.06	<0.02					mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.41	0.18	<0.04					mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.36	0.20	<0.04					mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	0.39	0.23	<0.05					mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.17	0.12	<0.05					mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	0.16	0.09	<0.07					mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	0.45	0.21	<0.06					mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	1.09	0.39	<0.08					mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	0.24	0.02	<0.01					mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.19	0.11	<0.03					mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	0.50	<0.03	0.04					mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	1.40	0.21	<0.03					mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	1.04	0.39	<0.07					mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	6.98	2.23	<0.08					mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/10943

Client Project Name: Axion Trafford

Client Project Ref: 10785G

Lab Sample ID	22/10943/8	22/10943/9	22/10943/10					Units	Limit of Detection	Method ref
Client Sample No	1	2	1							
Client Sample ID	WS05	WS05	BH02							
Depth to Top	0.50	0.80	0.30							
Depth To Bottom	0.60	0.90	0.40							
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	4AE	4A							
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	-	<0.01	-					mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	-	<0.01	-					mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	-	<1	-					mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	-	<1	-					mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	-	6	-					mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	-	18	-					mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	-	87	-					mg/kg	1	A-T-055s
Total Aliphatics$_A$	-	110	-					mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	-	<0.01	-					mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	-	<0.01	-					mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	-	<2	-					mg/kg	1	A-T-055s
Aro >C10-C12$_A$	-	1	-					mg/kg	1	A-T-055s
Aro >C12-C16$_A$	-	5	-					mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	-	14	-					mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	-	30	-					mg/kg	1	A-T-055s
Total Aromatics$_A$	-	50	-					mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	-	160	-					mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	-	<0.01	-					mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	-	<0.01	-					mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	-	<0.01	-					mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	-	<0.01	-					mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	-	<0.01	-					mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	-	<0.01	-					mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: WML Construction , No 8 Oak Green, Earl Road, Stanley Green Business Park, Cheadle Hulme, Cheshire, SK8 6QL

Project: Axion Trafford

Clients Project No: 10785G

Project No: 22/10943

Date Received: 07/11/2022 (am)

Cool Box Temperatures (°C): 13.0, 12.9

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/10943/1	22/10943/2	22/10943/3	22/10943/4	22/10943/5	22/10943/6	22/10943/7	22/10943/8	22/10943/9	22/10943/10
Client Sample No	1	2	1	1	2	1	2	1	2	1
Client Sample ID/Depth	WS01 0.30-0.40m	WS01 1.30-1.40m	WS02 1.00-1.20m	WS03 0.30-0.40m	WS03 1.40-1.50m	WS04 0.30-0.40m	WS04 0.80-0.90m	WS05 0.50-0.60m	WS05 0.80-0.90m	BH02 0.30-0.40m
Date Sampled	03/11/22	03/11/22	03/11/22	03/11/22	03/11/22	03/11/22	03/11/22	03/11/22	03/11/22	03/11/22
A-T-019s	09/11/2022	09/11/2022	09/11/2022	09/11/2022	09/11/2022	09/11/2022	09/11/2022	09/11/2022	09/11/2022	09/11/2022
A-T-022s				11/11/2022			16/11/2022		11/11/2022	
A-T-024s	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022
A-T-026s	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022
A-T-027s	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022
A-T-028s	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022
A-T-031s	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022
A-T-032 OM	14/11/2022	14/11/2022	14/11/2022	14/11/2022	14/11/2022	14/11/2022	14/11/2022	14/11/2022	14/11/2022	14/11/2022
A-T-040s	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022
A-T-042sTCN	09/11/2022	09/11/2022	09/11/2022	09/11/2022	09/11/2022	09/11/2022	09/11/2022	09/11/2022	09/11/2022	09/11/2022
A-T-044	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022
A-T-045	08/11/2022	08/11/2022	08/11/2022	08/11/2022	08/11/2022	08/11/2022	09/11/2022	08/11/2022	08/11/2022	08/11/2022
A-T-050s	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022
A-T-054								11/11/2022		
A-T-055s				09/11/2022			09/11/2022		09/11/2022	
Calc-As Recd				11/11/2022			16/11/2022		11/11/2022	

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

APPENDIX 05

Geotechnical Testing Results

LABORATORY REPORT

4043

Contract Number: PSL22/7431

Report Date: 07 December 2022

Client's Reference: 10785G

Client Name: WML Consultants
No 8 Oak Green Earl Road
Stanley Green Business Park
Cheadle Hulme
Cheshire
SK8 6QL

For the attention of: Tom Booth

Contract Title: Axion Trafford Park

Date Received: 18/11/2022
Date Commenced: 18/11/2022

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
L Knight (Assistant Laboratory Manager)	S Eyre (Senior Technician)	M Fennell (Senior Technician)

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH01		S	7.50	7.95	Brown gravelly very sandy CLAY.
BH01		S	9.00	9.45	Brown gravelly silty SAND.
BH02		S	6.00	6.45	Brown gravelly sandy CLAY.
BH02		S	12.00	12.45	Brown gravelly silty SAND.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH01		S	7.50	7.95	15			31	16	15	87	Low Plasticity CL
BH01		S	9.00	9.45	13				NP			
BH02		S	6.00	6.45	17			40	20	20	92	Intermediate Plasticity CI
BH02		S	12.00	12.45	15				NP			

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

Axion Trafford Park

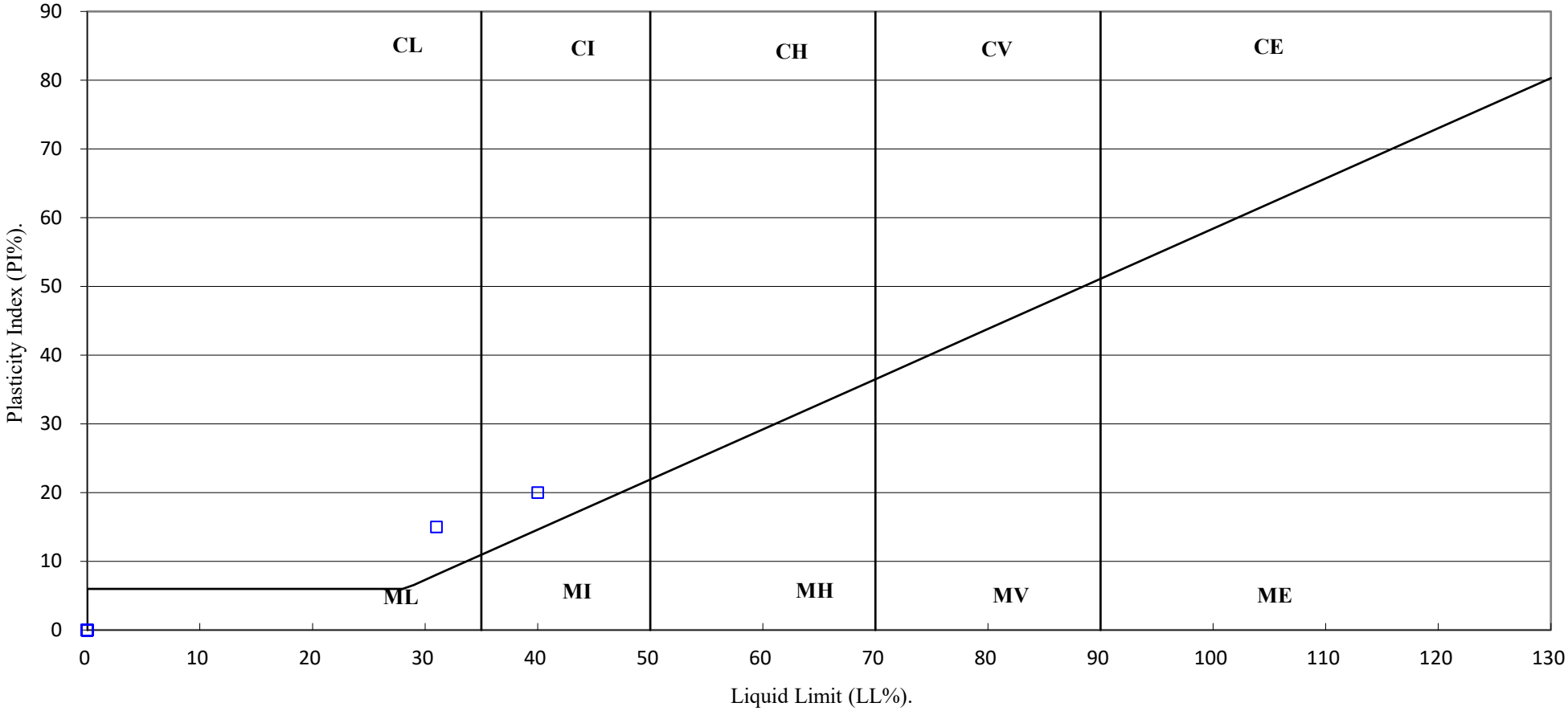
Contract No:

PSL22/7431

Client Ref:

10785G

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	Axion Trafford Park	Contract No: PSL22/7431 Client Ref: 10785G

APPENDIX 06

Generic Assessment Criteria

Screening Levels for "Commercial" end use assuming a 1% SOM for Hydrocarbons.

Contaminant	Screening Levels for Commercial End Use (mg/kg)
Metals	
Arsenic	640
Boron	240,000
Cadmium	190
Chromium III	8,600
Chromium VI	33
Copper	68,000
Lead*	2330
Mercury	58
Nickel	980
Selenium	12,000
Vanadium	9,000
Zinc	730,000
Non Metals	
Phenol	440
Polyaromatic Hydrocarbons (PAHs)	
Benz[a]anthracene	170
Benzo[a]pyrene	35
Benzo[b]fluoranthene	44
Benzo[ghi]perylene	3,900
Benzo[k]fluoranthene	1,200
Chrysene	350
Dibenz[ah]anthracene	3.5
Fluoranthene	23,000
Indeno[123-cd]pyrene	500
Naphthalene	190
Pyrene	54,000

* Where not included in the S4UL's criteria for a limited number of contaminants, namely lead, have been derived by DEFRA in their document entitled SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination, April 2014.

Contaminant	Screening Levels for Commercial End Use (mg/kg)
Volatile Organic Compounds	
Benzene	27
Ethylbenzene	5,700
Toluene	56,000
M - Xylene	6,200
O - Xylene	6,600
P - Xylene	5,900
Total Petroleum Hydrocarbons	
Aliphatic C5-6	3,200
Aliphatic C6-8	7,800
Aliphatic C8-10	2,000
Aliphatic C10-12	9,700
Aliphatic C12-16	59,000
Aliphatic C16-35	1,600,000
Aliphatic C35 - 44	1,600,000
Aromatic C5 - 7	26,000
Aromatic C7 - 8	56,000
Aromatic C8-10	3,500
Aromatic C10-12	16,000
Aromatic C12-16	36,000
Aromatic C16-21	28,000
Aromatic C21-35	28,000
Aromatic C35 - 44	28,000

* Where not included in the S4UL's criteria for a limited number of contaminants, namely lead, have been derived by DEFRA in their document entitled SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination, April 2014.