WML CONSULTING

Civil, Structural and Geotechnical Engineers

Geo-Environmental Investigation & Assessment

For

S Norton, Manchester

Undertaken on behalf of

Axion Polmers

Report No. 9624G-WML-XX-ZZ RP-G-0002

September 2021

WML CONSULTING
Civil, Structural and Geotechnical Engineers

Report Title:	**S Norton, Manchester** **Geo-environmental Investigation and Assessment**
Report Reference:	**9624G-WML-XX-ZZ RP-G-0002**
Client:	**Axion Polymers**
Issue Date:	**23rd September 2021**
Drafted By:	**T P Booth**
Reviewed By:	**S C Seddon**
Authorised By:	**S C Seddon**

Revision Status / History

Rev	Date	Issue / Purpose/ Comment	Prepared	Checked	Authorised
-	23/09/2021	First Issue	TPB	SCS	SCS

WML Consulting Ltd
No. 8 Oak Green,
Earl Road,
Stanley Green Business Park,
Cheadle Hulme,
Cheshire
SK8 6QL

Tel: 0161 482 0600
Email:info@wmlconsulting.com
www.wmlconsulting.com

Executive Summary

Site Location	The site comprises the southern section of the existing S Norton recycling centre, located off Tenax Road in Trafford. It is centred on approximate Ordnance Survey National Grid Reference 378827E, 397244N with an indicative postcode of M17 1JT.
Development Proposals	The project involves the phased development of a new processing plant and associated buildings adjacent to the recent constructed shear structure. It is indicated that these will comprise a pre-shredder, shredder building and the main shredder equipment.
Ground Conditions	Ground conditions encountered during the intrusive investigations comprised made ground to depths of between 1.30m and 2.60mbgl beneath the subject site, this being underlain by glaciofluvial deposits to depths of between 4.60m and 4.90mbgl. Below these depths firm becoming stiff and very stiff cohesive glacial till was encountered to depths of between 26.50m and in excess of 30.00mbgl (CCG 2009). BH2 extended into the underlying weathered Chester Formation to a maximum proven depth of 30.00mbgl.
Site Preparation	Site development will include the demolition of existing structures and equipment which should not proceed until an appropriate Asbestos survey has been undertaken. If / where required concrete/brick obstructions associated with current and former structures would be suitable for re-use as bulk fill beneath hard cover areas subject to appropriate screening and crushing. Existing underground services crossing the proposed areas of construction will need to be accurately located, identified and possibly diverted prior to any works commencing.
Earthworks	In consideration of the proposed development, it is anticipated that the excavated materials would be surplus to requirement and would need to be removed from site.
Pre Shredder Chamber	The below ground chamber will require excavations to depths of approximately 3.50mbgl with the excavation sides being supported by temporary sheet piles which should be driven to an anticipated depth of around 9.50mbgl and therefore into stiff/very stiff clay. It is anticipated that the base of the chamber is to be laid on a 200mm thick compacted Type 1 granular material with sand blinding. Backfill to the surface excavation should be of suitable granular or cohesive material. Where excavations to formation level encounter or are close to the groundwater level, it may be necessary to form the excavation in a cofferdam construction to prevent significant groundwater inflows or running sand conditions.
Foundations	New foundations will need to be piled, with piles being driven to achieve a set in the underlying glacial till or Chester Formation. However, the choice of pile type would be largely dependent on the need to balance optimum construction methods against environmental issues such as noise and vibration effects. Consultation with a reputable piling contractor, ideally with local experience, will be required to determine the final choice and design of pile type.
Groundwater	Conventional 'sump and pump' dewatering measures are likely to be adequate to shallow excavations dry, although it is anticipated that that groundwater exclusion measures such as interlocking sheet piles would be required to prevent excessive ingress of water within at least the pre-shredder chamber.
New Pavements	In consideration of the proposed development the existing concrete yard will remain insitu, with localised removal of the development areas only. If / where new external pavements are required the CBR will need to be reviewed and confirmed by site inspection and possibly suitable in-situ testing at formation levels.
Concrete Classification	The typical design sulphate (DS) class and "Aggressive Chemical Environment for Concrete" (ACEC) class for the site are DS-1 and AC-1 respectively.
Drainage	The existing surface water drainage from the S Norton yard is understood to rely on overland flows across the existing yard slab within the development area.
Ground Gas	No specific protection measures required.
Ground Contamination	In light of no exceedences of generic SL's in the samples analysed, ground contamination at the site is not considered to represent a significant long-term risk to human health. Notwithstanding this, chrysotile and amosite asbestos have been encountered sporadically within the made ground and it cannot be discounted that ACM and/or free fibres together with other unidentified contamination could occur on and beneath other areas of the site.

	Groundworks may therefore need to be undertaken under a watching brief in consultation with an asbestos specialist, with any ACM so encountered being segregated for removal to landfill under appropriate legislation. Such operations may also need to incorporate specific control measures such as dust suppression, perimeter air monitoring and appropriate Personal Protective Equipment (PPE). The risk to controlled waters from the site is considered low with no environmental remediation considered necessary.
Waste Soils	For guidance, preliminary assessment of waste classification has been undertaken by the laboratory by input of the chemical test results into a waste soil characterisation assessment tool (HAZWASTE) which follows the guidelines provided in the EA Technical Guidance document WM3, Waste Classification. This indicates that the levels of contamination measured would classify 5no of the 10no samples tested as Hazardous waste for disposal as a result of either a high pH or the presence of asbestos fibres, cement and bitumen ,namely within WS02 0.35m & 0.65m WS05 0.50 and WS08 1.15m Therefore it is considered that careful excavation, stockpiling of the more localised hazardous materials and appropriate waste management, could help to reduce the volume of hazardous waste and as such help to minimise disposal costs.

CONTENTS

APPENDICES

1.0 INTRODUCTION

Appointment

1.1 WML Consulting has been commissioned by Axion Polymers to undertake a Geo-environmental Investigation and Assessment at a site referred to as S Norton, located off Tenax Road in Manchester.

Proposed Development

1.2 The project involves the phased development of a new processing plant and associated buildings adjacent to the recent constructed shear structure. It is indicated that these will comprise a pre-shredder, shredder building and the main shredder equipment.

1.3 The proposed layout for the development, including proposed below ground services, is included in Appendix 01.

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:

- Establish, through undertaking a limited desk study of published information, the geological, hydrogeological and environmental setting of the site so as to identify any potential ground constraints to development through a site-specific conceptual model.
- Design a ground investigation so as to characterise the ground conditions in terms of geology, soil geotechnical parameters and ground contamination from information provided by the investigation.
- Provide recommendations regarding suitable foundations, floor slabs and new pavement construction, 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).
- Review of all available geotechnical reports for the site.

Scope

1.6 It is understood that a Phase 1 Desk Study report was not required as part of any planning conditions. Nevertheless, this report includes a review of freely available information to supplement the findings of the ground investigation.

1.7 The ground investigation comprised the formation of 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 A1:2013).

2.0 SITE LOCATION AND DESCRIPTION

Site Location

2.1 The site comprises the southern section of the existing S Norton recycling centre, located off Tenax Road in Trafford. It is centred on approximate Ordnance Survey National Grid Reference 378827E, 397244N with an indicative postcode of M17 1JT.

2.2 The proposed development site is bounded on all sides by existing commercial and industrial developments with Mellors Road immediately east.

Site Description

2.3 The subject site is located within the southern section of the larger recycling centre and the following description relates to the areas of proposed development.

2.4 At the time of the site investigation in August 2021 the central section of the site comprised a shredder surrounded by several low rise ancillary structures, concrete hardstanding and occasional

2.5 The hardstanding was in constant use for vehicle access and stockpiling of metals and plastic prior to separation, crushing, shredding and recycling. Additional storage bays for shredded metals and recyclable materials were located around the perimeter of the development area, with a car breakers to the south-west, but outside the proposed development area.

2.6 The existing equipment and surrounding lighting and CCTV systems are all served by a network of underground electricity cables. A water main, for the fire system, is also indicate to extend across the development area.

2.7 In additional the metal rails associated with a historical travelling crane were also noted to extend roughly north-east to south-west in an arc to the east of the existing crusher conveyor.

2.8 The site was accessed via a temporary gate to the east off Mellors Road north-east of the shear unit under construction.

2.9 The site is generally level and commensurate with the surrounding area.

3.0 SUMMARY OF ENVIRONMENTAL AND HISTORICAL SETTING

3.1 A review of the environmental and historical setting of the site, comprising information from the following freely available sources, has been undertaken to inform the existing investigations.

- British Geological Survey (BGS) Sheet '85' Manchester (1:50,000 scale Solid and Drift editions).
- BGS Digital Geological Map of Great Britain (DiGMapGB-50; available as a web map service).
- Coal Authority (CA) interactive map viewer (available as a web map service).
- "Old-Maps" web-based viewer.
- UK Radon Indicative Atlas of Radon in England and Wales as provided by Public Health England.
- BRE Publication 211 (2015) "Radon: Guidance on Protective Measures for New Buildings".
- Review of free public sector information through QGIS viewer licensed under the Open Government Licence v3.0.

3.2 The following paragraphs summarise the most relevant findings from the above information for the site together with a review of a Phase 1 Desk Study, which includes a Groundsure Report, by CC Geotechnical, referenced 09/5512, dated July 2009.

Geology

3.3 The BGS plans indicated that the site is underlain by Devensian Glaciofluvial Sheet Deposits comprising mainly sand and gravel.

3.4 The superficial deposits are indicated to be underlain by the Triassic Chester Formation, indicated to comprise sandstone.

Radon

3.5 The site is not in Radon Affected Area as defined by the Health Protection Agency were less than 1% of properties are above the Action Level of exposure. Therefore, no radon protection measures are necessary for new structures as described in publication BR211 by the Building Research Establishment.

Coal Mining

3.6 The Coal Authority web-based interactive viewer indicates that the site is not within a 'Development High Risk Area' and there are no mine workings indicated within the development area.

3.7 Therefore, the risks of shallow, unrecorded mine workings occurring beneath the site is considered low and can be discounted.

Environmental Setting

3.8 The Glaciofluvial Sheet Deposits beneath the site are classified as a 'Secondary A Aquifer'. The underlying Chester Formation is classified as a 'Principal Aquifer'.

3.9 The site is not located within an Environment Agency Source Protection Zone or a Flood Zone.

3.10 The closest groundwater abstractions is located some 229m east of the site at Trafford Park for potable use.

3.11 The nearest surface water feature is a pond located around 300m north-east of the site.

3.12 The closets surface water abstraction is located approximately 812m east from the Manchester Ship Canal for hydraulic testing.

3.13 There are no active landfill sites recorded within 500m of the site. The nearest historical landfill site is recorded 180m north-east of the subject site.

3.14 The site is not located within or close to a designated environmentally sensitive site.

Site History

3.15 Historical plans for the site within the CC Geotechnical Phase 1 report indicated that the proposed development area formed part of a larger Dee Park until sometime prior to 1929 when it formed the external area of the Anaconda Mill (copper and bronze wire factory) with a cold storage unit to the south-east.

3.16 By 1953 Anaconda Mill had been extended into the western half of the site with an ancillary building in the northern development area. A set of travelling crane tracks also extended in an arc around the eastern side of the proposed development area.

3.17 Between 1984 and 1987 the structures were cleared and the site described as a scrap yard and by 2008 the site converted into its current use as a recycling facility.

3.18 On the basis of the sites past use, significant sources of ground contamination cannot be discounted. Such sources could comprise spillages and leakages of liquids including volatile and semi volatile organic compounds. The presence of Asbestos Containing Materials cannot also be discounted at this preliminary stage from historical demolition.

3.19 Extensive industrial development surrounding the site could also provide sources of significant off-site ground contamination.

4.0 SUMMARY OF PREVIOUS SITE INVESTIGATIONS

4.1 CC Geotechnical have previously undertaken a Phase 2 investigation within the wider site for the adjacent Shear culminated in the following report.

- Soil Investigation at S. Norton & Co Ltd, Tenax Road, Trafford Park, reference 09/5512, dated July 2019.

4.2 Ground Investigation work was undertaken in May 2009. This comprised the formation of 2no cable percussive boreholes and 4no window sample probeholes to a maximum depth 30.00mbgl.

4.3 Typically, made ground was encountered within all of the exploratory holes from ground level to depths of between 1.00m and 3.70mbgl and comprised a surface horizon of concrete underlain by sub base and a generally loose broken brick, concrete, coal ash in a brown/black silty sand matrix with rare clayey pockets.

4.4 The made ground was underlain by loose/medium dense fine and medium silty gravely sand typically to depths of between 3.60m and 3.90mbgl below which glacial till extended to depths of between 26.50m (BH2) and in excess of 30.00mbgl (BH1). The cohesive till comprised firm becoming stiff and very stiff brown silty sandy gravelly clay.

4.5 Within BH2 the glacial till was underlain by a reddish brown mudstone between 26.50m and 27.20mbgl and then a reddish brown sandstone to depths in excess of 30.00mbgl.

4.6 Perched groundwater inflows were encountered within exploratory holes at depths of around 2.50mbgl with longer term monitoring levels between 2.40m and 2.74mbgl.

4.7 The chemical analyses was undertaken on shallow soil samples above 1.00mbgl, which did not record any significant exceedance of metals, hydrocarbons or asbestos when compared to a commercial end use relevant to the 2009 guidance. However, the shallow soils tested were removed as part of the development. Therefore, the results are not considered further within this report.

4.8 Risk to controlled waters were also considered to be low with chemical analyses from BH2 indicating no exceedance when compared to drinking water standards or EQS vales for surface water.

4.9 Geotechnical test results are discussed further within Section 7.0.

4.10 Ground gas monitoring was undertaken on 5no occasions in 2009, the results indicated no detectable concentrations of methane with carbon dioxide concentrations ranging from below detectable limits to 4.8% v/v in air. No detectable gas flows were recorded. Consequently, the site is indicated to classify as Characteristic Gas Situation (CGS) 1 – 'Very Low Gas Risk' in accordance with the current BS8485:2015 confirming that no specific gas protection measures would be required.

4.11 Relevant excerpts of the report are included within Appendix 02.

5.0 PRELIMINARY CONTAMINATION RISK ASSESSMENT

5.1 The following paragraphs outline a Preliminary Risk Assessment (PRA) for the site as defined by DEFRA and the EA Land Contamination Risk Management, October 2020, updated April 2021.

5.2 The table in Paragraph 4.5 provides a Preliminary Conceptual Model (PCM) which defines the site in terms of a potential pollution linkage, that is, whether a pathway exists between a contamination source and a sensitive environmental receptor (Source-Pathway-Receptor relationship).

5.3 The table considers whether a pollution linkage is potentially present or not and provides a preliminary qualitative assessment of risk, based on the information currently available and in accordance with guidance provided in the CIRIA document C552 (2001) Contaminated Land Risk Assessment – A Guide to Good Practice. The risk evaluation process is described further in Appendix 07.

5.4 Where a possible linkage is identified, it does not necessarily mean that a significant risk exists, but indicates that further information is required through appropriate site investigation to substantiate the conceptual model.

5.5 Based on the above findings, a Preliminary Conceptual Model and Risk Assessment is outlined for the proposed development as follows:

Source	Pathway	Receptor	Linkage potential	Comment
Based on the Phase 2 investigations in the wider site area, the presence of significant ground contamination sources due to the site's past use cannot be wholly discounted.	Direct contact, ingestion of soil, dermal contact, dust exposure pathways.	Current Site Users	Low	The site in its current condition is surfaced with hard standing and is in transient use. Therefore, the risk to current site users from direct contact is with historical contamination is considered **LOW**.
		Site End Users	Low	The provision of new building floor slabs and external hard cover will continue to break the direct pollution linkage. Therefore, the risk to site end users will remain **LOW**.
		Construction Workers	Low	Construction workers could potentially be exposed to contaminated soils during earthworks and foundation construction, although the exposure time will be relatively short. Any perceived contamination risks will be mitigated by adopting good site working practices including appropriate health and safety measures during the works, thus providing a **LOW** preliminary risk.
		Adjacent land users	Low	Contact via wind-blown dust/debris, particularly during the development phase is possible, although the exposure time would be relatively short. The current risk is considered **VERY LOW** although this could increase during construction works. Appropriate health and safety measures adopted during site development will ensure that the risk remains low.

Source	Pathway	Receptor	Linkage potential	Comment
The presence of soluble and/or liquid and therefore potentially mobile historical contamination occurring beneath the site cannot be wholly discounted.	Direct downward migration through leaching and/or mobile liquids.	Groundwater	Low	The site is indicated to be underlain by a Secondary A Superficial aquifer and Principal bedrock aquifer. Risk Assessment may be required in this respect. Therefore, the preliminary risk to groundwater is considered **MODERATE/LOW**.
	Off-site migration in groundwater or surface water flow.	Surface water	Unlikely	The nearest surface water feature is 300m north-east of the site and is therefore unlikely to be impacted by the site. Therefore, the preliminary risk to surface water is considered **VERY LOW**.
		Groundwater/ surface water abstractions	Low	The site is not within an EA Source Protection Zone and the 2009 Groundsure report indicates a potable water source approximately 229m east. Therefore, risks to groundwater/surface water abstractions are considered **Moderate / LOW**.
		Adjacent Properties	Unlikely	The presence of significant mobile contaminants is considered unlikely. Adjoining properties, being industrial, are of low sensitivity and transient use. Therefore, the preliminary risk to adjacent properties is assessed as **LOW.**
		Ecology	No linkage envisaged	The site is an industrial area. Therefore, risks to the surrounding ecology is considered **VERY LOW**.
The presence of significant volatile contamination beneath the site is unlikely but cannot be wholly discounted, although this would likely be localised in nature.	Inhalation of harmful vapours (indoor and outdoor airspaces)	Current Site Users	Unlikely	Site use is currently transient with occupation being mostly outdoors. Therefore, the preliminary risk to current site users is assessed as **VERY LOW**.
		Site End Users	Unlikely	Site use will remain transient and primarily located outdoors or in well ventilated buildings. The preliminary risk from inhalation of indoor/outdoor air is therefore considered **VERY LOW**.
		Construction Workers	Unlikely	In the unlikely event of construction workers coming into contact with possible volatile compounds, the exposure time will be relatively short. The chronic exposure risk to construction workers, assuming that appropriate health and safety measures will be adopted, is therefore considered **VERY LOW.**
		Adjacent Properties	Unlikely	Significant sources of volatile contaminants at the site are not anticipated. Adjoining properties, being industrial, are of low sensitivity and transient use. Therefore, the preliminary risk to adjacent properties and users is assessed as **LOW**.

Source	Pathway	Receptor	Linkage potential	Comment
There are no active landfill sites recorded within influencing distance of the site. The nearest historic landfill is recorded 180m north-east of the site and unlikely to be within influencing distance. No significant thicknesses of degradable made ground are likely beneath the site. The presence of ground gas resulting from shallow unrecorded mine workings can also be discounted.	Emissions from the ground beneath the site collecting in confined spaces and excavations	Construction/ services maintenance workers	Low	The potential to generate significant volumes of toxic and/ or flammable/ explosive gas beneath or close to the site is considered low. Assuming that appropriate health and safety measures will be adopted during construction, the preliminary risk is therefore considered **LOW**.
	Migration of gases on/off site and collecting in confined spaces on/off site.	Adjoining site users	Unlikely	The potential to generate significant volumes of ground gas beneath the site is considered low. Therefore, the preliminary risk to adjacent properties from the site is considered **VERY LOW**.
		Current/future site users	Unlikely	The potential to generate significant volumes of toxic and/ or flammable/ explosive gas beneath or close to the site is considered low. Therefore, the preliminary risk to current and future site users is considered **LOW**.
The site is not in an area which is affected by naturally occurring radon gas.	Natural emissions from the ground collecting in confined spaces within buildings	Site end users	No linkage envisaged	The site is not located in an area where radon protection measures are required for new structures. Therefore, the potential risk to site end users is considered **VERY LOW**.
Chemicals which could prove aggressive to construction materials could be present on site.	Direct contact	Construction concrete, plastic water pipes.	Unlikely	Any risks to construction materials identified after site investigation and assessment will be mitigated as part of the structural design. The perceived risk is therefore considered **LOW**.

5.6 Under the proposed development scenario, potential pollution linkages are, on the whole considered unlikely or low with associated preliminary risks being generally assessed as to low.

5.7 However, due to the site's historic use, it has been considered prudent to verify the conceptual ground model by incorporating chemical analysis of selected samples of soil into the ground investigation.

6.0 SITE INVESTIGATION

Rationale

6.1 Intrusive investigations were undertaken primarily to provide geotechnical parameters for structural design purposes but also to verify the preliminary site conceptual model and confirm the anticipated low environmental risk.

6.2 To minimise surface disruption and closure times to the existing shredder, window sample probeholes were undertaken to provide information on near surface deposits and to obtain samples for chemical 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.

6.3 The investigation locations were chosen so as not to impact on site operations and the presence of known/suspected services.

6.4 Chemical analysis of a general suite of contaminants was undertaken on selected samples of soil. This was to confirm the contamination risk and provide a laboratory hazardous waste assessment to assess soils for removal from site.

Intrusive Works

6.5 Ground investigations were undertaken by LOT Geotechnics Ltd on the 16th and 17th August 2021. This comprised the formation of 8no window sample probeholes to a maximum depth of 5.45 metres below ground level (mbgl).

6.6 The exploratory hole records are presented in Appendix 03 of this report while the exploratory hole locations are shown on Drawing 9624G-SK01 in Appendix 01.

Geotechnical and Chemical Testing

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

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

- Natural Moisture Content.
- Liquid and Plastic Limit.

6.9 The results of the geotechnical testing are presented in Appendix 04.

6.10 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).
- TPH ID and Trace.
- Asbestos Screen and Identification.
- 2:1 water/soil sulphate extract, pH.

6.11 The results of the chemical analysis are presented in Appendix 05.

7.0 GROUND CONDITIONS

Stratigraphy

7.1 As ground conditions across the site are consistent, and it was important to minimise the time for which the existing shredder was not in use, the results of the CCG investigations (2009) have been used to supplement the WML investigations. All information with regards to the thicknesses and strengths to depths of around 5.45mbgl refers to the WML phase of investigation unless otherwise stated.

7.2 Therefore, ground conditions encountered during the intrusive investigations comprised made ground to depths of between 1.30m and 2.60mbgl beneath the subject site, this being underlain by glaciofluvial deposits to depths of between 4.60m and 4.90mbgl. Below these depths firm becoming stiff and very stiff cohesive glacial till was encountered to depths of between 26.50m and in excess of 30.00mbgl (CCG 2009). BH2 extended into the underlying weathered Chester Formation to a maximum proven depth of 30.00mbgl.

Made Ground

7.3 Made ground was encountered within all exploratory holes from ground level to depths of between 1.30m and 2.60mbgl which broadly concurs with the findings of the 2009 investigations for the wider site area.

7.4 The made ground generally comprised a surface horizon of reinforced concrete to depths of between 0.20m and 0.80mbgl. However, WS02 was terminated at a depth of 0.60mbgl on structural concrete to the south of the existing shredder conveyor.

7.5 The concrete was underlain by grey and black, variably sandy gravel with localised horizons of sand and clay to depths of between 1.30m and 2.60mbgl. Gravel sized fragments included brick, concrete, ash and locally limestone and slate.

7.6 SPT 'N' values from the WML investigations within the made ground deposits range between 1 and 19, indicating very variable conditions.

Glaciofluvial Deposits

7.7 Within all exploratory holes, strata considered to represent glaciofluvial deposits were encountered underlying the made ground at depths of between 1.30m and 2.60mbgl. This corresponds with the ground conditions within the 2009 exploratory holes.

7.8 These generally comprised greyish brown, silty sand with rare fine gravel extending to depths of between 4.60m and 4.90mbgl.

7.9 Within WS05, a section of no soil recovery was recorded within the granular strata between 3.00m and 3.30mbgl, which is considered to be due to running sand conditions.

7.10 Within WS08 a thin horizon of black slightly clayey, slightly sandy fibrous peat was encountered between depths of 1.15m and 1.35mbgl.

7.11 SPT 'N' values from the WML investigations within the granular deposits range between 3 and 22, with an average of 9, indicating a locally very loose, but generally loose to medium dense state of compaction.

Glacial Till

7.12 Within WS01, WS02, WS03, WS05, WS07 and WS08 below depths of between 4.60m and 4.90mbgl the glaciofluvial deposits were underlain by strata considered to represent glacial till. This broadly

concurs with the findings of the CCG investigations which encountered glacial till at depths of between 3.50m and 3.90mbgl and extending to 26.50m (BH2) and locally in excess of 30.00mbgl (BH1).

7.13 The glacial till generally comprised firm locally stiff, brown, slightly sandy, gravelly, clay. Within the deeper CCG holes the strata generally becomes stiff to very stiff with increasing depth.

7.14 SPT 'N' values within the shallow cohesive deposits range between 8 and 20, with an average of 13, indicating a generally firm and locally stiff consistency. However, within BH1 and BH2 these increased from 31 to in excess of 50 below depths of 10.00m to 13.00mbgl.

7.15 Natural moisture contents of between 19% and 24% were recorded within the cohesive deposits with Liquid Limits of between 24% and 30% together with corresponding Plasticity Indices of between 10% and 15% (modified to 9.8 and 13.4%) indicating clay of low plasticity and low volume change potential.

7.16 This broadly concurs within the 2009 information which recorded natural moisture contents of between 15% and 16% and Liquid Limits of between 34% and 37% together with corresponding Plasticity Indices of between 17% and 23%. However, these indicate clay of low to intermediate plasticity and low to medium volume change potential.

7.17 Triaxial testing recorded undrained shear strengths within the 2009 investigation to range between 90 and 197kN/m^2.

Chester Formation

7.18 Within BH2 (2009) the glacial till was underlain by strata considered to represent the Chester Formation at a depth of 26.50mbgl and proven to a maximum depth of 30.00mbgl.

7.19 This strata was described as a reddish brown mudstone underlain at 27.20mbgl by a reddish brown sandstone. As BH2 was formed using only cable percussive techniques it is assumed that the strata is highly weathered and would be likely classified as an extremely weak rock or possibly recovered as a weakly cemented sandstone with the consistency of a soil. This appears to be confirmed to a degree within the geotechnical test results which describe a sample of sandstone at 30.00mbgl as a reddish brown silty sand.

7.20 A single SPT within the sandstone recorded an N value in excess of 50.

Visual/Olfactory Evidence of Contamination

7.21 No visual and/or olfactory evidence of significant ground contamination was identified within the exploratory holes during the investigation.

Groundwater

7.22 During the WML investigations groundwater was encountered during the formation of WS01 and WS02 at depths of 3.90m and 4.00mbgl respectively.

7.23 Longer term groundwater monitoring in 2009 recorded groundwater levels across the wider site area between 2.40m and 2.74mbgl.

7.24 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

7.25 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.

8.0 GEOTECHNICAL APPRAISAL

Site Preparation

8.1 Site development will include the demolition of existing structures and equipment which should not proceed until an appropriate Asbestos survey has been undertaken.

8.2 Existing foundations, ground floor slabs and other buried concrete obstructions associated with current structures should be anticipated and will need to be removed to facilitate proposed foundation construction. If / where required concrete/brick obstructions associated with current and former structures would be suitable for re-use as bulk fill beneath hard cover areas subject to appropriate screening and crushing.

8.3 Excavated concrete could also be crushed to a suitable grading and replaced to a specified compaction to provide a stable working platform for construction plant if/where the slabs are to be removed.

8.4 Excavation of ground obstructions should be undertaken with due regard to the integrity of adjacent existing structures and services infrastructure.

8.5 Existing underground services crossing the proposed areas of construction will need to be accurately located, identified and possibly diverted prior to any works commencing.

8.6 Although not anticipated or noted during the site inspection, if any above or below ground hydrocarbon storage tanks are encountered as part of the groundworks, these should be decommissioned and removed by a specialist.

Earthworks

8.7 Although it is anticipated that site levels would not need to be reduced to accommodate the proposed development modifications, it is noted that more localised deep excavations would be required to form the proposed chamber associated with the pre-shredder building. Current drawings indicate that this could extend to depths of between 3.25 and 3.50mbgl.

8.8 Excavated soils would primarily include concrete, made ground and granular glaciofluvial deposits.

8.9 In consideration of the proposed development, it is anticipated that the excavated materials would be surplus to requirement and would need to be removed from site.

8.10 However, should excavated granular made ground be required for localised re-use, appropriate management would be required to enable optimisation of material through sorting, segregating and selective re-use.

8.11 It should be noted that the re-use of excavated soils on site should be undertaken in accordance with guidance provided in the CL:AIRE Definition of Waste, Development Industry Code of Practice, Version 2, 2011 so that the activity is removed from Environmental Permitting.

8.12 In this respect, surplus materials will cease to be waste where it can be demonstrated that there is a certainty to their use and that only the quantities necessary for that purpose are used.

Pre-Shredder Chamber

8.13 A below ground chamber associated with the pre-shredder building is outlined on the preliminary drawing 9624-WML-03-00-DR-S-0303-PO1, this indicates the base of the chamber to be at approximately 3.25m to 3.50mbgl with 250mm reinforced concrete walls, base and cover.

8.14 This will require excavations to depths of approximately 3.50mbgl with the excavation sides being supported by temporary sheet piles which should be driven to an anticipated depth of around 9.50mbgl and therefore into stiff/very stiff clay.

8.15 It is anticipated that the base of the chamber is to be laid on a 200mm thick compacted Type 1 granular material with sand blinding. The formation soil should be thoroughly proof-rolled with any material being subsequently loose, soft or otherwise unsuitable being removed and replace with suitable granular fill.

8.16 Backfill to the surface excavation should be of suitable granular or cohesive material. Where it is proposed to source this from site, adequate testing should be undertaken to confirm that the material meets the required specification.

8.17 Where excavations to formation level encounter or are close to the groundwater level, it may be necessary to form the excavation in a cofferdam construction to prevent significant groundwater inflows or running sand conditions.

Foundations

8.18 Development will include the installation of heavy process machinery and as such new foundation will need to allow for the spread of loads in order to limit settlement and / or potential tilting of the foundation block. The foundation will also need to exhibit sufficient rigidity and absorb or damp down vibrations which may induce settlement.

8.19 Made ground and loose glaciofluvial deposits should be considered unsuitable for the direct support of structural loads as they will be weak and compressible, leading to possibly unacceptable total and differential settlements.

8.20 As such, and in consideration of the anticipated requirements new foundations will need to be piled, with piles probably being driven to achieve a set in the underlying glacial till or Chester Formation.

8.21 However, the choice of pile type would be largely dependent on the need to balance optimum construction methods against environmental issues such as noise and vibration effects. Consultation with a reputable piling contractor, ideally with local experience, will be required to determine the final choice and design of pile type.

Excavations and Groundwater

8.22 Excavations at the site will be feasible using conventional hydraulic plant. All excavations at the site and specifically requiring man-entry, will need adequate lateral support, or will need to be battering back to a safe angle to ensure their stability.

8.23 Conventional 'sump and pump' dewatering measures are likely to be adequate to shallow excavations dry, although it is anticipated that that groundwater exclusion measures such as interlocking sheet piles would be required to prevent excessive ingress of water within at least the pre-shredder chamber.

8.24 Such support measures will also reduce the risk of conditions that could lead to loss of ground beneath any nearby adjacent structures or infrastructure.

External Pavements

8.25 In consideration of the proposed development the existing concrete yard will remain insitu, with localised removal of the development areas only.

8.26 If / where new external pavements are required the CBR will need to be reviewed and confirmed by site inspection and possibly suitable in-situ testing at formation levels.

Concrete Design

8.27 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.

8.28 Values of 2:1 water/soil extract for sulphate range from 10 to 420mg/l. Values of pH range from 7.95 to 13.59 indicating very alkaline conditions.

8.29 On the basis of these results, the typical design sulphate (DS) class and "Aggressive Chemical Environment for Concrete" (ACEC) class for the site are DS-1 and AC-1 respectively.

Drainage

8.30 The existing surface water drainage from the S Norton yard is understood to rely on overland flows across the existing yard slab within the development area.

8.31 During the development the contractor should allow for managing surface water flows entering the site from adjacent areas and the temporary diversion, as required, to maintain flow through the site and to the historical destination. This may also require the use of temporary sumps and pumps during construction stage.

9.0 GENERIC QUANTITATIVE RISK ASSESSMENT (GQRA)

General

9.1 A review of the desk study information has concluded that the potential for a significant pollution linkage to be present at the site is low with corresponding risk to human health and the environment assessed as low.

9.2 Further to this, no visual or olfactory evidence of significant ground contamination has been recorded from the intrusive investigations.

9.3 However, it has been considered prudent to adopt a precautionary principal and undertake chemical analysis of the sub-surface soils to confirm the low human health risk status of the site.

Human Health

9.4 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 Agency Land Contamination: Risk Management document of May 2021.

9.5 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.

9.6 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.

9.7 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.

9.8 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.

9.9 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.

9.10 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.

9.11 In light of the proposed continued industrial use, the SL's for a "Commercial" end-use are considered appropriate for the assessment at this stage.

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

Chemical Analyses Results

9.13 10no soil samples were analysed for a suite of Contaminants of Concern (CoC). None of the concentrations were measured exceeded the SL's for "Commercial" end-use.

9.14 However, both Chrysotile and Amosite asbestos was detected in 3no of the 10no samples analysed in the form of loose fibres, cement and bitumen.

Sample	Asbestos Identification	Type	Quantification % w/w
WS01 0.80m	Chrysotile	Loose Fibres	<0.001
WS02 0.65m	Amosite & Chrysotile	Loose Fibres and Cement	0.229
WS05 0.50m	Amosite & Chrysotile	Bitumen and Loose Fibres	0.002

Discussion and Conclusions

Human Health

9.15 In light of no exceedences of generic SL's in the samples analysed, ground contamination at the site is not considered to represent a significant long-term risk to human health.

9.16 Notwithstanding this, chrysotile and amosite asbestos have been encountered sporadically within the made ground and it cannot be discounted that ACM and/or free fibres together with other unidentified contamination could occur on and beneath other areas of the site.

9.17 Following site development, the site will be surfaced with buildings and hardstanding, with no mechanism for a direct contact pollution linkage to any unidentified contaminants or for any asbestos fibres to become airborne. Therefore, the risk to end-users and to the general public will be negligible.

9.18 However, as there is a possibility of asbestos fibres becoming airborne during site enabling and ground works, there is a perceived risk to construction workers and the general public of exposure, particularly during dry weather conditions.

9.19 Groundworks may therefore need to be undertaken under a watching brief in consultation with an asbestos specialist, with any ACM so encountered being segregated for removal to landfill under appropriate legislation. Such operations may also need to incorporate specific control measures such as dust suppression, perimeter air monitoring and appropriate Personal Protective Equipment (PPE).

Controlled Waters

9.20 The site is not located within an Environment Agency Source Protection Zone.

9.21 The nearest surface water feature is a pond located around 300m north-east of the site.

9.22 In consideration of the site history together with lack of visual and/or olfactory evidence of source contamination within the soils, the site is not considered to have been unduly impacted by its current use.

9.23 The Glaciofluvial Sheet Deposits beneath the site are classified as a 'Secondary A Aquifer' and therefore not of the highest sensitivity. The underlying Chester Formation is classified as a 'Principal

Aquifer' however the intervening cohesive glacial till would offer a degree of protection to the underlying bedrock aquifer. However, it is anticipated that the Environment Agency would require a piling risk assessment to be undertaken if / where piles extend into the underlying sandstone of the Chester Formation

9.24 The site will be covered by relatively impermeable concrete hardcover and will maintain a positive drainage system. As such, the potential for surface water infiltration and resulting mobilisation of contaminants towards the groundwater and surface water receptors will be greatly reduced.

9.25 Therefore, the risk to controlled waters from the site is considered low with no environmental remediation considered necessary.

Waste Disposal

9.26 It is assumed that waste soils will be removed from site through appropriate Duty of Care.

9.27 For guidance, preliminary assessment of waste classification has been undertaken by the laboratory by input of the chemical test results into a waste soil characterisation assessment tool (HAZWASTE) which follows the guidelines provided in the EA Technical Guidance document WM3, Waste Classification.

9.28 This indicates that the levels of contamination measured would classify 5no of the 10no samples tested as Hazardous waste for disposal as a result of either a high pH or the presence of asbestos fibres, cement and bitumen as outlined below.

Sample	Waste Classification	Reason	Comment
WS01 0.80m	Hazardous	Asbestos	Non Hazardous Based on the RSK assessment the Hazardous classification can be reduced to Non-hazardous as additional quantification testing recorded concentrations of fibres below 0.1%
WS02 0.35m	Hazardous	Asbestos &pH	-
WS02 0.65m	Hazardous	pH	-
WS03 1.45m	Non-hazardous	-	-
WS04 1.55m	Non-hazardous	-	-
WS05 0.50m	Hazardous	Asbestos & pH	-
WS05 2.00m	Non-hazardous	-	-
WS07 1.40m	Non-hazardous	-	-
WS07 2.60m	Non-hazardous	-	-
WS08 1.15	Hazardous	pH	-

9.29 Therefore it is considered that careful excavation, stockpiling of the more localised hazardous materials and appropriate waste management, could help to reduce the volume of hazardous waste and as such help to minimise disposal costs.

9.30 It should be noted also that further analysis of soils destined for disposal for assessment against Waste Acceptance Criteria (WAC) will need to be undertaken on soils characterised as Hazardous for appropriate disposal at the landfill.

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

10.0 GROUND GAS RISK ASSESSMENT

Ground Gas Conceptual Model

10.1 The site is not in Radon Affected Area as defined by the Health Protection Agency were less than 1% of properties are above the Action Level of exposure. Therefore, no radon protection measures are necessary for new structures as described in publication BR211 by the Building Research Establishment.

10.2 There are no recorded current landfills within influencing distance of the site. The nearest historic landfill is recorded 180m north-east of the site and unlikely to be within influencing distance.

10.3 In consideration of the underlying geology, risks of shallow abandoned mine workings which could contain hazardous gases can be discounted.

10.4 Ground investigation has indicated no significant thicknesses of degradable soils capable of generating hazardous ground gas in significant volumes.

10.5 Further to this, the proposed development is to comprise open, well ventilated buildings with no enclosed spaces, with the exception of the chamber associated with the pre-shredder building. However, this would be constructed to

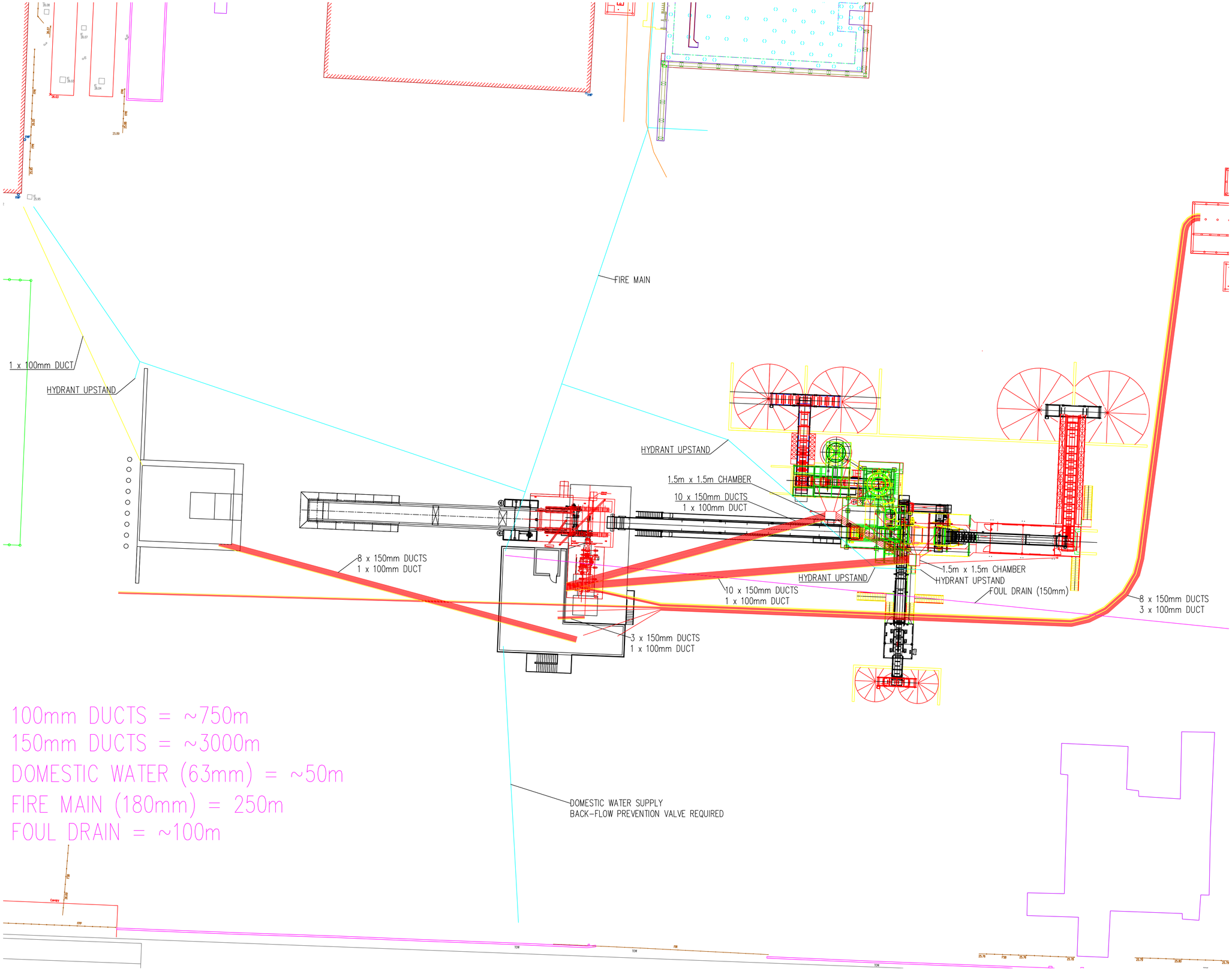
Results and Recommendations

10.6 In consideration of the above, the long-term risk from ground gas at the site is considered low.

10.7 However, it is recommended that health and safety measures such as a no smoking policy are put in place, with personal gas detection monitoring being possibly employed within excavations requiring man entry and in proximity to piling operations.

APPENDIX 01

Drawings



100mm DUCTS = ~750m
150mm DUCTS = ~3000m
DOMESTIC WATER (63mm) = ~50m
FIRE MAIN (180mm) = 250m
FOUL DRAIN = ~100m

PLAN VIEW
SCALE 0:0

Notes:

Notes:

WORK FIGURED TO DIMENSIONS ONLY.

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S, SERVICE ENGINEER'S AND S. NORTON & CO. LTD/AXION RECYCLING LTD DRAWINGS AND SPECIFICATIONS

-	REVISION DESCRIPTION	--	--/--/--

REV:	DESCRIPTION:	BY:	DATE:

STATUS: -

Key Plan.

N

AXION S.Norton Responsible Recycling

PROJECT: - -

DWG TITLE: - -

SCALE AT A1:	DATE:	DRAWN:	CHECKED:
NTS	--/--/--	--	--

PROJECT NO:	DRAWING NO:	REVISION:
-	-	-

A0

This survey has been produced at the survey scale detailed below with its accuracy commensurate with the indicated scale and should only be used for its original intended purpose. Any scaling should only be undertaken using a stable media print produced using the original data. The plotted scale may differ (for presentation purposes) from the survey scale.

It is for the use only of the party to whom it has been addressed and no responsibility is accepted to any third party for the whole or part of its contents. This survey has been prepared on the basis that all information and facts, which may affect the survey, have been disclosed to Formby Surveys Ltd by all parties concerned and no liability, nor responsibility can be accepted, unless full disclosure has been made.

All ground features that were visible at the time of the survey have been located, however there may have been items obscured. Pipe sizes and flow direction have been visually assessed from the surface and should be considered as approximate only.

All data remains in the ownership of Formby Surveys Ltd and any discrepancies between this survey and any other information should be reported to Formby Surveys Ltd.

Sheet Layout

Sheet 1

Sheet 2

Rev	Date	Description	CAD

Client

Axion Polymers

measure⁺ manage⁺ deliver⁺

FormbySurveys

Professional Measurement Surveyors

Formby Surveys Ltd
The Hayes Building
16-18 Johnson Street
Liverpool
L3 2BQ

T +44 (0)151 329 3040
F +44 (0)151 329 3140
E info@formbysurveys.com
W www.formbysurveys.com

Topographical Survey

Axion Polymers, Tenax Road, Trafford Park
Stretford, Manchester, M17 1JT

Plotted Scale: A0@1:200 — NB: Survey Scale: 1:200 — 0.0 4.0 8.0 12.0m

Surveyor: NT | CAD: JO | Checker: JO | Rev:

Date of Issue: October 2020 | FSL Ref No: 10963_T:200:1:2

Topographical Legend

(where applicable)

Building; Gate; Hedge; Foliage; Tree — Ø0.35/MS/H6 Dia/Trunk/Ht, NB:Spread & Heights are indicative; Spot Level ×50.00; Survey Station; Borehole; Trial Pit; Window Sample; Dynamic Cone Penetrometer; Top of Bank / Bottom of Bank; Contours 25.50; Photo Position (& orientation)

Abbreviations

(where applicable)

AB	Air Brick	IT	Intercom
AV	Air Valve	JTN	Junction Box
BB	Belisha Beacon	KL	Keep Left
BC	Building Canopy	KO	Kerb Outlet
BH	Borehole	LP	Lamp Post
BL	Bed Level	MB	Mooring Bollard
BM	Bench Mark	ME	Meter Manhole
BDY	Boundary	MH	Manhole
BO	Bollard	MK	Marker
BS	Bi-Stem (Tree)	MS	Multi-Stem (Tree)
BST	Bus Stop	MY	Mercury Manhole
BT	British Telecom Manhole	NB	Notice Board
C	Crest	NFS(**)	Additional Survey Station
CE	Cat's Eye	NP	Road Name Plate
CCTV	Closed Circuit Television	OB	Out Building
CL	Ceiling Level	OS	Ordnance Survey
CP	Concrete Post	P	Post
CR	Cycle Rack	PB	Post Box
CTV	Cable Television Manhole	PED	Pedestrian Pad
CUL	Culvert	PI	Pipe
DK	Drop Kerb	PM	Parking Meter
DP	Drain Pipe	PO	Post Office Manhole
DPC	Damp Proof Course	PP	Power Point
D	Drain	RE	Rodding Eye
DCP	Dynamic Core Penetrometer	RS	Road Sign
DWB	Dog Waste Bin	RTW	Retaining Wall
EB	Electricity Box	RWP	Rainwater Pipe
EL	Electricity Manhole	SDP	Stand Pipe
EP	Electricity Pole	SK	Soakaway
ER	Earthing Rod	SOF	Soffit Level
FBR	Footbridge	SWMH	Storm Water Manhole
FCL	Fence (Chain Link)	ST	Stop Tap
FFL	Finished Floor Level	SU	Stump (Tree)
FIR	Fence (Iron Railing)	SV	Stop Valve
FL	Floor Level	SVP	Soil Vent Pipe
FWMH	Foul Water Manhole	SW	Storm Water
FP	Flag Pole	SY	Stay (e.g. Pylon, TP)
FPC	Fence (Post & Chain)	TBM	Temporary Benchmark
FPP	Fence (Post & Panel)	TCB	Telephone Call Box
FPR	Fence (Post & Rail)	TH	Threshold Level
FPW	Fence (Post & Wire)	TL	Traffic Light
FSB	Fence (Safety Barrier)	TOW	Top of Wall
FS**	Permanent Survey Station	TP	Telegraph Pole
FW	Foul Water	TPT	Trial Pit
FWM	Fence (Wire Mesh)	TS	Tri-Stem (Tree)
GV	Gas Valve	TSI	Traffic Signal Manhole
GL	Ground Level	U/B	Under Beam
GP	Gate Post	UP	Upright
GS	Gravestone	UTR	Unable To Raise
GU	Gully	VP	Vent Pipe
H	Height	WCL	Window Cill Level
HY	Hydrant	WHL	Window Head Level
IC	Inspection Chamber	WL	Wall Level
IS	Information Sign	WM	Water Meter

Grid & Datum

Survey Grid: Local Grid ☐ Nat. Grid (OSTN15) ☑ Nat. Grid (Graph. Fit) ☐ Existing Grid ☐
Survey Datum: Local Datum ☐ Nat. Grid (OSGM15) ☑ Nat. Grid (Spot Level) ☐ O.S.B.M. ☐

The survey grid & level datum relate to the Ordnance Survey active GPS network (OSGM15) established via Leica SmartNET, plotted with no scale factor applied.

The current survey has been merged with existing survey data, from either a previous project or from a third party. This data may not truly represent current features due to site changes and may have been produced at a different scale to the most recent information.

This survey is produced using a combination of Ordnance Survey (OS) digital data and topographical digital surveying. Care should be taken when measuring from one system to another as the two datasets have been produced using different techniques. The OS information is provided for guidance only.

General Notes

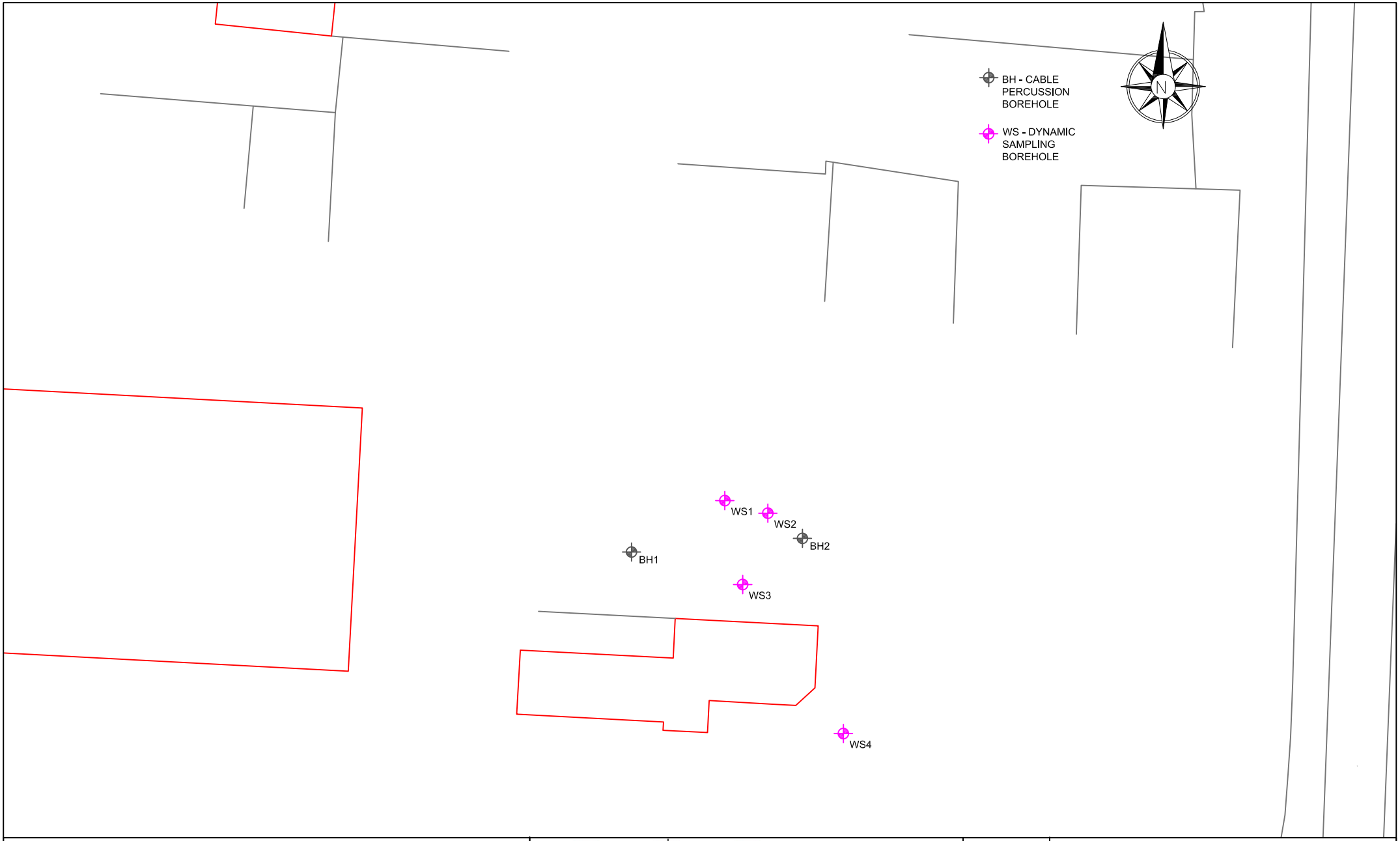
1. Where manholes / ICs have been lifted they have been annotated as "star-bursts" showing incoming / outgoing pipes and ducts. Drainage runs have not been linked together unless specified at the time of commission.
2. Tree canopies have been "trimmed" for clarity and presentation purposes.
3. All arrows on steps / ramps etc indicate an UP direction unless otherwise stated.
4. Contours are shown on soft detail areas only (where applicable) and annotated at the interval identified above. Hard detail areas may be contoured if specifically requested.
5. Site traffic or obstructions encountered at the time of the survey may have resulted in surface features being omitted.

WML CONSULTING

Project: S Norton, Tenax Rd
Drg Title: Exploratory Hole Plan
Job No: 9624G | By: TPB
Drg No: SK-01 | Rev: -
Date: 04/08/21 | Scale: 1:200@A0

APPENDIX 02

CGG Report Excerpts - 2009



CC GEOTECHNICAL LTD
Essex House
Bridle Road
Bootle
L30 4UE
Tel: (0151) 523 0202
Fax: (0151) 523 0252
enquiries@ccgeotechnical co.uk
www.ccgeotechnical.co.uk

Client	Axion Polymers			
Site	Proposed New Shear Plant - Tenax Road, Manchester			
Drawing	Ground Investigation layout			
Job No.	**Dwg. No.**	**Rev. No.**	**Scale@A4**	**Date**
11869-3	3	0	NTS	NOV 20

Contract Name: Tenax Road, Manchester - Shear Plant			Client: Axion Polymers		Borehole ID: **BH1**
Contract Number: CCG-C-20-11869	Date Started: 23/09/2020	Logged By: PMC	Checked By: CB	Status: FINAL	Sheet 1 of 3
Cable Percussion Borehole Log	Easting: 378852.2	Northing: 397291.5	Ground Level: 25.70mAOD	Plant Used: Dando 3000 S/A Rig	Rig Crew: PC/AS	Scale: 1:50
Weather:	Termination: As instructed		SPT Hammer: CCG7 Energy Ratio: 64%		

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
				(0.45)		CONCRETE		
			25.26	0.45				
0.60	D					Loose grey/brown silty gravelly SAND. Gravel is fine to coarse subrounded to subangular of sandstone and mudstone (MADE GROUND)		
1.00	B							
		SPT(S) 1.20m, N=8 (1,2/2,2,2,2)						
1.50	D							
2.00	B	SPT(S) 2.00m, N=2 (1,0/0,1,0,1)		(3.25)				
2.20	D							
2.50	B							
3.00	B	SPT(S) 3.00m, N=6 (1,1/1,1,2,2)						
3.50	D							
			22.00	3.70		Stiff brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse angular to subrounded of sandstone		
4.00	B							
4.00 - 4.45	UT							
4.50	D							
5.00	B	SPT(S) 5.00m, N=10 (1,2/2,2,3,3)						
5.50	D							
6.00	B							
6.00 - 6.45	UT							
6.50	D							
				(10.80)				
7.50	B	SPT(S) 7.50m, N=15 (2,3/3,3,4,5)						
8.00	D							
9.00	B							
9.00 - 9.45	UT							
9.50	D							
						Continued next sheet		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Remarks:
1 hour hand excavating 1.20mbgl service avoidance pit

Chiselling			
From (m)	To (m)	Duration	Remarks
14.60	15.00	01:00	Boulder
19.20	19.50	01:00	Boulder

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

CCG	Contract Name: Tenax Road, Manchester - Shear Plant		Client: Axion Polymers		Borehole ID: **BH1**
	Contract Number: CCG-C-20-11869	Date Started: 23/09/2020	Logged By: PMC	Checked By: CB	Status: FINAL — Sheet 2 of 3
Cable Percussion Borehole Log	Easting: 378852.2	Northing: 397291.5	Ground Level: 25.70mAOD	Plant Used: Dando 3000 S/A Rig	Rig Crew: PC/AS — Scale: 1:50
Weather:	Termination: As instructed		SPT Hammer: CCG7 Energy Ratio: 64%		

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
						Stiff brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse angular to subrounded of sandstone		
10.50	B	SPT(S) 10.50m, N=16 (2,3/3,4,4,5)						
11.00	D							
12.00	B							
12.00 - 12.45	UT							
13.00	D							
13.50	B	SPT(S) 13.50m, N=25 (2,4/6,6,6,7)						
14.60	D		11.20	14.50		Very stiff brown slightly sandy gravelly silty CLAY. Low cobble content. Low boulder content. Gravel is fine to coarse subangular to subrounded of sandstone		
15.00	B	SPT(S) 15.00m, N=43 (3,6/7,10,12,14)						
16.00	D							
16.50	B	SPT(S) 16.50m, N=50 (4,8/10,11,15,14)						
				(10.50)				
17.50	D							
18.00	B	SPT(S) 18.00m, N=50 (6,10/50 for 285mm)						
19.00	D							
19.50	B	SPT(S) 19.50m, 50 (25 for 30mm/50 for 25mm)						
						Continued next sheet		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Remarks:
1 hour hand excavating 1.20mbgl service avoidance pit

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)
14.60	15.00	01:00	Boulder				
19.20	19.50	01:00	Boulder				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Contract Name: Tenax Road, Manchester - Shear Plant			Client: Axion Polymers	Borehole ID: **BH1**
Contract Number: CCG-C-20-11869	Date Started: 23/09/2020	Logged By: PMC	Checked By: CB	Status: FINAL — Sheet 3 of 3
Cable Percussion Borehole Log	Easting: 378852.2	Northing: 397291.5	Ground Level: 25.70mAOD	Plant Used: Dando 3000 S/A Rig — Rig Crew: PC/AS — Scale: 1:50
Weather:	Termination: As instructed		SPT Hammer: CCG7 Energy Ratio: 64%	

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
20.50	D					Very stiff brown slightly sandy gravelly silty CLAY. Low cobble content. Low boulder content. Gravel is fine to coarse subangular to subrounded of sandstone		
21.00	B	SPT(S) 21.00m, N=62 (8,10/10,15,17,20)						
22.00	D							
22.50	B	SPT(S) 22.50m, N=64 (7,11/12,16,18,18)						
23.50	D							
24.00	B	SPT(S) 24.00m, N=100 (10,13/100 for 285mm)						
24.50	D							
25.00	B	SPT(S) 25.00m, N=92 (25 for 140mm/18,22,24,28)	0.70	25.00		End of Borehole at 25.00m		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Remarks:
1 hour hand excavating 1.20mbgl service avoidance pit

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)
14.60	15.00	01:00	Boulder				
19.20	19.50	01:00	Boulder				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Contract Name: Tenax Road, Manchester - Shear Plant			Client: Axion Polymers	Borehole ID: **BH2**
Contract Number: CCG-C-20-11869	Date Started: 28/09/2020	Logged By: PMC	Checked By: CB	Status: FINAL
Cable Percussion Borehole Log	Easting: 378868.5	Northing: 397292.8	Ground Level: 25.62mAOD	Plant Used: Dando 150 S/A Rig
Rig Crew: PC/AS	Scale: 1:50			Sheet 1 of 4
Weather:	Termination: Bedrock		SPT Hammer: CCG7 Energy Ratio: 64%	

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
				(0.45)		CONCRETE		
			25.17	0.45		Brown slightly silty sandy GRAVEL. Gravel is fine to coarse angular to sub-angular brick. (MADE GROUND) Obstructions within the made ground included for intact remnants of brick walling and concrete foundations - borehole advanced by chiselling for 1hr		
0.80	B							
0.90	D			(0.95)				
1.00	B	SPT(S) 1.20m, N=9 (1,2/2,2,2,3)						
1.50	D		24.22	1.40		Loose brown/grey silty gravelly SAND. Gravel is fine to coarse subangular to subrounded of sandstone and mudstone		
2.00	B	SPT(S) 2.00m, N=4 (1,0/1,1,1,1)						
2.50	D			(2.30)				
3.00	B	SPT(S) 3.00m, N=3 (1,1/1,0,1,1)						
3.50	D							
			21.92	3.70		Stiff becoming very stiff brown slightly sandy slightly gravelly silty CLAY with occasional sand bands. Low cobble content. Gravel is fine to coarse subangular to subrounded sandstone		
4.00	B							
4.50	D	SPT(S) 4.50m, N=13 (1,2/2,3,4,4)				*NO RECOVERY OF UT100 DUE TO SAND CONTENT 4.50-4.95mbgl*		
5.00	B							
5.50 - 5.95	UT							
6.00	D							
6.50	B							
6.50 - 6.95	UT							
		SPT(S) 7.00m, N=17 (2,2/3,4,5,5)						
7.50	D							
8.50	B							
8.50 - 8.95	UT							
9.00	D							
10.00	B							

Continued next sheet

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)
28-09-2020	16:00	7.00	7.00	
29-09-2020	08:00	7.00	7.00	
29-09-2020	16:00	19.50	19.50	19.00
30-09-2020	08:00	19.50	19.50	11.10
30-09-2020	16:00	26.50	26.50	15.40

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Remarks:
1 hour hand excavating 1.20mbl service avoidance pit

Chiselling			
From (m)	To (m)	Duration	Remarks
0.50	1.00	01:00	Concrete and brick obstructions

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
13.00			20	12.00	

Contract Name: Tenax Road, Manchester - Shear Plant			Client: Axion Polymers	Borehole ID: **BH2**
Contract Number: CCG-C-20-11869	Date Started: 28/09/2020	Logged By: PMC	Checked By: CB	Status: FINAL
Cable Percussion Borehole Log	Easting: 378868.5	Northing: 397292.8	Ground Level: 25.62mAOD	Plant Used: Dando 150 S/A Rig
Rig Crew: PC/AS	Scale: 1:50			Sheet 2 of 4
Weather:	Termination: Bedrock		SPT Hammer: CCG7 Energy Ratio: 64%	

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
		SPT(S) 10.00m, N=31 (5,7/7,7,8,9)				Stiff becoming very stiff brown slightly sandy slightly gravelly silty CLAY with occasional sand bands. Low cobble content. Gravel is fine to coarse subangular to subrounded sandstone		
10.50	D							
11.50	B							
11.50 - 11.95	UT							
12.00	EW							
12.50	D							
13.00	B	SPT(S) 13.00m, N=33 (8,10/5,7,9,12)						
14.00	D							
14.50	B	SPT(S) 14.50m, N=37 (6,8/8,9,9,11)						
14.50 - 14.95	UT					NO RECOVERY OF UT100 DUE TO COBBLE CONTENT - 14.50-14.95mbgl		
				(22.80)				
15.50	D							
16.00	B	SPT(S) 16.00m, N=47 (7,10/10,11,11,15)						
17.00	D							
17.50	B	SPT(S) 17.50m, N=44 (8,11/8,10,12,14)						
18.50	D							
19.00	B	SPT(S) 19.00m, N=71 (9,16/15,18,18,20)						
20.00	D					Continued next sheet		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)
28-09-2020	16:00	7.00	7.00	
29-09-2020	08:00	7.00	7.00	
29-09-2020	16:00	19.50	19.50	19.00
30-09-2020	08:00	19.50	19.50	11.10
30-09-2020	16:00	26.50	26.50	15.40

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Remarks:
1 hour hand excavating 1.20mbl service avoidance pit

Chiselling			
From (m)	To (m)	Duration	Remarks
0.50	1.00	01:00	Concrete and brick obstructions

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
13.00			20	12.00	

Contract Name: Tenax Road, Manchester - Shear Plant			Client: Axion Polymers	Borehole ID: **BH2**
Contract Number: CCG-C-20-11869	Date Started: 28/09/2020	Logged By: PMC	Checked By: CB	Status: FINAL
Cable Percussion Borehole Log	Easting: 378868.5	Northing: 397292.8	Ground Level: 25.62mAOD	Plant Used: Dando 150 S/A Rig
Rig Crew: PC/AS	Scale: 1:50			Sheet 3 of 4
Weather:	Termination: Bedrock		SPT Hammer: CCG7 Energy Ratio: 64%	

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
						Stiff becoming very stiff brown slightly sandy slightly gravelly silty CLAY with occasional sand bands. Low cobble content. Gravel is fine to coarse subangular to subrounded sandstone		
20.50	B	SPT(S) 20.50m, 50 (25 for 115mm/50 for 60mm)						
21.50	D							
22.00	B	SPT(S) 22.00m, 100 (25 for 90mm/100 for 190mm)						
23.00	D							
23.50	B	SPT(S) 23.50m, 50 (25 for 45mm/50 for 55mm)						
24.50	D							
25.00	B	SPT(S) 25.00m, 100 (25 for 30mm/100 for 25mm)						
25.50	D							
26.50	B		-0.88	26.50		Reddish brown weathered MUDSTONE		
				(0.70)				
			-1.58	27.20		Reddish brown weathered SANDSTONE		
28.00	B	SPT(C) 28.00m, 100 (25 for 95mm/100 for 145mm)						
				(2.80)				
29.50	B							
30.00	B		-4.38	30.00				
						Continued next sheet		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)
28-09-2020	16:00	7.00	7.00	
29-09-2020	08:00	7.00	7.00	
29-09-2020	16:00	19.50	19.50	19.00
30-09-2020	08:00	19.50	19.50	11.10
30-09-2020	16:00	26.50	26.50	15.40

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Remarks:
1 hour hand excavating 1.20mbl service avoidance pit

Chiselling			
From (m)	To (m)	Duration	Remarks
0.50	1.00	01:00	Concrete and brick obstructions

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
13.00			20	12.00	

	Contract Name: Tenax Road, Manchester - Shear Plant		Client: Axion Polymers		Borehole ID: **BH2**
	Contract Number: CCG-C-20-11869	Date Started: 28/09/2020	Logged By: PMC	Checked By: CB	Status: FINAL
Cable Percussion Borehole Log	Easting: 378868.5	Northing: 397292.8	Ground Level: 25.62mAOD	Plant Used: Dando 150 S/A Rig	Rig Crew: PC/AS
					Sheet 4 of 4
					Scale: 1:50

Weather: | Termination: Bedrock | SPT Hammer: CCG7 Energy Ratio: 64%

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
		SPT(C) 30.00m, 100 (25 for 30mm/100 for 130mm)				End of Borehole at 30.00m		

31 32 33 34 35 36 37 38 39 40

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
28-09-2020	16:00	7.00	7.00	
29-09-2020	08:00	7.00	7.00	
29-09-2020	16:00	19.50	19.50	19.00
30-09-2020	08:00	19.50	19.50	11.10
30-09-2020	16:00	26.50	26.50	15.40

Borehole Diameter

Depth (m)	Dia (mm)

Casing Diameter

Depth (m)	Dia (mm)

Chiselling

From (m)	To (m)	Duration	Remarks
0.50	1.00	01:00	Concrete and brick obstructions

Installation

Top (m)	Base (m)	Type	Dia (mm)

Remarks:
1 hour hand excavating 1.20mbl service avoidance pit

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
13.00			20	12.00	

Contract Name: Tenax Road, Manchester - Shear Plant			Client: Axion Polymers		Borehole ID: **WS1**
Contract Number: CCG-C-20-11869	Date Started: 29/09/2020	Logged By: PMC	Checked By: CB	Status: FINAL	Sheet 1 of 2
Dynamic Sampling Borehole Log	Easting: 378861.1	Northing: 397296.4	Ground Level: 25.58mAOD	Plant Used: Dando Terrier Rig	Rig Crew: LN	Scale: 1:25
Weather:	Termination: As instructed		SPT Hammer: N/R, Energy Ratio: N/R		

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
				(0.30)		CONCRETE		
			25.28	0.30		SUB-BASE		
0.40	D							
0.45	B		25.08	0.50		Dark brown slightly silty gravelly fine to coarse grained SAND (MADE GROUND)		
0.60	B							
0.70	D			(0.30)				
			24.78	0.80		Dark grey very sandy silty GRAVEL. Gravel is fine to coarse angular to sub-angular brick and sandstone (MADE GROUND)		
0.90	B							
			24.58	1.00		Loose varying to very loose brown gravelly silty SAND. Gravel is fine to coarse sub-angular to sub-rounded sandstone, quartz and brick (MADE GROUND)		
1.10	D							
		SPT(S)N=8 (1,2/2,2,2,2)						
1.50	ES							
1.60	B							
		SPT(S)N=0 (1,0/0,0,0,0)						
				(2.30)				
2.20	D							
2.80	B							
		SPT(S)N=8 (4,2/2,3,1,2)						
			22.28	3.30		Firm brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium sub-rounded sandstone		
		HVP=70						
3.80	D							
		HVP=80						
		SPT(S)N=18 (2,3/4,3,5,6)						
				(2.70)				
4.20	B	HVP=70						
		HVP=70						
		HVP=100						
4.80	D							
		SPT(S)N=21 (2,2/4,5,6,6)						
						Continued next sheet		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)

Remarks:
1 hour hand excavating 1.20mbgl service avoidance pit

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
2.00			0		

Contract Name: Tenax Road, Manchester - Shear Plant			Client: Axion Polymers	Borehole ID: **WS1**
Contract Number: CCG-C-20-11869	Date Started: 29/09/2020	Logged By: PMC	Checked By: CB	Status: FINAL
Dynamic Sampling Borehole Log	Easting: 378861.1	Northing: 397296.4	Ground Level: 25.58mAOD	Plant Used: Dando Terrier Rig
Rig Crew: LN	Scale: 1:25			Sheet 2 of 2
Weather:	Termination: As instructed		SPT Hammer: N/R, Energy Ratio: N/R	

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.20	D	HVP=50				Firm brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium sub-rounded sandstone		
5.80	D	HVP=50						
		SPT(S)N=21 (2,3/4,5,6,6)	19.58	6.00		End of Borehole at 6.00m		

6 7 8 9 10

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)

Remarks:
1 hour hand excavating 1.20mbgl service avoidance pit

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
2.00			0		

	Contract Name: Tenax Road, Manchester - Shear Plant		Client: Axion Polymers		Borehole ID: **WS2**
	Contract Number: CCG-C-20-11869	Date Started: 29/09/2020	Logged By: PMC	Checked By: CB	Status: FINAL
Dynamic Sampling Borehole Log	Easting: 378865.2	Northing: 397295.2	Ground Level: 25.61mAOD	Plant Used: Dando Terrier Rig	Rig Crew: LN
					Sheet 1 of 2
					Scale: 1:25
Weather:		Termination: As instructed		SPT Hammer: N/R, Energy Ratio: N/R	

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
				(0.30)		CONCRETE		
0.40	D		25.31	0.30		Dark brown very gravelly silty SAND. Gravel is fine to coarse sub-angular to sub-rounded limestone, sandstone, quartz and brick (MADE GROUND)		
0.50	B			(0.40)				
0.90	D		24.91	0.70		Medium dense brown slightly silty fine to medium grained SAND		
1.00	B							
		SPT(S)N=12 (2,3/3,3,3,3)						
1.40	B			(1.70)				
2.00	D	SPT(S)N=10 (1,2/2,3,2,3)						
			23.21	2.40		Loose brown very gravelly silty fine to coarse grained SAND. Gravel is fine to coarse sub-angular to angular sandstone, mudstone and quartz		
2.60	B							
		SPT(S)N=7 (2,2/1,2,2,2)		(1.20)				
3.30	D							
			22.01	3.60		Stiff, locally firm to stiff, brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium sub-angular to subrounded sandstone		
		HVP=100						
3.90	D							
		SPT(S)N=15 (2,3/3,4,4,4)						
		HVP=110		(2.40)				
4.50	D							
		HVP=110						
		SPT(S)N=13 (3,3/3,3,4,3)						
						Continued next sheet		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)

Remarks:
1 hour hand excavating 1.20mbgl service avoidance pit

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
2.50			0		

Contract Name: Tenax Road, Manchester - Shear Plant			Client: Axion Polymers	Borehole ID: **WS2**
Contract Number: CCG-C-20-11869	Date Started: 29/09/2020	Logged By: PMC	Checked By: CB	Status: FINAL
Dynamic Sampling Borehole Log	Easting: 378865.2	Northing: 397295.2	Ground Level: 25.61mAOD	Plant Used: Dando Terrier Rig
Rig Crew: LN	Scale: 1:25			Sheet 2 of 2
Weather:	Termination: As instructed		SPT Hammer: N/R, Energy Ratio: N/R	

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.60	D	HVP=70 HVP=50 SPT(S)N=17 (3,3/4,5,4,4)	19.61	6.00		Stiff, locally firm to stiff, brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium sub-angular to subrounded sandstone End of Borehole at 6.00m		

6 7 8 9 10

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Remarks:
1 hour hand excavating 1.20mbgl service avoidance pit

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
2.50			0		

Contract Name: Tenax Road, Manchester - Shear Plant			Client: Axion Polymers		Borehole ID: **WS3**
Contract Number: CCG-C-20-11869	Date Started: 29/09/2020	Logged By: PMC	Checked By: CB	Status: FINAL	Sheet 1 of 2
Dynamic Sampling Borehole Log	Easting: 378862.8	Northing: 397288.4	Ground Level: 25.73mAOD	Plant Used: Dando Terrier Rig	Rig Crew: LN	Scale: 1:25
Weather:	Termination: As instructed		SPT Hammer: N/R, Energy Ratio: N/R		

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
				(0.30)		CONCRETE		
			25.43	0.30		SUB-BASE		
0.40	D							
0.45	B		25.23	0.50		Greyish brown gravelly silty SAND. Gravel is fine to coarse angular to sub-angular limestone, brick and sandstone (MADE GROUND)		
0.60	ES							
0.70	B			(0.50)				
			24.73	1.00		Loose brown slightly gravelly slightly silty fine to medium grained SAND. Gravel is fine to medium sub-rounded sandstone and quartz		
1.10	D	SPT(S)N=7 (1,2/2,2,1,2)						
1.50	B			(1.30)				
2.00	D	SPT(S)N=8 (1,2/2,2,2,2)						
			23.43	2.30		Medium dense greyish brown very gravelly slightly silty fine to medium grained SAND. Gravel is fine to coarse sub-rounded to rounded sandstone and quartz		
2.40	B							
				(1.20)				
3.00	D	SPT(S)N=11 (2,3/3,3,2,3)						
			22.23	3.50		Stiff brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium sub-angular to sub-rounded sandstone		
3.70	D	HVP=75						
		SPT(S)N=20 (2,4/4,5,6,5)						
4.20	ES			(2.50)				
		HVP=110						
		HVP=110						
5.00	D	SPT(S)N=16 (2,3/3,5,4,4)						
						Continued next sheet		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)

Remarks:
1 hour hand excavating 1.20mbgl service avoidance pit

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Contract Name: Tenax Road, Manchester - Shear Plant			Client: Axion Polymers		Borehole ID: **WS3**
Contract Number: CCG-C-20-11869	Date Started: 29/09/2020	Logged By: PMC	Checked By: CB	Status: FINAL	Sheet 2 of 2
Dynamic Sampling Borehole Log	Easting: 378862.8	Northing: 397288.4	Ground Level: 25.73mAOD	Plant Used: Dando Terrier Rig	Rig Crew: LN	Scale: 1:25
Weather:	Termination: As instructed		SPT Hammer: N/R, Energy Ratio: N/R		

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.50	D	HVP=90 HVP=80 SPT(S)N=15 (2,2/3,4,4,4)	19.73	6.00		Stiff brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium sub-angular to sub-rounded sandstone End of Borehole at 6.00m		

6 7 8 9 10

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Chiselling			
From (m)	To (m)	Duration	Remarks

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Remarks:
1 hour hand excavating 1.20mbgl service avoidance pit

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Contract Name: Tenax Road, Manchester - Shear Plant			Client: Axion Polymers		Borehole ID: **WS4**
Contract Number: CCG-C-20-11869	Date Started: 29/09/2020	Logged By: PMC	Checked By: CB	Status: FINAL	Sheet 1 of 2
Dynamic Sampling Borehole Log	Easting: 378872.4	Northing: 397274.2	Ground Level: 25.68mAOD	Plant Used: Dando Terrier Rig	Rig Crew: LN	Scale: 1:25
Weather:	Termination: As instructed		SPT Hammer: N/R, Energy Ratio: N/R		

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
				(0.30)		CONCRETE		
0.40	B		25.38	0.30		Black very clayey gravelly SAND. Gravel is fine to medium sub-angular brick and sandstone (MADE GROUND)		
0.45	D		25.18	0.50		Brown silty fine to medium grained SAND (MADE GROUND)		
0.60	D							
				(0.80)				
1.00	B							
		SPT(S)N=20 (2,4/4,5,6,5)						
1.40	D		24.38	1.30		Medium dense brown slightly gravelly slightly silty fine to medium grained SAND. Gravel is fine to medium sub-angular to sub-rounded coal, sandstone and quartz (POSSIBLE MADE GROUND)		
				(1.20)				
2.00	B	SPT(S)N=12 (1,2/3,3,3,3)						
2.60	D		23.18	2.50		Medium dense greyish brown very gravelly slightly silty fine to medium grained SAND. Gravel is fine to coarse sub-angular to sub-rounded sandstone, mudstone and quartz		
		SPT(S)N=14 (2,3/3,3,4,4)						
				(1.40)				
3.80	D							
		SPT(S)N=12 (2,2/3,3,3,3)	21.78	3.90		Firm brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium sub-rounded sandstone		
4.20	D							
		HVP=110						
				(2.10)				
		HVP=110						
5.00	D	SPT(S)N=16 (2,4/4,3,4,5)						

Continued next sheet

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Remarks:
1 hour hand excavating 1.20mbgl service avoidance pit

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
3.00			0		

Contract Name: Tenax Road, Manchester - Shear Plant			Client: Axion Polymers	Borehole ID: **WS4**
Contract Number: CCG-C-20-11869	Date Started: 29/09/2020	Logged By: PMC	Checked By: CB	Status: FINAL
Dynamic Sampling Borehole Log	Easting: 378872.4	Northing: 397274.2	Ground Level: 25.68mAOD	Plant Used: Dando Terrier Rig	Rig Crew: LN	Scale: 1:25
Weather:	Termination: As instructed		SPT Hammer: N/R, Energy Ratio: N/R	Sheet 2 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
		HVP=110				Firm brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium sub-rounded sandstone		
		HVP=80						
6.00	D	SPT(S)N=19 (3,3/4,5,5,5)	19.68	6.00		End of Borehole at 6.00m		

6
7
8
9
10

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)

Remarks:
1 hour hand excavating 1.20mbgl service avoidance pit

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
3.00			0		

APPENDIX C

SOIL ENGINERRING TEST DATA

Units 1 & 2
Deltic Place
Deltic Way
Knowsley Industrial Estate
Liverpool
L33 7BU

Telephone: (0151) 545 2750
Fax: (0151) 548 7892
Email: enquiries@ccgeotechnical.com
www.ccgeotechnical.com

CC GEOTECHNICAL LTD
Consulting Geoenvironmental and Geotechnical Engineers

LABORATORY REPORT

CONTRACT NUMBER: CCG-C-20-11869

CONTRACT TITLE: SHEAR PLANT, TENAX ROAD

CLIENT: AXION POLYMERS
Tenax Road, Trafford Park, Manchester M17 1JT

DATE RECEIVED: 24/10/20
DATE COMMENCED: 24/10/20
DATE COMPLETED: 29/10/20
REPORT DATE: 29/10/20

Test Description	Qty
Determination of Moisture Content BS 1377-2:1990 (a)	10
Determination of Liquid & Plastic Limits BS 1377-2:1990 (a)	4
Particle Size Distribution BS 1377-2:1990 (a)	5
Unconsolidated Undrained Triaxial Compression Test BS 1377-7:1990 (a)	4

Notes: Observations and interpretations are not accredited by UKAS
All testing undertaken at laboratory permanent facilities
# denotes non-accredited test
a denotes UKAS accredited test
s denotes test undertaken by approved subcontractor
Test results only relate to the samples tested

Approved Signatories: Chris Bolan (Managing Director) – Daniel Kerfoot (Laboratory Manager)

SUMMARY OF LABORATORY SOIL TEST RESULTS

BH / TP / WS Number	Sample Type	Depth From (m)	Depth To (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Shear Strength (kN/m²)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425mm (%)	Soil Classification	UKAS accredited test (Y/N)	Description / Test Method Samples described in accordance with BS EN ISO 14688-2 2004
BH1	B	2.00	2.00	20	-	-	-	-	-	-	-	-	Y	Dark brown silty gravelly SAND. Gravel is fine to coarse subangular to subrounded sandstone and mudstone. (BS1377Pt2:3.2,9.2)
BH1	UT	4.00	4.45	15	2.21	1.92	146	34	17	17	86	CL	Y	Brown slightly sandy slightly gravelly silty CLAY of HIGH shear strength. Gravel is fine to coarse subangular to subrounded sandstone (BS1377Pt2:3.2,4.4,5,Pt7.9)
BH1	UT	6.00	6.45	16	2.18	1.89	90	-	-	-	-	-	Y	Brown slightly sandy slightly gravelly silty CLAY of HIGH shear strength. Gravel is fine to coarse subangular to subrounded sandstone (BS1377Pt2:3.2,Pt7.9)
BH1	UT	9.00	9.45	15	2.24	1.94	176	37	17	20	86	CL	Y	Brown slightly sandy slightly gravelly silty CLAY of VERY HIGH shear strength. Gravel is fine to coarse subangular to subrounded sandstone (BS1377Pt2:3.2,4.4,5,Pt7.9)
BH1	UT	12.00	12.45	15	2.27	1.98	197	-	-	-	-	-	Y	Brown slightly sandy slightly gravelly silty CLAY of VERY HIGH shear strength. Gravel is fine to coarse subangular to subrounded sandstone (BS1377Pt2:3.2,Pt7.9)
BH1	B	15.00	15.00	-	-	-	-	40	17	23	82	CL/CI	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular to subrounded sandstone (BS1377Pt2:3.2,4.4,5)

SITE: SHEAR PLANT, TENAX ROAD (CCG-C-20-11869) DATE: 29.10.20

CLIENT: AXION POLYMERS

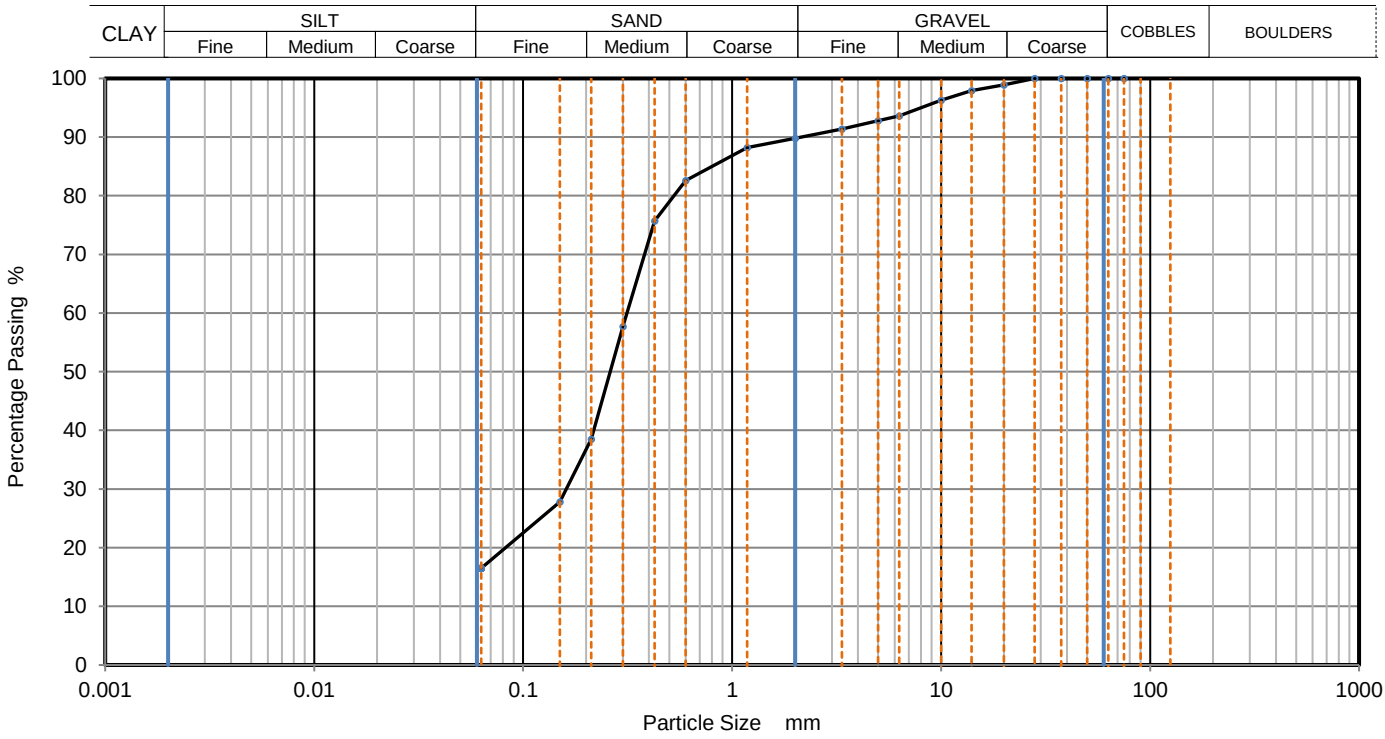
UKAS TESTING 4514

Key:- BD = Bulk Disturbed; SD = Small Disturbed; U100 = Undisturbed 100mm; WS = Window Sample
CL = Low Plasticity; CI = Intermediate; CH = High; CV = Very high; CE = Extremely high; NP = Non-plastic
(* Denotes Hand Shear Vane test result)
Sample description not accredited by UKAS

CC Geotechnical Ltd
Tel: 0151 545 2750
e: lab@ccgeotechnical.com

PARTICLE SIZE DISTRIBUTION

Job Ref			CCG-C-20-11869
Borehole/Pit No.			BH1
Site Name	SHEAR PLANT, TENAX ROAD	Sample No.	1
Specimen Description	Dark brown silty gravelly SAND.	Depth, m	2.00
Specimen Reference	Specimen Depth: m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	CCGL202010294



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	98		
10	96		
6.3	94		
5	93		
3.35	91		
2	90		
1.18	88		
0.6	83		
0.425	76		
0.3	58		
0.212	39		
0.15	28		
0.063	17		

Dry Mass of sample, g

Sample Proportions	% dry mass
Very coarse	0
Gravel	10
Sand	73
Fines <0.063mm	17

Grading Analysis		
D100	mm	
D60	mm	0.314
D30	mm	0.161
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

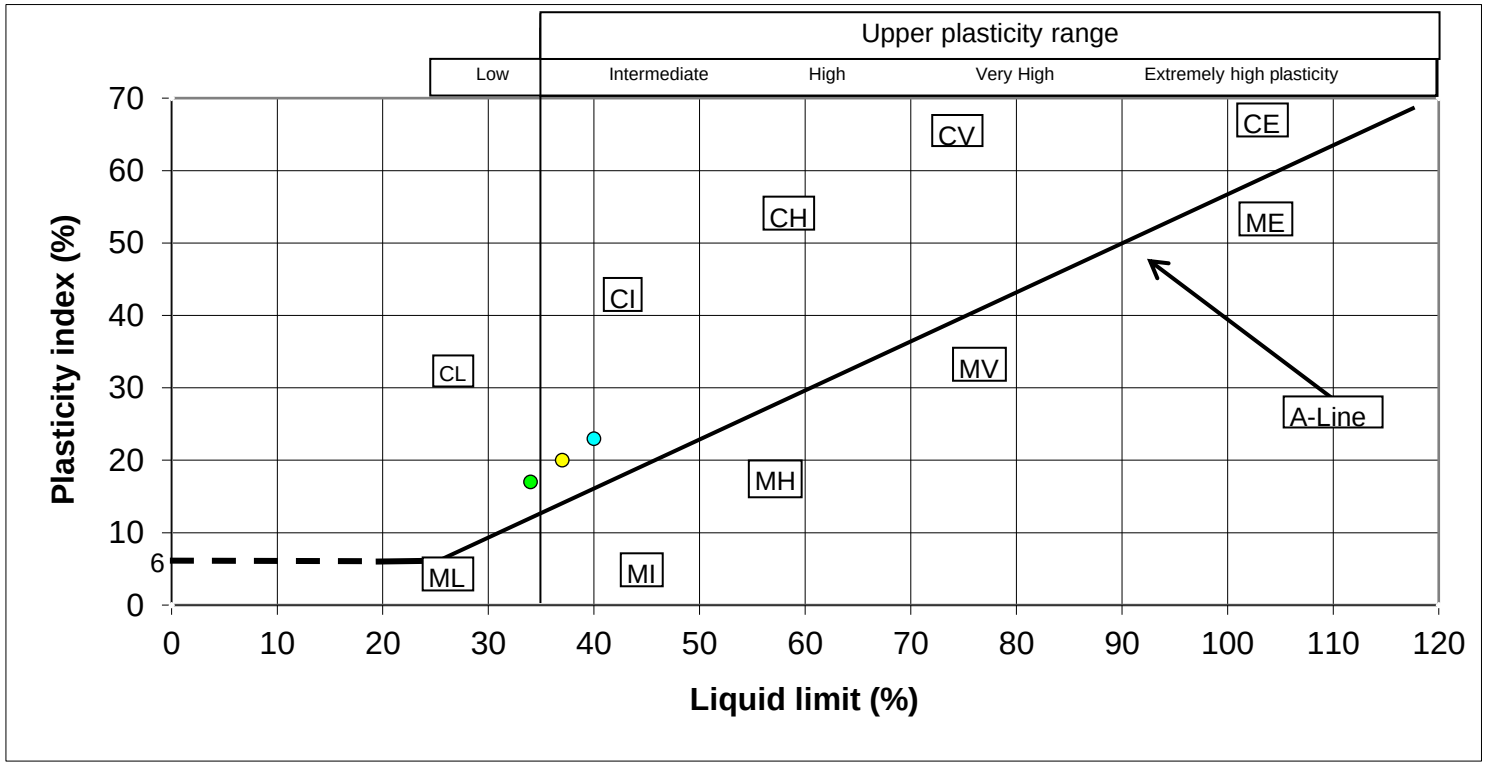
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	Fig 1
JE	DK	DK	29/10/2020 09:51	Sheet

ATTERBERG TEST RESULT SHEET

BS 1377:Part 2:1990:cl 4.4,5

SILT (M-SOIL), M plots below A-Line , CLAY,C, plots above A-Line, M and C may be combined as FINE SOIL, F.



BH	Sample Depth	Liquid limit	Plasticity index
BH1	4.00	34.0	17.0
BH1	9.00	37.0	20.0
BH1	15.00	40.0	23.0

UKAS TESTING
4514

APPROVED BY	DK

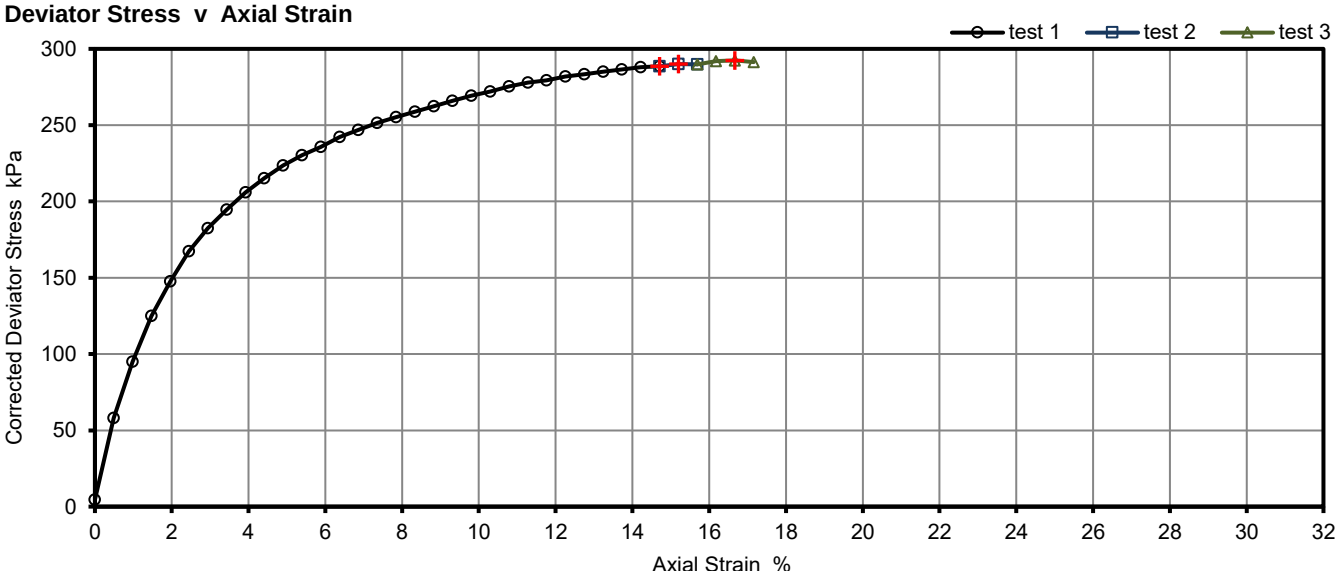
CLIENT: AXION POLYMERS	SITE: SHEAR PLANT, TENAX ROAD (CCG-C-20-11869)

	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test			Job Ref	CCG-C-20-11869
				Borehole/Pit No.	BH1
Site Name	SHEAR PLANT, TENAX ROAD			Sample No.	1
Soil Description				Depth	4.00
Specimen Reference		Specimen Depth	m	Sample Type	UT
Specimen Description	Brown slightly sandy slightly gravelly silty CLAY of HIGH shear strength.			KeyLAB ID	CCGL202010295
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specir			Date of test	27.10.20

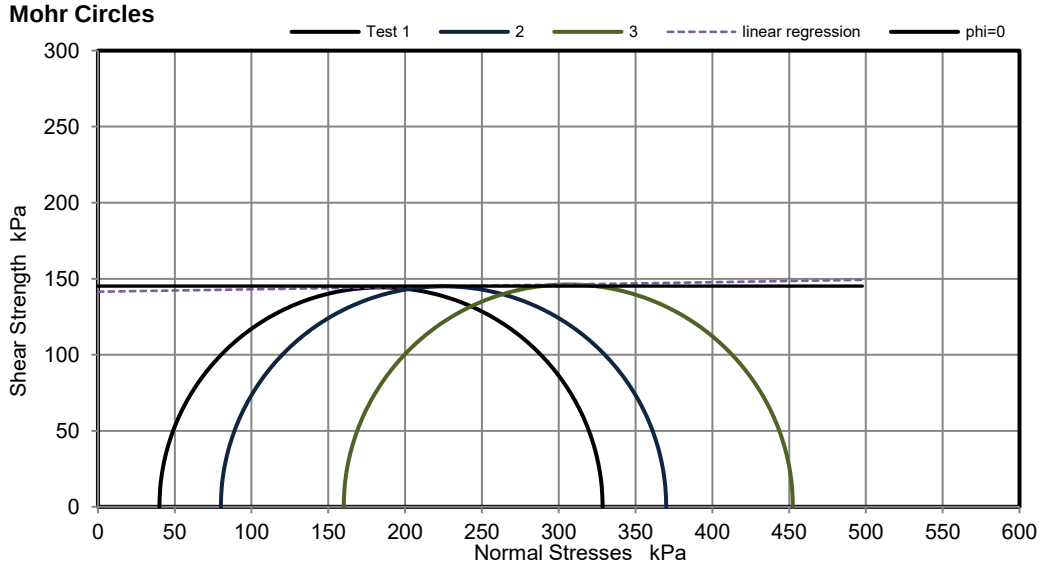
Length	mm	204.0
Diameter	mm	103.9
Bulk Density	Mg/m3	2.21
Moisture Content	%	15.1
Dry Density	Mg/m3	1.92

Rate of Strain		%/min	2.00		
Stage Number			1	2	3
Cell Pressure		kPa	40	80	160
End of stage	Axial Strain	%	14.7	15.2	16.7
	Deviator Stress, (σ1 - σ3) corrected for area and membrane	kPa	288.6	290.0	292.5
	Shear strength, cu	kPa	144.3	145.0	146.2
	Mode of failure		Compound		

Deviator Stress v Axial Strain



Mohr Circles



ϕu = 0

Average cu 145 kPa

Linear Regression

ϕu 0.9 °

cu 141 kPa

Mohr circles and their interpretation is not covered by BS1377. These are provided for information only.

Remarks

Approved

Printed 29/10/2020 10:08

Fig. No. 1

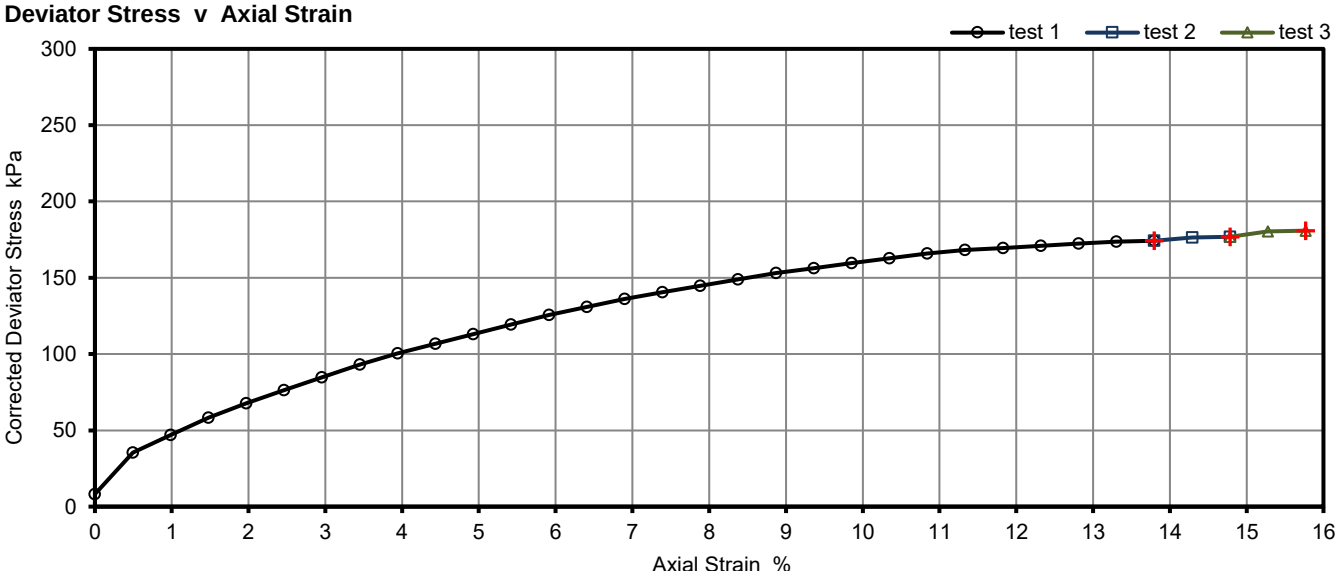
Sheet 1

Lab Sheet Reference :

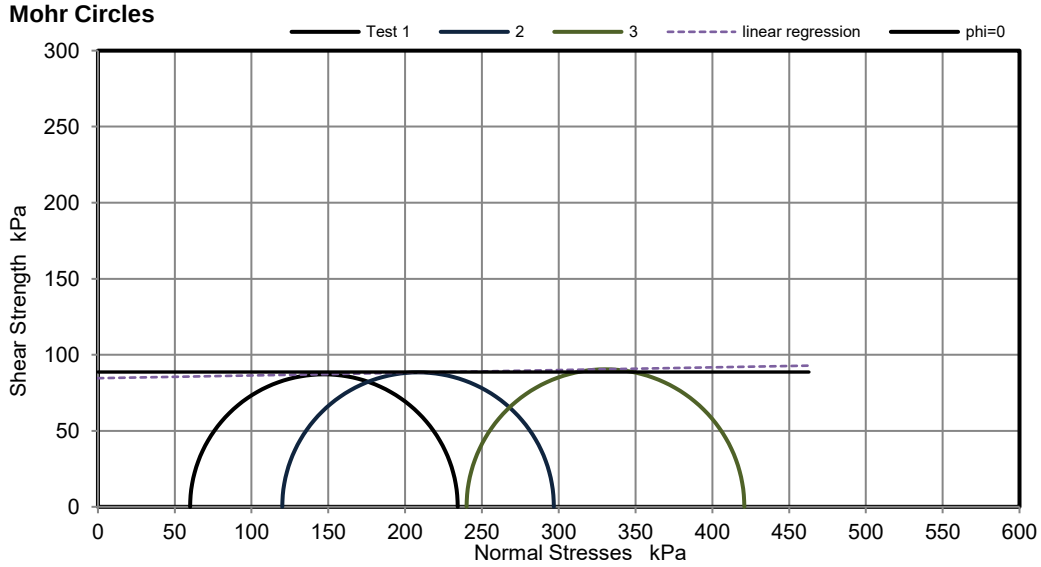
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test			Job Ref	CCG-C-20-11869
				Borehole/Pit No.	BH1
Site Name	SHEAR PLANT, TENAX ROAD			Sample No.	2
Soil Description				Depth	6.00
Specimen Reference		Specimen Depth	m	Sample Type	UT
Specimen Description	Brown slightly sandy slightly gravelly silty CLAY of HIGH shear strength.			KeyLAB ID	CCGL202010296
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specir			Date of test	27.10.20

Length			mm	202.9	
Diameter			mm	103.9	
Bulk Density			Mg/m3	2.18	
Moisture Content			%	15.5	
Dry Density			Mg/m3	1.89	
Rate of Strain			%/min	2.00	
Stage Number				1	2	3
Cell Pressure			kPa	60	120	240
End of stage	Axial Strain		%	13.8	14.8	15.8
	Deviator Stress, (σ1 - σ3) corrected for area and membrane		kPa	174.2	176.8	180.9
	Shear strength, cu		kPa	87.1	88.4	90.4
	Mode of failure			Compound		

Deviator Stress v Axial Strain



Mohr Circles



ϕu = 0

Average cu 89 kPa

Linear Regression

ϕu 1.0 °

cu 85 kPa

Mohr circles and their interpretation is not covered by BS1377. These are provided for information only.

Remarks

Approved

Printed 29/10/2020 10:09

Lab Sheet Reference :

Fig. No. 1

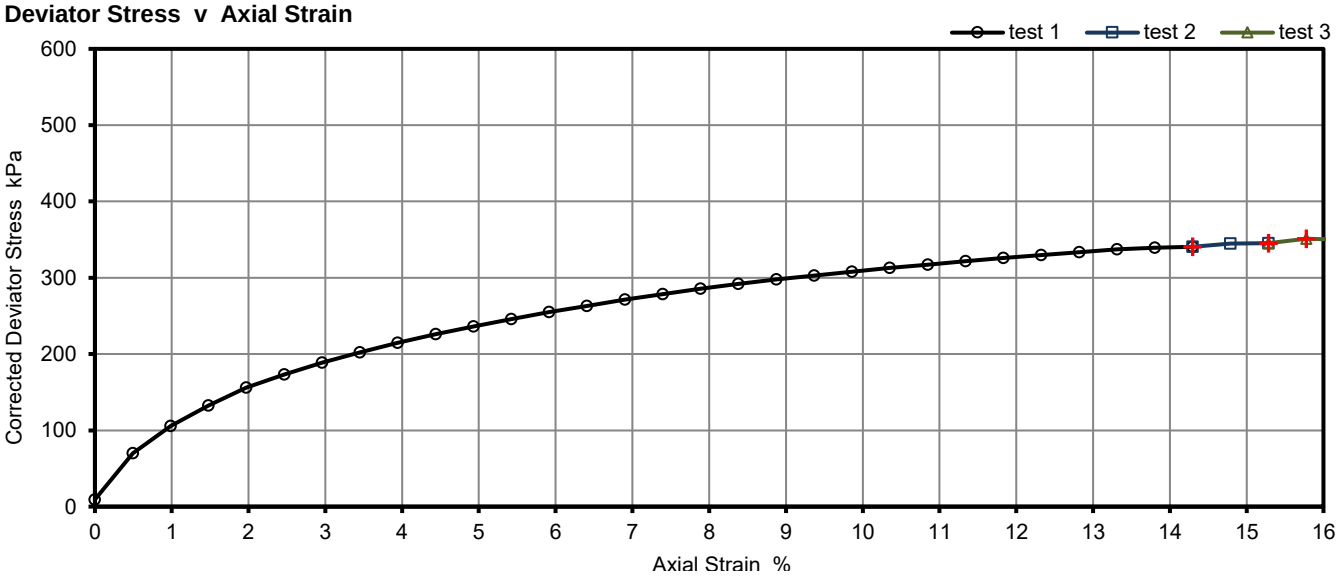
Sheet 2

	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test			Job Ref	CCG-C-20-11869
				Borehole/Pit No.	BH1
Site Name	SHEAR PLANT, TENAX ROAD			Sample No.	3
Soil Description				Depth	9.00
Specimen Reference		Specimen Depth	m	Sample Type	UT
Specimen Description	Brown slightly sandy slightly gravelly silty CLAY of VERY HIGH shear strength.			KeyLAB ID	CCGL202010297
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specir			Date of test	27.10.20

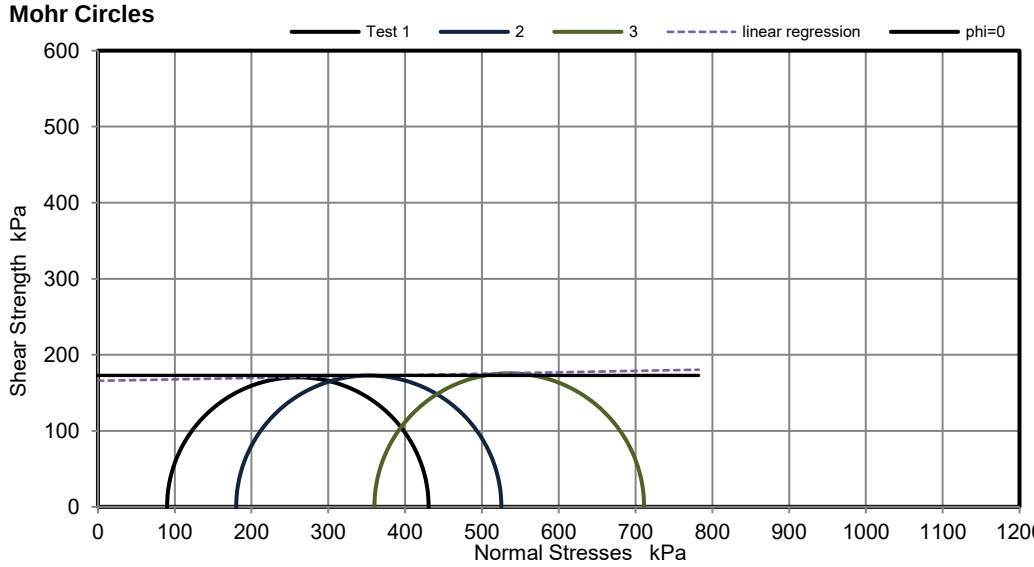
Length	mm	202.8
Diameter	mm	102.6
Bulk Density	Mg/m3	2.24
Moisture Content	%	15.1
Dry Density	Mg/m3	1.94

Rate of Strain		%/min	2.00		
Stage Number			1	2	3
Cell Pressure		kPa	90	180	360
End of stage	Axial Strain	%	14.3	15.3	15.8
	Deviator Stress, (σ1 - σ3) corrected for area and membrane	kPa	340.6	345.3	351.2
	Shear strength, cu	kPa	170.3	172.7	175.6
	Mode of failure		Compound		

Deviator Stress v Axial Strain



Mohr Circles



ϕu = 0

Average cu 173 kPa

Linear Regression

ϕu 1.1 °

cu 166 kPa

Mohr circles and their interpretation is not covered by BS1377. These are provided for information only.

Remarks

Approved

Printed 29/10/2020 10:09

Lab Sheet Reference :

Fig. No. 1

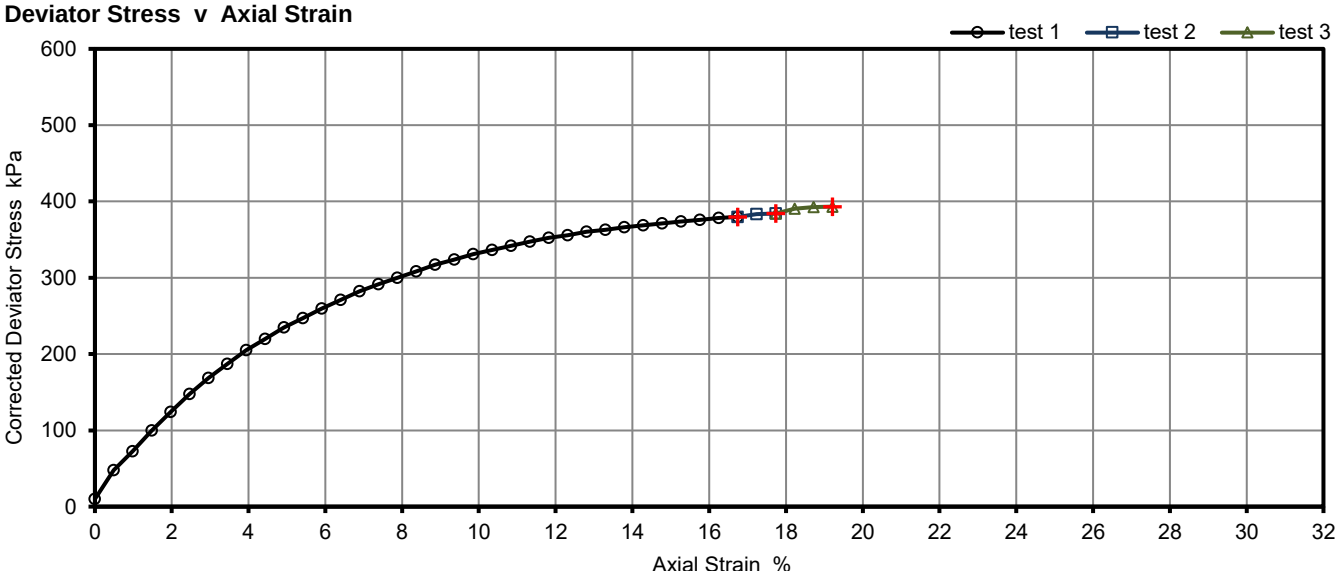
Sheet 3

	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test			Job Ref	CCG-C-20-11869
				Borehole/Pit No.	BH1
Site Name	SHEAR PLANT, TENAX ROAD			Sample No.	4
Soil Description				Depth	12.00
Specimen Reference		Specimen Depth	m	Sample Type	UT
Specimen Description	Brown slightly sandy slightly gravelly silty CLAY of VERY HIGH shear strength.			KeyLAB ID	CCGL202010298
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specir			Date of test	27.10.20

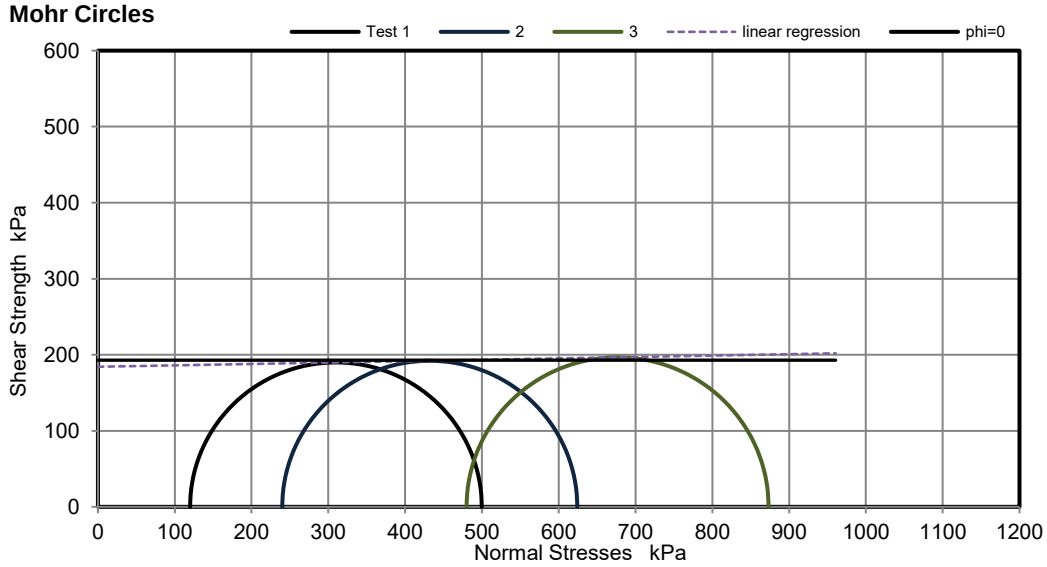
Length	mm	203.0
Diameter	mm	104.3
Bulk Density	Mg/m3	2.27
Moisture Content	%	14.8
Dry Density	Mg/m3	1.98

Rate of Strain		%/min	2.00		
Stage Number			1	2	3
Cell Pressure		kPa	120	240	480
End of stage	Axial Strain	%	16.7	17.7	19.2
	Deviator Stress, (σ1 - σ3) corrected for area and membrane	kPa	379.8	384.2	393.3
	Shear strength, cu	kPa	189.9	192.1	196.6
	Mode of failure		Compound		

Deviator Stress v Axial Strain



Mohr Circles



ϕu = 0

Average cu 193 kPa

Linear Regression

ϕu 1.1 °

cu 184 kPa

Mohr circles and their interpretation is not covered by BS1377. These are provided for information only.

Remarks

Approved

Printed 29/10/2020 10:09

Lab Sheet Reference :

Fig. No. 1

Sheet 4

SUMMARY OF LABORATORY SOIL TEST RESULTS

BH / TP / WS Number	Sample Type	Depth From (m)	Depth To (m)	Moisture Content (%)	Bulk Density (Mg/m^3)	Dry Density (Mg/m^3)	Shear Strength (kN/m^2)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425mm (%)	Soil Classification	UKAS accredited test (Y/N)	Description / Test Method Samples described in accordance with BS EN ISO 14688-2 2004
BH2	B	2.00	2.00	20	-	-	-	-	-	-	-	-	Y	Dark brown silty gravelly SAND. Gravel is fine to coarse subangular to subrounded sandstone and mudstone. (BS1377Pt2:3.2,9.2)
BH2	UT	5.50	5.95	18	-	-	-	-	-	-	-	-	Y	Brown very clayey gravelly SAND. Gravel is fine to coarse subrounded sandstone. Frequent pockets of clay (BS1377Pt2:3.2)
BH2	UT	8.50	8.95	15	-	-	>110	-	-	-	-	-	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular to subrounded sandstone (BS1377Pt2:3.2,4.4,5,Pt7.9)
BH2	UT	11.50	11.95	14	-	-	>110	-	-	-	-	-	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular to subrounded sandstone (BS1377Pt2:3.2)
BH2	B	19.00	19.00	25	-	-	-	40	17	23	88	CL/CI	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular to subrounded sandstone (BS1377Pt2:3.2,4.4,5)
BH2	B	30.00	30.00	32	-	-	-	-	-	-	-	-	Y	Reddish brown very silty SAND. (BS1377Pt2:3.2,9.2)

SITE: SHEAR PLANT, TENAX ROAD (CCG-C-20-11869) DATE: 29.10.20

CLIENT: AXION POLYMERS

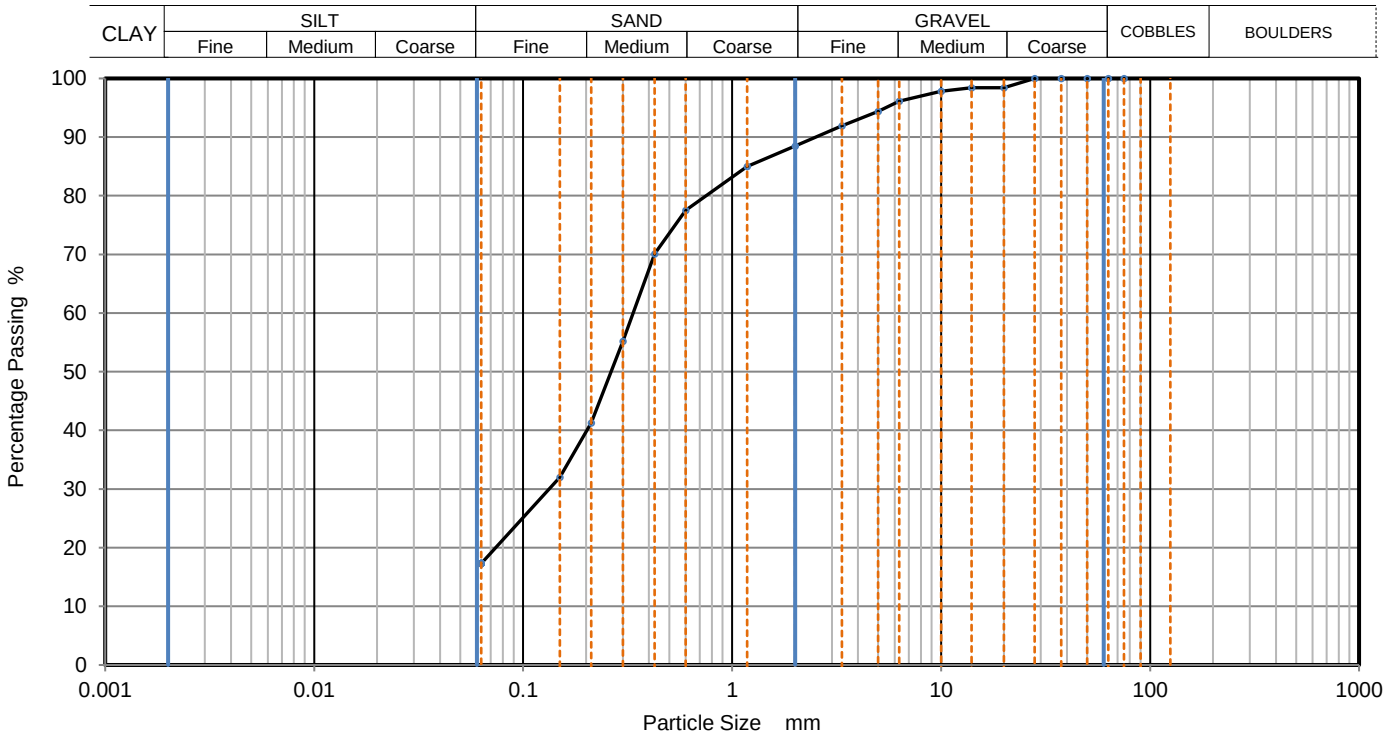
UKAS TESTING 4514

Key:- BD = Bulk Disturbed; SD = Small Disturbed; U100 = Undisturbed 100mm; WS = Window Sample
CL = Low Plasticity; CI = Intermediate; CH = High; CV = Very high; CE = Extremely high; NP = Non-plastic
(* Denotes Hand Shear Vane test result)
Sample description not accredited by UKAS

CC Geotechnical Ltd
Tel: 0151 545 2750
e: lab@ccgeotechnical.com

PARTICLE SIZE DISTRIBUTION

Job Ref			CCG-C-20-11869
Borehole/Pit No.			BH2
Site Name	SHEAR PLANT, TENAX ROAD		
Sample No.			1
Specimen Description	Dark brown silty gravelly SAND.		
Depth, m			2.00
Specimen Reference		Specimen Depth	m
Sample Type			B
Test Method	BS1377:Part 2:1990, clause 9.2		
KeyLAB ID			CCGL202010291



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	98		
10	98		
6.3	96		
5	94		
3.35	92		
2	89		
1.18	85		
0.6	78		
0.425	70		
0.3	55		
0.212	41		
0.15	32		
0.063	17		

Dry Mass of sample, g

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	71
Fines <0.063mm	17

Grading Analysis		
D100	mm	
D60	mm	0.336
D30	mm	0.134
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

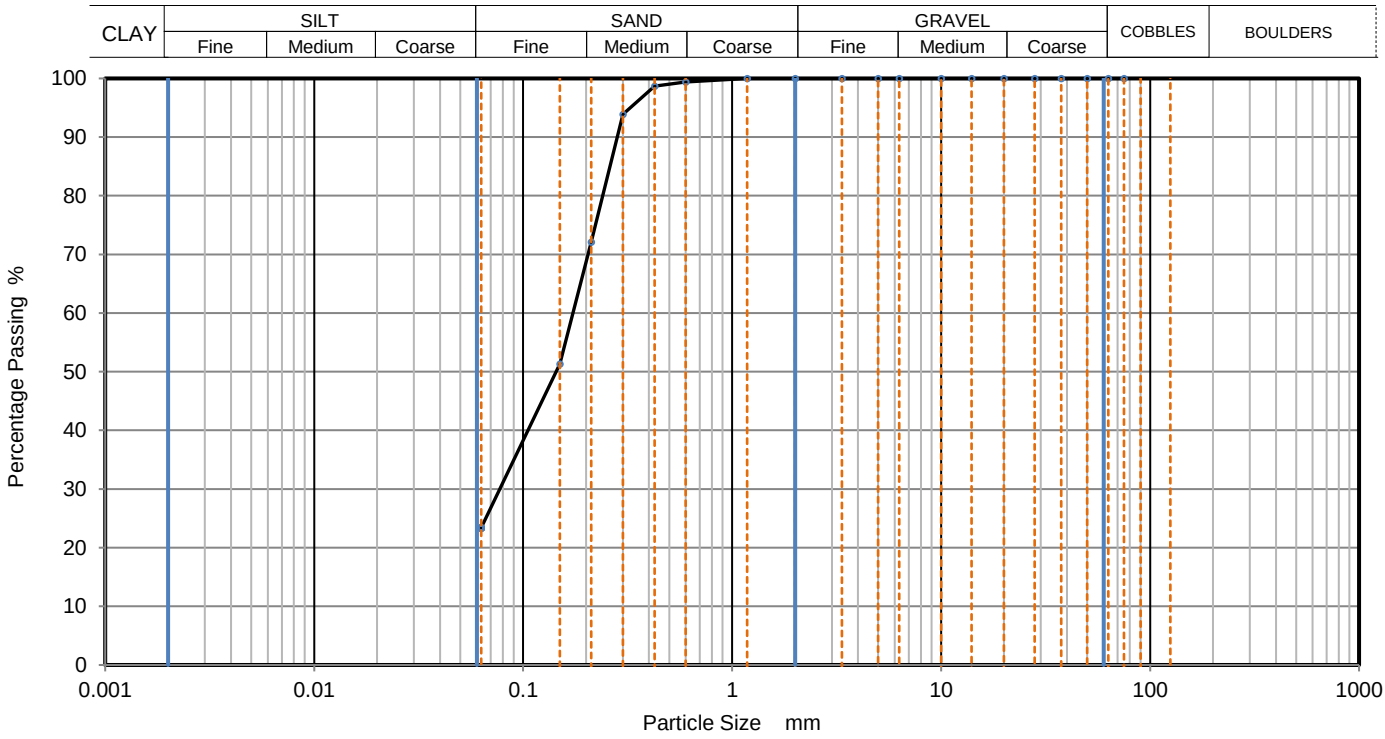
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	Fig 1
JE	DK	DK	29/10/2020 09:51	Sheet

CC Geotechnical Ltd
Tel: 0151 545 2750
e: lab@ccgeotechnical.com

PARTICLE SIZE DISTRIBUTION

Job Ref	CCG-C-20-11869		
Borehole/Pit No.	BH2		
Site Name	SHEAR PLANT, TENAX ROAD	Sample No.	1
Specimen Description	Reddish brown very silty SAND.	Depth, m	30.00
Specimen Reference	Specimen Depth: m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	CCGL202010299



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	94		
0.212	72		
0.15	51		
0.063	23		

Dry Mass of sample, g

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	77
Fines <0.063mm	23

Grading Analysis		
D100	mm	
D60	mm	0.173
D30	mm	0.0774
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

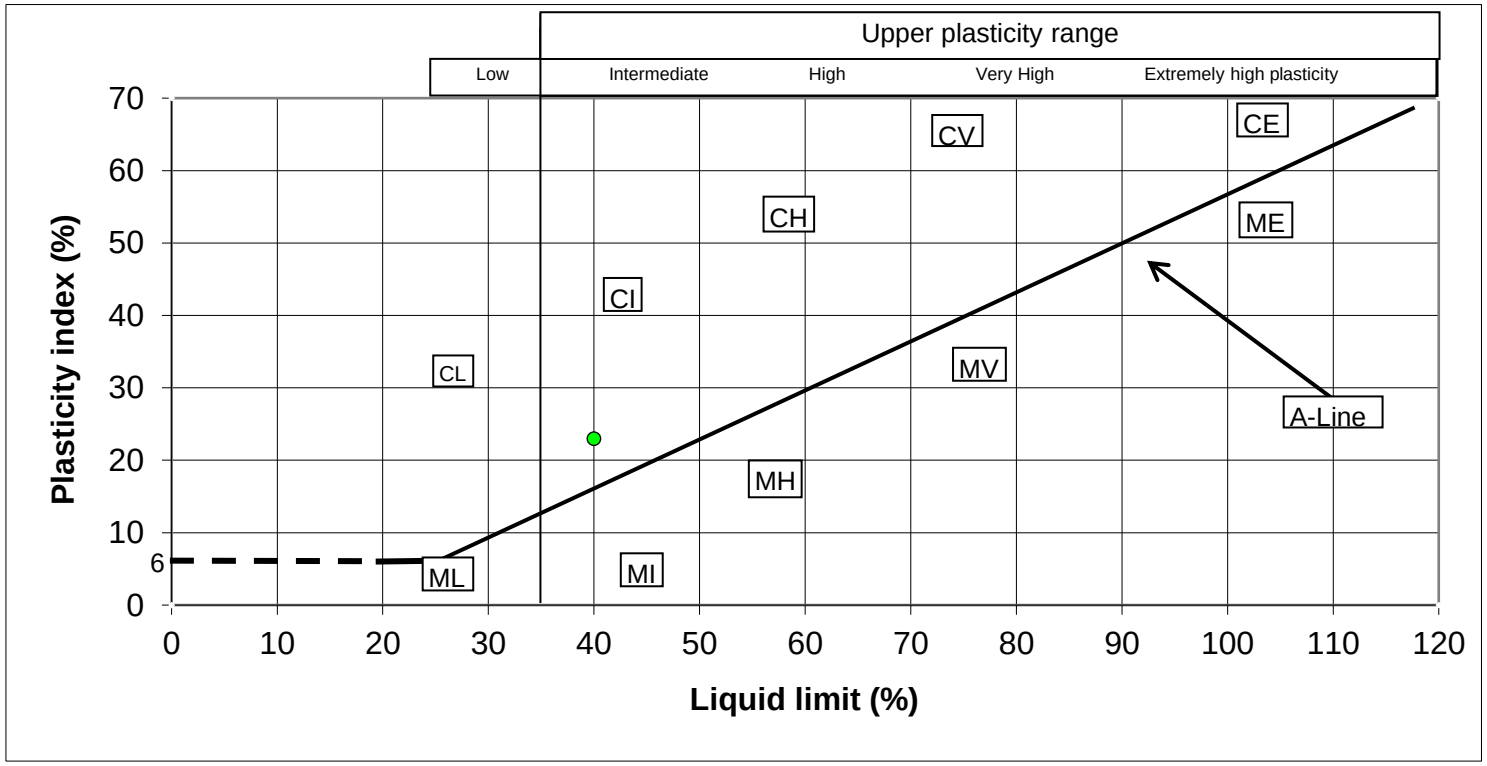
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	Fig 1
JE	DK	DK	29/10/2020 09:51	Sheet

ATTERBERG TEST RESULT SHEET
BS 1377:Part 2:1990:cl 4.4,5

SILT (M-SOIL), M plots below A-Line , CLAY,C, plots above A-Line, M and C may be combined as FINE SOIL, F.



BH	Sample Depth	Liquid limit	Plasticity index
BH2	19.00	40.0	23.0

UKAS TESTING
4514

APPROVED BY	DK

CLIENT: AXION POLYMERS	SITE: SHEAR PLANT, TENAX ROAD (CCG-C-20-11869)

SUMMARY OF LABORATORY SOIL TEST RESULTS

BH / TP / WS Number	Sample Type	Depth From (m)	Depth To (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Shear Strength (kN/m²)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425mm (%)	Soil Classification	UKAS accredited test (Y/N)	Description / Test Method Samples described in accordance with BS EN ISO 14688-2 2004
WS2	WS	3.30	3.30	14	-	-	-	-	-	-	-	-	Y	Greyish brown very gravelly silty SAND. Gravel is fine to coarse subangular to subrounded sandstone and mudstone. (BS1377Pt2:3.2,9.2)
WS4	WS	3.80	3.80	10	-	-	-	-	-	-	-	-	Y	Brown gravelly silty SAND. Gravel is fine to coarse subangular to subrounded sandstone and mudstone. (BS1377Pt2:3.2,9.2)

SITE: SHEAR PLANT, TENAX ROAD (CCG-C-20-11869) DATE: 29.10.20

CLIENT: AXION POLYMERS

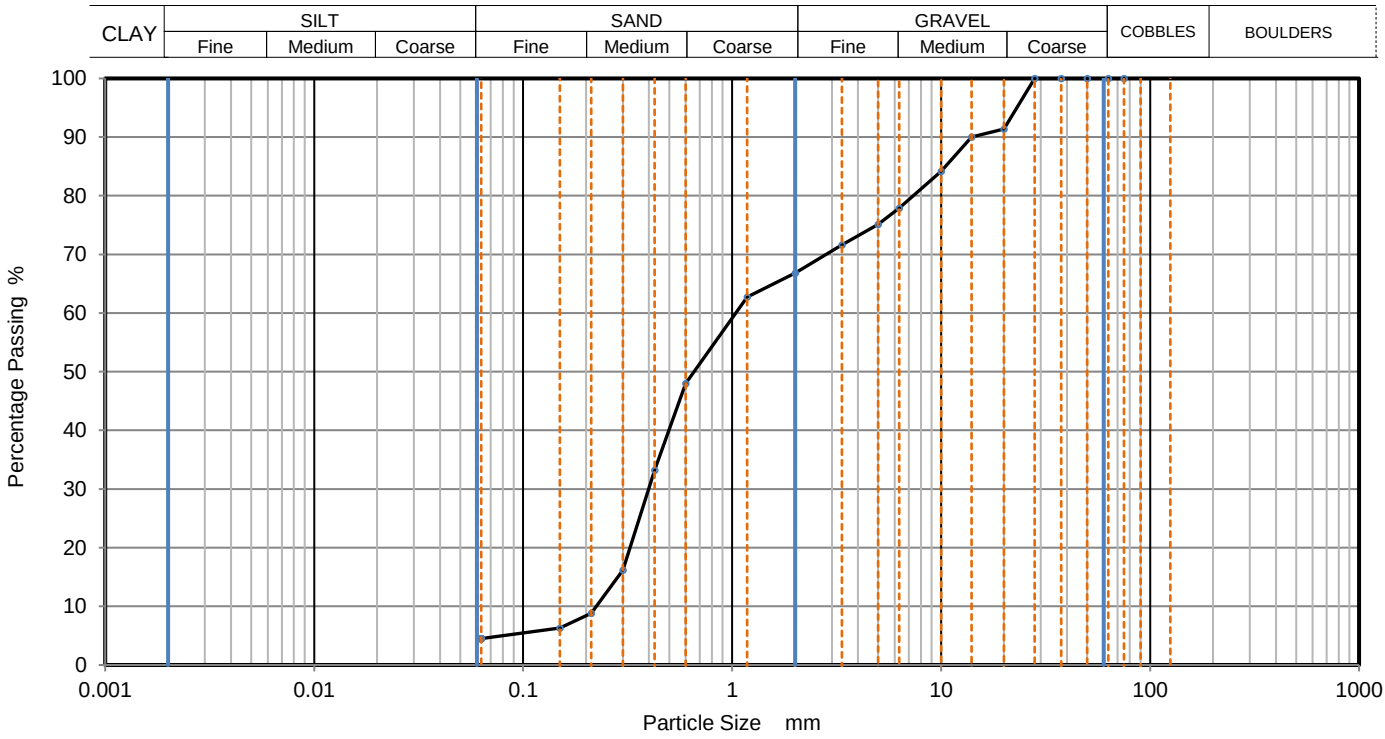
UKAS TESTING 4514

Key:- BD = Bulk Disturbed; SD = Small Disturbed; U100 = Undisturbed 100mm; WS = Window Sample
CL = Low Plasticity; CI = Intermediate; CH = High; CV = Very high; CE = Extremely high; NP = Non-plastic
(* Denotes Hand Shear Vane test result)
Sample description not accredited by UKAS

CC Geotechnical Ltd
Tel: 0151 545 2750
e: lab@ccgeotechnical.com

PARTICLE SIZE DISTRIBUTION

Job Ref			CCG-C-20-11869
Borehole/Pit No.			WS2
Site Name	SHEAR PLANT, TENAX ROAD	Sample No.	1
Specimen Description	Greyish brown very gravelly silty SAND.	Depth, m	3.30
Specimen Reference	Specimen Depth: m	Sample Type	WS
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	CCGL202010292



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	91		
14	90		
10	84		
6.3	78		
5	75		
3.35	72		
2	67		
1.18	63		
0.6	48		
0.425	33		
0.3	16		
0.212	9		
0.15	6		
0.063	5		

Dry Mass of sample, g

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	62
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	1.04
D30	mm	0.398
D10	mm	0.224
Uniformity Coefficient		4.7
Curvature Coefficient		0.68

Remarks

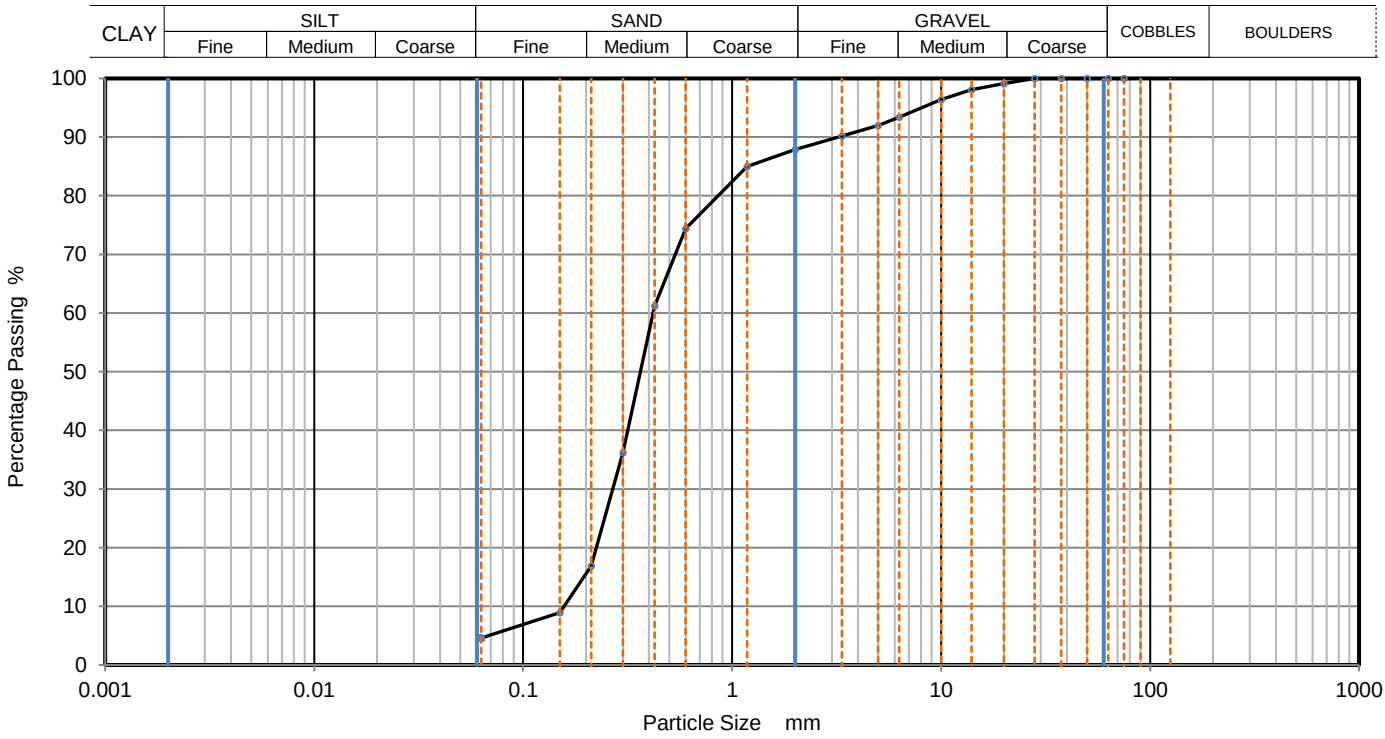
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	Fig 1
JE	DK	DK	29/10/2020 09:51	Sheet

CC Geotechnical Ltd
Tel: 0151 545 2750
e: lab@ccgeotechnical.com

PARTICLE SIZE DISTRIBUTION

Job Ref	CCG-C-20-11869		
Borehole/Pit No.	WS4		
Site Name	SHEAR PLANT, TENAX ROAD	Sample No.	1
Specimen Description	Brown gravelly silty SAND.	Depth, m	3.80
Specimen Reference	Specimen Depth: m	Sample Type	WS
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	CCGL202010293



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	98		
10	96		
6.3	93		
5	92		
3.35	90		
2	88		
1.18	85		
0.6	74		
0.425	61		
0.3	36		
0.212	17		
0.15	9		
0.063	5		

Dry Mass of sample, g

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	83
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	0.418
D30	mm	0.268
D10	mm	0.157
Uniformity Coefficient		2.7
Curvature Coefficient		1.1

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	Fig 1
JE	DK	DK	29/10/2020 09:51	Sheet

APPENDIX 03

Exploratory Hole Records

WML CONSULTING	Project Title: S Norton, Tenax Road		WS01
	Project Number: 9624G	Client: Axion Polymers	Sheet 1 Of 1
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 16/08/2021	Method: Window Sample	Driller: LOT Geotechnics	Logged By: SCS

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
					0.25	Grey reinforced concrete. (MADE GROUND)		
						Grey slightly sandy fine to coarse gravel of mixed lithologies. (MADE GROUND)		
0.80	E				0.80			
		N=4			1.00	Black slightly sandy fine to coarse gravel os ash, clinker, brick and concrete. (MADE GROUND)		
1.40	D				1.30			
2.00	D	N=12			2.00	Greyish brown, silty fine to medium SAND with rare fine gravel of mixed lithologies and thin horizons of clay. (GLACIOFLUVIAL SHEET DEPOSITS)		
					2.60			
		N=6			3.00	Greyish brown, silty coarse SAND with rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
3.70	D				3.90		▼	
		N=11			4.00			
					4.10	Greyish brown, silty fine SAND with rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
					4.70	Greyish brown, silty coarse SAND with rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
5.00	D	N=20			5.00	Firm to stiff brown slightly sandy CLAY with rare fine gravel of mixed lithologies. (GLACIAL TILL)		
					5.45	End Of Borehole At 5.45 m		
					6.00			

KEY

D - Disturbed Sample
B - Bulk Sample
U - Undisturbed
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

Surface concrete cut with Stihl saw and broken out with 5T excavator. Hand dug pit to 1.20mbgl. Surface reinstated with concrete.

Scale: 1:40

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed
16/08/2021	3.9	3.90			Seepage

Daily Log Of Depths

Date	Casing	Water

Chiselling

From	To	Hours

WML CONSULTING	Project Title: S Norton, Tenax Road		WS02
	Project Number: 9624G	Client: Axion Polymers	Sheet 1 Of 1
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 16/08/2021	Method: Window Sample	Driller: LOT Geotechnics	Logged By: SCS

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
					0.25	Grey reinforced concrete. (MADE GROUND)		
0.35	E				0.55	Grey slightly sandy fine to coarse gravel of mixed lithologies. (MADE GROUND)		
0.65	E				1.00	Black slightly sandy fine to coarse gravelly silt. Gravel sized fragments are fine to coarse of ash, clinker, brick and concrete. (MADE GROUND)		
		N=10			1.25			
1.60	D					Greyish brown, silty coarse SAND with rare fine gravel of brick. (MADE GROUND)		
		N=13			2.00			
					2.10	Black slightly sandy fine to coarse gravel of ash. (MADE GROUND)		
					2.50	Greyish brown, silty coarse SAND with rare fine gravel of mixed lithologies and organic flecks. (GLACIOFLUVIAL SHEET DEPOSITS)		
		N=3			3.00	Greyish brown, silty fine SAND with rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
3.40	D				3.30	Greyish brown, silty coarse SAND with rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)	▼	
		N=11			4.00			
					4.60	Firm to stiff brown slightly sandy CLAY with rare fine gravel of mixed lithologies. (GLACIAL TILL)		
		N=16			5.00			
					5.45	End Of Borehole At 5.45 m		
					6.00			

KEY

D - Disturbed Sample
B - Bulk Sample
U - Undisturbed
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

Surface concrete cut with Stihl saw and broken out with 5T excavator. Hand dug pit to 1.20mbgl. Surface reinstated with concrete.

Scale: 1:40

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed
16/08/2021	3.9	3.90			Seepage

Daily Log Of Depths

Date	Casing	Water

Chiselling

From	To	Hours

WML CONSULTING	Project Title: S Norton, Tenax Road		WS03
	Project Number: 9624G	Client: Axion Polymers	Sheet 1 Of 1
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 16/08/2021	Method: Window Sample	Driller: LOT Geotechnics	Logged By: SCS

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
					0.25	Grey reinforced concrete. (MADE GROUND)		
					0.55	Grey slightly sandy fine to coarse gravel of mixed lithologies. (MADE GROUND)		
		N=9			1.00	Black slightly sandy fine to coarse gravel os ash, clinker, brick and concrete. (MADE GROUND)		
1.45	E				1.40			
		N=14			2.00	Greyish brown, silty fine to medium SAND with rare fine gravel of mixed lithologies and thin horizons of clay. (GLACIOFLUVIAL SHEET DEPOSITS)		
2.65	D				2.60			
		N=4			3.00	Greyish brown, silty coarse SAND with rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
		N=8			4.00			
4.65	D				4.60			
		N=14			5.00	Firm to stiff brown slightly sandy CLAY with rare fine gravel of mixed lithologies. (GLACIAL TILL)		
					5.45	End Of Borehole At 5.45 m		
					6.00			

KEY

D - Disturbed Sample
B - Bulk Sample
U - Undisturbed
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
Surface concrete cut with Stihl saw and broken out with 5T excavator. Hand dug pit to 1.20mbgl. Surface reinstated with concrete.

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: S Norton, Tenax Road		WS04
	Project Number: 9624G	Client: Axion Polymers	Sheet 1 Of 1
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 16/08/2021-17/08/2021	Method: Window Sample	Driller: LOT Geotechnics	Logged By: SCS

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
					0.20	Grey reinforced concrete. (MADE GROUND)		
					0.50	Grey slightly sandy fine to coarse gravel of mixed lithologies. (MADE GROUND)		
		N=8			1.00	Black slightly sandy fine to coarse gravel of ash, clinker, brick and concrete. (MADE GROUND)		
1.55	E				1.40			
					1.50	Firm greyish brown slightly silty, gravelly clay. (MADE GROUND)		
		N=14			1.75	Greyish brown, silty fine to medium sand with rare fine gravel of mixed lithologies and thin horizons of clay. (MADE GROUND)		
					2.00			
					2.20	Black slightly sandy fine to coarse gravel of ash, clinker, brick and concrete. (MADE GROUND)		
3.00	D	N=7			3.00	Greyish brown, silty fine to medium SAND with rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
3.60	D				3.60	3.00 - 3.30 ...between 3.00m and 3.30mbgl No Recovery		
		N=5			4.00	Firm greyish brown slightly silty, sandy, gravelly CLAY. Gravel is fine to medium of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
					4.10			
		N=8			5.00	Greyish brown, slightly silty, gravelly fine to medium SAND. Gravel is fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
					5.45	End Of Borehole At 5.45 m		
					6.00			

KEY

D - Disturbed Sample
B - Bulk Sample
U - Undisturbed
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

REMARKS

No Groundwater Encountered
Surface concrete cut with Stihl saw and broken out with 5T excavator. Hand dug pit to 1.20mbgl. Surface reinstated with concrete.

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: S Norton, Tenax Road		WS05
	Project Number: 9624G	Client: Axion Polymers	Sheet 1 Of 1
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 16/08/2021-17/08/2021	Method: Window Sample	Driller: LOT Geotechnics	Logged By: SCS

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
					0.30	Grey reinforced concrete. (MADE GROUND)		
0.50	E				0.80	Grey slightly sandy fine to coarse gravel of mixed lithologies. (MADE GROUND)		
		N=7			1.00	Reddish brown slightly sandy, medium to coarse gravel sized fragments of brick and concrete. (MADE GROUND)		
2.00	E	N=16			1.90 2.00	Greyish brown, silty fine to medium SAND with rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
		N=6			3.00			
		N=5			3.80 4.00	Firm greyish brown slightly silty, sandy, gravelly CLAY. Gravel is fine to medium of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
4.90	D	N=11			4.10 4.80	Greyish brown, silty fine to medium SAND with rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
					5.00	Firm greyish brown slightly silty, sandy, gravelly CLAY. Gravel is fine to medium of mixed lithologies. (GLACIAL TILL)		
					5.45	End Of Borehole At 5.45 m		
					6.00			

KEY

D - Disturbed Sample
B - Bulk Sample
U - Undisturbed
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

REMARKS

No Groundwater Encountered
Surface concrete cut with Stihl saw and broken out with 5T excavator. Hand dug pit to 1.20mbgl. Surface reinstated with concrete.

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: S Norton, Tenax Road			WS06
Project Number: 9624G	Client: Axion Polymers		Sheet 1 Of 1
GL (mAOD):	N Coord: 0		E Coord: 0
Date: 17/08/2021	Method: Tracked Excavator	Driller: LOT Geotechnics	Logged By: SCS

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
					0.60	Grey reinforced concrete. (MADE GROUND)		
						End Of Borehole At 0.60 m		
					1.00			
					2.00			
					3.00			
					4.00			
					5.00			
					6.00			

KEY

D - Disturbed Sample
B - Bulk Sample
U - Undisturbed
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
HOle Terminated on structural concrete slab at 0.60mbgl.

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: S Norton, Tenax Road		WS07
	Project Number: 9624G	Client: Axion Polymers	Sheet 1 Of 1
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 16/08/2021-17/08/2021	Method: Window Sample	Driller: LOT Geotechnics	Logged By: SCS

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
						Grey reinforced concrete. (MADE GROUND)		
					0.80			
					1.00	Grey slightly sandy fine to coarse gravel of mixed lithologies. (MADE GROUND)		
1.40	E	N=1			1.50	Greyish brown slightly sandy fine to coarse gravel of brick and concrete. (MADE GROUND)		
		N=19			2.00	Firm greyish brown slightly silty, gravelly clay. Gravel sized fragments are fine to coarse of brick, concrete and limestone. (MADE GROUND)		
2.60	E				2.60			
2.60	D				2.80	Greyish brown, silty fine to medium sand with rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
2.80 - 3.60	D	N=10			3.00			
					3.10	soft greyish brown slightly silty, sandy, gravelly CLAY. Gravel is fine to medium of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
					3.50	Greyish brown, silty fine to medium sand with rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
		N=3			4.00	Greyish brown, silty fine to medium SAND with rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
					4.90			
		N=8			5.00	Firm greyish brown slightly silty, sandy, gravelly CLAY. Gravel is fine to medium of mixed lithologies. (GLACIAL TILL)		
					5.45	End Of Borehole At 5.45 m		
					6.00			

KEY

D - Disturbed Sample
B - Bulk Sample
U - Undisturbed
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
Surface concrete cut with Stihl saw and broken out with 5T excavator. Hand dug pit to 1.20mbgl. Surface reinstated with concrete.

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: S Norton, Tenax Road		WS08
	Project Number: 9624G	Client: Axion Polymers	Sheet 1 Of 1
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 16/08/2021-17/08/2021	Method: Window Sample	Driller: LOT Geotechnics	Logged By: SCS

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
					0.50	Grey reinforced concrete. (MADE GROUND)		
					1.00	Grey slightly sandy fine to coarse gravel of mixed lithologies. (MADE GROUND)		
1.15	E	N=12			1.15			
					1.35	Black slightly clayey, slightly sandy fibrous PEAT. (PEAT)		
					1.55			
2.00	D	N=22			2.00	Soft greyish brown slightly silty, sandy, gravelly CLAY. Gravel is fine to medium of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
						Greyish brown, silty fine to medium SAND with rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
					2.85			
3.10	D	N=8			3.00	Orangish brown, silty fine to medium SAND with pockets of soft clay and rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
					3.30			
						Greyish brown, silty fine to medium sand with rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
		N=8			4.00	Greyish brown, silty fine locally medium SAND with rare fine gravel of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
					4.60			
		N=11			5.00	Firm greyish brown slightly silty, sandy, gravelly CLAY. Gravel is fine to medium of mixed lithologies. (GLACIOFLUVIAL SHEET DEPOSITS)		
					5.45	End Of Borehole At 5.45 m		
					6.00			

KEY

D - Disturbed Sample
B - Bulk Sample
U - Undisturbed
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
Surface concrete cut with Stihl saw and broken out with 5T excavator. Hand dug pit to 1.20mbgl. Surface reinstated with concrete.

Scale: 1:40

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed

Daily Log Of Depths

Date	Casing	Water

Chiselling

From	To	Hours

APPENDIX 04

Geotechnical Test Results

LABORATORY REPORT

4043

Contract Number: PSL21/6976

Report Date: 20 September 2021

Client's Reference: 9624G

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

For the attention of: Sam Seddon

Contract Title: S Norton

Date Received: 1/9/2021
Date Commenced: 1/9/2021
Date Completed: 20/9/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
fax: +44 (0)844 815 6642
e-mail: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS1			1.40		Dark brown gravelly SAND.
WS1			3.70		Dark brown gravelly SAND.
WS2			3.40		Dark brown gravelly very sandy CLAY.
WS4			3.60		Dark brown slightly gravelly very sandy CLAY.
WS6			2.80		Dark brown very sandy very silty CLAY.

UKAS TESTING
4043

Professional Soils Laboratory

S Norton

Contract No:
PSL21/6976
Client Ref:
9624G

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
WS1			1.40		20							
WS1			3.70		15							
WS2			3.40		19			29	14	15	89	Low Plasticity CL
WS4			3.60		19			24	14	10	98	Low Plasticity CL
WS6			2.80		24			30	20	10	100	Low Plasticity CL

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

UKAS TESTING 4043

PSL Professional Soils Laboratory

S Norton

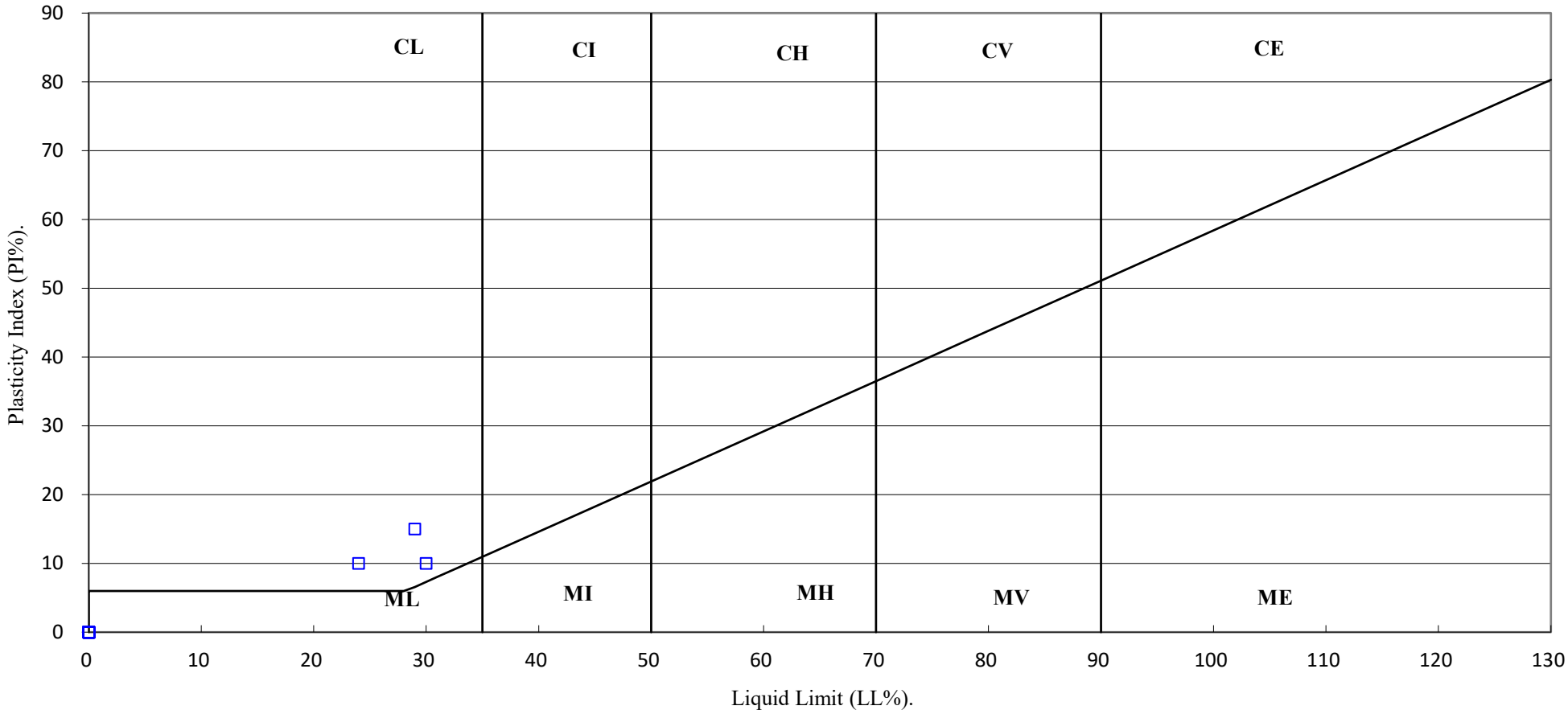
Contract No:

PSL21/6976

Client Ref:

9624G

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	S Norton	Contract No: PSL21/6976 Client Ref: 9624G

APPENDIX 05

Chemical Analytical Results

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

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/09096
Issue Number: 1 **Date:** 08 September, 2021

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

Project Manager: Sam Seddon
Project Name: S. Norton
Project Ref: 9624G
Order No: 9624G
Date Samples Received: 20/08/21
Date Instructions Received: 23/08/21
Date Analysis Completed: 08/09/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 21/09096

Client Project Name: S. Norton

Client Project Ref: 9624G

Lab Sample ID	21/09096/1	21/09096/2	21/09096/3	21/09096/4	21/09096/5	21/09096/6	21/09096/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS01	WS01	WS02	WS02	WS02	WS03	WS03			
Depth to Top	0.80	5.00	0.65	0.35	1.60	1.45	4.65			
Depth To Bottom										
Date Sampled	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21			
Sample Type	Soil	Soil - D	Soil	Soil	Soil - D	Soil	Soil - D			
Sample Matrix Code	4A	5A	4AB	4A	4A	4A	5A			
Hazardous Waste Assessment	APPENDED	-	APPENDED	APPENDED	-	APPENDED	-			Assessment
% Moisture at <40C$_A$	13.5	-	10.4	4.8	-	12.2	-	% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1	<0.1	32.0	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH$_D$[M#]	9.49	8.29	12.17	13.59	10.02	8.54	8.90	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$[M#]	0.42	0.08	0.10	<0.01	0.02	<0.01	0.05	g/l	0.01	A-T-026s
Sulphate (acid soluble)$_D$[M#]	2200	-	3600	4700	-	<200	-	mg/kg	200	A-T-028s
Sulphur (total)$_D$	1050	-	3450	1820	-	<50	-	mg/kg	50	A-T-024s
Cyanide (total)$_A$[M#]	<1	-	<1	<1	-	<1	-	mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	<0.2	-	<0.2	<0.2	-	<0.2	-	mg/kg	0.2	A-T-050s
Organic matter$_D$[M#]	27.7	-	21.5	1.0	-	0.2	-	% w/w	0.1	A-T-032 OM
Arsenic$_D$[M#]	30	-	10	2	-	<1	-	mg/kg	1	A-T-024s
Boron (water soluble)$_D$	2.8	-	4.9	<1.0	-	2.4	-	mg/kg	1	A-T-027s
Cadmium$_D$[M#]	2.0	-	2.1	1.1	-	<0.5	-	mg/kg	0.5	A-T-024s
Copper$_D$[M#]	95	-	202	78	-	7	-	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	-	<1	<1	-	<1	-	mg/kg	1	A-T-040s
Lead$_D$[M#]	38	-	136	121	-	3	-	mg/kg	1	A-T-024s
Mercury$_D$	0.20	-	1.44	1.84	-	<0.17	-	mg/kg	0.17	A-T-024s
Nickel$_D$[M#]	50	-	49	12	-	5	-	mg/kg	1	A-T-024s
Selenium$_D$[M#]	<1	-	<1	<1	-	<1	-	mg/kg	1	A-T-024s
Vanadium$_D$[M#]	64	-	31	12	-	8	-	mg/kg	1	A-T-024s
Zinc$_D$[M#]	38	-	229	171	-	<5	-	mg/kg	5	A-T-024s
Hazardous Waste Assessment - first sample	APPENDED	-	-	-	-	-	-			Assessment
Hazardous Waste Assessment - samples 2-11	-	-	APPENDED	-	-	-	-			Assessment

Envirolab Job Number: 21/09096

Client Project Name: S. Norton

Client Project Ref: 9624G

Lab Sample ID	21/09096/1	21/09096/2	21/09096/3	21/09096/4	21/09096/5	21/09096/6	21/09096/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS01	WS01	WS02	WS02	WS02	WS03	WS03			
Depth to Top	0.80	5.00	0.65	0.35	1.60	1.45	4.65			
Depth To Bottom										
Date Sampled	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21			
Sample Type	Soil	Soil - D	Soil	Soil	Soil - D	Soil	Soil - D			
Sample Matrix Code	4A	5A	4AB	4A	4A	4A	5A			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	Chrysotile	-	Amosite & Chrysotile	NAD	-	NAD	-			A-T-045
Asbestos Matrix (microscope)$_{D}$	Loose Fibres	-	Loose Fibres & Cement	-	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	-	No	N/A	-	N/A	-			A-T-045
Asbestos in Soil Quantification % (Hand Picking & Weighing)										
Asbestos in soil % composition (hand picking and weighing)$_{D}$	<0.001	-	0.229	-	-	-	-	% w/w	0.001	A-T-054

Envirolab Job Number: 21/09096

Client Project Name: S. Norton

Client Project Ref: 9624G

Lab Sample ID	21/09096/1	21/09096/2	21/09096/3	21/09096/4	21/09096/5	21/09096/6	21/09096/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS01	WS01	WS02	WS02	WS02	WS03	WS03			
Depth to Top	0.80	5.00	0.65	0.35	1.60	1.45	4.65			
Depth To Bottom										
Date Sampled	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21			
Sample Type	Soil	Soil - D	Soil	Soil	Soil - D	Soil	Soil - D			
Sample Matrix Code	4A	5A	4AB	4A	4A	4A	5A			
PAH-16MS										
Acenaphthene$_A^{M\#}$	0.06	-	<0.01	0.01	-	<0.01	-	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	0.02	-	<0.01	<0.01	-	<0.01	-	mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	0.14	-	<0.02	<0.02	-	<0.02	-	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.75	-	0.07	0.06	-	<0.04	-	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.91	-	0.07	0.06	-	<0.04	-	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	0.89	-	0.09	0.07	-	<0.05	-	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.43	-	<0.05	<0.05	-	<0.05	-	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	0.32	-	<0.07	<0.07	-	<0.07	-	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	0.80	-	0.08	0.09	-	<0.06	-	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	0.09	-	<0.04	<0.04	-	<0.04	-	mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	1.16	-	0.13	0.15	-	<0.08	-	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	0.03	-	0.02	0.06	-	<0.01	-	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.50	-	<0.03	0.04	-	<0.03	-	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	0.08	-	0.17	0.06	-	<0.03	-	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	0.60	-	0.11	0.12	-	<0.03	-	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	1.16	-	0.13	0.19	-	<0.07	-	mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	7.94	-	0.87	0.91	-	<0.08	-	mg/kg	0.01	A-T-019s
TPH Total with ID + GC Trace										
TPH total (>C6-C40)$_A^{M\#}$	254	-	600	2040	-	2850	-	mg/kg	10	A-T-007s
TPH FID Chromatogram$_A$	Appended	-	Appended	Appended	-	Appended	-			A-T-007s
TPH ID (for FID characterisations)$_A$	C8-C44 hydrocarbons with some PAHs and humic substances	-	C6-C44 with profile indicative of weathered petrol and unknown heavier hydrocarbons	C8-C44 hydrocarbons with unknown profile	-	C8-C44 hydrocarbons with unknown profile	-			A-T-007s

Envirolab Job Number: 21/09096

Client Project Name: S. Norton

Client Project Ref: 9624G

Lab Sample ID	21/09096/8	21/09096/9	21/09096/10	21/09096/11	21/09096/12	21/09096/13	21/09096/14	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS04	WS04	WS05	WS05	WS05	WS07	WS07 (ES/D)			
Depth to Top	1.55	3.00	0.50	2.00	4.90	1.40	2.60			
Depth To Bottom										
Date Sampled	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21			
Sample Type	Soil	Soil - D	Soil	Soil	Soil - D	Soil	Soil			
Sample Matrix Code	5A	4A	4AB	4A	5A	4A	4A			
Hazardous Waste Assessment	APPENDED	-	APPENDED	APPENDED	-	APPENDED	APPENDED			Assessment
% Moisture at <40C$_A$	14.7	-	7.4	17.5	-	11.2	14.6	% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	10.6	<0.1	<0.1	<0.1	20.7	<0.1	% w/w	0.1	A-T-044
pH$_D$ M#	8.00	7.95	12.72	8.64	8.16	8.55	8.15	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$ M#	0.04	0.04	0.04	0.06	0.03	<0.01	0.08	g/l	0.01	A-T-026s
Sulphate (acid soluble)$_D$ M#	220	-	4000	<200	-	<200	220	mg/kg	200	A-T-028s
Sulphur (total)$_D$	273	-	1270	141	-	83	350	mg/kg	50	A-T-024s
Cyanide (total)$_A$ M#	<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	mg/kg	0.2	A-T-050s
Organic matter$_D$ M#	3.3	-	0.4	0.7	-	0.4	0.8	% w/w	0.1	A-T-032 OM
Arsenic$_D$ M#	<1	-	<1	<1	-	<1	<1	mg/kg	1	A-T-024s
Boron (water soluble)$_D$	<1.0	-	1.2	<1.0	-	<1.0	<1.0	mg/kg	1	A-T-027s
Cadmium$_D$ M#	<0.5	-	0.5	<0.5	-	<0.5	<0.5	mg/kg	0.5	A-T-024s
Copper$_D$ M#	11	-	115	10	-	67	15	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	-	<1	<1	-	<1	<1	mg/kg	1	A-T-040s
Lead$_D$ M#	6	-	42	5	-	24	5	mg/kg	1	A-T-024s
Mercury$_D$	<0.17	-	0.76	<0.17	-	<0.17	<0.17	mg/kg	0.17	A-T-024s
Nickel$_D$ M#	13	-	7	10	-	10	10	mg/kg	1	A-T-024s
Selenium$_D$ M#	<1	-	<1	<1	-	<1	<1	mg/kg	1	A-T-024s
Vanadium$_D$ M#	17	-	13	8	-	15	10	mg/kg	1	A-T-024s
Zinc$_D$ M#	9	-	42	12	-	10	12	mg/kg	5	A-T-024s

Envirolab Job Number: 21/09096

Client Project Name: S. Norton

Client Project Ref: 9624G

Lab Sample ID	21/09096/8	21/09096/9	21/09096/10	21/09096/11	21/09096/12	21/09096/13	21/09096/14	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS04	WS04	WS05	WS05	WS05	WS07	WS07 (ES/D)			
Depth to Top	1.55	3.00	0.50	2.00	4.90	1.40	2.60			
Depth To Bottom										
Date Sampled	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21			
Sample Type	Soil	Soil - D	Soil	Soil	Soil - D	Soil	Soil			
Sample Matrix Code	5A	4A	4AB	4A	5A	4A	4A			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	NAD	-	Chrysotile & Amosite	NAD	-	NAD	NAD			A-T-045
Asbestos Matrix (microscope)$_{D}$	-	-	Bitumen & Loose Fibres	-	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	-	N/A	N/A	-	N/A	N/A			A-T-045
Asbestos in Soil Quantification % (Hand Picking & Weighing)										
Asbestos in soil % composition (hand picking and weighing)$_{D}$	-	-	0.002	-	-	-	-	% w/w	0.001	A-T-054

Envirolab Job Number: 21/09096

Client Project Name: S. Norton

Client Project Ref: 9624G

Lab Sample ID	21/09096/8	21/09096/9	21/09096/10	21/09096/11	21/09096/12	21/09096/13	21/09096/14	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS04	WS04	WS05	WS05	WS05	WS07	WS07 (ES/D)			
Depth to Top	1.55	3.00	0.50	2.00	4.90	1.40	2.60			
Depth To Bottom										
Date Sampled	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21			
Sample Type	Soil	Soil - D	Soil	Soil	Soil - D	Soil	Soil			
Sample Matrix Code	5A	4A	4AB	4A	5A	4A	4A			
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<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	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	-	<0.04	<0.04	-	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	-	<0.04	<0.04	-	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<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	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	-	<0.06	<0.06	-	<0.06	<0.06	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<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	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<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	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	-	<0.03	<0.03	-	<0.03	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	-	<0.03	<0.03	-	<0.03	<0.03	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	-	<0.07	<0.07	-	<0.07	<0.07	mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	-	<0.08	<0.08	-	<0.08	<0.08	mg/kg	0.01	A-T-019s
TPH Total with ID + GC Trace										
TPH total (>C6-C40)$_A^{M\#}$	21	-	238	2470	-	280	1520	mg/kg	10	A-T-007s
TPH FID Chromatogram$_A$	Appended	-	Appended	Appended	-	Appended	Appended			A-T-007s
TPH ID (for FID characterisations)$_A$	C16-C40 hydrocarbons with unknown profile	-	C8-C44 hydrocarbons with unknown profile	C12-C44 hydrocarbons with unknown profile	-	C16-C44 hydrocarbons with unknown profile	C10-C44 hydrocarbons with unknown profile			A-T-007s

Envirolab Job Number: 21/09096

Client Project Name: S. Norton

Client Project Ref: 9624G

Lab Sample ID	21/09096/15	21/09096/16	21/09096/17					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS07 (D)	WS08	WS08							
Depth to Top	2.60	1.15	2.00							
Depth To Bottom										
Date Sampled	17-Aug-21	17-Aug-21	17-Aug-21							
Sample Type	Soil - D	Soil	Soil - D							
Sample Matrix Code	4A	4AB	4A							
Hazardous Waste Assessment	-	APPENDED	-							Assessment
% Moisture at <40C$_A$	-	7.5	-					% w/w	0.1	A-T-044
% Stones >10mm$_A$	2.3	19.0	10.8					% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	9.22	13.24	9.36					pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.04	<0.01	0.04					g/l	0.01	A-T-026s
Sulphate (acid soluble)$_D$$^{M\#}$	-	4400	-					mg/kg	200	A-T-028s
Sulphur (total)$_D$	-	1920	-					mg/kg	50	A-T-024s
Cyanide (total)$_A$$^{M\#}$	-	<1	-					mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	-	<0.2	-					mg/kg	0.2	A-T-050s
Organic matter$_D$$^{M\#}$	-	3.3	-					% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	-	4	-					mg/kg	1	A-T-024s
Boron (water soluble)$_D$	-	2.1	-					mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	-	1.1	-					mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	-	1200	-					mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	-	<1	-					mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	-	63	-					mg/kg	1	A-T-024s
Mercury$_D$	-	2.00	-					mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	-	19	-					mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	-	<1	-					mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	-	15	-					mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	-	111	-					mg/kg	5	A-T-024s

Envirolab Job Number: 21/09096

Client Project Name: S. Norton

Client Project Ref: 9624G

Lab Sample ID	21/09096/15	21/09096/16	21/09096/17					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS07 (D)	WS08	WS08							
Depth to Top	2.60	1.15	2.00							
Depth To Bottom										
Date Sampled	17-Aug-21	17-Aug-21	17-Aug-21							
Sample Type	Soil - D	Soil	Soil - D							
Sample Matrix Code	4A	4AB	4A							
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	-	NAD	-							A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	-	N/A	-							A-T-045

Envirolab Job Number: 21/09096

Client Project Name: S. Norton

Client Project Ref: 9624G

Lab Sample ID	21/09096/15	21/09096/16	21/09096/17					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS07 (D)	WS08	WS08							
Depth to Top	2.60	1.15	2.00							
Depth To Bottom										
Date Sampled	17-Aug-21	17-Aug-21	17-Aug-21							
Sample Type	Soil - D	Soil	Soil - D							
Sample Matrix Code	4A	4AB	4A							
PAH-16MS										
Acenaphthene$_A^{M\#}$	-	0.03	-					mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	-	<0.01	-					mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	-	0.04	-					mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	0.14	-					mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	0.13	-					mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	-	0.17	-					mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	0.10	-					mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	-	<0.07	-					mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	-	0.18	-					mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	-	<0.04	-					mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	-	0.26	-					mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	-	0.02	-					mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	-	0.09	-					mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	-	0.07	-					mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	-	0.20	-					mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	-	0.25	-					mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	-	1.68	-					mg/kg	0.01	A-T-019s
TPH Total with ID + GC Trace										
TPH total (>C6-C40)$_A^{M\#}$	-	638	-					mg/kg	10	A-T-007s
TPH FID Chromatogram$_A$	-	Appended	-							A-T-007s
TPH ID (for FID characterisations)$_A$	-	C6-C44 hydrocarbons with unknown profile	-							A-T-007s

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

Please contact us if you need any further information.

v1

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: S. Norton

Clients Project No: 9624G

Project No: 21/09096

Date Received: 23/08/2021 (am)

Cool Box Temperatures (°C): 16.8 & 17.1

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: 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 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/09096/1	21/09096/2	21/09096/3	21/09096/4	21/09096/5	21/09096/6	21/09096/7	21/09096/8	21/09096/9	21/09096/10	21/09096/11	21/09096/12
Client Sample No												
Client Sample ID/Depth	WS01 0.80m	WS01 5.00m	WS02 0.65m	WS02 0.35m	WS02 1.60m	WS03 1.45m	WS03 4.65m	WS04 1.55m	WS04 3.00m	WS05 0.50m	WS05 2.00m	WS05 4.90m
Date Sampled	17/08/21	17/08/21	17/08/21	17/08/21	17/08/21	17/08/21	17/08/21	17/08/21	17/08/21	17/08/21	17/08/21	17/08/21
A-T-007s	31/08/2021		31/08/2021	31/08/2021		31/08/2021		31/08/2021		31/08/2021	31/08/2021	
A-T-019s	01/09/2021		01/09/2021	01/09/2021		01/09/2021		01/09/2021		01/09/2021	01/09/2021	
A-T-024s	02/09/2021		02/09/2021	02/09/2021		02/09/2021		02/09/2021		02/09/2021	02/09/2021	
A-T-026s	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021
A-T-027s	02/09/2021		02/09/2021	02/09/2021		02/09/2021		02/09/2021		02/09/2021	02/09/2021	
A-T-028s	02/09/2021		02/09/2021	02/09/2021		02/09/2021		02/09/2021		02/09/2021	02/09/2021	
A-T-031s	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021
A-T-032 OM	01/09/2021		01/09/2021	01/09/2021		01/09/2021		01/09/2021		01/09/2021	01/09/2021	
A-T-040s	01/09/2021		01/09/2021	01/09/2021		01/09/2021		01/09/2021		01/09/2021	01/09/2021	
A-T-042sTCN	25/08/2021		25/08/2021	25/08/2021		25/08/2021		25/08/2021		25/08/2021	25/08/2021	
A-T-044	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
A-T-045	24/08/2021		24/08/2021	24/08/2021		24/08/2021		24/08/2021		24/08/2021	24/08/2021	
A-T-050s	25/08/2021		25/08/2021	25/08/2021		25/08/2021		25/08/2021		25/08/2021	25/08/2021	
A-T-054	06/09/2021		06/09/2021							06/09/2021		
Assessment	08/09/2021		08/09/2021	08/09/2021		08/09/2021		08/09/2021		08/09/2021	08/09/2021	

Lab Sample ID	21/09096/13	21/09096/14	21/09096/15	21/09096/16	21/09096/17
Client Sample No					
Client Sample ID/Depth	WS07 1.40m	WS07 (ES/D) 2.60m	WS07 (D) 2.60m	WS08 1.15m	WS08 2.00m
Date Sampled	17/08/21	17/08/21	17/08/21	17/08/21	17/08/21
A-T-007s	31/08/2021	31/08/2021		31/08/2021	
A-T-019s	01/09/2021	01/09/2021		01/09/2021	
A-T-024s	02/09/2021	02/09/2021		02/09/2021	
A-T-026s	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021
A-T-027s	02/09/2021	02/09/2021		02/09/2021	
A-T-028s	02/09/2021	02/09/2021		02/09/2021	
A-T-031s	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021
A-T-032 OM	01/09/2021	01/09/2021		01/09/2021	
A-T-040s	01/09/2021	01/09/2021		01/09/2021	
A-T-042sTCN	25/08/2021	25/08/2021		25/08/2021	
A-T-044	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
A-T-045	24/08/2021	24/08/2021		24/08/2021	
A-T-050s	25/08/2021	25/08/2021		25/08/2021	
A-T-054					
Assessment	08/09/2021	08/09/2021		08/09/2021	

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

Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

HAZARDOUS WASTE CLASSIFICATION REPORT

Envirolab Job Number: 21/09096
Issue Number: 1 **Date: 08/09/2021**

Client: WML Construction

Project Manager: Sam Seddon
Project Name: S. Norton
Project Ref: 9624G
Order No: 9624G
Date Samples Received:20/08/2021
Date Instructions Received: 02/09/2021

Appended hazardous waste assessment, RSK ref 11505-R159, 11 pages.

Approved by:

Sophie France
Client Manager

WM3 PRELIMINARY WASTE ASSESSMENT AND CLASSIFICATION REPORT

RSK REPORT REFERENCE: 11505-R159

INTRODUCTION

On behalf of Envirolab, RSK was requested to undertake waste assessment and classification on ten soil samples collected by a third party from an unknown site on 17 August 2021.

Information relating to historical operations at the site was not reviewed as part of RSK's assessment. In addition, RSK was not present during the collection of the sample nor had any input on the chemical testing suite. Therefore, the waste assessment and classification detailed in this report are based solely on the laboratory chemical data that were provided to RSK by Envirolab and were completed without prejudice for our client, Envirolab.

CHEMICAL TESTING

The samples were analysed for a chemical testing suite comprising: TPH total with ID, pH, speciated PAH, heavy metals including hexavalent chromium, asbestos screen, total phenols, total cyanide, sulphur and moisture content.

A copy of the certificate of chemical analysis is provided in Appendix B.

WASTE ASSESSMENT AND CLASSIFICATION

The following assessments assume the material tested is classified subsequently as waste. Envirolab, an RSK company, has developed a waste soils characterisation assessment tool (HASWASTE), which follows the guidance within Technical Guidance WM3. The analytical results have been assessed using this tool to determine if the samples contain hazardous properties.

The results of the assessment are summarised below. A copy of the HASWASTE assessment spreadsheet is provided in Appendix C.

Sample Reference	Waste classification of sample	Hazardous property code(s)	Hazardous chemical component(s) and concentration(s)
WS01 (0.80)	**Hazardous**	HP5 – specific target organ toxicity HP7 - carcinogenic	Chrysotile asbestos fibres
WS02 (0.65)	**Hazardous**	HP5 – specific target organ toxicity HP7 – carcinogenic HP8 – pH corrosive	Amosite and chrysotile loose asbestos fibres and asbestos cement pH – 12.17
WS02 (0.35)	**Hazardous**	HP8 – pH corrosive	pH – 13.59
WS03 (1.45)	**Non-hazardous**	Not applicable	Not applicable
WS04 (1.55)	**Non-hazardous**	Not applicable	Not applicable
WS05 (0.50)	**Hazardous**	HP5 – specific target organ toxicity HP7 – carcinogenic HP8 – pH corrosive	Chrysotile asbestos bitumen pH – 12.72
WS05 (2.00)	**Non-hazardous**	Not applicable	Not applicable
WS07 (1.40)	**Non-hazardous**	Not applicable	Not applicable

WS07 (ES/D) (2.60)	**Non-hazardous**	Not applicable	Not applicable
WS08 (1.15)	**Hazardous**	HP8 – pH corrosive	pH – 13.24

CONCLUSIONS

Waste assessment and classification were completed by RSK solely on the basis of chemical data provided by Envirolab. Using the data available for assessment, the assessed samples WS01 (0.80m), WS02 (0.65m), WS02 (0.35m), WS05 (0.50m) and WS08 (1.15m) may be classified as hazardous waste due to the presence of elevated pH in excess of the hazardous waste threshold of 11.5 in four of these samples, and detection of asbestos (either visible or fibres) in three of the samples. However, it is noted that asbestos quantification analysis was not carried out. If this analysis is subsequently completed and the concentration of asbestos fibres in sample WS01 (0.80m) is determined to be below the **hazardous** waste threshold of 0.1%, it may be possible to declassify this sample to non-hazardous. Samples WS03 (1.45m), WS04 (1.55m), WS05 (2.00m), WS07 (1.40m) and WS07 (ES/D) (2.60m) may be classified as non-hazardous waste. Whilst it is noted that samples WS02 (0.35m), WS03 (1.45m), WS05 (2.00m) and WS07 (E/D) (2.60m) recorded TPH concentrations in excess of 1,000mg/kg, these samples were assessed as non-hazardous due to HP7 (carcinogenic) and HP11 (mutagenic) because, as per the unknown oil marker test in WM3, the benzo(a)pyrene concentration in the samples was <0.01% of the TPH concentration.

We are not aware of the source of the material that the sample was taken from therefore we cannot definitively assign the appropriate List of Waste (LoW) code (formerly the European Waste Catalogue (EWC)). However, if the sample was taken from material that is CONSTRUCTION AND DEMOLITION WASTE (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES) it may be possible for the waste producer to assign the hazardous waste LoW code **'17 05 03* soil and stones containing hazardous substances'** to samples WS01 (0.80m), WS02 (0.65m). WS02 (0.35m), WS05 (0.50m) and WS08 (1.15m). For samples WS01 (0.80m), WS02 (0.65m) and WS05 (0.50m), the detection of asbestos means the hazardous LoW code '**17 06 05* construction material containing asbestos'** may also be applicable. For samples WS02 (0.35m), WS03 (1.45m), WS07 (1.40m), WS05 (2.00m) and WS07 (E/D) (2.60m), it may be possible for the waste producer to assign the non-hazardous waste LoW code **'17 05 04 soil and stones'**. However, the detection of asbestos in three out of ten samples may be indicative of the widespread presence of asbestos within the waste stream. For this reason, together with the elevated concentrations of TPH and pH in several of the samples, it is strongly recommended that further sampling and assessment is carried out.

In the absence of specific information on potential waste volumes and waste stream(s) the tested samples are representative of, it is noted that the chemical testing and assessment undertaken on ten samples may not necessarily be representative of the waste stream(s) requiring disposal. It is strongly recommended that further testing and assessment is completed to robustly characterise the waste and satisfy the requirements of the waste receiving facility. Furthermore, specific waste receiving sites that are identified as potential disposal routes may have additional analytical requirements (e.g. further asbestos, TPH and pH analysis, WAC testing) before they are either able or willing to accept the waste; therefore, it is advised that potential disposal sites are contacted at the earliest possible convenience so any further specific requirements to support disposal can be established.

Report author: **Karl Hall** Technical reviewer: **Tim Holding**

APPENDIX A
RSK SERVICE CONSTRAINTS

1. This report and the site investigation carried out in connection with the report (together the "Services") were compiled and carried out by RSK Environment Limited (RSK) for Envirolab (the "client") in accordance with the terms of the of the agreement between RSK and the "client". The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the client.

2. Other than that, expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.

3. Unless otherwise agreed in writing, the Services were performed by RSK exclusively for the purposes of the Client. RSK is not aware of any interest of or reliance by any party other than the Client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. **Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.**

4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK 's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date of this report, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.

5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the Client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.

6. The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the Client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, RSK did not seek to evaluate the presence on or off the site of asbestos, invasive plants, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials, unless specifically identified in the Services.

7. The Services are based upon RSK's observations of existing physical conditions at the Site gained from a visual inspection of the site together with RSK's interpretation of information, including documentation, obtained from third parties and from the Client on the history and usage of the site, unless specifically identified in the Services or accreditation system (such as UKAS ISO 17020:2012 clause 7.1.6):

    a. The Services were based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely.

    b. The Services were limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the visual inspection.

    c. The Services did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services.

    RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the Client and RSK.

8. The intrusive environmental site investigation aspects of the Services are a limited sampling of the site at pre-determined locations based on the known historic / operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the properties of the materials adjacent and local conditions, together with the position of any current structures and underground utilities and facilities, and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters (as stipulated in the scope between the client and RSK, based on an understanding of the available operational and historical information) and it should not be inferred that other chemical species are not present.

9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (intrusive and sample locations etc) annotated

on site plans are not drawn to scale but are centred over the approximate location. Such features should not be used for setting out and should be considered indicative only.

10. The comments given in this report and the opinions expressed are based on the ground conditions encountered during the site work and on the results of tests made in the field and in the laboratory. However, there may be conditions pertaining to the site that have not been disclosed by the investigation and therefore could not be taken into account. In particular, it should be noted that there may be areas of made ground not detected due to the limited nature of the investigation or the thickness and quality of made ground across the site may be variable. In addition, groundwater levels and ground gas concentrations and flows, may vary from those reported due to seasonal, or other, effects and the limitations stated in the data should be recognised.

11. Asbestos is often observed to be present in soils in discrete areas. Whilst asbestos-containing materials may have been locally encountered during the fieldworks or supporting laboratory analysis, the history of brownfield and demolition sites indicates that asbestos fibres may be present more widely in soils and aggregates, which could be encountered during more extensive ground works.

12. Unless stated otherwise, only preliminary geotechnical recommendations are presented in this report and these should be verified in a Geotechnical Design Report, once proposed construction and structural design proposals are confirmed.

APPENDIX B
CERTIFICATES OF CHEMICAL ANALYSIS

Envirolab Job Number: 21/09096
Client:
Client Project Name:
Client Project Ref:

Lab Sample ID				21/09096/1	21/09096/3	21/09096/4
Client Sample No						
Client Sample ID				WS01	WS02	WS02
Depth to Top				0.80	0.65	0.35
Depth to Bottom						
Date Sampled				17-Aug-21	17-Aug-21	17-Aug-21
Sample Type				Soil	Soil	Soil
Sample Matrix Code	**Units**	**Limit of Detection**	**Method**	4A	4AB	4A
% Moisture at <40C	% w/w	0.1	A-T-044	13.5	10.4	4.8
% Stones >10mm	% w/w	0.1	A-T-044	<0.1	<0.1	32
pH	pH	0.01	A-T-031s	9.49	12.17	13.59
Sulphate (water sol 2:1)	g/l	0.01	A-T-026s	0.42	0.1	<0.01
Sulphate (acid soluble)	mg/kg	200	A-T-028s	2200	3600	4700
Sulphur (total)	mg/kg	50	A-T-024s	1050	3450	1820
Cyanide (total)	mg/kg	1	A-T-042sTCN	<1	<1	<1
Phenols - Total by HPLC	mg/kg	0.2	A-T-050s	<0.2	<0.2	<0.2
Organic matter	% w/w	0.1	A-T-032 OM	27.7	21.5	1
Arsenic	mg/kg	1	A-T-024s	30	10	2
Boron (water soluble)	mg/kg	1	A-T-027s	2.8	4.9	<1.0
Cadmium	mg/kg	0.5	A-T-024s	2	2.1	1.1
Copper	mg/kg	1	A-T-024s	95	202	78
Chromium (hexavalent)	mg/kg	1	A-T-040s	<1	<1	<1
Lead	mg/kg	1	A-T-024s	38	136	121
Mercury	mg/kg	0.17	A-T-024s	0.2	1.44	1.84
Nickel	mg/kg	1	A-T-024s	50	49	12
Selenium	mg/kg	1	A-T-024s	<1	<1	<1
Vanadium	mg/kg	1	A-T-024s	64	31	12
Zinc	mg/kg	5	A-T-024s	38	229	171
Asbestos in Soil (inc. matrix)						
Asbestos in soil			A-T-045	Chrysotile	Amosite & Chrysotile	NAD
Asbestos Matrix (microscope)			A-T-045	Loose Fibres	Loose Fibres & Cement	-
Asbestos ACM - Suitable for Water Absorption Test?			A-T-045	N/A	No	N/A
PAH-16MS						
Acenaphthene	mg/kg	0.01	A-T-019s	0.06	<0.01	0.01
Acenaphthylene	mg/kg	0.01	A-T-019s	0.02	<0.01	<0.01
Anthracene	mg/kg	0.02	A-T-019s	0.14	<0.02	<0.02
Benzo(a)anthracene	mg/kg	0.04	A-T-019s	0.75	0.07	0.06
Benzo(a)pyrene	mg/kg	0.04	A-T-019s	0.91	0.07	0.06
Benzo(b)fluoranthene	mg/kg	0.05	A-T-019s	0.89	0.09	0.07
Benzo(ghi)perylene	mg/kg	0.05	A-T-019s	0.43	<0.05	<0.05
Benzo(k)fluoranthene	mg/kg	0.07	A-T-019s	0.32	<0.07	<0.07
Chrysene	mg/kg	0.06	A-T-019s	0.8	0.08	0.09
Dibenzo(ah)anthracene	mg/kg	0.04	A-T-019s	0.09	<0.04	<0.04
Fluoranthene	mg/kg	0.08	A-T-019s	1.16	0.13	0.15
Fluorene	mg/kg	0.01	A-T-019s	0.03	0.02	0.06
Indeno(123-cd)pyrene	mg/kg	0.03	A-T-019s	0.5	<0.03	0.04
Naphthalene	mg/kg	0.03	A-T-019s	0.08	0.17	0.06
Phenanthrene	mg/kg	0.03	A-T-019s	0.6	0.11	0.12
Pyrene	mg/kg	0.07	A-T-019s	1.16	0.13	0.19
Total PAH-16MS	mg/kg	0.01	A-T-019s	7.94	0.87	0.91
TPH Total with ID + GC Trace						
TPH total (>C6-C40)	mg/kg	10	A-T-007s	254	600	2040
TPH FID Chromatogram			A-T-007s	Appended	Appended	Appended

Envirolab Job Number: 21/09096
Client:
Client Project Name:
Client Project Ref:

	Units	Limit of Detection	Method			
Lab Sample ID				21/09096/1	21/09096/3	21/09096/4
Client Sample No						
Client Sample ID				WS01	WS02	WS02
Depth to Top				0.80	0.65	0.35
Depth to Bottom						
Date Sampled				17-Aug-21	17-Aug-21	17-Aug-21
Sample Type				Soil	Soil	Soil
Sample Matrix Code				4A	4AB	4A
TPH ID (for FID characterisations)			A-T-007s	C8-C44 hydrocarbons with some PAHs and humic substances	C6-C44 with profile indicative of weathered petrol and unknown heavier hydrocarbons	C8-C44 hydrocarbons with unknown profile

Envirolab Job Number: 21/09096
Client:
Client Project Name:
Client Project Ref:

Lab Sample ID			21/09096/6	21/09096/8	21/09096/10	21/09096/11
Client Sample No						
Client Sample ID			WS03	WS04	WS05	WS05
Depth to Top			1.45	1.55	0.50	2.00
Depth to Bottom						
Date Sampled			17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21
Sample Type			Soil	Soil	Soil	Soil
Sample Matrix Code	**Units**	**Limit of Detection**	4A	5A	4AB	4A
% Moisture at <40C	% w/w	0.1	12.2	14.7	7.4	17.5
% Stones >10mm	% w/w	0.1	<0.1	<0.1	<0.1	<0.1
pH	pH	0.01	8.54	8	12.72	8.64
Sulphate (water sol 2:1)	g/l	0.01	<0.01	0.04	0.04	0.06
Sulphate (acid soluble)	mg/kg	200	<200	220	4000	<200
Sulphur (total)	mg/kg	50	<50	273	1270	141
Cyanide (total)	mg/kg	1	<1	<1	<1	<1
Phenols - Total by HPLC	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Organic matter	% w/w	0.1	0.2	3.3	0.4	0.7
Arsenic	mg/kg	1	<1	<1	<1	<1
Boron (water soluble)	mg/kg	1	2.4	<1.0	1.2	<1.0
Cadmium	mg/kg	0.5	<0.5	<0.5	0.5	<0.5
Copper	mg/kg	1	7	11	115	10
Chromium (hexavalent)	mg/kg	1	<1	<1	<1	<1
Lead	mg/kg	1	3	6	42	5
Mercury	mg/kg	0.17	<0.17	<0.17	0.76	<0.17
Nickel	mg/kg	1	5	13	7	10
Selenium	mg/kg	1	<1	<1	<1	<1
Vanadium	mg/kg	1	8	17	13	8
Zinc	mg/kg	5	<5	9	42	12
Asbestos in Soil (inc. matrix)						
Asbestos in soil			NAD	NAD	Chrysotile	NAD
Asbestos Matrix (microscope)			-	-	Bitumen	-
Asbestos ACM - Suitable for Water Absorption Test?			N/A	N/A	N/A	N/A
PAH-16MS						
Acenaphthene	mg/kg	0.01	<0.01	<0.01	<0.01	<0.01
Acenaphthylene	mg/kg	0.01	<0.01	<0.01	<0.01	<0.01
Anthracene	mg/kg	0.02	<0.02	<0.02	<0.02	<0.02
Benzo(a)anthracene	mg/kg	0.04	<0.04	<0.04	<0.04	<0.04
Benzo(a)pyrene	mg/kg	0.04	<0.04	<0.04	<0.04	<0.04
Benzo(b)fluoranthene	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05
Benzo(ghi)perylene	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	mg/kg	0.07	<0.07	<0.07	<0.07	<0.07
Chrysene	mg/kg	0.06	<0.06	<0.06	<0.06	<0.06
Dibenzo(ah)anthracene	mg/kg	0.04	<0.04	<0.04	<0.04	<0.04
Fluoranthene	mg/kg	0.08	<0.08	<0.08	<0.08	<0.08
Fluorene	mg/kg	0.01	<0.01	<0.01	<0.01	<0.01
Indeno(123-cd)pyrene	mg/kg	0.03	<0.03	<0.03	<0.03	<0.03
Naphthalene	mg/kg	0.03	<0.03	<0.03	<0.03	<0.03
Phenanthrene	mg/kg	0.03	<0.03	<0.03	<0.03	<0.03
Pyrene	mg/kg	0.07	<0.07	<0.07	<0.07	<0.07
Total PAH-16MS	mg/kg	0.01	<0.08	<0.08	<0.08	<0.08
TPH Total with ID + GC Trace						
TPH total (>C6-C40)	mg/kg	10	2850	21	238	2470
TPH FID Chromatogram			Appended	Appended	Appended	Appended

Envirolab Job Number: 21/09096
Client:
Client Project Name:
Client Project Ref:

	Units	Limit of Detection				
Lab Sample ID			21/09096/6	21/09096/8	21/09096/10	21/09096/11
Client Sample No						
Client Sample ID			WS03	WS04	WS05	WS05
Depth to Top			1.45	1.55	0.50	2.00
Depth to Bottom						
Date Sampled			17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21
Sample Type			Soil	Soil	Soil	Soil
Sample Matrix Code			4A	5A	4AB	4A
TPH ID (for FID characterisations)			C8-C44 hydrocarbons with unknown profile	C16-C40 hydrocarbons with unknown profile	C8-C44 hydrocarbons with unknown profile	C12-C44 hydrocarbons with unknown profile

Envirolab Job Number: 21/09096
Client:
Client Project Name:
Client Project Ref:

Lab Sample ID			21/09096/13	21/09096/14	21/09096/16
Client Sample No					
Client Sample ID			WS07	WS07 (ES/D)	WS08
Depth to Top			1.40	2.60	1.15
Depth to Bottom					
Date Sampled			17-Aug-21	17-Aug-21	17-Aug-21
Sample Type			Soil	Soil	Soil
Sample Matrix Code	**Units**	**Limit of Detection**	4A	4A	4AB
% Moisture at <40C	% w/w	0.1	11.2	14.6	7.5
% Stones >10mm	% w/w	0.1	20.7	<0.1	19
pH	pH	0.01	8.55	8.15	13.24
Sulphate (water sol 2:1)	g/l	0.01	<0.01	0.08	<0.01
Sulphate (acid soluble)	mg/kg	200	<200	220	4400
Sulphur (total)	mg/kg	50	83	350	1920
Cyanide (total)	mg/kg	1	<1	<1	<1
Phenols - Total by HPLC	mg/kg	0.2	<0.2	<0.2	<0.2
Organic matter	% w/w	0.1	0.4	0.8	3.3
Arsenic	mg/kg	1	<1	<1	4
Boron (water soluble)	mg/kg	1	<1.0	<1.0	2.1
Cadmium	mg/kg	0.5	<0.5	<0.5	1.1
Copper	mg/kg	1	67	15	1200
Chromium (hexavalent)	mg/kg	1	<1	<1	<1
Lead	mg/kg	1	24	5	63
Mercury	mg/kg	0.17	<0.17	<0.17	2
Nickel	mg/kg	1	10	10	19
Selenium	mg/kg	1	<1	<1	<1
Vanadium	mg/kg	1	15	10	15
Zinc	mg/kg	5	10	12	111
Asbestos in Soil (inc. matrix)					
Asbestos in soil			NAD	NAD	NAD
Asbestos Matrix (microscope)			-	-	-
Asbestos ACM - Suitable for Water Absorption Test?			N/A	N/A	N/A
PAH-16MS					
Acenaphthene	mg/kg	0.01	<0.01	<0.01	0.03
Acenaphthylene	mg/kg	0.01	<0.01	<0.01	<0.01
Anthracene	mg/kg	0.02	<0.02	<0.02	0.04
Benzo(a)anthracene	mg/kg	0.04	<0.04	<0.04	0.14
Benzo(a)pyrene	mg/kg	0.04	<0.04	<0.04	0.13
Benzo(b)fluoranthene	mg/kg	0.05	<0.05	<0.05	0.17
Benzo(ghi)perylene	mg/kg	0.05	<0.05	<0.05	0.1
Benzo(k)fluoranthene	mg/kg	0.07	<0.07	<0.07	<0.07
Chrysene	mg/kg	0.06	<0.06	<0.06	0.18
Dibenzo(ah)anthracene	mg/kg	0.04	<0.04	<0.04	<0.04
Fluoranthene	mg/kg	0.08	<0.08	<0.08	0.26
Fluorene	mg/kg	0.01	<0.01	<0.01	0.02
Indeno(123-cd)pyrene	mg/kg	0.03	<0.03	<0.03	0.09
Naphthalene	mg/kg	0.03	<0.03	<0.03	0.07
Phenanthrene	mg/kg	0.03	<0.03	<0.03	0.2
Pyrene	mg/kg	0.07	<0.07	<0.07	0.25
Total PAH-16MS	mg/kg	0.01	<0.08	<0.08	1.68
TPH Total with ID + GC Trace					
TPH total (>C6-C40)	mg/kg	10	280	1520	638
TPH FID Chromatogram			Appended	Appended	Appended

Envirolab Job Number: 21/09096
Client:
Client Project Name:
Client Project Ref:

	Units	Limit of Detection			
Lab Sample ID			21/09096/13	21/09096/14	21/09096/16
Client Sample No					
Client Sample ID			WS07	WS07 (ES/D)	WS08
Depth to Top			1.40	2.60	1.15
Depth to Bottom					
Date Sampled			17-Aug-21	17-Aug-21	17-Aug-21
Sample Type			Soil	Soil	Soil
Sample Matrix Code			4A	4A	4AB
TPH ID (for FID characterisations)			C16-C44 hydrocarbons with unknown profile	C10-C44 hydrocarbons with unknown profile	C6-C44 hydrocarbons with unknown profile

APPENDIX C
‘HASWASTE’ SPREADSHEET

Haswaste, developed by Dr. Iain Haslock.

Please enter available data in the rows associated with the test (grey) cells. Calculation cells initially display either "0.0000" or "#DIV/0!".
If any calculation cells below state "0.00000", testing has NOT been undertaken that contributes to that Hazardous Property.

11505-CTR159

Ref. 1		WS01	WS02	WS02	WS03	WS04	WS05	WS05	WS07	WS07 (ES/D)
Ref. 2		0.80	0.65	0.35	1.45	1.55	0.50	2.00	1.40	2.60
Date		17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21
% Moisture	%	13.5	10.4	4.8	12.2	14.7	7.4	17.5	11.2	14.6
pH (soil)		9.49	12.17	13.59	8.54	8.00	12.72	8.64	8.55	8.15
pH (leachate)										
Arsenic	mg/kg	30	10	2	1	1	1	1	1	1
Cadmium	mg/kg	2.0	2.1	1.1	0.5	0.5	0.5	0.5	0.5	0.5
Copper	mg/kg	95	202	78	7	11	115	10	67	15
CrVI or Chromium	mg/kg	1	1	1	1	1	1	1	1	1
Lead	mg/kg	38	136	121	3	6	42	5	24	5
Mercury	mg/kg	0.20	1.44	1.84	0.17	0.17	0.76	0.17	0.17	0.17
Nickel	mg/kg	50	49	12	5	13	7	10	10	10
Selenium	mg/kg	1	1	1	1	1	1	1	1	1
Zinc	mg/kg	38	229	171	5	9	42	12	10	12
Barium	mg/kg									
Beryllium	mg/kg									
Vanadium	mg/kg	64	31	12	8	17	13	8	15	10
Cobalt	mg/kg									
Manganese	mg/kg									
Molybdenum	mg/kg									
Antimony	mg/kg									
Aluminium	mg/kg									
Bismuth	mg/kg									
CrIII	mg/kg									
Iron	mg/kg									
Strontium	mg/kg									
Tellurium	mg/kg									
Thallium	mg/kg									
Titanium	mg/kg									
Tungsten	mg/kg									
Ammoniacal N	mg/kg									
ws Boron	mg/kg	2.8	4.9	1.0	2.4	1.0	1.2	1.0	1.0	1.0
PAH (Input Total PAH **OR** individual PAH results)										
Acenaphthene	mg/kg	0.06	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Acenaphthylene	mg/kg	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Anthracene	mg/kg	0.14	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Benzo(a)anthracene	mg/kg	0.75	0.07	0.06	0.04	0.04	0.04	0.04	0.04	0.04
Benzo(a)pyrene	mg/kg	0.91	0.07	0.06	0.04	0.04	0.04	0.04	0.04	0.04
Benzo(b)fluoranthene	mg/kg	0.89	0.09	0.07	0.05	0.05	0.05	0.05	0.05	0.05
Benzo(ghi)perylene	mg/kg	0.43	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Benzo(k)fluoranthene	mg/kg	0.32	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Chrysene	mg/kg	0.80	0.08	0.09	0.06	0.06	0.06	0.06	0.06	0.06
Dibenzo(ah)anthracene	mg/kg	0.09	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Fluoranthene	mg/kg	1.16	0.13	0.15	0.08	0.08	0.08	0.08	0.08	0.08
Fluorene	mg/kg	0.03	0.02	0.06	0.01	0.01	0.01	0.01	0.01	0.01
Indeno(123cd)pyrene	mg/kg	0.50	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03
Naphthalene	mg/kg	0.08	0.17	0.06	0.03	0.03	0.03	0.03	0.03	0.03
Phenanthrene	mg/kg	0.60	0.11	0.12	0.03	0.03	0.03	0.03	0.03	0.03
Pyrene	mg/kg	1.16	0.13	0.19	0.07	0.07	0.07	0.07	0.07	0.07
Coronene	mg/kg									
Total PAHs (16 or 17)	mg/kg									
TPH										
Petrol	mg/kg		600.00							
Diesel	mg/kg									
Lube Oil	mg/kg									
Crude Oil	mg/kg									
White Spirit / Kerosene	mg/kg									
Creosote	mg/kg									
Unknown TPH with ID	mg/kg	254.0		2,040.0	2,850.0	21.0	238.0	2,470.0	280.0	1,520.0
Unknown TPHCWG	mg/kg									
Total Sulphide	mg/kg									
Complex Cyanide	mg/kg									
Free (or Total) Cyanide	mg/kg									
Thiocyanate	mg/kg									
Elemental/Free Sulphur	mg/kg	1,050	3,450	1,820	50	273	1,270	141	83	350
Phenols Input Total Phenols HPLC **OR** individual Phenol results.										
Phenol	mg/kg									
Cresols	mg/kg									
Xylenols	mg/kg									
Resourcinol	mg/kg									
Phenols Total by HPLC	mg/kg	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
BTEX Input Total BTEX **OR** individual BTEX results.										
Benzene	mg/kg									
Toluene	mg/kg									
Ethylbenzene	mg/kg									
Xylenes	mg/kg									
Total BTEX	mg/kg									
PCBs (POPs)										
PCBs Total (eg EC7/WHO12)	mg/kg									
PBBs (POPs)										
Hexabromobiphenyl (Total or PBB153; 2,2',4,4',5,5'- if only available)	mg/kg									

Please enter available data in the rows associated with the test (grey) cells. Calculation cells initially display either "0.0000" or "#DIV/0!".
If any calculation cells below state "0.00000", testing has NOT been undertaken that contributes to that Hazardous Property.

Haswaste, developed by Dr. Iain Haslock.

11505-CTR159

Ref. 1	WS01	WS02	WS02	WS03	WS04	WS05	WS05	WS07	WS07 (ES/D)
Ref. 2	0.80	0.65	0.35	1.45	1.55	0.50	2.00	1.40	2.60
Date	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21

POPs Dioxins and Furans Input Total Dioxins and Furans **OR** individual Dioxin and Furan results.

2,3,7,8-TeCDD	mg/kg								
1,2,3,7,8-PeCDD	mg/kg								
1,2,3,4,7,8-HxCDD	mg/kg								
1,2,3,6,7,8-HxCDD	mg/kg								
1,2,3,7,8,9-HxCDD	mg/kg								
1,2,3,4,6,7,8-HpCDD	mg/kg								
OCDD	mg/kg								
2,3,7,8-TeCDF	mg/kg								
1,2,3,7,8-PeCDF	mg/kg								
2,3,4,7,8-PeCDF	mg/kg								
1,2,3,4,7,8-HxCDF	mg/kg								
1,2,3,6,7,8-HxCDF	mg/kg								
2,3,4,6,7,8-HxCDF	mg/kg								
1,2,3,7,8,9-HxCDF	mg/kg								
1,2,3,4,6,7,8-HpCDF	mg/kg								
1,2,3,4,7,8,9-HpCDF	mg/kg								
OCDF	mg/kg								
Total Dioxins and Furans	mg/kg								

Some Pesticides (POPs unless otherwise stated)

Aldrin	mg/kg								
α Hexachlorocyclohexane (alpha-HCH) *(leave empty if total HCH results used)*	mg/kg								
β Hexachlorocyclohexane (beta-HCH) *(leave empty if total HCH results used)*	mg/kg								
α Cis-Chlordane (alpha) ***OR*** *Total Chlordane*	mg/kg								
δ Hexachlorocyclohexane (delta-HCH) *(leave empty if total HCH results used)*	mg/kg								
Dieldrin	mg/kg								
Endrin	mg/kg								
χ Hexachlorocyclohexane (gamma-HCH) (lindane) ***OR*** *Total HCH*	mg/kg								
Heptachlor	mg/kg								
Hexachlorobenzene	mg/kg								
o,p'-DDT *(leave empty if total DDT results used)*	mg/kg								
p,p'-DDT ***OR*** *Total DDT*	mg/kg								
χ Trans-Chlordane (gamma) *(leave empty if total Chlordane results used)*	mg/kg								
Chlordecone (kepone)	mg/kg								
Pentachlorobenzene	mg/kg								
Mirex	mg/kg								
Toxaphene (camphechlor)	mg/kg								

Tin

Tin *(leave empty if Organotin and Tin excl Organotin results used)*	mg/kg								

Organotin

Dibutyltin; DiBT	mg/kg								
Tributyltin; TriBT	mg/kg								
Triphenyltin; TriPT	mg/kg								
Tetrabutyltin; TeBT	mg/kg								

Tin excluding Organotin

Tin excl Organotin	mg/kg								

Haswaste, developed by Dr. Iain Haslock.

Please enter available data in the rows associated with the test (grey) cells. Calculation cells initially display either "0.0000" or "#DIV/0!".
If any calculation cells below state "0.00000", testing has NOT been undertaken that contributes to that Hazardous Property.

11505-CTR159									
Ref. 1	WS01	WS02	WS02	WS03	WS04	WS05	WS05	WS07	WS07 (ES/D)
Ref. 2	0.80	0.65	0.35	1.45	1.55	0.50	2.00	1.40	2.60
Date	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21
Asbestos in Soil	Thresholds								
Asbestos detected in Soil (enter Y or N)	Y	**Y**	**Y**	N	N	N	**Y**	N	N	N
		If Asbestos in Soil above is "**Y**", the soil is Hazardous Waste HP5 and HP7							
Asbestos % Composition in Soil (Matrix Loose Fibres or Microscopic Identifiable Pieces only)	see "Carc HP7 % Asbestos in Soil (Fibres)" below								
Carcinogenic HP7 % Asbestos in Soil (fibres or micro pieces) *Please be advised, if the calculation cell is "0.00000" DOES NOT MEAN asbestos testing has been undertaken and the result is zero.*	≥0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
		If Asbestos in Soil above is "**Y**", but Asbestos % above is "<0.1%", the soil is Non Hazardous Waste. You can only use Asbestos % results where loose fibres or micro pieces are only present. You cannot use Asbestos % results when visual identifiable pieces are present.							
Asbestos Identifiable Pieces visible with the naked eye detected in the Soil (enter Y or N)	Y	N	**Y**	N	N	N	**Y**	N	N	N

If visual identifiable pieces of asbestos are present, you cannot use Asbestos % results and the whole soil sample is Hazardous Waste HP5 and HP7 Construction material containing Asbestos 17 06 05.
Therefore, if Asbestos in Soil above is "**Y**", the Asbestos % above is "<0.1%", but the Asbestos Identifiable Pieces visible with the naked eye is "Y", the soil is Hazardous Waste.

Identifiable Pieces are Cement, Fragments, Board, Rope etc. ie anything ACM that is not Loose Fibres.

All visual asbestos pieces need to be removed leaving only fibres (or micro pieces) with an Asbestos % Composition in Soil result of <0.1% for the soil to become non-hazardous waste.

Hazardous Property	Thresholds	Cut Off Value	**If cells below turn yellow and the text turns red, the samples should be classified as Hazardous Waste.**								
Corrosive HP8	≥5%	<1%	0.00361	0.00137	0.00045	0.00030	0.00029	0.00032	0.00028	0.00031	0.00029
Irritant HP4	≥10%	<1%	0.02258	0.02660	0.01069	0.00208	0.00377	0.01432	0.00223	0.00923	0.00310
Irritant HP4	≥20%	<1%	0.10904	0.39224	0.18401	0.00600	0.02662	0.13098	0.01426	0.01592	0.03309
Specifc Target Organ Toxicity HP5	≥1%		0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
Specifc Target Organ Toxicity HP5	≥20%		0.00985	0.00494	0.00203	0.00125	0.00258	0.00214	0.00117	0.00237	0.00152
Specifc Target Organ Toxicity HP5	≥1%		0.00985	0.00887	0.00231	0.00125	0.00258	0.00214	0.00167	0.00237	0.00173
Specifc Target Organ Toxicity HP5	≥10%		0.02197	0.01219	0.19421	0.25023	0.00179	0.02204	0.20378	0.02486	0.12981
Aspiration Toxicity HP5	≥10%		0.02197	0.05376	0.19421	0.25023	0.00179	0.02204	0.20378	0.02486	0.12981
Acute Toxicity HP6	≥0.1%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.25%	<0.1%	0.00344	0.00131	0.00043	0.00013	0.00013	0.00019	0.00012	0.00013	0.00013
Acute Toxicity HP6	≥5%	<0.1%	0.00031	0.00032	0.00034	0.00031	0.00030	0.00033	0.00029	0.00031	0.00030
Acute Toxicity HP6	≥25%	<1%	0.03151	0.04669	0.02441	0.00317	0.00647	0.01945	0.00426	0.01309	0.00519
Acute Toxicity HP6	≥0.25%	<0.1%	0.00002	0.00013	0.00018	0.00001	0.00001	0.00007	0.00001	0.00002	0.00001
Acute Toxicity HP6	≥2.5%	<0.1%	0.00017	0.00017	0.00018	0.00017	0.00016	0.00018	0.00016	0.00017	0.00016
Acute Toxicity HP6	≥15%	<0.1%	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
Acute Toxicity HP6	≥55%	<1%	0.00017	0.00019	0.00010	0.00004	0.00004	0.00005	0.00004	0.00004	0.00004
Acute Toxicity HP6	≥0.1%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.5%	<0.1%	0.00036	0.00049	0.00046	0.00023	0.00022	0.00029	0.00021	0.00023	0.00022
Acute Toxicity HP6	≥3.5%	<0.1%	0.00014	0.00014	0.00015	0.00014	0.00014	0.00015	0.00013	0.00014	0.00014
Acute Toxicity HP6	≥22.5%	<1%	0.03116	0.04645	0.02425	0.00309	0.00639	0.01937	0.00419	0.01302	0.00512
Carcinogenic HP7	≥0.1%		0.00874	0.05376	0.01152	0.00089	0.00224	0.00389	0.00167	0.00213	0.00173
Carcinogenic HP7	≥0.1%		0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000
Carcinogenic HP7	≥1%		0.00985	0.00494	0.00203	0.00125	0.00258	0.00214	0.00117	0.00237	0.00152
Carcinogenic HP7 Unknown TPH with ID	≥1,000mg/kg		219.71	0.00	1942.08	2502.30	17.91	220.39	2037.75	248.64	1298.08
Carcinogenic HP7 b(a)p marker test (Unknown TPH with ID only) Cell only applicable if TPH >1,000mg/kg	≥0.01%		0.30990	#DIV/0!	0.00280	0.00123	0.16248	0.01556	0.00134	0.01269	0.00225
pH Corrosive HP8 pH (soil or leachate)	H8 ≥11.5		9.49	**12.17**	**13.59**	8.54	8.00	**12.72**	8.64	8.55	8.15
pH Corrosive HP8 pH (soil or leachate)	H8 ≤2		9.49	12.17	13.59	8.54	8.00	12.72	8.64	8.55	8.15
Toxic for Reproduction HP10	≥0.3%		0.00874	0.01219	0.01152	0.00089	0.00224	0.00389	0.00167	0.00213	0.00173
Toxic for Reproduction HP10	≥3%		0.02197	0.05376	0.19421	0.25023	0.00258	0.02204	0.20378	0.02486	0.12981
Mutagenic HP11	≥0.1%		0.00017	0.05376	0.00018	0.00017	0.00016	0.00018	0.00016	0.00017	0.00016
Mutagenic HP11 Unknown TPH with ID	≥1,000mg/kg		219.71	0.00	1942.08	2502.30	17.91	220.39	2037.75	248.64	1298.08
Mutagenic HP11 b(a)p marker test (Unknown TPH with ID only) Cell only applicable if TPH >1,000mg/kg	≥0.01%		0.30990	#DIV/0!	0.00280	0.00123	0.16248	0.01556	0.00134	0.01269	0.00225
Mutagenic HP11	≥1%		0.00985	0.00887	0.00231	0.00125	0.00258	0.00214	0.00167	0.00237	0.00173
Produces Toxic Gases HP12 Sulphide	≥1,400mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases HP12 Cyanide	≥1,200mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases HP12 Thiocyanate	≥2,600mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HP13 Sensitising	≥10%		0.00874	0.00887	0.00231	0.00089	0.00224	0.00131	0.00167	0.00179	0.00173

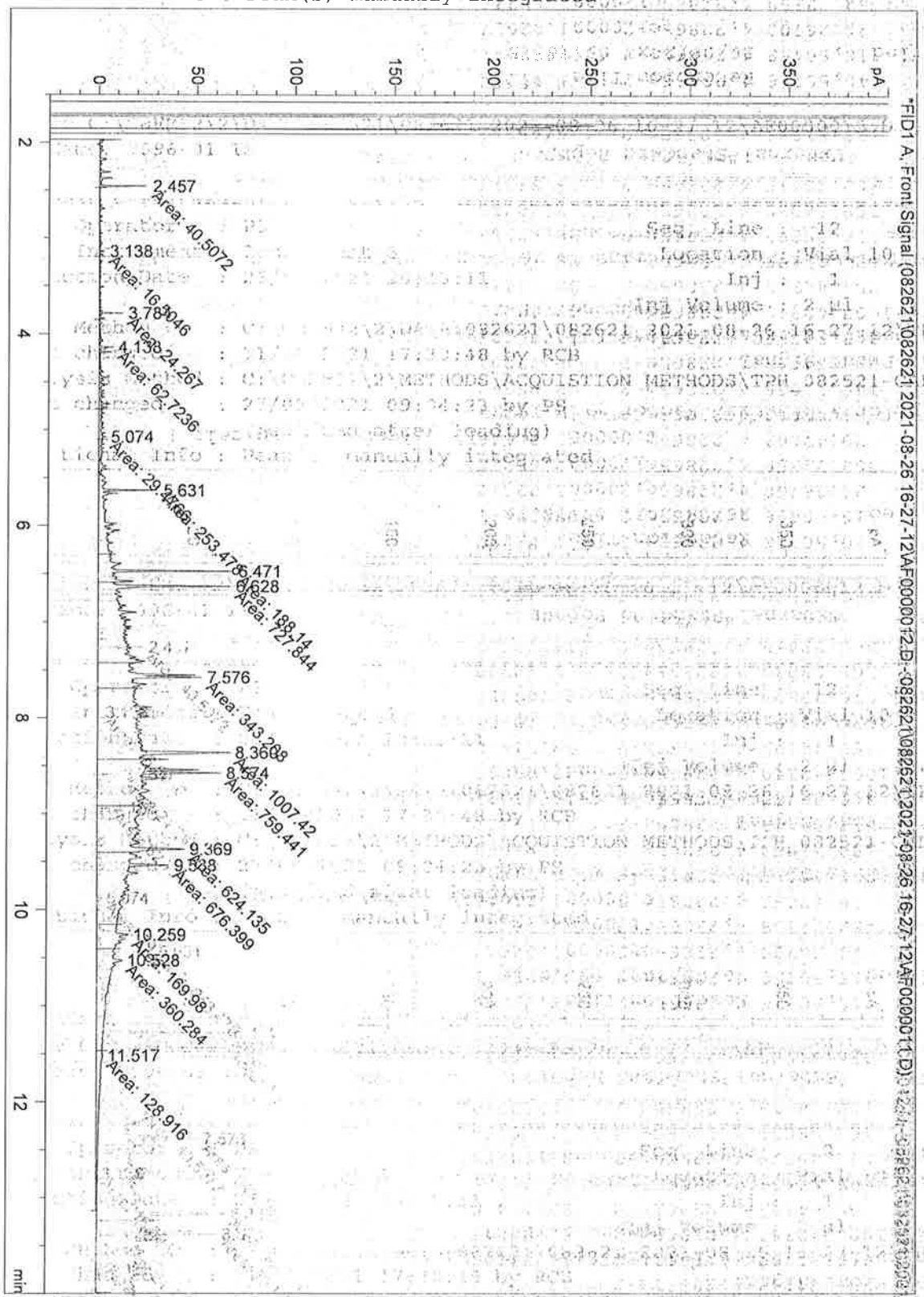
Haswaste, developed by Dr. Iain Haslock.

Please enter available data in the rows associated with the test (grey) cells. Calculation cells initially display either "0.0000" or "#DIV/0!".
If any calculation cells below state "0.00000", testing has NOT been undertaken that contributes to that Hazardous Property.

11505-CTR159										
Ref. 1			WS01	WS02	WS02	WS03	WS04	WS05	WS05	WS07	WS07 (ES/D)
Ref. 2			0.80	0.65	0.35	1.45	1.55	0.50	2.00	1.40	2.60
Date			17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21	17-Aug-21
Ecotoxic HP14 amended v6	≥25%	<0.1%	0.02998	0.06907	0.04353	0.00293	0.00529	0.02271	0.00475	0.01230	0.00540
Ecotoxic HP14 amended v6	≥25%	<0.1% (except Be, V, Te, Tl, Petrol, Diesel, Crude Oil, Kerosene, White Spirit, Crosote, TPH, TPHCWG, Phenol, Cresols, Xylenols, T-Phenols, CompCN, Thiocyanate, Toluene, Ethylbenzene, Xylene + BTEX 1%).	0.06181	0.12777	0.23978	0.25441	0.00967	0.04690	0.20970	0.03954	0.13673
Ecotoxic HP14 amended v6	≥25%	<0.1% (except Be, V, Te, Tl, Petrol, Diesel, Crude Oil, Kerosene, White Spirit, Crosote, TPH, TPHCWG, Phenol, Cresols, Xylenols, T-Phenols, CompCN, Thiocyanate, Toluene, Ethylbenzene, Xylene + BTEX 1%).	3.31478	7.49198	6.31410	2.80630	0.57156	2.51163	2.52338	1.50090	1.85207
Persistent Organic Pollutant (PCB, PBB or POP Pesticides)	>0.005%		0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
Persistent Organic Pollutant (Total Dioxins+Furans)	>0.0000015%		0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000
Persistent Organic Pollutant (Individual Dioxins+Furans)	>0.0000015%		0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000

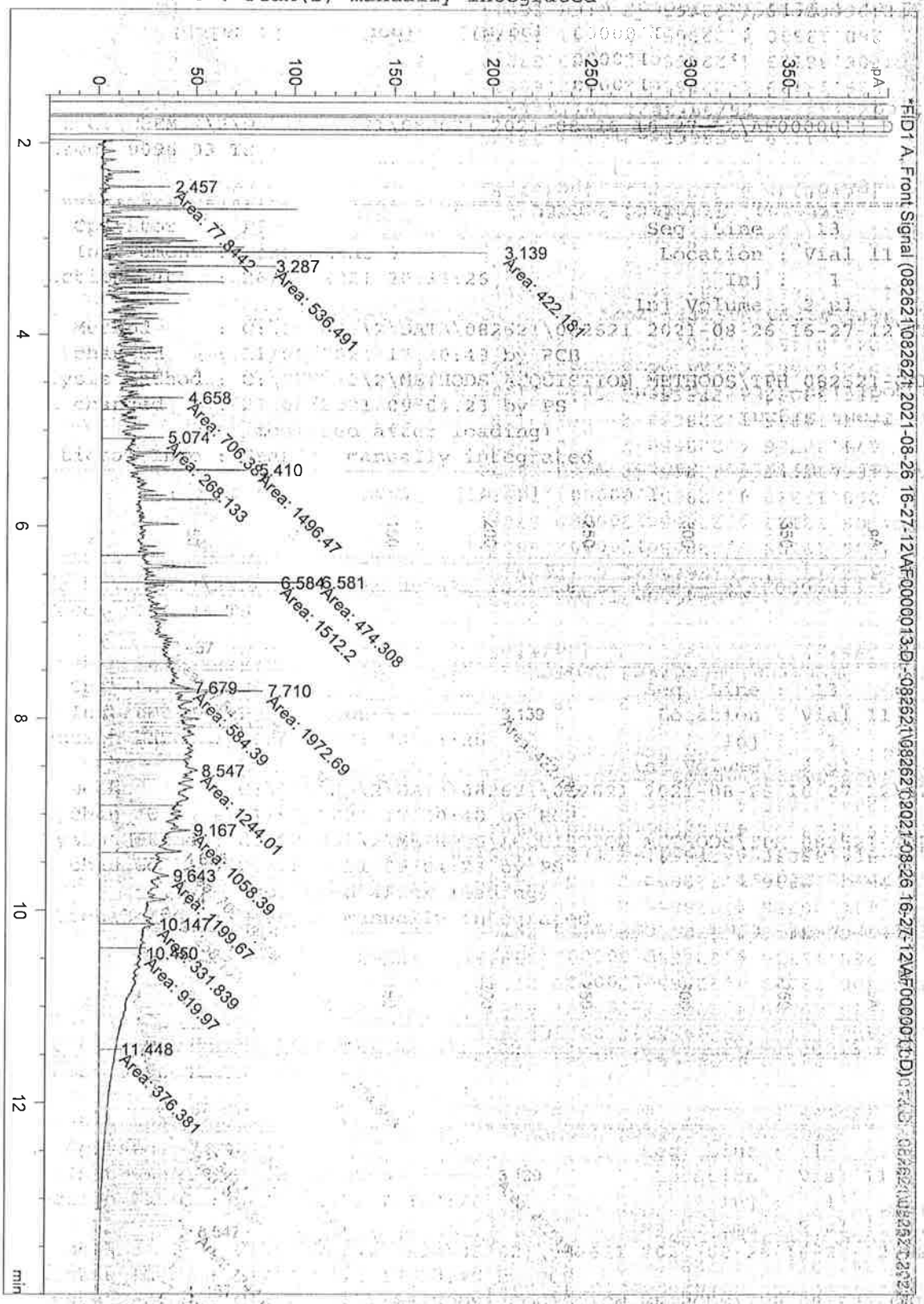
Data File C:\CHEM32\2\DATA\082621\082621 2021-08-26 16-27-12\AF0000012.D
Sample Name: 9096-01 TS

Acq. Operator	: PS	Seq. Line	: 12
Acq. Instrument	: Instrument 5	Location	: Vial 10
Injection Date	: 26/08/2021 20:13:11	Inj	: 1
		Inj Volume	: 2 µl
Acq. Method	: C:\CHEM32\2\DATA\082621\082621 2021-08-26 16-27-12\TPH.M		
Last changed	: 11/06/2021 17:30:48 by RCB		
Analysis Method	: C:\CHEM32\2\METHODS\ACQUISTION METHODS\TPH_082521-CAL1X2.M		
Last changed	: 27/08/2021 09:04:23 by PS		
	(modified after loading)		
Additional Info	: Peak(s) manually integrated		



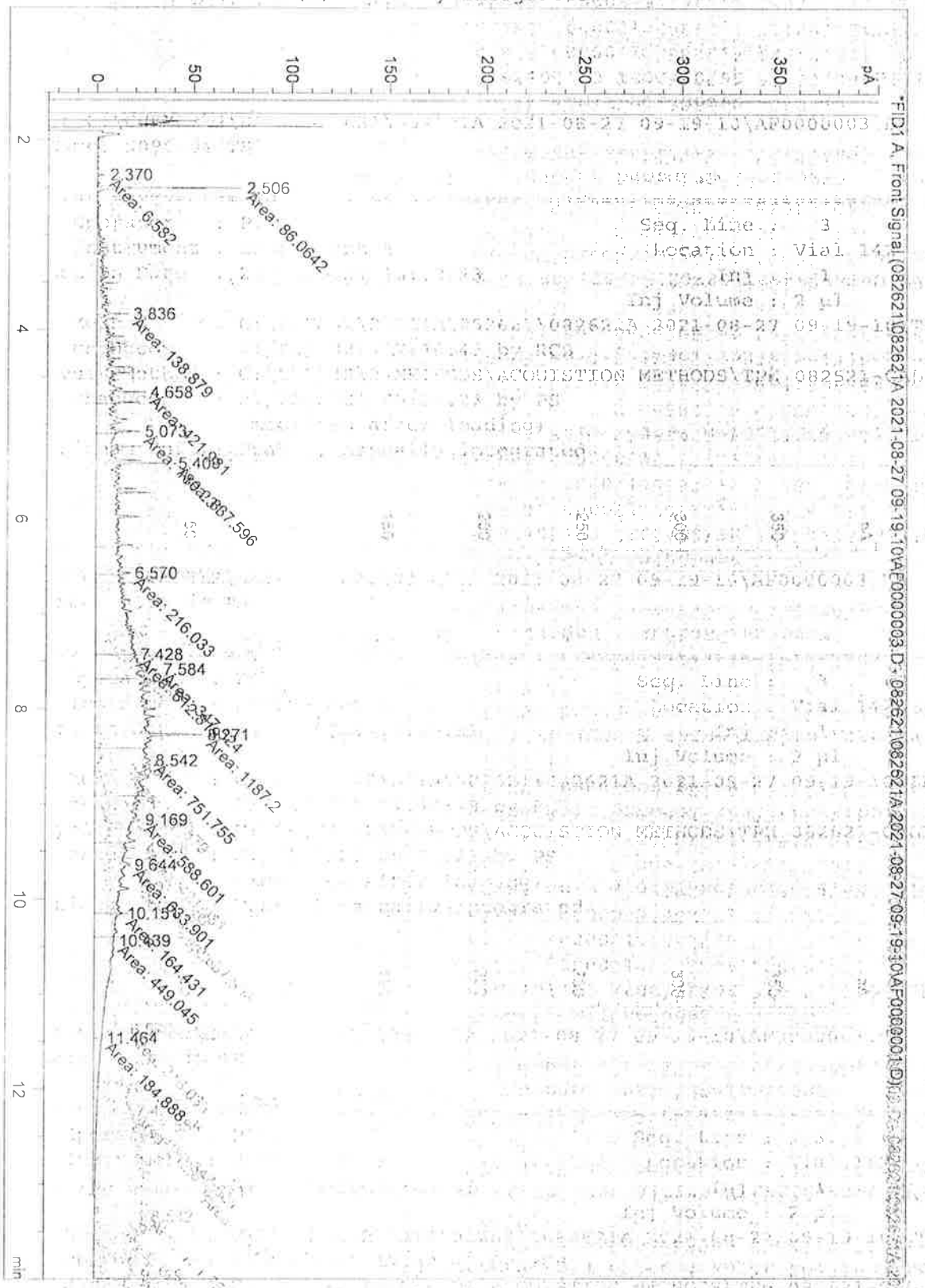
Data File C:\CHEM32\2\DATA\082621\082621 2021-08-26 16-27-12\AF0000013.D
Sample Name: 9096-03 TS

Acq. Operator	: PS	Seq. Line	: 13
Acq. Instrument	: Instrument 5	Location	: Vial 11
Injection Date	: 26/08/2021 20:33:26	Inj	: 1
		Inj Volume	: 2 µl
Acq. Method	: C:\CHEM32\2\DATA\082621\082621 2021-08-26 16-27-12\TPH.M		
Last changed	: 11/06/2021 17:30:48 by RCB		
Analysis Method	: C:\CHEM32\2\METHODS\ACQUISTION METHODS\TPH 082521-CAL1X2.M		
Last changed	: 27/08/2021 09:04:23 by PS (modified after loading)		
Additional Info	: Peak(s) manually integrated		



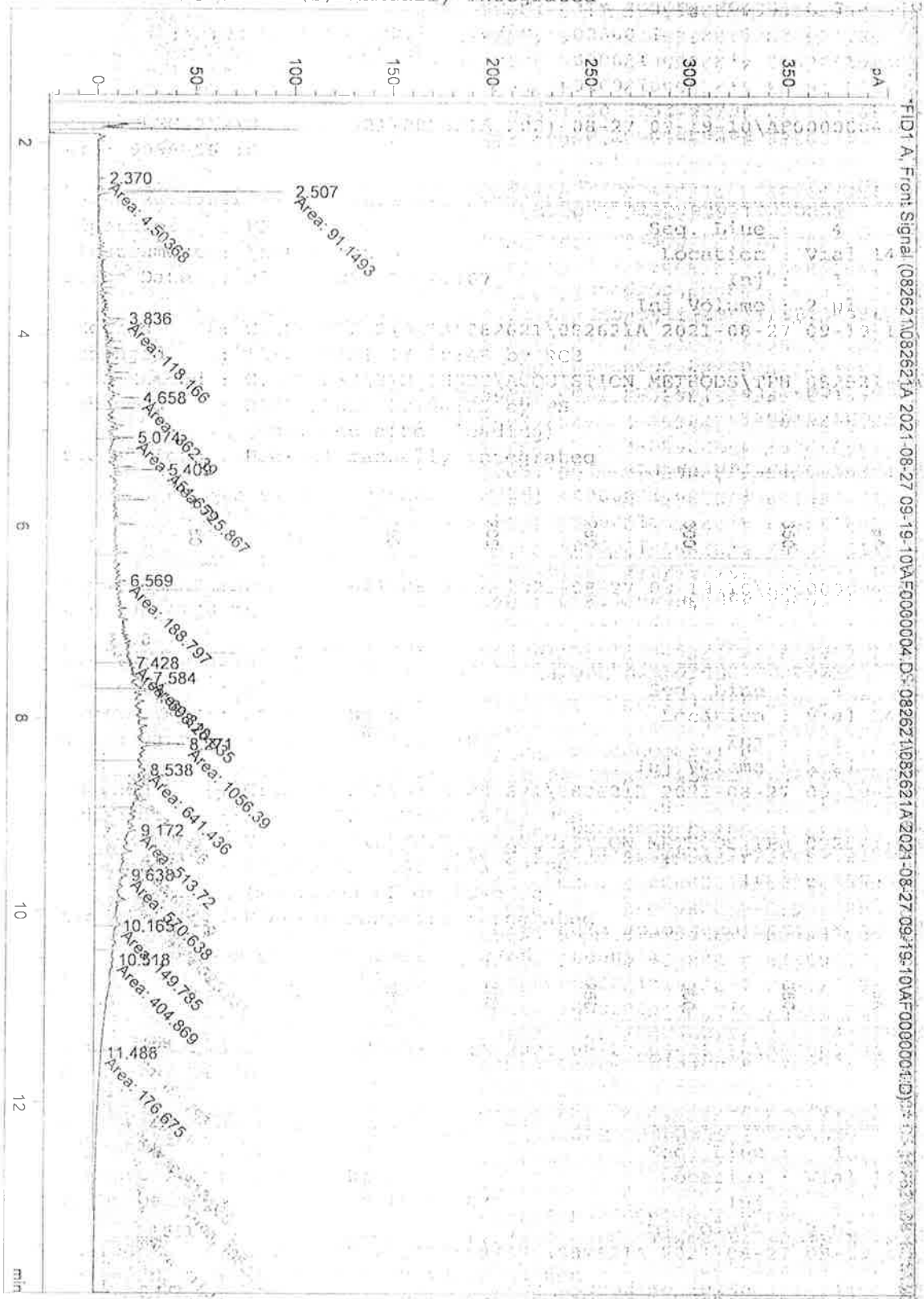
Data File C:\CHEM32\2\DATA\082621\082621A 2021-08-27 09-19-10\AF0000003.D
Sample Name: 9096-04 TS

Acq. Operator	: PS	Seq. Line	: 3
Acq. Instrument	: Instrument 5	Location	: Vial 142
Injection Date	: 27/08/2021 10:00:53	Inj	: 1
		Inj Volume	: 2 µl
Acq. Method	: C:\CHEM32\2\DATA\082621\082621A 2021-08-27 09-19-10\TPH.M		
Last changed	: 11/06/2021 17:30:48 by RCB		
Analysis Method	: C:\CHEM32\2\METHODS\ACQUISTION METHODS\TPH 082521-CAL1X2.M		
Last changed	: 27/08/2021 09:04:23 by PS (modified after loading)		
Additional Info	: Peak(s) manually integrated		



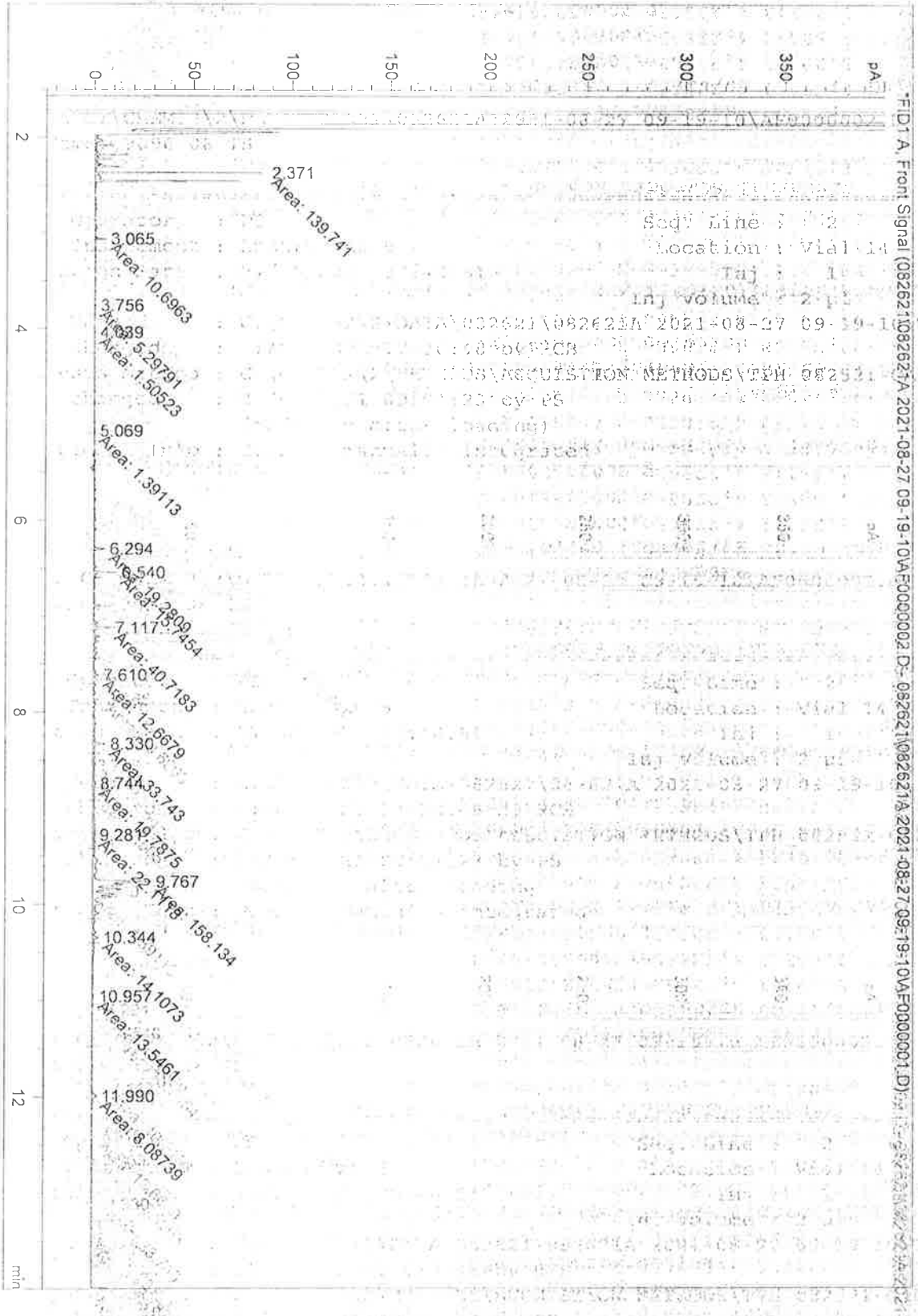
Data File C:\CHEM32\2\DATA\082621\082621A 2021-08-27 09-19-10\AF0000004.D
Sample Name: 9096-06 TS

Acq. Operator	: PS	Seq. Line	: 4
Acq. Instrument	: Instrument 5	Location	: Vial 143
Injection Date	: 27/08/2021 10:21:07	Inj	: 1
		Inj Volume	: 2 µl
Acq. Method	: C:\CHEM32\2\DATA\082621\082621A 2021-08-27 09-19-10\TPH.M		
Last changed	: 11/06/2021 17:30:48 by RCB		
Analysis Method	: C:\CHEM32\2\METHODS\ACQUISTION METHODS\TPH_082521-CAL1X2.M		
Last changed	: 27/08/2021 09:04:23 by PS (modified after loading)		
Additional Info	: Peak(s) manually integrated		



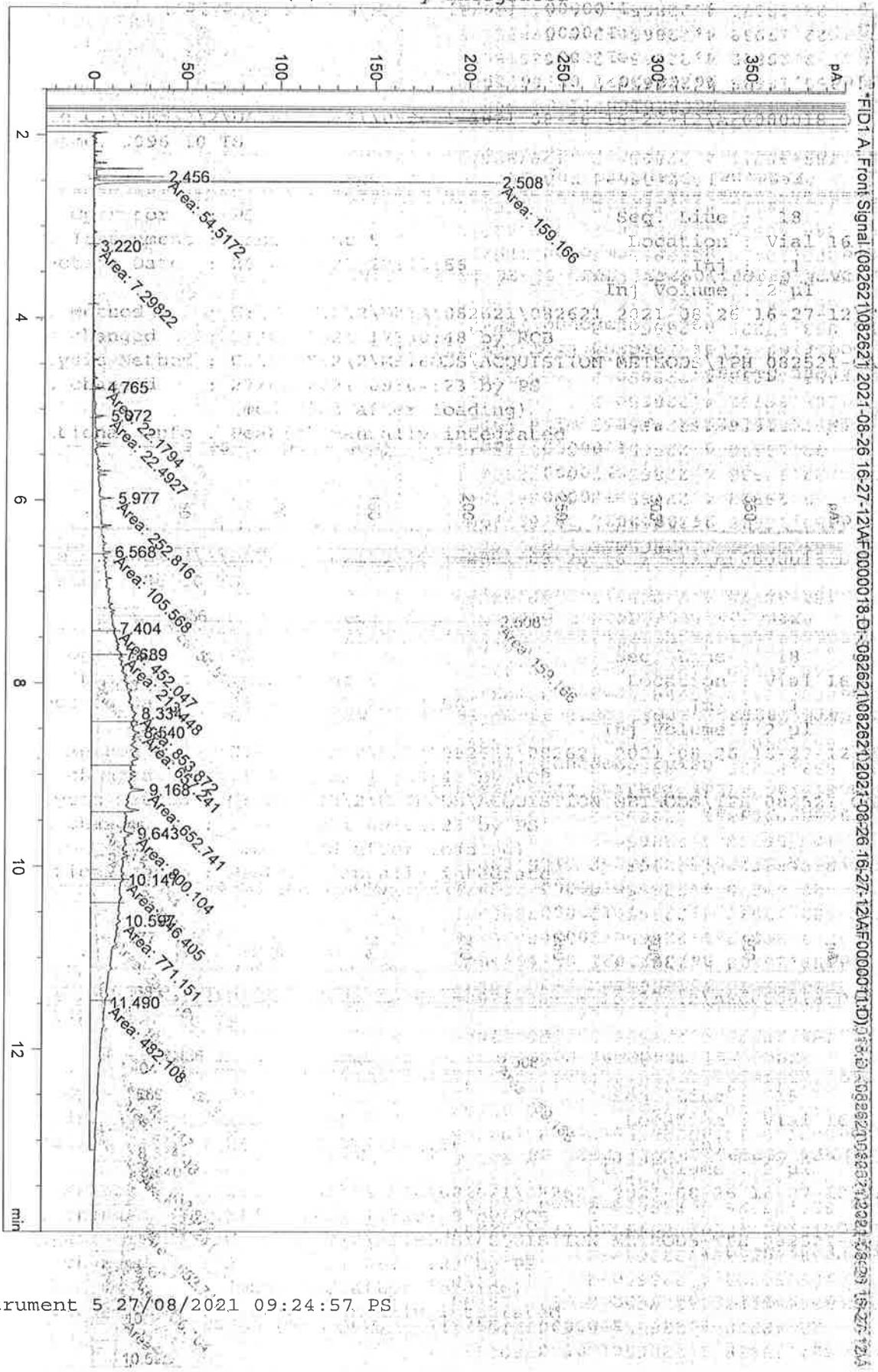
Data File C:\CHEM32\2\DATA\082621\082621A 2021-08-27 09-19-10\AF0000002.D
Sample Name: 9096-08 TS

Acq. Operator	: PS	Seq. Line	: 2
Acq. Instrument	: Instrument 5	Location	: Vial 14
Injection Date	: 27/08/2021 09:40:51	Inj	: 1
		Inj Volume	: 2 µl
Acq. Method	: C:\CHEM32\2\DATA\082621\082621A 2021-08-27 09-19-10\TPH.M		
Last changed	: 11/06/2021 17:30:48 by RCB		
Analysis Method	: C:\CHEM32\2\METHODS\ACQUISTION METHODS\TPH 082521-CAL1X2.M		
Last changed	: 27/08/2021 09:04:23 by PS (modified after loading)		
Additional Info	: Peak(s) manually integrated		



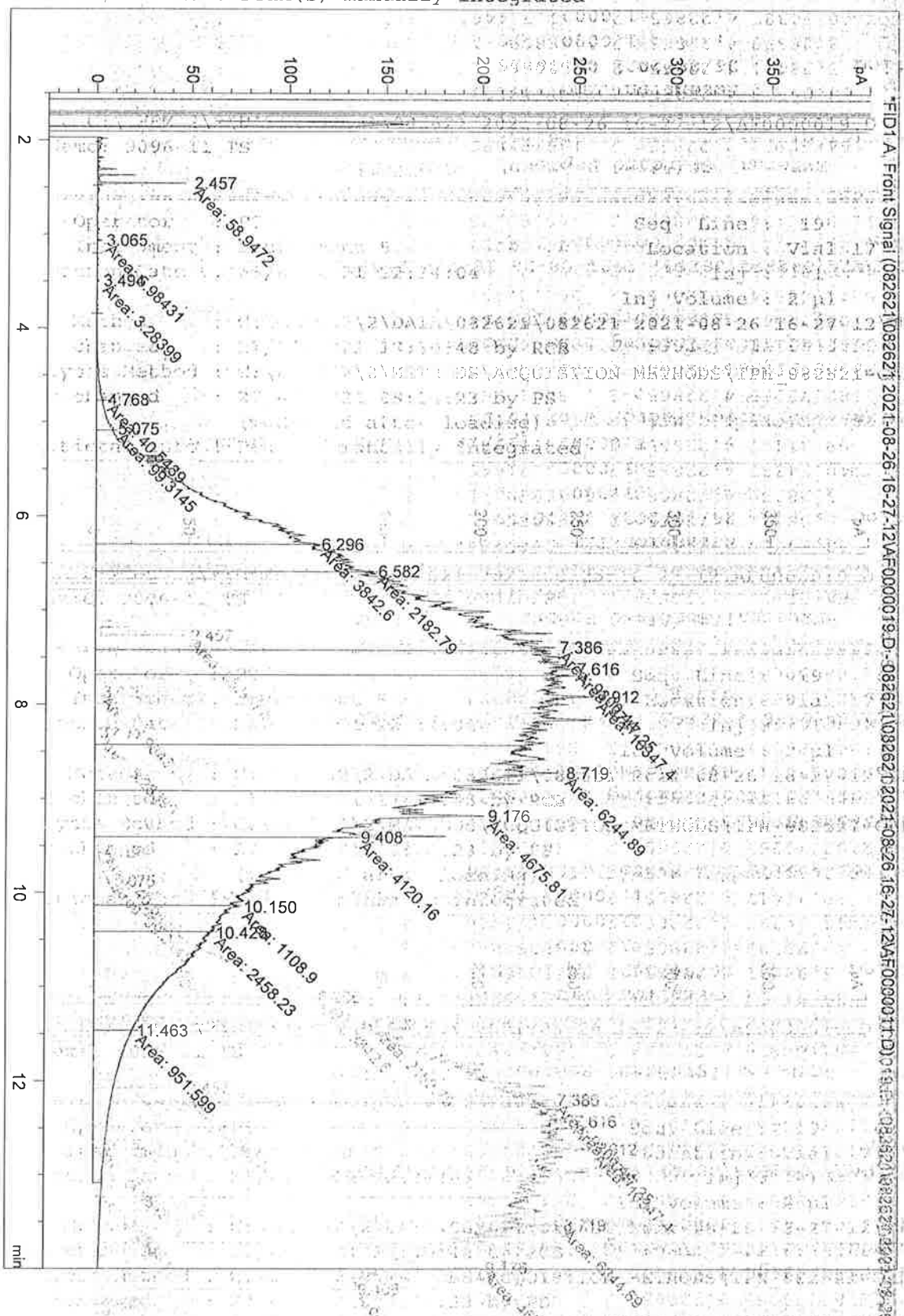
Data File C:\CHEM32\2\DATA\082621\082621 2021-08-26 16-27-12\AF0000018.D
Sample Name: 9096-10 TS

Acq. Operator	: PS	Seq. Line	: 18
Acq. Instrument	: Instrument 5	Location	: Vial 16
Injection Date	: 26/08/2021 22:13:56	Inj	: 1
		Inj Volume	: 2 µl
Acq. Method	: C:\CHEM32\2\DATA\082621\082621 2021-08-26 16-27-12\TPH.M		
Last changed	: 11/06/2021 17:30:48 by RCB		
Analysis Method	: C:\CHEM32\2\METHODS\ACQUISTION METHODS\TPH_082521-CAL1X2.M		
Last changed	: 27/08/2021 09:04:23 by PS (modified after loading)		
Additional Info	: Peak(s) manually integrated		



Data File C:\CHEM32\2\DATA\082621\082621 2021-08-26 16-27-12\AF0000019.D
Sample Name: 9096-11 TS

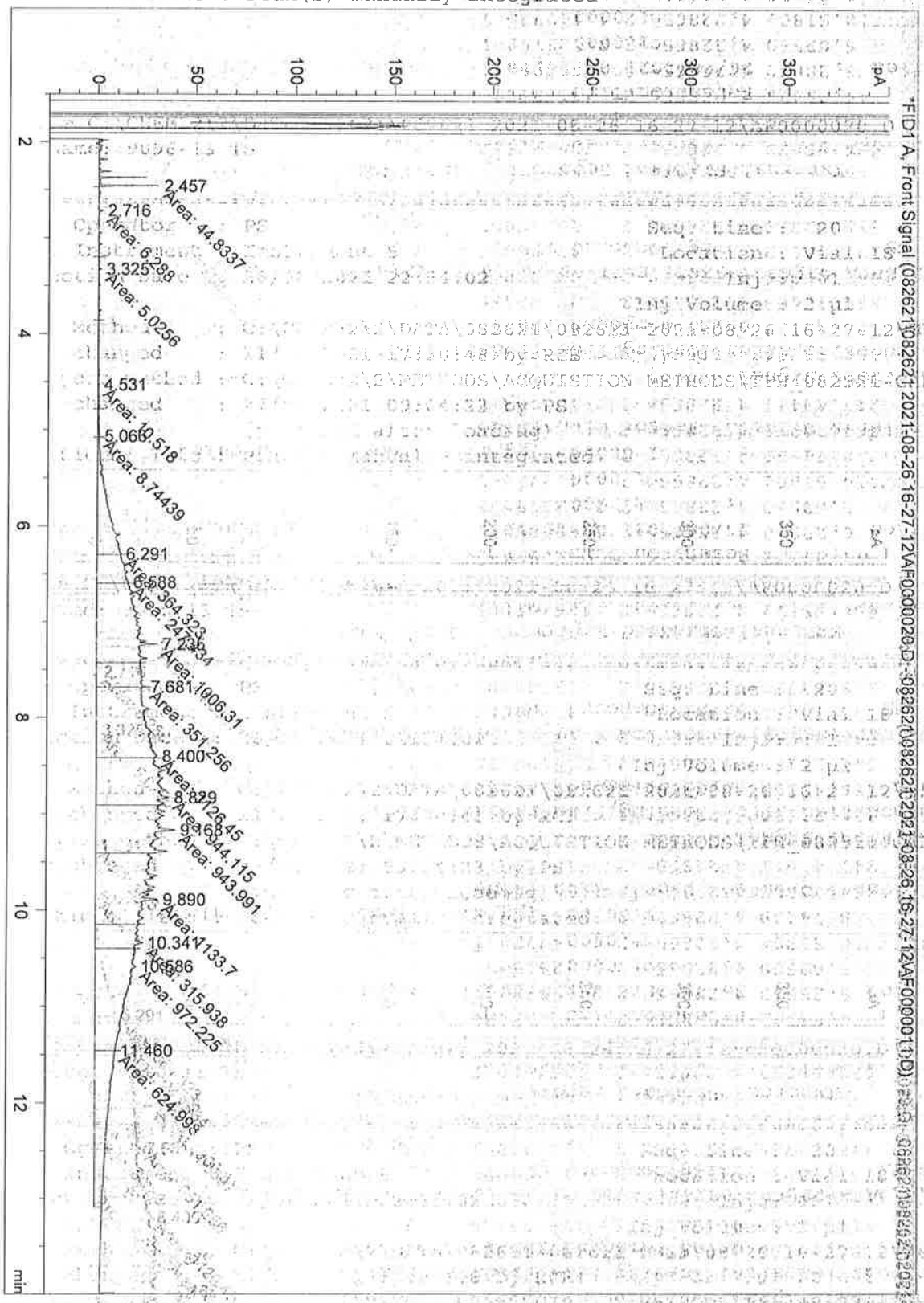
Acq. Operator	: PS	Seq. Line	: 19
Acq. Instrument	: Instrument 5	Location	: Vial 17
Injection Date	: 26/08/2021 22:34:04	Inj	: 1
		Inj Volume	: 2 µl
Acq. Method	: C:\CHEM32\2\DATA\082621\082621 2021-08-26 16-27-12\TPH.M		
Last changed	: 11/06/2021 17:30:48 by RCB		
Analysis Method	: C:\CHEM32\2\METHODS\ACQUISTION METHODS\TPH_082521-CAL1X2.M		
Last changed	: 27/08/2021 09:04:23 by PS (modified after loading)		
Additional Info	: Peak(s) manually integrated		



Data File C:\CHEM32\2\DATA\082621\082621 2021-08-26 16-27-12\AF0000020.D
Sample Name: 9096-13 TS

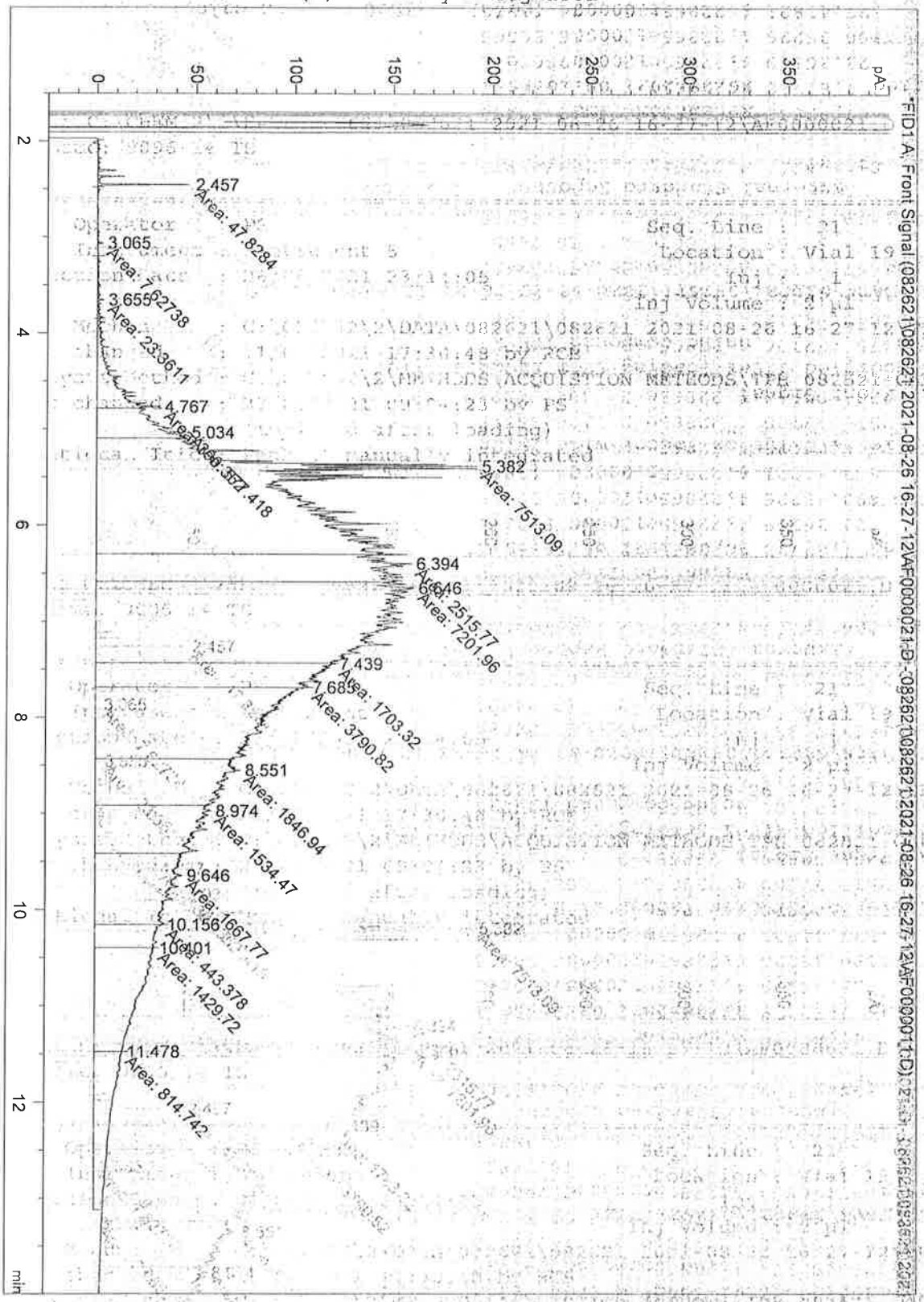
==========

Acq. Operator	: PS	Seq. Line	: 20
Acq. Instrument	: Instrument 5	Location	: Vial 18
Injection Date	: 26/08/2021 22:54:02	Inj	: 1
		Inj Volume	: 2 µl
Acq. Method	: C:\CHEM32\2\DATA\082621\082621 2021-08-26 16-27-12\TPH.M		
Last changed	: 11/06/2021 17:30:48 by RCB		
Analysis Method	: C:\CHEM32\2\METHODS\ACQUISTION METHODS\TPH_082521-CAL1X2.M		
Last changed	: 27/08/2021 09:04:23 by PS		
	(modified after loading)		
Additional Info	: Peak(s) manually integrated		



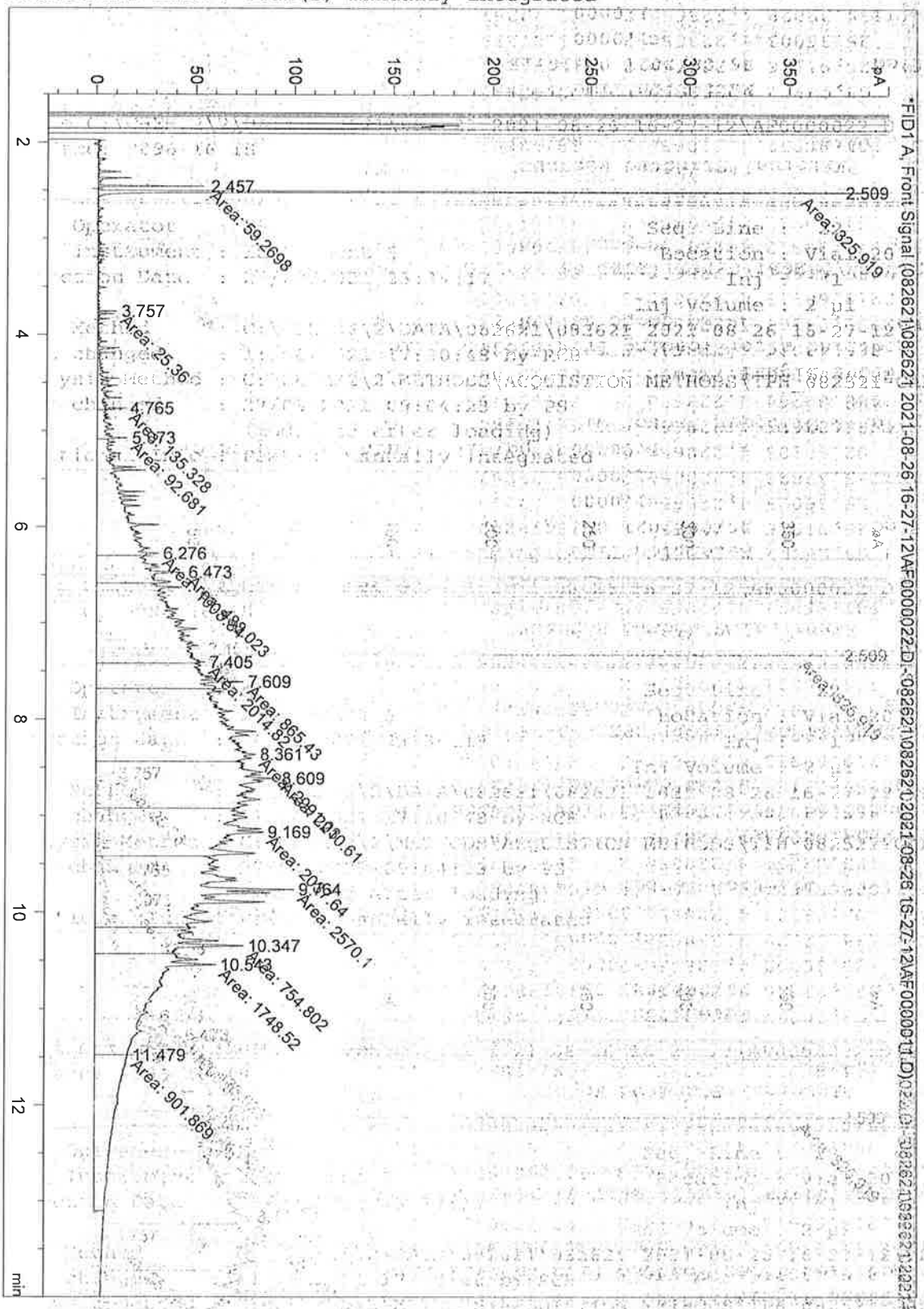
Data File C:\CHEM32\2\DATA\082621\082621 2021-08-26 16-27-12\AF0000021.D
Sample Name: 9096-14 TS

Acq. Operator	: PS	Seq. Line	: 21
Acq. Instrument	: Instrument 5	Location	: Vial 19
Injection Date	: 26/08/2021 23:14:05	Inj	: 1
		Inj Volume	: 2 µl
Acq. Method	: C:\CHEM32\2\DATA\082621\082621 2021-08-26 16-27-12\TPH.M		
Last changed	: 11/06/2021 17:30:48 by RCB		
Analysis Method	: C:\CHEM32\2\METHODS\ACQUISTION METHODS\TPH 082521-CAL1X2.M		
Last changed	: 27/08/2021 09:04:23 by PS (modified after loading)		
Additional Info	: Peak(s) manually integrated		



Data File C:\CHEM32\2\DATA\082621\082621 2021-08-26 16-27-12\AF0000022.D
Sample Name: 9096-16 TS

Acq. Operator	: PS	Seq. Line	: 22
Acq. Instrument	: Instrument 5	Location	: Vial 20
Injection Date	: 26/08/2021 23:34:17	Inj	: 1
		Inj Volume	: 2 µl
Acq. Method	: C:\CHEM32\2\DATA\082621\082621 2021-08-26 16-27-12\TPH.M		
Last changed	: 11/06/2021 17:30:48 by RCB		
Analysis Method	: C:\CHEM32\2\METHODS\ACQUISTION METHODS\TPH-082521-CAL1X2-M		
Last changed	: 27/08/2021 09:04:23 by PS (modified after loading)		
Additional Info	: Peak(s) manually integrated		



APPENDIX 06

Site Specific Acceptance 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.