BROWNFIELD SOLUTIONS LTD

GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

DOMIS CONSTRUCTION LTD

Fusion, Manchester

Remediation Validation Report

NS/C5511/12505 Rev A

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PROJECT QUALITY CONTROL DATA SHEET

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CONTENTS

1.0 INTRODUCTION 1
1.1 Context 1
1.2 Objectives 1
1.3 Proposed Development 1
1.4 Previous Reports and Correspondence 1
1.5 Limitations 1
2.0 PREVIOUS REPORTS 3
2.1 Opus (2015) / WSP (2021) 3
2.2 Structural Soils (2016) / Buro Happold Engineering (2017) 3
2.3 TEC (2023) – Ground Investigation Report 4
3.0 SUMMARY OF RISK ASSESSMENTS 6
3.1 General 6
3.2 On Site Tanks 6
3.3 Human Health Risks 6
3.4 Ground Gas and Vapours 7
3.5 Risks to Controlled Waters 8
3.6 Summary 8
4.0 REMEDIATION STRATEGY 9
4.1 Outline 9
4.2 Site Remediation Requirements. 9
5.0 SITE REMEDIATION AND VALIDATION 10
5.1 General 10
5.2 Hydrocarbon Point Sources 10
5.3 Groundwater Monitoring 14
6.0 CONCLUSIONS 22
6.1 General 22
6.2 Hydrocarbon Point Source Excavations 22
6.3 Groundwater Monitoring 22
6.4 Further Works 22

DRAWINGS

Drawing Number	Re	Title
20269-011	T-07	General Arrangement – Ground Floor
DSM-SDL-ZZ-FX-DR-ST-0091	P03	General Arrangement Foundation Sections
DSM-SDL-ZZ-FX-DR-ST-0092	P03	General Arrangement Foundation Sections
C5511/01	-	Site Location Plan
C5511/02	A	Exploratory Hole Location Plan
C5511/03	-	Hotspot Location Plan
C5511/07	-	Validation Sample Location Plan

APPENDICES

Appendix	Title
Appendix A	Photographic Volume –Tank Excavation
Appendix B	Chemical Testing Results – Tank Removal
Appendix C	PID Calibration Certificates
Appendix D	Photographic Volume –Reduced Level Dig

Appendix E	Chemical Testing Results – Reduced Level Dig
Appendix F	Waste Transfer Notes
Appendix G	TEC Groundwater Monitoring Reports
Appendix H	BSL Exploratory Hole Logs
Appendix I	BSL Chemical Testing Results - Groundwater

1.0 INTRODUCTION

1.1 Context

This Remediation Validation Report has been produced by Brownfield Solutions Limited (BSL) on behalf of Domis Construction Ltd for a site off Deansgate, Manchester.

1.2 Objectives

The objective of the validation works is to provide evidence demonstrating implementation of appropriate remediation measures. The remedial works were carried out in order to make the site suitable for the proposed residential end use, as per the Remedial Strategy produced by TEC, reference 2006023.004.01C, dated November 2023, which is understood to have been accepted by the Local Planning Authority (Manchester City Council).

1.3 Proposed Development

The proposed development is understood to comprise a 534No. purpose build student accommodation units within a 28-storey building as shown on the 'General Arrangement Plan' ref. 20269-2009, dated 5th April 2023, provided to BSL by the client. No areas of communal recreation or open space are proposed at ground floor level, as shown on the General Arrangement – Ground Floor Plan (ref. 20269-011 T-07).

1.4 Previous Reports and Correspondence

The following reports and correspondence with regulators are applicable to the site and should be read in conjunction with this validation report:

- Opus, Phase I (Desk Study) Investigation Report (ref. J-W0501.02, issued November 2015).
- WSP, Phase I Preliminary Risk Assessment Report (ref. 11742(1), issued 2021).
- Structural Soils Ltd, Factual Report on Ground Investigation (ref. 764121, issued December 2016).
- Buro Happold Engineering, Design Note BCG091 (ref. 035799, dated June 2017).
- TEC, Ground Investigation Report (ref. 2006023.001.01A, issued August 2023).
- TEC, Foundation Works Risk Assessment (ref. 2006023.002.01, issued July 2023).
- TEC, Remediation Strategy & Verification Plan (ref. 2006023.004.01C, issued November 2023).
- Email/Telephone correspondence between Laura Miller <laura.miller@manchester.gov.uk>, dated 3rd October 2023.
- TEC, Groundwater Monitoring Report – Pre-Piling (ref. 2006023.003.01, issued October 2023).
- TEC, Interim Groundwater Monitoring Report (ref. 2006023.003.02, issued March 2024).

It is assumed that the Local Planning Authority will have provided the above reports to the appropriate statutory consultees and the recommendations therein have been accepted.

1.5 Limitations

This report has been carried out based on information obtained from a number of areas, BSL have assumed that this information is correct.

There may be other conditions prevailing on the site which are outside the scope of work and have not been highlighted by this report and therefore not been taken into account by this report. Responsibility cannot be accepted for such site conditions not revealed by the assessment.

This report has been prepared for the sole use and reliance of the Client, Domis Construction. No other third parties may rely upon or reproduce the contents of this report without the written permission of Brownfield Solutions Ltd (BSL). If any unauthorised third party comes into possession of this report, they rely on it at their own risk and BSL do not owe them any Duty of Care.

This report has been based on the proposed planning layouts provided. Any subsequent change to the planning layout may have an impact on the validity of recommendations made within this report. Furthermore, new information, changed practices or new legislation may necessitate revised interpretation of the report after the date of its submission.

The site plans enclosed in this report should not be scaled off. Any site boundary line depicted on plans does not imply legal ownership of land.

Any recommendations made in this report should be confirmed with the Regulatory Authorities to ensure compliance.

2.0 PREVIOUS REPORTS

2.1 Opus (2015) / WSP (2021)

A summary of the relevant points from the Phase I Preliminary Risk Assessment Reports completed by Opus / WSP (ref. J-W0501.02 / 11742(1)) are presented below:

Phase I Risk Assessment Summary	
Site History	The earliest available historical mapping (1851) indicated the site formed part of the wider 'The Old Warehouse' wharf development to the north. The western part of the site was occupied by several buildings, with an additional smaller building to the north and notably a 'pump' in the eastern corner. This layout was reportedly changed by 1893, with the site appearing distinctly separate from adjacent works areas, and featuring two buildings, parallel with the north-eastern boundary. The WSP 2021 report suggested that the retaining structure along the north-eastern perimeter was likely constructed prior to 1893. Minor alterations to the site layout reportedly occurred in 1948 and 1951 when buildings were removed and replaced by a garage in 1960, interpreted by WSP to include a canopy/forecourt to the west and a building to the east which was likely a shop. No notable changes to the site layout were reported until mapping dating to 2010 which suggested the site was vacant. Imagery from Google Earth Pro shows that the contemporary concrete slab was likely associated with construction activities on a nearby site.
Surrounding Area History	A number of potentially significant currentand historic land uses were reported within 500m of the site, including numerous industrial or engineering sites, two petrol/fuel sites (both of which listed as obsolete), sixty-five historical garages or vehicle repair sites and ten historical tanks.
Published Geology	The geology for the site was reported to comprise sands and gravels of the superficial Glaciofluvial Deposits, underlain by sandstone bedrock of the Chester Formation.
Hydrogeology	The Glaciofluvial Deposits are designated by the Environment Agency as a Secondary A Aquifer, whilst the Chester Formation is designated as a Principal Aquifer. Whilst the site is not located within a Source Protection Zone, there are eight groundwater abstractions recorded within 1km of the site, the nearest of which is reported approximately 575m to the north.
Hydrology	The nearest surface water feature was identified as the River Medlock located approximately 50m east of the site, which supplies the Castlefield Canal Basin 50m to the north. It is reported that the eastern half of the site lies within an Environment Agency Zone 2 flood zone.
Potential Environmental Constraints	There were no historical landfill sites recorded within 250m of the site, nor any records of historical mining or historical cavities within 1km.
Radon	The site is not located within a Radon Affected Area and therefore, no radon protective measures are reported to be required within new properties on site.
UXO	As part of the WSP report in 2021 a review of the Manchester Bomb Record was undertaken which suggested numerous damaged or demolished buildings as a result of historical bombing, with one recorded incidence of 'high explosives' located just northwest of the site.Online Zetica Bomb Risk Maps shows the site to be in a moderate risk area for the potential presence of unexploded bombs.

2.2 Structural Soils (2016) / Buro Happold Engineering (2017)

A summary of the relevant points from the Factual Report on Ground Investigation / Design Note completed by Structural Soils / Buro Happold Engineering (ref. 764121 / 035799) are presented below:

Historic Ground Investigation Reports	
Observed Geology	The encountered ground conditions across the site were generally reported to comprise made ground to depths of between 0.80m to in excess of 2.20m bgl, recorded as reinforced concrete underlain by brick fill, silty sandy gravel or silty gravelly sand. The gravel component typically comprised brick and sandstone.

Historic Ground Investigation Reports	
	The made ground was recorded to be underlain by gravelly sand with gravel of sandstone to depths of between 1.80m to 2.90m bgl, beneath which very weak to weak thinly to moderately bedded medium to coarse sandstone was observed to a maximum depth of 20.00m bgl and was considered representative of the Sherwood Sandstone Group.
Groundwater	Groundwater was struck in BH02 at 15.20m bgl, with resting levels recorded as 6.90m bgl after a period of 20 minutes. During subsequent monitoring works, groundwater was reported at depths ranging from 6.25m and 9.06m bgl.
Contamination – Soils	Limited visual and olfactory evidence of contamination was recorded during the ground investigation works and noted to include localised pockets of ash within the made ground, a strong hydrocarbon odour and staining between 0.60m and 1.90m bgl in made ground and underlying sandstone in TP04 and similarly in TP05 between 0.90m and 1.80m bgl. Elevated Photo-Ionisation Detector (PID) readings were recorded to a maximum of 1,700ppm at 1.40m bgl in TP04 and 2,100ppm at 1.60m bgl in TP05. Laboratory analysis of samples recorded localised exceedances of the relevant residential without plant uptake land use thresholds with respect to lead (TP04 0.70-0.90m bgl), naphthalene (TP04 1.80-1.90m bgl, and TP05 1.60-1.80m bgl), petroleum hydrocarbons (TP05 1.60-1.80m bgl) and 1,2,4- trimethylbenzene (TP05 1.60-1.80m bgl).
Contamination – Groundwater	Laboratory analysis of 3 No. groundwater samples recovered from BH02, recorded exceedances of UK Drinking Water Standards for total aliphatic/aromatic TPH compounds and benzene, with additional exceedances of Environmental Quality Standards (EQS- Freshwater, AA) for cyanide, chromium, copper, lead, nickel, naphthalene and aromatic EC10-EC12 TPH compounds.
Ground Gas	4No. rounds of ground gas monitoring were undertaken by Structural Soils, within two installed boreholes screening the made ground. Results of the ground gas monitoring indicated the site would likely be classified as Characteristic Situation 1, with no further monitoring required, nor any gas protection measures considered necessary.
Land Contamination Recommendationsand Further Works	Based on the localised hydrocarbon impact on subsurface soils identified by Structural Soils, Buro Happold reported that the visually impacted soils should be removed to a maximum depth of 2.00m bgl or a vapour resistant gas barrier should be installed in the proposed development. Additionally, whilst hardstanding is proposed across the majority of the site, Buro Happold recommended that a minimum build-up of clean material of 600mm installed along with a geotextile membrane in any areas of soft landscaping.

2.3 TEC (2023) – Ground Investigation Report

A summary of the relevant points from the Ground Investigation Report completed by TEC (reference 2006023.001.01A, used issued September 2023) is presented below:

Ground Investigation Report Summary	
Ground Penetrating RadarFindings	A GPR survey was undertaken by Groundscan prior to the commencement of works. The survey identified a number of anomalies considered to be associated with the former PFS in the south / southwest of the site, including 4No. possible underground storage tanks, possible fuel line and possible former pump island. Anecdotal evidence from a local resident corroborates this layout and suggests that a forecourt building was present along the north-eastern perimeter and that the remaining brick wall on site was likely part of this structure.
Observed Geology	Made ground was encountered across the site to a maximum depth of 4.00mbgl and typically comprised reinforced concrete underlain by gravelly sand or clayey gravel, with gravel of brick, concrete, asphalt and limestone. The Chester formation was encountered beneath the made ground in all locations and typically comprised medium dense reddish brown slightly clayey fine to medium sand to depths between 1.00 and 7.00m bgl, underlain by moderately strong to strong reddish brown fine to medium sandstone to a maximum depth of 25.00m bgl.

Ground Investigation Report Summary	
Groundwater	While it was not possible to determine groundwater levels during drilling works due to the addition of water to aid with construction of the borehole, groundwater levels during the initial monitoring visit conducted immediately post drilling show groundwater levels resting at approximately 2.50 to 3.30m bgl. However, during subsequent monitoring visits standing groundwater levels were noted to be at approximately 7.00m bgl.
Contamination - Soils	Hydrocarbon odours and black staining were recorded within reworked natural materials and the upper part of the Chester Formation in BH102, whilst made ground materials sampled from BH101 were noted to have a weak petrol odour with Volatile Organic Carbon (VOC) concentrations recorded with a PID of a maximum of 305ppm at 1.50m bgl. Laboratory analysis of made ground recorded marginal exceedances at a single location (TP102) when screened against Public Open Space (resi) screening criteria for PAH compounds for residential site end use without homegrown produce. No contaminants of potential concern were identified within the natural ground.
Contamination - Groundwater	Leachable CoPCs (heavy metals and total phenol) were identified within sampled made ground/natural Chester Formation. In addition, PAH, total phenol, benzene and Aromatic TPH EC5-EC7 were identified within the groundwater at the site in excess of the UK Drinking Water Standards.
Ground Gas	No credible source of ground gas was identified within the assessment undertaken by WSP, Structural Soils and TEC; and the confirmatory gas monitoring undertaken by both Structural Soils and TEC confirms the site would be classified as Characteristic Situation 1. No ground gas protection of further assessment is deemed to be required.

3.0 SUMMARY OF RISK ASSESSMENTS

3.1 General

The previous site investigations have confirmed the following:

- Localised exceedances of lead (TP04 1.60-1.80m bgl), naphthalene (TP04 1.80-1.90m bgl, and TP05 1.60-1.80m bgl), petroleum hydrocarbons (TP05 1.60-1.80m bgl) and 1,2,4 trimethylbenzene (TP05 1.60-1.80m bgl).
- Made ground exceedances for PAH compounds in TP102.
- Exceedances of UK Drinking Water Standards for total aliphatic/aromatic TPH compounds and benzene within BH02.
- Exceedances of Environmental Quality Standards for cyanide, chromium, copper, lead, nickel, naphthalene and aromatic EC10-EC12 TPH compound within BH02.
- Presence of decommissioned tanks and interceptors.
- Ground gas monitoring indicated the site to be classified as Characteristic Situation 1.
- The presence of Volatile Organic Compounds (VOCs) presenting a risk via vapour migration into confined spaces.
- Elevated Photo-Ionisation Detector (PID) readings were recorded to a maximum of 1,700ppm at 1.40m bgl in TP04 and 2,100ppm at 1.60m bgl in TP05.

3.2 On Site Tanks

The GPR survey undertaken as part of the TEC intrusive works identifies the potential presence of 4No. underground storage tanks, a potential fuel line and a potential former pump island. Appropriate decommissioning and removal of these features are to be undertaken by an appropriately qualified party and a watching brief will be undertaken by an appropriately experienced geo-environmental consultant for the duration of the works.

3.3 Human Health Risks

Hydrocarbon odours were recorded in four exploratory hole locations, generally localised to the northwest corner of the site, and with a second localised area in the east of the site. Details of where hydrocarbon odours and staining were observed are summarised below:

Location	Observation	Strata	Depth (m bgl)
BH101	Weak petrol odour	Made ground	1.00 – 3.00
BH101	Weak petrol odour	Made ground	3.00 – 3.80
BH102	Slight hydrocarbon odour & small amount of visual staining	Made ground	0.80 – 1.00
BH102	Slight hydrocarbon odour & small amount of visual staining	Reworked natural (sandy gravelly clay)	1.00 – 1.50
TP04	Strong hydrocarbon odour	Made ground	0.67 – 0.95
TP04	Hydrocarbon odour and staining	SILT	0.95 – 1.17
TP04	Strong hydrocarbon odour and staining	SAND (weathered bedrock)	1.17 – 1.90
TP05	Strong hydrocarbon odour and staining	Made ground	0.90 – 1.10
TP05	Strong hydrocarbon odour	SAND (weathered bedrock)	1.10 – 1.80
TP05	Strong hydrocarbon odour	SANDSTONE	1.80

A photo-ionisation detector (PID) was utilised alongside the identification of visual / olfactory evidence of contamination with a number of locations / strata demonstrating levels of volatile contamination above 50ppm as detailed below:

Location	Observation	Depth (m bgl)	PID (ppm)
BH101	Weak hydrocarbon odour	1.50 – 1.80	**305**
BH101	Weak petrol odour	3.00 – 3.80	**81.50**
TP04	Strong hydrocarbon odour	0.70 – 0.90	**495**
TP04	Hydrocarbon odour and staining	0.95 – 1.17	**1,650**
TP04	Strong hydrocarbon odour and staining	1.40 – 1.50	**1,700**
TP04	Strong hydrocarbon odour and staining	1.80 – 1.90	**1,400**
TP05	Strong hydrocarbon odour and staining	0.90 – 1.10	**600**
TP05	Strong hydrocarbon odour	1.60 – 1.80	**2,100**

NB: PID readings in bold are considered to represent the contamination observed.

On-site PID testing of samples returned high values in localised areas, the highest PID was encountered in TP05 between 1.60m and 1.80m bgl at a recorded level of 2,100ppm.

Structural Soils 2017 (report ref. 764121/035799) laboratory analysis of samples recorded localised exceedances of the relevant residential without plant uptake land use thresholds with respect to lead (TP04 0.70-0.90m bgl), naphthalene (TP04 1.80-1.90m bgl, and TP05 1.60-1.80m bgl), petroleum hydrocarbons (TP05 1.60-1.80m bgl) and 1,2,4- trimethylbenzene (TP05 1.60-1.80).

TEC 2023 (report ref. 2006023.001.01A) laboratory analysis of made ground recorded marginal exceedances at a single location (TP102) when screened against Public Open Space (resi) screening criteria for PAH compounds for residential site end use without homegrown produce. No contaminants of potential concern were identified within the natural ground.

It should be noted that all locations with elevated PID readings (>50 ppm) were in close proximity to the 4No. tanks on site. The above PID readings and the exceedances within TP04 and TP05, as well as groundwater contamination in BH102 were utilised to generate an indicative Hotspot Location Plan (ref. C5511/03) for targeting remediation and validation of the hydrocarbon impacted site soils.

3.4 Ground Gas and Vapours

No credible source of ground gas has been identified within the assessment by WSP, Structural Soils and TEC; and the confirmatory gas monitoring undertaken by both Structural Soils and TEC confirms the site would be classified as Characteristic Situation 1. No ground gas protection or further assessment is deemed to be required.

Whilst volatile contamination has been identified during the site investigation and during one of the three supplementary monitoring visits in BH102 at 67.7ppm, attention should be drawn to the Conceptual Site Model for the developed site. To date, hydrocarbon impacted soils have been encountered up to depths of 3.80m bgl or ~26.50m AOD (BH101) and it is proposed to reduce the site down to levels between 23.35 and 24.95m AOD which allows for an additional 1.50m below the contamination in this area of the site to be excavated as part of the reduced level dig. That being said, the greater PID readings were encountered at depths shallower than 2.00m bgl which would allow for ~4m of additional material to be excavated below the base of the contamination.

Across the site as a whole, it is proposed to reduce levels by circa 6.00m to accommodate the basement and raft foundation for the building. The site wide reduction in levels will, in some areas, result in the removal of circa 4.00m of sandstone bedrock. Given this, it is highly likely that the development of the site will remove all the hydrocarbon impacted soils at the site, thus removing the source, and mitigate the risk from vapours.

Any residual contamination which remains following the site wide reduction in levels will be mitigated by the formation of the raft foundation which consists of 2.50m to 3.00m thick concrete. Given the

considerable thickness of concrete this will break the pathway between residually contaminated site soils / bedrock and the end-user.

The above is demonstrated on the General Arrangement Foundation Sections for the site (ref. DSM-SDL-ZZ-FX-DR-ST-0091 P03 and DSM-SDL-ZZ-FX-DR-ST-0092 P03).

3.5 Risks to Controlled Waters

The groundwater monitoring regime and remediation requirements are currently under review with the Environment Agency. Groundwater monitoring throughout the construction of the project has been undertaken by TEC and BSL as appointed by Shear Design Ltd on behalf of Fusion Manchester Devco Ltd and has been reported by BSL within this report, in section 5.2.

3.6 Summary

A summary of the findings of the previous investigations and assessments where a risk is present (i.e. an unacceptable source-pathway-receptor linkage) which requires mitigation is presented in the table below.

Source	Receptor
<- Poses an unacceptable risk to ->	
VOCs, hydrocarbons	Water Pipe / Human Health and Controlled waters
Existing or redundant fuel storage and dispensing infrastructure, inspection pit	Human Health, Controlled Waters

4.0 REMEDIATION STRATEGY

4.1 Outline

Based on the site investigations undertaken at the site and the contaminant sources identified within the CSM, the following key items associated with the site soils require remediating:

- Petroleum Hydrocarbon Point Sources – Four underground storage tanks (USTs) have been identified on site. Any associated drainage or fuel lines represent potential point sources.
- General Made Ground – Pervasive contamination in the form of PAHs has been identified within the made ground, presenting a risk to human health (site end users).

4.2 Site Remediation Requirements.

Following an options appraisal in the Remedial Strategy completed by TEC in November 2023 (report reference 2006023.004.01C). Full details are available within the Remedial Strategy, with the key requirements summarised in the table below.

Source	Contaminants of Concern	Remediation Method	Further Details / Remedial Requirements
1 – Hydrocarbon point Sources (USTs, interceptor, inspection pits, associated drainage)	Petroleum Hydrocarbons	Source Removal – Excavation of hydrocarbon point sources	Once tanks are precisely located and it has been confirmed that the tanks have been appropriately decommissioned, the tanks/cradles and any hydrocarbon impacted soils and perched groundwater will be excavated and removed until "clean" faces and base are encountered, with chemical testing undertaken to confirm this. The sum of TPH CWG banding per validation sample should not exceed 1000mg/kg for the protection of controlled waters (considered to be highly conservative in this case).
2 – Hydrocarbon impacted made ground and natural soils / bedrock	Petroleum Hydrocarbons & VOCs	Source Removal – Excavation of hydrocarbon point sources	Hydrocarbon impacted soils will be excavated and removed until "clean" faces and base are encountered, with chemical testing undertaken to confirm this. The sum of TPH CWG banding per validation sample should not exceed 1000mg/kg for the protection of controlled waters (considered to be highly conservative in this case).

In addition to the specific remedial requirements listed in the tables above which are intended to mitigate the risks from known sources, it was recommended that a watching brief be maintained during the groundworks and construction for any evidence of contamination and BSL consulted for advice.

With reference to the remedial requirements, "clean" soils, validation samples taken from the resultant excavations will be screened on site with a Photo-Ionisation Detector (PID) and values should not exceed 50ppm, to assist with delineation. TPH CWG testing should be undertaken on all validation samples and the sum of petroleum hydrocarbon bands should not exceed 1000mg/kg which is considered to be suitably protective of controlled waters.

5.0 SITE REMEDIATION AND VALIDATION

5.1 General

The remediation process was undertaken over several stages and site visits were undertaken between the dates of 7th September 2023 and 18th November 2024.

A summary of the site works undertaken in accordance with the Remedial Strategy (report reference 2006023.004.01C) is detailed below.

5.2 Hydrocarbon Point Sources

Prior to BSL attendance on site, O'gara, the earthworks contractor, lifted the concrete slabs in the area of the suspected tanks on the site to confirm the number of tanks and their contents. It was confirmed that 6No. (~2m x ~3m ≈ 9,000-10,000L) tanks were present and each was noted to have been decommissioned with sand / cement and therefore there was no requirement to pump / de-gas their contents prior to commencing their removal. It was noted that the tanks were enclosed within a brick bund on all four sides.

BSL attended the site to verify the removal of hydrocarbon point sources over a series of supervisory visits between 7th September 2023 and 25th September 2023. Prior to commencement, the four corners of the brick bund were surveyed, and these are demonstrated on the Hotspot Location Plan ref. C5511/03. The brick bund had dimensions of 16.0m x 3.5m.

Sampling and chemical testing were to be undertaken at a minimum frequency of one test per 10m of linear sidewall with a minimum of four tests (i.e. one per side) and one test per 50m^2 on the base, as governed by BSL standard practice. Based on this, two samples were to be taken from the longer walls and two from the base of the excavation, totalling 8 samples for the validation of the entire tank bund.

7th September 2023- UST (Excavation 1)
BSL were not requested to attend site during the removal of the UST. However, photographic records were provided by the groundworks contractor are provided in Appendix A.

According to the groundworks contractor, two metal tanks were encountered in the south area of the site during break-up of the concrete. The tanks did not contain any liquid products but were filled with what appeared to be concrete. No cradle or other concrete support was present surrounding the tank but the tanks were surrounded by sand.

Following confirmation that the tank did not contain any hydrocarbons, the two tanks were lifted out of the excavation and placed on an area of concrete hardstanding.

The soils immediately surrounding the tanks were excavated and placed on impermeable hardstanding ground in the north of the site for offsite disposal. The material was tested (SP01) and the results are presented in Appendix B within analytical report number 23-55896.

BSL then attended site on 7th September 2023 to undertake verification of the removal of known hydrocarbon point sources in the form of UST's in the south of the site. In order to allow the inspection of the resultant excavation for the UST, the original excavation was kept open and made secure with heras fencing.

When the contents of the bund in this area had been excavated, a 300mm thick concrete slab was observed across part of the excavation with the eastern most tank (thought to be diesel) placed directly over bedrock. The excavation extended to bedrock at 3.80m bgl where the sandstone was noted to be

visually impacted. The excavation was advanced through the assistance of a breaker to 4.20m bgl where the base was noted to be "clean" with no significant areas with hydrocarbon odours and staining remaining, a sample was taken of the bedrock at the base of the excavation.

Once a clean base was determined the eastern and eastern half of the southern wall were punched in to allow the surrounding soils to be examined. Following these soils from two of the three sides of the tank excavation were sampled and scheduled for TPH-CWG analysis at a UKAS accredited laboratory. All samples were screened onsite with a Photo-Ionisation Detector (PID).

A summary of the sample information, chemical testing and results is presented in the table below:

Sample Reference	Sample depth (m bgl)	VOCs by PID (ppm)	Chemical Testing Scheduled	Total TPH Concentration (mg/kg)
TKVAL1 (base)	4.20	0	TPH-CWG	<10
TKVAL2 (side wall)	2.50	0	TPH-CWG	<10
TKVAL3 (side wall)	2.50	0	TPH-CWG	<10

The PID measurements of the validation samples did not exceed 50ppm, which is the acceptable limit specified by BSL.

All samples taken within the tank excavation did not exceed the remedial target concentration of 1000mg/kg for TPH concentrations and therefore demonstrate the successful removal of impacted soils from the southern and eastern extent of the tank bund in this area of the site.

The chemical testing results are presented in Appendix B within analytical report number 23-55896. PID calibration certificates are presented in Appendix C.

A photographic volume from the tank excavation is presented in Appendix A. Locations of validation samples are recorded on the Validation Sample Location Plan (ref. C5511/07 Rev A).

Northern Wall
Following the excavation of this area of the site, it was determined that chasing out the northern side of the tank bund to clean sides would not be feasible at this stage given the size of the site, the depth of the excavation and the logistics of excavator, soil and wagon movement during the process. The excavation of the northern side was then determined to be combined with the hotspot removal for the areas demarked on the Hotspot Location Plan (ref. C5511/03) which was to be undertaken at a later date during the reduced level dig.

12-13th September 2023 – USTs (Excavation 1 Extension)
The excavation undertaken on 7th September under BSL supervision was extended during the removal of four additional UST's.

When the contents of the bund in this area had been excavated, bedrock was observed at ~2.30m bgl where the sandstone was noted to be visually impacted. The excavation was advanced through the assistance of a breaker to 2.50m bgl where the base was noted to be "clean" with no significant areas with hydrocarbon odours and staining remaining, a sample was taken of the bedrock at the base of the excavation.

Further sampling was undertaken on soils and rock from the sides and base and samples were scheduled for TPH-CWG analysis at a UKAS accredited laboratory. All samples were screened onsite with a Photo-

Ionisation Detector (PID). The locations of the additional samples are indicated on the Validation Sample Location Plan (ref. C5511/07 Rev A).

A summary of the sample information, chemical testing and results is presented in the table below:

Sample Reference	Sample depth (m bgl)	VOCs by PID (ppm)	Chemical Testing Scheduled	TPH Concentration (mg/kg)
TKVAL4 (base)	2.50	8.2	TPH-CWG	<10
TKVAL5 (side wall)	2.00	0.2	TPH-CWG	13
TKVAL6 (side wall)	0.90	6	-	-
TKVAL7 (side wall)	1.00	0	TPH-CWG	<10

The PID measurements of the validation samples did not exceed 50ppm, which is the acceptable limit specified by BSL.

All samples taken within the tank excavation did not exceed the remedial target concentration of 1000mg/kg for TPH concentrations and therefore demonstrate the successful removal of impacted soils from the southern and western extent of the tank bund in this area of the site.

The chemical testing results are presented in Appendix B within analytical report number 23-56397. PID calibration certificates are presented in Appendix C.

A photographic volume from the tank excavation is presented in Appendix A.

Northern Wall
As detailed above, the northernmost extent of the excavation remained unvalidated as part of this exercise in September 2023. The wall along the eastern extent of the northern face was removed for inspection during BSL's attendance which demonstrated some hydrocarbon-impacted strata at circa 1.00m bgl, and up to 2.85m bgl in the area which was most visually impacted.

The area with the most significant staining was considered to be associated with the second tank from the east (Tank 2), in proximity to BH103 and aligned with TP05 where the greatest PID readings were encountered. It is understood this may have been a petrol tank. Once the contiguous pile wall has been installed, in line with the Foundation Works Risk Assessment (ref. 2006023.002.01) the hotspot will be removed in its entirety before the site levels are reduced.

A 300mm diameter pipe was encountered behind the brick bund and when broken was not noted to contain any visual or olfactory evidence of contamination.

A photographic volume from the tank excavation is presented in Appendix A.

24th June – 9th July 2024 – Bedrock Validation Samples
Prior to attending site BSL was provided an updated Remedial Strategy for the site which confirmed a sample frequency of 1 sample per 5m linear side wall and 1 sample per 25m^2 of the excavation base. In order to assist BSL in validation the site to the EA's revised requirements a 5m x 5m grid is demonstrated on the Validation Sample Location Plan (ref. C5511/07 Rev A).

BSL attended the site on several dates between the 24th June and the 9th July 2024 to collect samples of the bedrock across the site following the removal of the former USTs and hotspot removal in the immediate surrounding area. The excavation was advanced through the assistance of a breaker to 3.50m bgl where the base was noted to be "clean" with no significant areas with hydrocarbon odours, further

testing of the bedrock strata was undertaken from the base (3.50m bgl) and sides (1.50m bgl). 19 of these samples were scheduled for TPH-CWG and Soil Organic Matter analysis at a UKAS accredited laboratory. All samples were screened onsite with a Photo-Ionisation Detector (PID). The laboratory testing results and Photo-Ionisation Detector results are indicated in the table below. The locations of the additional samples are indicated on the Validation Sample Location Plan, Drawing No. C5511/07 Rev A. A summary of the findings are presented in the table below:

Sample Reference	Sample depth (m bgl)	VOCs by PID (ppm)	Chemical Testing Scheduled	TPH Concentration (mg/kg)
HSVAL1	1.50	0	-	-
HSVAL2	1.50	0.4	-	-
HSVAL3	1.50	0.2	-	-
HSVAL4	3.50	0	TPH-CWG and SOM	<10
HSVAL5	3.50	0	TPH-CWG and SOM	<10
HSVAL6	3.50	0	-	-
HSVAL7	3.50	27.7	TPH-CWG and SOM	<10
HSVAL8	1.50	2.3	TPH-CWG and SOM	<10
HSVAL9	1.50	0	TPH-CWG and SOM	<10
HSVAL10	3.50	0	TPH-CWG and SOM	<10
HSVAL11	1.50	0	TPH-CWG and SOM	16
HSVAL13	1.50	0	TPH-CWG and SOM	<10
HSVAL14	1.50	0	TPH-CWG and SOM	<10
HSVAL15	3.50	0	-	-
HSVAL16	3.50	0	TPH-CWG and SOM	<10
HSVAL17	3.50	0	-	-
HSVAL18	3.50	0	-	-
HSVAL19	3.50	0	-	-
HSVAL20	3.50	0	TPH-CWG and SOM	<10
HSVAL21	3.50	0	-	-
HSVAL22	3.50	0	-	-
HSVAL23	3.50	0	-	-
HSVAL24	3.50	0	TPH-CWG and SOM	<10
HSVAL25	3.50	0	-	-
HSVAL26	3.50	0	TPH-CWG and SOM	<10
HSVAL27	3.50	0	TPH-CWG and SOM	<10
HSVAL28	3.50	23.7	TPH-CWG and SOM	<10
HSVAL29	3.50	0	-	-
HSVAL30	3.50	0	TPH-CWG and SOM	<10
HSVAL31	1.50	0	TPH-CWG and SOM	<10
HSVAL32	1.50	0	TPH-CWG and SOM	<10
HSVAL33	3.50	11.3	TPH-CWG and SOM	<10

As seen in the table above, concentrations of VOCs by PID ranged from 0.0ppm to 27.7ppm, indicating no elevated (>50ppm) PID readings. TPH concentrations were typically observed at <10mg/kg with one elevation at 16mg/kg within HSVAL11. As in the table above, the PID measurements of the validation samples did not exceed 50ppm, which is the acceptable limit specified by BSL. Samples tested for TPH-CWG did not exceed the remedial target concentration of 1000mg/kg for TPH concentrations. Therefore, the removal of the tank and surrounding contaminated soils is considered successful.

A photographic volume from the reduced level dig and above sampling exercise is presented in Appendix D. Chemical testing results are presented in Appendix E. Associated Waste Transfer Notes will be provided in Appendix F.

5.3 Groundwater Monitoring

In line with the agreed Remedial Strategy a groundwater monitoring programme was implemented at the site which included pre-piling, during piling and post-piling groundwater monitoring to demonstrate a continued betterment of the groundwater quality following the successful removal of the hydrocarbon impacted soils and former USTs at the site. The following tests were scheduled on groundwater samples at a UKAS approved laboratory throughout the monitoring programme which lasted from 1st September 2022 until 18th November 2024:

Determinand	No of Samples
Heavy metals, total cyanide, phenols, sulphate, sulphide, ammonia.	27
Petroleum Hydrocarbons (TPH CWG) inc BTEX and MTBE.	27
Volatile Organic Compounds (VOCs) by GC-MS (Ex TIC).	27
Semi Volatile Organic compounds (SVOCs) by GC-MS (Ex TIC).	27
Turbidity and suspended soils.	27

9 rounds of groundwater monitoring were undertaken by TEC between September 2022 and March 2024 with a further 4 rounds undertaken by BSL between August and November 2024 at the site and samples were recovered from installations. Samples were obtained from boreholes via low flow sampling techniques.

In order to facilitate the monitoring undertaken by BSL post-piling two additional boreholes were drilled to replace those decommissioned, the new boreholes BH301 and BH302, are demonstrated on the Exploratory Hole Location Plan (ref. C5511/02 Rev A) along with the position of all other boreholes. Given the development layout with a contiguous pile wall around the perimeter of the site which facilitated a reduced level dig across the site, limited areas were available to position a rotary rig in order to advance new monitoring wells and maintain them for 3 months post-piling, as was required. As such, the two boreholes were positioned at the western and easternmost extents of the site. Associated borehole logs are presented in Appendix H.

The monitoring rounds are as outlined below:

Round No.	Programme	Company	Date	Boreholes
1	Pre-piling (Post Remediation)	TEC	01/09/2022	BH101, BH102
2			30/08/2023	
3			13/09/2023	BH102
4	During Piling		28/11/2023	BH201, BH202, BH203
5			17/01/2024	
6			23/01/2024	
7			29/01/2024	
8			21/02/2024	BH202
9			13/03/2024	
10	Post-Piling	BSL	13/08/2024	BH301, BH302
11			17/09/2024	
12			14/10/2024	
13			18/11/2024	

Two reports were produced by TEC based on pre-piling and during piling monitoring, these are listed below and are presented in Appendix G for reference but should be read in conjunction with this report for completeness:

- TEC, Groundwater Monitoring Report – Pre-Piling (ref. 2006023.003.01, issued October 2023).
- TEC, Interim Groundwater Monitoring Report (ref. 2006023.003.02, issued March 2024).

Groundwater Sampling

The following tests were scheduled on groundwater samples at a UKAS approved laboratory:

Determinand	No of Samples
Heavy metals, total cyanide, phenols, sulphate, sulphide, ammonia.	27
Petroleum Hydrocarbons (TPH CWG) inc BTEX and MTBE.	27
Volatile Organic Compounds (VOCs) by GC-MS (Ex TIC).	27
Semi Volatile Organic compounds (SVOCs) by GC-MS (Ex TIC).	27
Turbidity and suspended soils.	27

Chemical testing results and groundwater monitoring parameter sheets are presented in Appendix I.

The below assessment has been split into areas of the site to better demonstrate the groundwater quality due to the redrilling of borehole and subsequent renaming of boreholes to aid the advancement of the site, these are outlined as below:

Area	Boreholes
North	BH203
East	BH101, BH202, BH302
South	BH103
West	BH102, BH201, BH301

Metals

The inland waters EQSs for copper, manganese, nickel and zinc are based on the bioavailable fraction and so the Metal Bioavailability Assessment Tool (M-BAT) developed by (WFD-UKTAG July 2014) has been used to calculate site-specific PNEC dissolved values which have been used as EQS for comparison against measured dissolved metal concentrations and take into account the calculated bioavailable fraction.

The locations and concentrations of metals identified above the adopted screening criteria are shown in the table below:

Round	Metal	Concentration (ug/l)	Adopted Screening Criteria (ug/l)
NORTH			
3	Arsenic	10	10
	Calcium	73000	250
	Lead	2	1
	Manganese	12000	50
	Nickel	16	4
4	Calcium	89500	250
	Manganese	755	50
5	Calcium	75000	250
	Manganese	650	50

6	Calcium	110000	250
	Copper	17	1
	Manganese	1000	50
7	Calcium	120000	250
	Copper	2	1
	Manganese	510	50
EAST			
1	Calcium	37000	250
	Copper	1	1
	Lead	4	1.2
	Mercury	0.24	0.07
2	Calcium	43000	250
	Copper	3	1
4	Calcium	117000	250
	Manganese	723	50
	Zinc	89	10.9
5	Calcium	120000	250
	Manganese	620	50
6	Calcium	120000	250
	Manganese	730	50
7	Calcium	140000	250
	Manganese	560	50
8	Calcium	120000	250
	Manganese	620	50
9	Calcium	130000	250
	Manganese	570	50
10	Calcium	82000	250
	Copper	3	1.2
	Manganese	590	50
11	Copper	2	1.2
	Manganese	110	50
12	Copper	3	1.2
	Manganese	110	50
	Nickel	21	4
13	Copper	2	1.2
	Manganese	130	50
SOUTH			
3	Arsenic	10	10
WEST			
1	Calcium	25000	250
	Copper	3	1
	Manganese	820	50
2	Calcium	46000	250
	Copper	4	1
	Lead	3	1.2
	Manganese	12000	50
	Nickel	43	4
	Zinc	23	10.9
4	Calcium	68800	250
	Manganese	5950	50
	Zinc	16	10.9
5	Calcium	75000	250
	Manganese	7500	50
	Calcium	72000	250

6	Manganese	6700	50
7	Calcium	92000	250
	Copper	4	1
	Manganese	5800	50
10	Calcium	56000	250
	Lead	4	1.2
11	Manganese	4800	50
	Zinc	18	10.9
12	Copper	4	1
	Manganese	5400	50
	Zinc	17	10.9
13	Copper	2	1
	Manganese	830	50

As seen in the table above, heavy metal concentrations were observed generally decreasing across the site. The most recent results from the east (BH101, BH202, BH302) and west (BH102, BH201, BH301) of the site indicate exceedances of copper and manganese within 1 order of magnitude of the screening values within both boreholes and exceedances of zinc are recorded within the same order of magnitude of the screening values. The above demonstrates a betterment of the groundwater quality with respect to heavy metals at the site.

Inorganics/Non-metals

The locations and concentrations of inorganics/non-metals identified above the adopted screening criteria are shown in the table below:

Round	Inorganics/Non Metals	Concentration (ug/l)	Adopted Screening Criteria (ug/l)
NORTH			
5	Sulphate	270000	250000
6	Sulphate	262000	250000
	Sulphide	6	0.25
7	Sulphate	271000	250000
EAST			
4	Sulphate	304000	250000
5	Cyanide (Hydrogen cyanide)	13	1
	Sulphate	294000	250000
6	Sulphate	324000	250000
7	Sulphate	346000	250000
	Sulphide	5	0.25
8	Cyanide (Hydrogen cyanide)	11	1
	Sulphate	293000	250000
	Sulphide	6	0.25
9	Sulphate	329000	250000
	Sulphide	6	0.25
13	Ammonia (NH4)	5300	500
WEST			
5	Sulphide	6	0.25
6	Sulphide	11	0.25
7	Sulphide	7	0.25

As seen in the table above concentrations of inorganics and non-metals show a general decreasing trend across the site during monitoring. Generally, exceedances were only present during piling and

subsequently concentrations reduced when piling was completed. An exceedance of ammonia NH_4 was recorded within the BH302 in the east of the site during the final monitoring round. Concentrations of ammonia NH4 within the east and west of the site (BH301 and BH302) identified exceedances up to one order of magnitude greater than the screening value of ammonia, which have been recorded primarily in BH302 in recent visits. High concentrations of ammonia can be attributed to natural and man-made processes and incidents such as oxygen reduction and sewage leaks. Analysis of the low flow data parameters has indicated that the direct links to ammonia such as limited oxygen don't correlate with the data recorded for ammonia, suggesting the ammonia exceedances in recent visits are not attributed to typical natural and man-made processes or incidents. However, the exceedances of ammonia do coincide with the piling of the site, and the exceedance could be attributed to the disturbance of sediment during the process of piling. Alternatively and more likely, given the lack of ammonia exceedances during piling the elevations are associated with an offsite source.

Poly Aromatic Hydrocarbons (PAHs)
The locations and concentrations of PAHs identified above the adopted screening criteria are shown in the table below:

	Phenol & PAHs	Concentration (ug/l)	Adopted Screening Criteria (ug/l)
		EAST	
1	Phenols (Total)	53	7.7
	Naphthalene	6	2
		SOUTH	
3	Phenols (Total)	71	7.7
	Naphthalene	118	2
		WEST	
1	Naphthalene	7	2
2	Phenols (Total)	73	7.7
	Naphthalene	197	2
	Fluoranthene	0.32	0.0063
4	Naphthalene	14	2
5	Phenols (Total)	16	7.7
	Naphthalene	71	2
6	Phenols (Total)	15	7.7
	Naphthalene	48	2
7	Phenols (Total)	38	7.7
	Naphthalene	59	2
11	Naphthalene	40	2
	Fluoranthene	0.21	0.0063
12	Naphthalene	100	2
	Anthracene	0.05	0.1
	Fluoranthene	0.09	0.0063
13	Naphthalene	12	2
	Fluoranthene	0.05	0.0063

As seen in the tables above concentrations of phenols and PAH have generally decreased over the monitoring period, and the only exceedances on the most recent sample testing are within the west of the site in BH302 indicating minor exceedances of naphthalene and fluoranthene. However, these are noted to be lower than pre-piling concentrations showing a successful betterment of the groundwater quality.

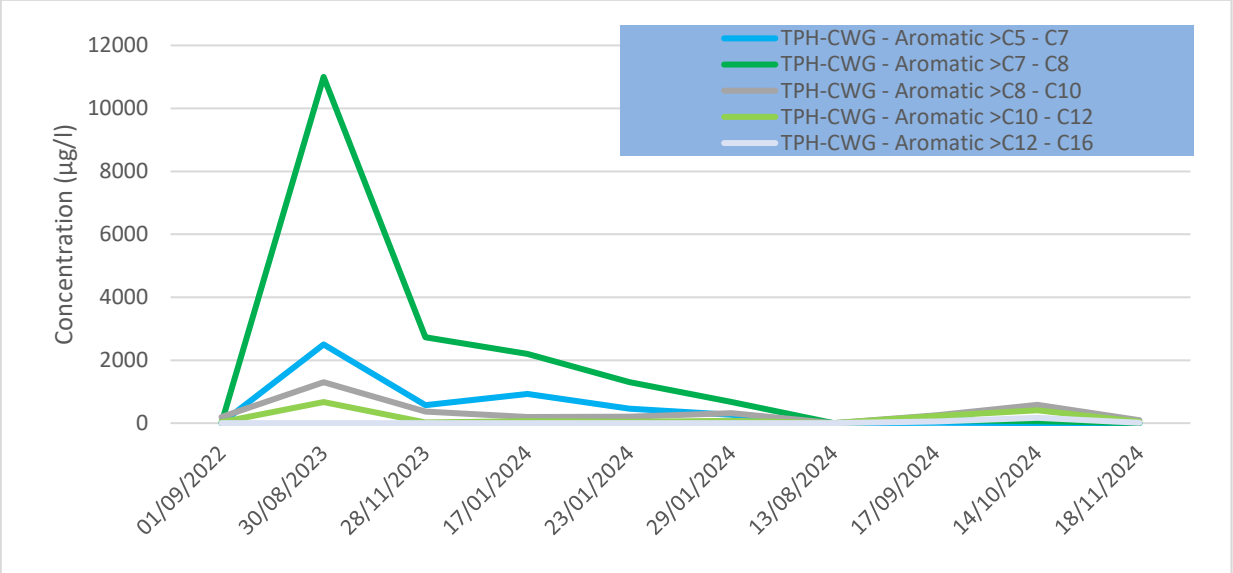
Petroleum Hydrocarbons

There are no EQS values for hydrocarbons. The Water Supply Regulations 1989 and the Private Water Supply Regulations 1991 contained a concentration of 10 µg/l for dissolved or emulsified hydrocarbons. This was removed when the regulations were updated. However, 10 µg/l is used in this report as an initial screening assessment as it is typically the preferred approach of the Environment Agency.

The locations elevated ranges of petroleum hydrocarbons identified above the adopted screening criteria are shown in the table below:

Round	TPH CWG	Concentration (ug/l)	Adopted Screening Criteria (ug/l)
EAST			
1	TPH-CWG – Aromatic > C5 – C7	53	10
SOUTH			
3	TPH-CWG – Aromatic > C5 – C7	3600	700
	TPH-CWG – Aromatic > C7 – C8	15000	300
	TPH-CWG – Aromatic > C8 – C10	28000	90
	TPH-CWG – Aromatic > C10 – C12	490	90
WEST			
2	TPH-CWG – Aromatic > C5 – C7	2500	10
	TPH-CWG – Aromatic > C7 – C8	11000	300
	TPH-CWG – Aromatic > C8 – C10	22000	90
	TPH-CWG – Aromatic > C10 – C12	670	90
	TPH-CWG – Aromatic > C21 - C35	2910	90
4	TPH-CWG – Aromatic > C5 – C7	574	700
	TPH-CWG – Aromatic > C7 – C8	2731	300
	TPH-CWG – Aromatic > C8 – C10	3532	90
	TPH-CWG – Aromatic > C21 – C35	574	90
5	TPH-CWG – Aromatic > C5 – C7	930	700
	TPH-CWG – Aromatic > C7 – C8	2200	300
	TPH-CWG – Aromatic > C8 – C10	6200	90
	TPH-CWG – Aromatic > C21 – C35	937	90
6	TPH-CWG – Aromatic > C5 – C7	460	700
	TPH-CWG – Aromatic > C7 – C8	1300	300
	TPH-CWG – Aromatic > C8 – C10	3800	90
	TPH-CWG – Aromatic > C21 – C35	480	90
7	TPH-CWG – Aromatic > C5 – C7	270	700
	TPH-CWG – Aromatic > C8 – C10	2900	300
	TPH-CWG – Aromatic > C21 – C35	313	90
11	TPH-CWG – Aromatic > C8 – C10	1700	300
	TPH-CWG – Aromatic > C10 – C12	230	90
12	TPH-CWG – Aromatic > C8 – C10	1600	300
	TPH-CWG – Aromatic > C10 – C12	410	90
	TPH-CWG – Aromatic > C12 – C16	170	90

Concentrations of TPHs fluctuate across the site during the monitoring period and are seen decreasing in recent visits with no exceedances in the final visit of BH301 and BH302. A graph is presented below which demonstrates the trend of the above aromatic fractions over the sampling rounds:



The above shows a successful reduction in concentration following remediation which commenced in September 2023 with the removal of the USTs and some hydrocarbon impacted soils. The above is considered to demonstrate a suitable betterment of the groundwater quality.

BTEX Compounds

The locations elevated ranges of BTEX compounds identified above the adopted screening criteria are shown in the table below:

Round	BTEX & MTBE	Concentration (ug/l)	Adopted Screening Criteria (ug/l)
EAST			
1	Benzene	6	1
SOUTH			
3	Benzene	17800	1
	Toluene	3020	74
	Ethyl Benzene	25030	300
WEST			
1	Benzene	5	1
2	Benzene	12700	1
	Toluene	1940	74
	Ethyl Benzene	20070	300
4	Benzene	2730	1
	Toluene	759	74
	Ethyl Benzene	4390	300
5	Benzene	2110	1
	Toluene	1420	74
	Ethyl Benzene	4410	300
6	Benzene	1390	1
	Toluene	640	74
	Ethyl Benzene	2990	300
7	Benzene	776	1
	Ethyl Benzene	2834	74
13	Benzene	3	1

Concentrations of BTEX are also seen to fluctuate in the earlier monitoring visits across the site but are seen to decrease in recent visits with only one minor exceedance in the most recent visit within BH301 of benzene.

Summary

The groundwater sampling undertaken across the site by TEC (2022-2024) and BSL (2024) has indicated a general betterment of the site with the removal of the hydrocarbon tank and construction of the development. Over the monitoring rounds reductions in concentrations can be observed demonstrating the successful removal of hydrocarbon impacted soils and USTs have generated a betterment in the groundwater quality associated with the Principal Aquifer. As such, no further action is required and the site is considered to have been successfully remediated.

6.0 CONCLUSIONS

6.1 General

The remedial works described within this report were carried out between the dates of 7th September 2023 and 13th September 2023 under the supervision of experienced BSL geo-environmental engineers.

6.2 Hydrocarbon Point Source Excavations

A total of six ~9,000-10,000 litre underground storage tanks (USTs) have been encountered on site.

BSL carried out soil sampling from three sides and the base of the resultant excavations. The soil samples were scheduled for appropriate chemical testing; the sampling frequency and scheduling of chemical testing (TPH CWG). None of the samples exceeded the Remediation Target value of 1,000mg/kg and 50ppm. In general, all of the samples were either below detection or marginally above, and it is therefore considered these areas have been successfully remediated.

In summary, based on the above remediation and validation works, the eastern, western and southern walls as well as the base of the tank bund have all been successfully remediated and validated.

6.3 Groundwater Monitoring

A total of thirteen monitoring rounds have been undertaken from September 2022 to November 2024 with sampling of boreholes undertaken for groundwater sampling to demonstrate a betterment of the groundwater quality following removal of hydrocarbon impacted soils and former USTs at the site. The monitoring is considered to have successfully demonstrated successful betterment with minimal exceedances recorded on the final monitoring visit and no exceedances of TPH were noted during this monitoring visit. Given this, no further remedial actions are required.

6.4 Further Works

As detailed above, the following works associated with the impacted site soils require remediation at the site:

- Decommissioning of BH301 and BH302 following EA approval of groundwater monitoring programme.

The above will be reported in an updated revision of this Remediation Validation Reporter.

DRAWINGS

CASTLE WHARF

DEANSGATE QUAY

BRIDGEWATER VIADUCT

CAR PARK

LAYBY

DEANSGATE SOUTH

OWEN STREET

Reconstructed Brick Wall

Maintenance Access Only 600Ø

Glazed screen

Glazed screen

Glazed screen

Glazed screen

Glazed screen

Riser 01

Riser 02

Riser 03

Riser 04 (Comms)

Stair 01

Lift A

Lift B Fire Fighting Lift

Wet Riser

SV-01

Booster Set

Sprinkler Tank

Sprinkler Tank

Pedestal & Sprinkler Tank Room

GF-001 Amenity Zone 1 71.1m² Note: Layout TBC by Interior Designer.

GF-002 Amenity Zone 2 Note: Layout TBC by Interior Designer.

GF 003 Cycle Parking Provision for 20 no. 27 m²

GF 004 Lift Shaft / Lobby 17.5 m²

GF 005 Living Room 14.9 m²

GF 006 Pedestal & Sprinkler Tank Room 70.7 m²

GF-007 Lift Shaft 3.5 m²

GF-008 Laundry 33.8 m²

GF-009 Games Space 23.9 m²

GF 010 Amenity Zone 3 72.8 m² Note: Layout TBC by Interior Designer.

GF 011 Lobby 5.3 m²

GF 012 WC Redundant Room

GF 013 Acc. Toilet 4.9 m²

GF 014 Cleaner's Store 4.7 m²

GF 015 Mail Room 11.8 m²

GF 016 Office 10.4 m²

Slab 02

UP

DN

DN

D00-001

D00-002

D00-003

D00-004

D00-005

D00-006

D00-007

D00-008

D00-009

D00-010

D00-011

D00-012

D00-013

D00-014

D00-015

D00-016

D00-017

D00-018

D00-019

D00-020

D00-021

D00-022

D00-023

SSL +30.850

SSL +30.875

FFL +30.890

Ø 1500

Ø 1500

1:20

1:40

1000

1335

2500

2500

1000

1000

500

500

500

500

4386

6021

3612

2300

5610

6050

4465

6900

6350

4730

1620

2000

4350

2000

4350

2825

675

4240

3800

4544

6500

6550

5643

5145

N

Scale 1:100

0 5m 10m

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Rev.	Description	Date	Drawn	Chk.
T-07	Updated to suit VE Contractor Proposals.	22/09/23	BH	CMc
T-06	Updated to suit Design Team comments.	24/05/23	BH	CMc
T-05	Drawings updated to suit comments from the Design & Client Team following the introduction of the new stair.	06/04/23	BH	CMc
T-04	Coordinated with Interior Design Team.	04/11/22	BH	CMc
T-03	Stage 4 Issue.	23/09/2022	BH	CMc
T-02	Drawings updated to suit Design Team comments ahead of Stage 3+ Issue.	26/08/22	BH	CMc
T-01	TENDER	05/08/2022	SW	CMc
T-00	TENDER	08/07/2022	SW	CMc

KEY

— Site Boundary

NOTES:

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Figured dimensions only to be taken from this drawing. DO NOT SCALE.

All contractors must visit the site and be responsible for checking all setting out dimensions and notifying the Architect of any discrepancies prior to any manufacture or construction work.

Drawings to be read in conjunction with the following Consultant information:

- Structural Engineer
- M&E Engineer
- Fire Engineer
- Interior Designer

Client:
Domis Construction

Project:
Deansgate South, Manchester

Drawing Title
General Arrangement - Plan - 00 - Ground Floor

Drawing Status
TENDER

Corstorphine & Wright

Warwick Studio
Brook Hall, Brook Street, Warwick, CV34 4BL
01926 658 444
corstorphine-wright.com

Drawing No.	Revision
20269-2011	T-07

Drawn	Checked	Paper Size	Scale	Date
SW	CMc	A1	1 : 100	20/06/22

EXTENT OF CONTIGUOUS PILED WALL AND TEMPORARY WORKS TO BE CONFIRMED FOLLOWING EXPOSURE OF BELOW GROUND VIADUCT MASONRY INTO SITE BOUNDARY. ALLOWANCE TO BE MADE FOR TEMPORARY WORKS / SHEET PILING IN FOOTPATH TO ALLOW FOR CUTTING DOWN OF CONTIGUOUS PILES.

NOTE! DPM

DPM/DPC AND TANKING DETAILS BY OTHERS

RED LINE BOUNDARY

RED LINE BOUNDARY SHOWN HAS BEEN TAKEN FROM CWA DRAWINGS AND IS INDICATIVE, TBC BY FUSION

PILING BLANKET

PILING BLANKET LEVEL IS INDICATIVE AND IS TO BE DESIGNED AND POSITIONED BY CONTRACTOR TO SUIT PREFERRED SEQUENCE OF WORKS

SECTION CUTTING

SECTIONS HAVE CUT THE STRUCTURE AT AN OBLIQUE ANGLE IN SOME INSTANCES AND ELEMENTS ARE SHOWN WIDER THAN ACTUAL

PILE LOCATIONS

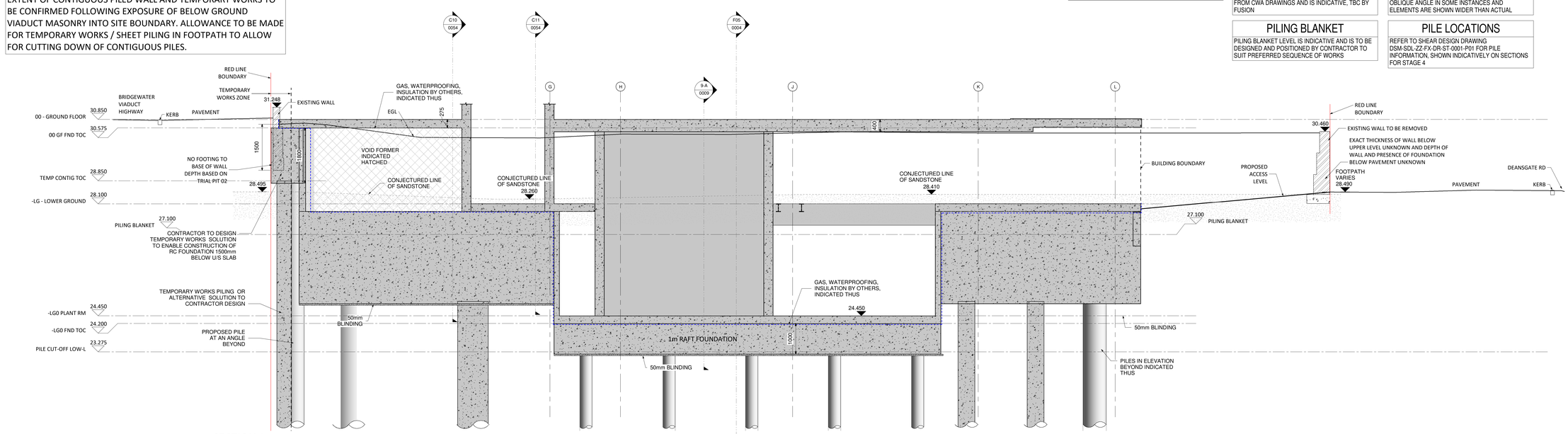
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NOTES

GENERAL

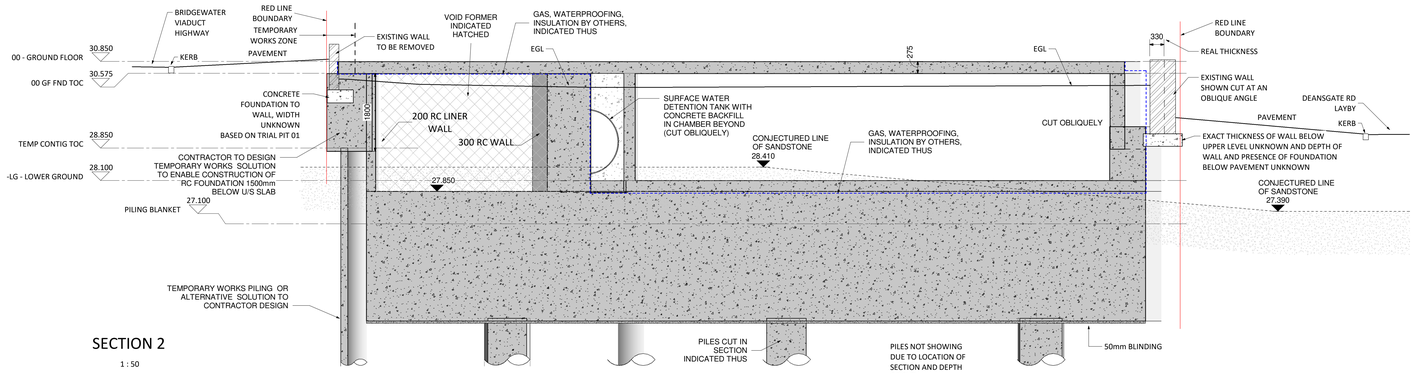
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS RELATE TO ORDNANCE DATUM UNLESS NOTED OTHERWISE.
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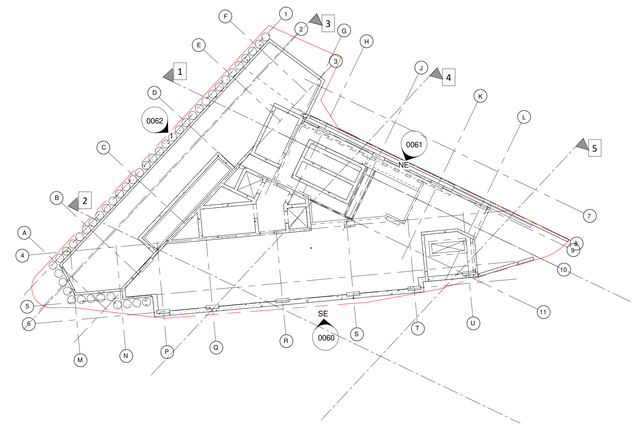
SECTION 1

1 : 50



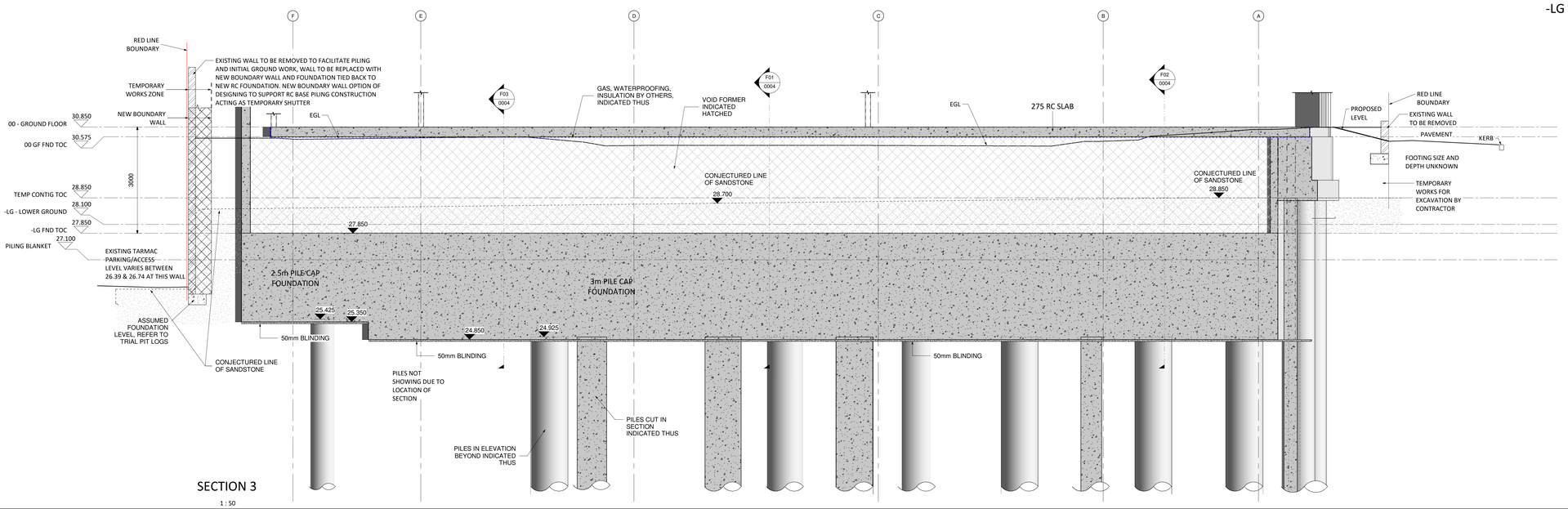
SECTION 2

1 : 50



-LG - LOWER GROUND - KEYPLAN

1 : 200



SECTION 3

1 : 50

REV	DATE	DESCRIPTION	BY	CHK
P03	26.05.23	STAGE 4 ISSUE	AK	BGH
P02	31.10.22	STAGE 4 ISSUE	DF	BGH
P01	26.08.22	STAGE 3+ ISSUE	AK	BGH

Revision Schedule

CLIENT: FUSION MANCHESTER DEVCO LIMITED

PROJECT: DEANSGATE SOUTH DEANSGATE MANCHESTER

TITLE: GENERAL ARRANGEMENT FOUNDATION SECTIONS 1

SHEAR design
Consulting Civil and Structural Engineers
7 Ashtree Court - Woodsy Close - Cardiff Gate Business Park - Cardiff - CF23 8RW
Tel : 029 2054 7000 - Fax : 029 2054 7001 - www.shear-design.com
Enquiries@shear-design.com

DRAWN:	CHECKED:	DATE:	SCALE:
AK	BH	27/06/22	As indicated@A0

STATUS: STAGE 4

SHEAR DESIGN REF:	DRAWING NUMBER:	REVISION:
20047	DSM-SDL-ZZ-FX-DR-ST-0091	P03
		STATUS: S1

05/06/2023 15:06:30

NOTE! DPM

DPM/DPC AND TANKING DETAILS BY OTHERS

RED LINE BOUNDARY

RED LINE BOUNDARY SHOWN HAS BEEN TAKEN FROM CWA DRAWINGS AND IS INDICATIVE, TBC BY FUSION

PILING BLANKET

PILING BLANKET LEVEL IS INDICATIVE AND IS TO BE DESIGNED AND POSITIONED BY CONTRACTOR TO SUIT PREFERRED SEQUENCE OF WORKS

SECTION CUTTING

SECTIONS HAVE CUT THE STRUCTURE AT AN OBLIQUE ANGLE IN SOME INSTANCES AND ELEMENTS ARE SHOWN WIDER THAN ACTUAL

PILE LOCATIONS

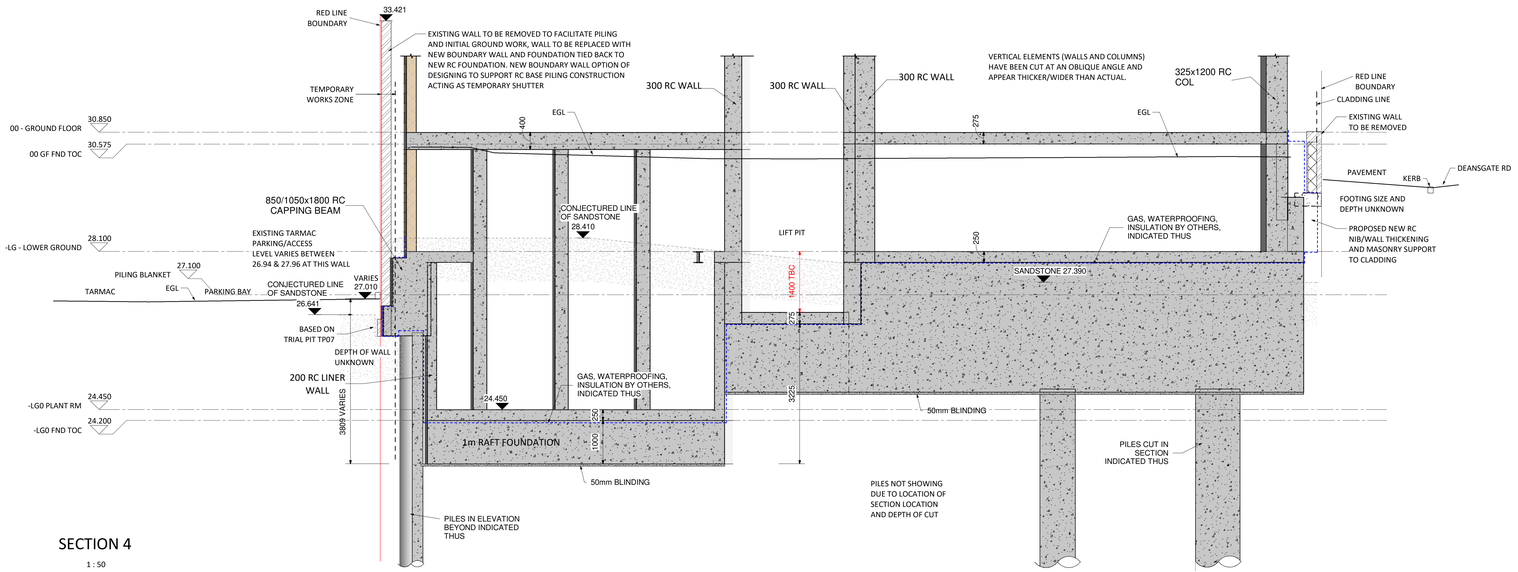
REFER TO SHEAR DESIGN DRAWING DSM-SDL-ZZ-FX-DR-ST-0001-P01 FOR PILE INFORMATION, SHOWN INDICATIVELY ON SECTIONS FOR STAGE 4

NOTES

GENERAL

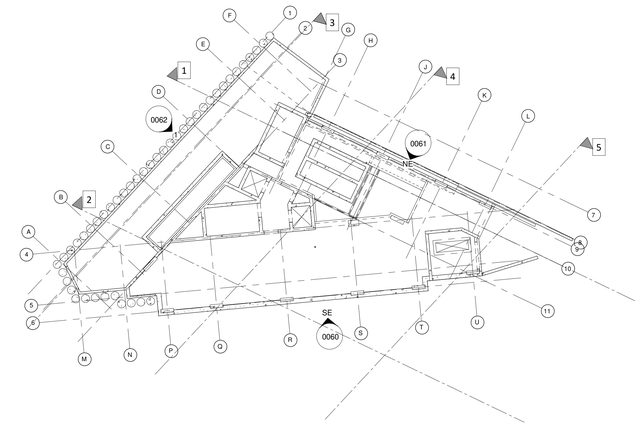
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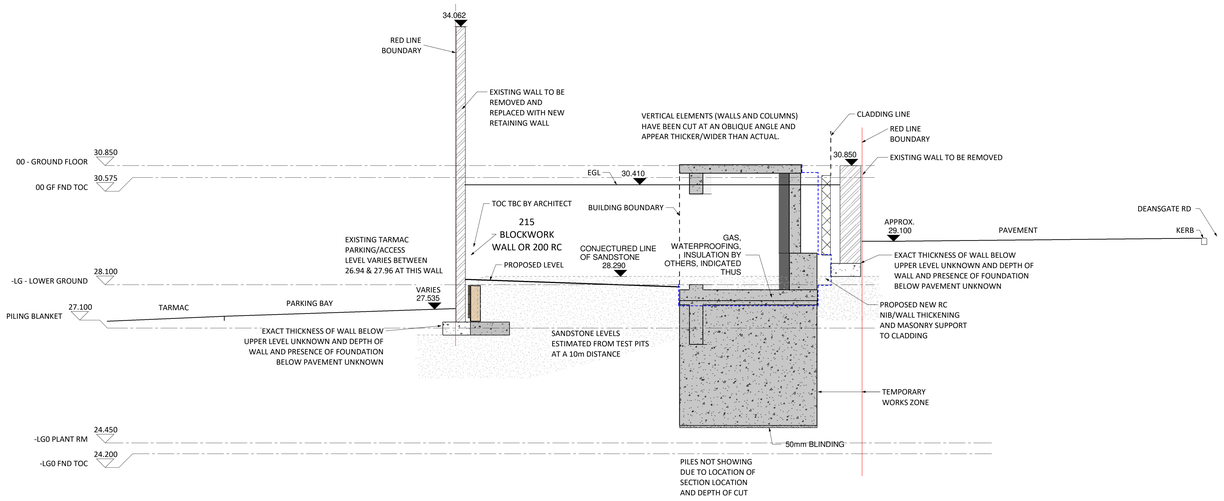
SECTION 4

1 : 50



-LG - LOWER GROUND -- KEYPLAN

1 : 200



SECTION 5

1 : 50

REV	DATE	DESCRIPTION	BY	CHK
P03	26.05.23	STAGE 4 ISSUE	AK	BGH
P02	31.10.22	STAGE 4 ISSUE	DF	BGH
P01	26.08.22	STAGE 3+ ISSUE	AK	BGH

Revision Schedule

CLIENT: FUSION MANCHESTER DEVCO LIMITED

PROJECT: DEANSGATE SOUTH DEANSGATE MANCHESTER

TITLE: GENERAL ARRANGEMENT FOUNDATION SECTIONS 2

SHEAR design
Consulting Civil and Structural Engineers
7 Ashtree Court - Woodsy Close - Cardiff Gate Business Park - Cardiff - CF23 8RW
Tel : 029 2054 7000 - Fax : 029 2054 7001 - www.shear-design.com
Enquiries@shear-design.com

DRAWN:	CHECKED:	DATE:	SCALE:
AK	BH	27/06/22	As indicated@A0

STATUS: STAGE 4

SHEAR DESIGN REF:	DRAWING NUMBER:	REVISION:
20047	DSM-SDL-ZZ-FX-DR-ST-0092	P03
		STATUS: S1

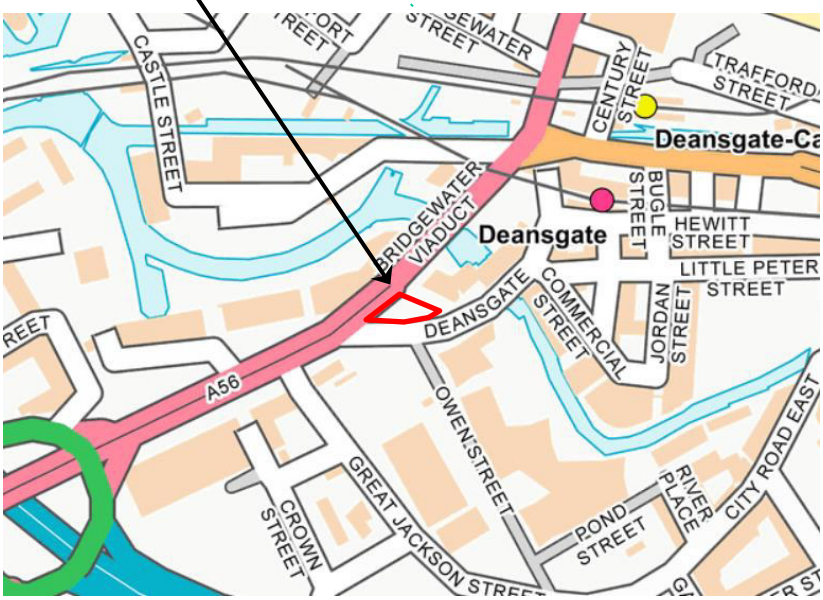
05/06/2023 14:56:46



SITE LOCATION

NEAREST POSTCODE: M3 4LB

SITE ENTRANCE WHAT3WORDS: ///SHELF.TAKES.VIEWS



REV	DATE	DESCRIPTION	BY	CKD

BROWNFIELD SOLUTIONS LTD
GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

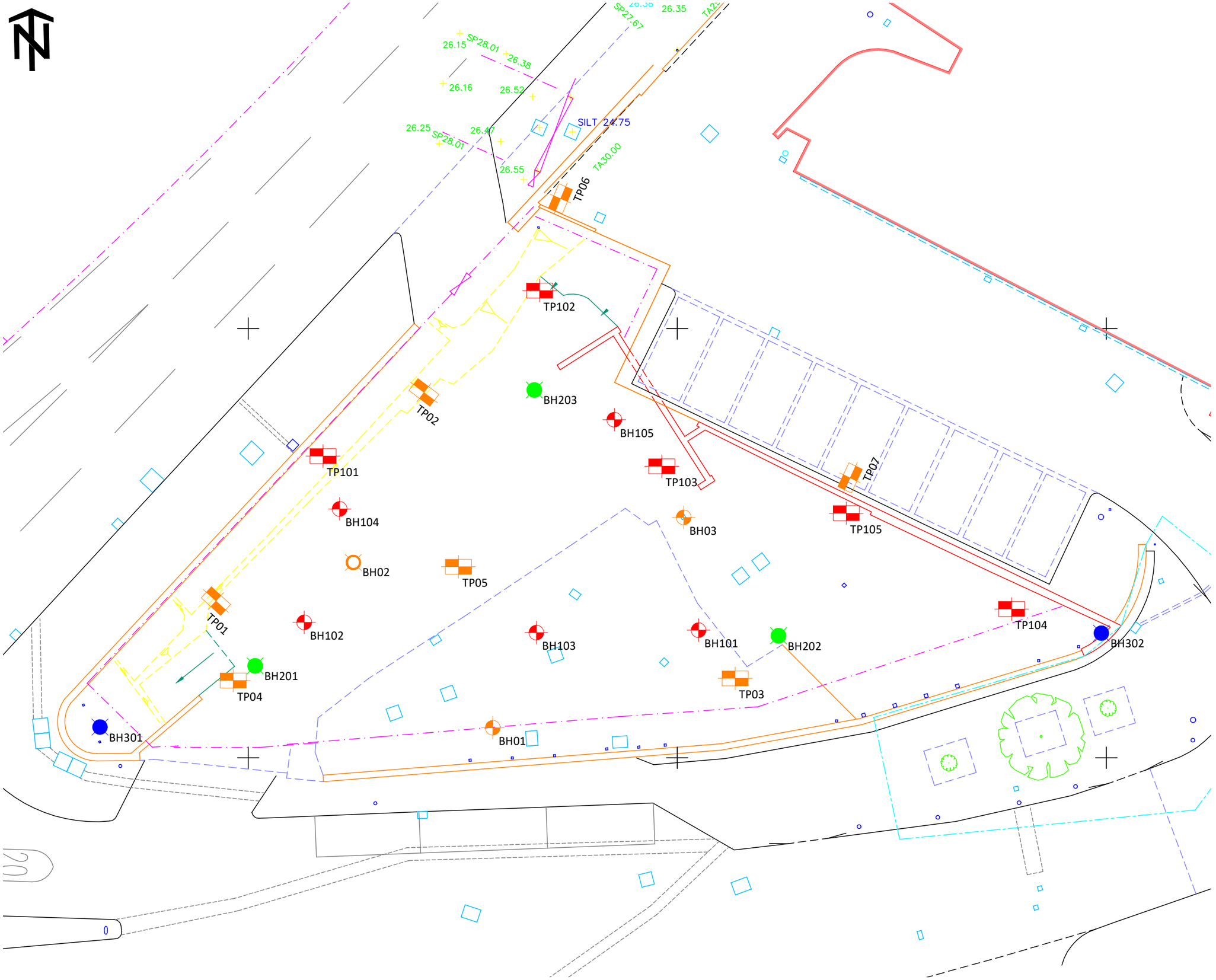
CLIENT
DOMIS CONSTRUCTION LTD

PROJECT TITLE
FUSION, MANCHESTER

DRAWING TITLE
SITE LOCATION PLAN

DRAWING No.	REVISION	SCALE	DATE
C5511/01	-	NTS	03/10/23

DRAWN BY	CHECKED BY
SD	NS



KEY	
	APPROXIMATE SITE BOUNDARY
BSL (2024)	
BHXX	SONIC DRILLING BOREHOLE
TEC (2024)	
BHXX	SONIC DRILLING BOREHOLE
TEC (2022)	
BHXX	SONIC DRILLING BOREHOLE
TPXX	TRIAL PIT
STRUCTURAL SOILS (2017)	
TPXX	TRIAL PIT
WSXX	WINDOW SAMPLE BOREHOLE
RCXX	ROTARY CORED BOREHOLE

NOTES

1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCING WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT & ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
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REV	DATE	DESCRIPTION	BY	CKD
A	08/08/2024	UPDATED WITH RECENT EXPLORATORY HOLES	AH	

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CLIENT

DOMIS CONSTRUCTION LTD

PROJECT TITLE

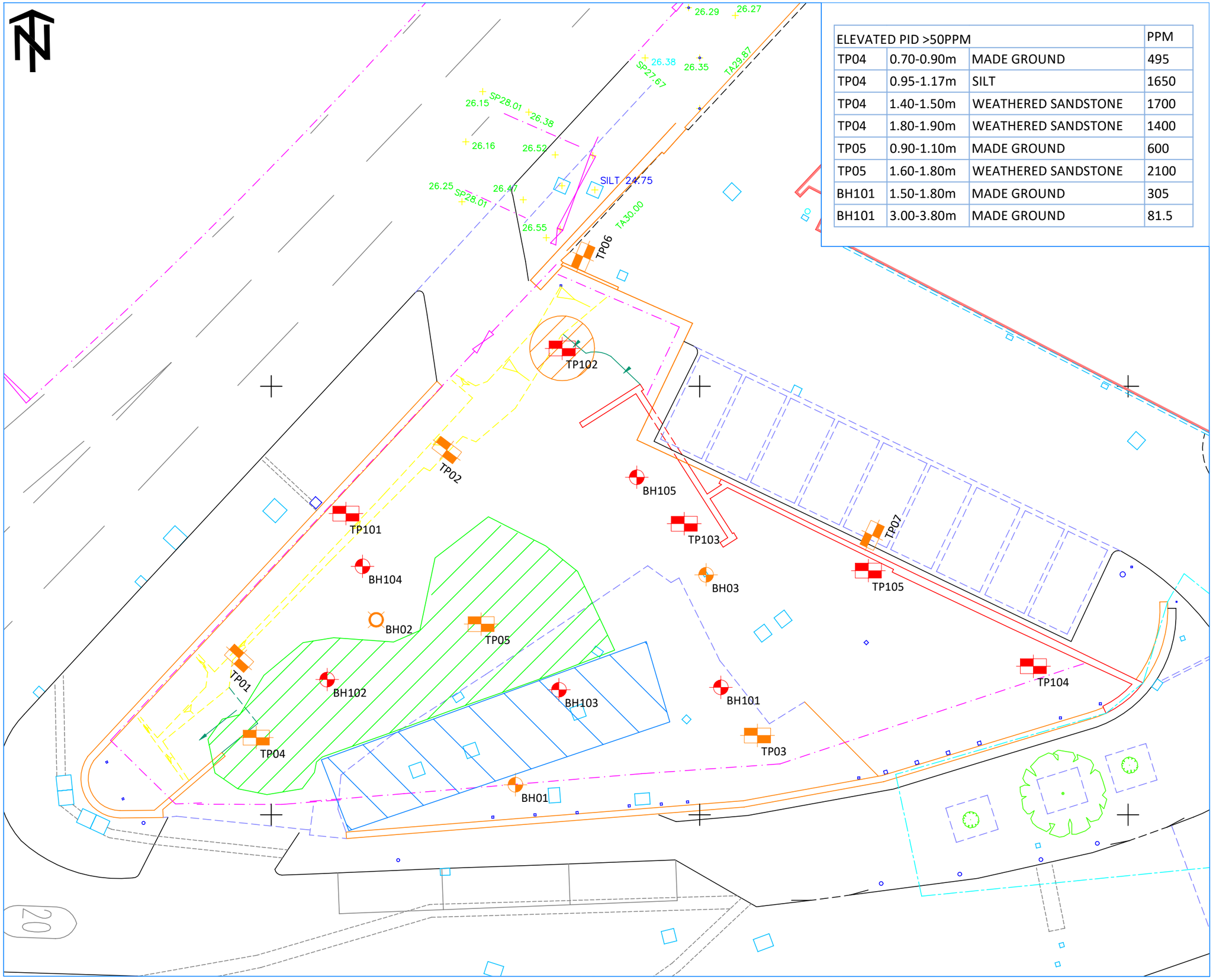
FUSION, MANCHESTER

DRAWING TITLE

EXPLORATORY HOLE LOCATION PLAN

DRAWING No.	REVISION	SCALE	DATE
C5511/02	A	NTS	08/08/2024

DRAWN BY	CHECKED BY
AH	NS



ELEVATED PID >50PPM			PPM
TP04	0.70-0.90m	MADE GROUND	495
TP04	0.95-1.17m	SILT	1650
TP04	1.40-1.50m	WEATHERED SANDSTONE	1700
TP04	1.80-1.90m	WEATHERED SANDSTONE	1400
TP05	0.90-1.10m	MADE GROUND	600
TP05	1.60-1.80m	WEATHERED SANDSTONE	2100
BH101	1.50-1.80m	MADE GROUND	305
BH101	3.00-3.80m	MADE GROUND	81.5

KEY	
	APPROXIMATE SITE BOUNDARY
	ELEVATED PAH
	TPH >1000mg/kg
	HYDROCARBON ODOURS IN LOGS
	TANK BRICK BUND EXTENTS

TEC (2022)	
BHXX	SONIC DRILLING BOREHOLE
TP105	TRIAL PIT

STRUCTURAL SOILS (2017)	
TPXX	TRIAL PIT
WSXX	WINDOW SAMPLE BOREHOLE
RCXX	ROTARY CORED BOREHOLE

NOTES

1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCING WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT & ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
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REV	DATE	DESCRIPTION	BY	CKD

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CLIENT

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PROJECT TITLE

FUSION, MANCHESTER

DRAWING TITLE

HOTSPOT LOCATION PLAN

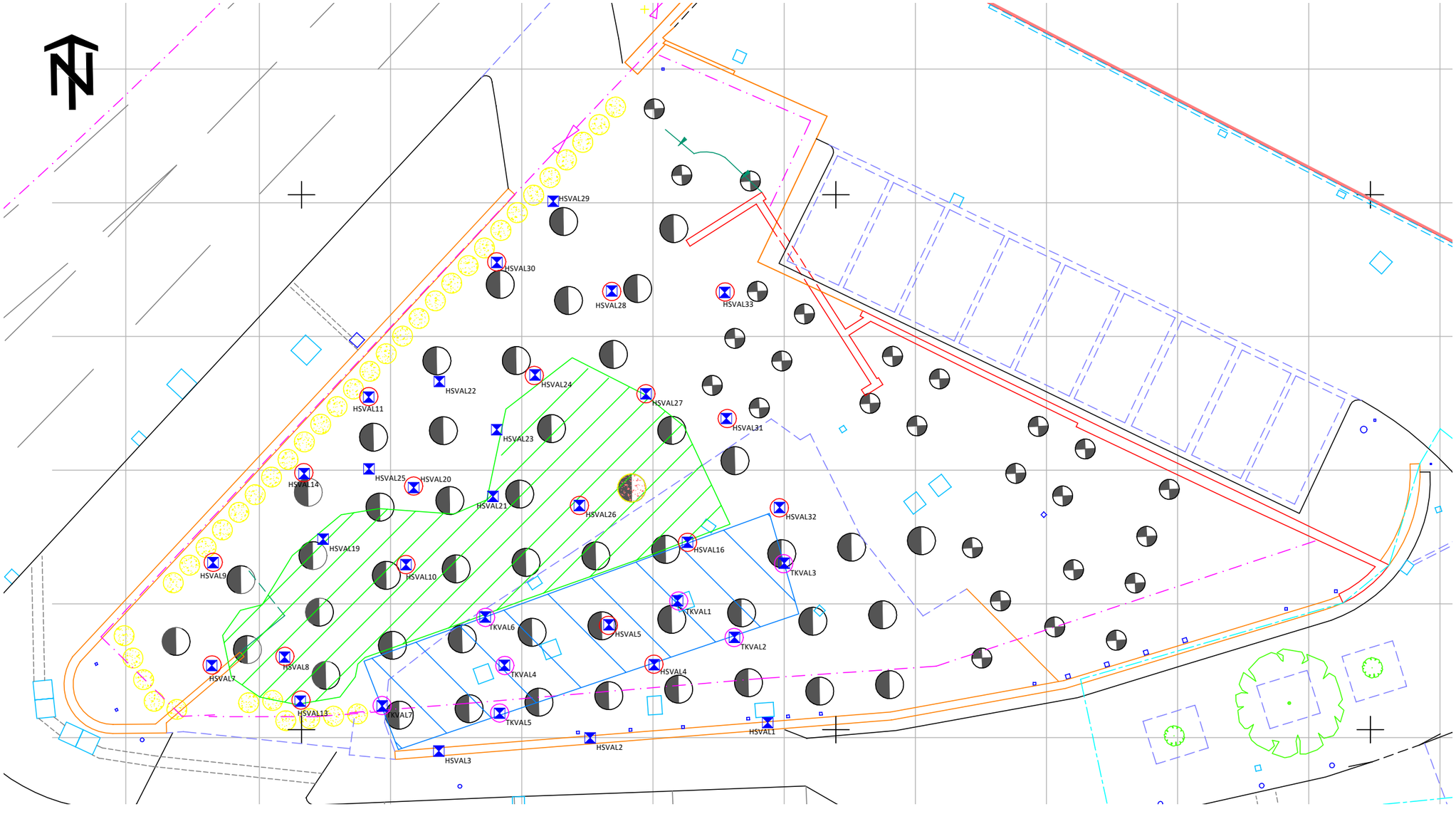
DRAWING No.	REVISION	SCALE	DATE
C5511/03	-	NTS	06/10/23

DRAWN BY	CHECKED BY
MB	NS

ELEVATED PID >50PPM			PPM
TP04	0.70-0.90m	MADE GROUND	495
TP04	0.95-1.17m	SILT	1650
TP04	1.40-1.50m	WEATHERED SANDSTONE	1700
TP04	1.80-1.90m	WEATHERED SANDSTONE	1400
TP05	0.90-1.10m	MADE GROUND	600
TP05	1.60-1.80m	WEATHERED SANDSTONE	2100
BH101	1.50-1.80m	MADE GROUND	305
BH101	3.00-3.80m	MADE GROUND	81.5
TKVAL1	4.20m	BASE - SANDSTONE	0
TKVAL2	2.50m	SIDE WALL - SAND	0
TKVAL3	2.50m	SIDE WALL - SAND	0
TKVAL4	2.50m	BASE - SANDSTONE	8.2
TKVAL5	2.00m	SIDE WALL - SAND	0.2
TKVAL6	0.90m	SIDE WALL - MADE GROUND	6
TKVAL7	1.00m	SIDE WALL - MADE GROUND	0

ELEVATED PID >50PPM			PPM
HSVAL1	1.50m	SIDE WALL - SANDSTONE	0
HSVAL2	1.50m	SIDE WALL - SANDSTONE	0.4
HSVAL3	1.50m	SIDE WALL - SANDSTONE	0.2
HSVAL4	3.50m	BASE - SANDSTONE	0
HSVAL5	3.50m	BASE - SANDSTONE	0
HSVAL7	3.50m	BASE - SANDSTONE	0
HSVAL8	1.50m	SIDE WALL - SANDSTONE	27.7
HSVAL9	1.50m	SIDE WALL - SANDSTONE	2.3
HSVAL10	3.50m	BASE - SANDSTONE	0
HSVAL11	1.50m	SIDE WALL - SANDSTONE	0
HSVAL13	1.50m	SIDE WALL - SANDSTONE	0
HSVAL14	1.50m	SIDE WALL - SANDSTONE	0
HSVAL15	3.50m	BASE - SANDSTONE	0
HSVAL16	3.50m	BASE - SANDSTONE	0
HSVAL17	3.50m	BASE - SANDSTONE	0

ELEVATED PID >50PPM			PPM
HSVAL18	3.50m	BASE - SANDSTONE	0
HSVAL19	3.50m	BASE - SANDSTONE	0
HSVAL20	3.50m	BASE - SANDSTONE	0
HSVAL21	3.50m	BASE - SANDSTONE	0
HSVAL22	3.50m	BASE - SANDSTONE	0
HSVAL23	3.50m	BASE - SANDSTONE	0
HSVAL24	3.50m	BASE - SANDSTONE	0
HSVAL25	3.50m	BASE - SANDSTONE	0
HSVAL26	3.50m	BASE - SANDSTONE	0
HSVAL27	3.50m	BASE - SANDSTONE	0
HSVAL28	3.50m	BASE - SANDSTONE	23.7
HSVAL29	3.50m	BASE - SANDSTONE	0
HSVAL30	3.50m	BASE - SANDSTONE	0
HSVAL31	1.50m	SIDE WALL - SANDSTONE	0
HSVAL32	1.50m	SIDE WALL - SANDSTONE	0
HSVAL33	3.50m	BASE - SANDSTONE	11.3



KEY	
	APPROXIMATE SITE BOUNDARY
	TPH >1000mg/kg
	HYDROCARBON ODOURS IN LOGS
	TANK BRICK BUND EXTENTS
TKVALX	TANK VALIDATION SAMPLE
HSVALX	HYDROCARBON HOTSPOT VALIDATION SAMPLE
	LABORATORY TESTING SCHEDULED (June/July 2024)
	LABORATORY TESTING SCHEDULED (September 2023)

NOTES

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REV	DATE	DESCRIPTION	BY	CKD

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CLIENT

DOMIS CONSTRUCTION LTD

PROJECT TITLE

FUSION, MANCHESTER

DRAWING TITLE

VALIDATION SAMPLE LOCATION PLAN

DRAWING No.	REVISION	SCALE	DATE
C5511/07	A	NTS	24/07/24

DRAWN BY	CHECKED BY
MB	NS

APPENDIX A

Photographic Volume –Tank Excavation



PHOTO 1



PHOTO 2



PHOTO 3

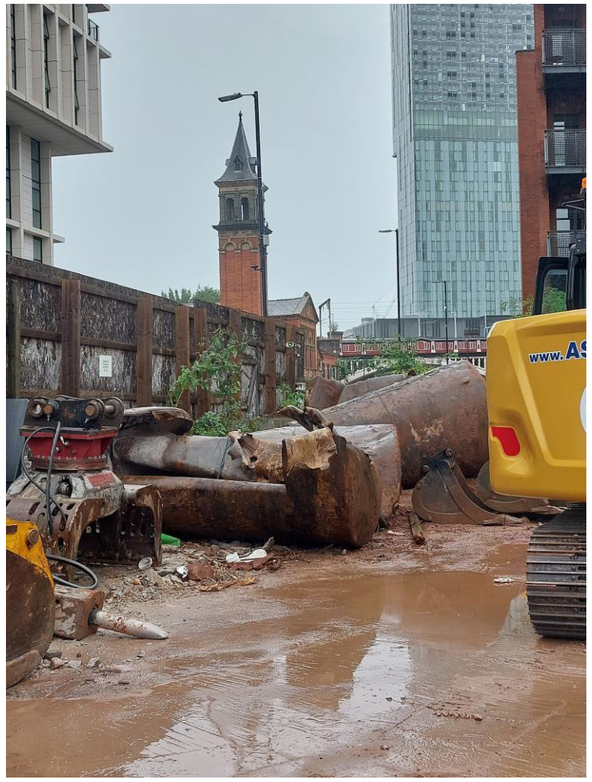


PHOTO 4

Photo Descriptions

PHOTO NO.	DETAILS
1	Tanks identified onsite
2	Tanks identified onsite
3	Tanks being removed 07/09/23
4	Tanks removed onto hard standing ground 12/09/23

REV	DATE	DESCRIPTION	BY	CKD

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GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

CLIENT
DOMIS CONSTRUCTION LTD

PROJECT TITLE
FUSION, MANCHESTER

TITLE
TANK REMOVAL PHOTOBOARD

Associated Document Ref No.	PAGE
NS/C5511/12505	1 of 5
COMPLIED BY: MB	CHECKED BY: NS



PHOTO 5



PHOTO 6



PHOTO 7



PHOTO 8

Photo Descriptions

PHOTO NO.	DETAILS
5	Visual bedrock contamination staining 07/09/23
6	Breaking up and removing of contaminated bedrock 07/09/23
7	Visually “clean” bedrock after removal 07/09/23
8	South side wall excavation for testing 07/09/23

REV	DATE	DESCRIPTION	BY	CKD

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GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

CLIENT
DOMIS CONSTRUCTION LTD

PROJECT TITLE
FUSION, MANCHESTER

TITLE
TANK REMOVAL PHOTOBOARD

Associated Document Ref No.
NS/C5511/12505

COMPLIED BY
MB

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NS



PHOTO 9



PHOTO 10



PHOTO 11



PHOTO 12

Photo Descriptions

PHOTO NO.	DETAILS
9	Breaking up and removing of contaminated bedrock 12/09/23
10	Visually contaminated bedrock 12/09/23
11	Visually “clean” bedrock after removal 12/09/23
12	South side wall excavation for testing 12/09/23

REV	DATE	DESCRIPTION	BY	CKD

BROWNFIELD SOLUTIONS LTD
GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

CLIENT
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PROJECT TITLE
FUSION, MANCHESTER

TITLE
TANK REMOVAL PHOTOBOARD

Associated Document Ref No.
NS/C5511/12505

COMPLIED BY
MB

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NS

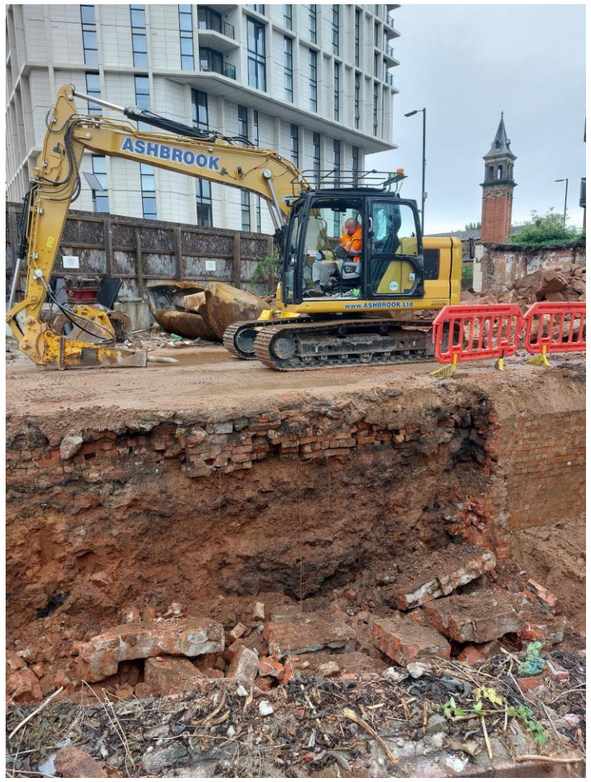


PHOTO 13

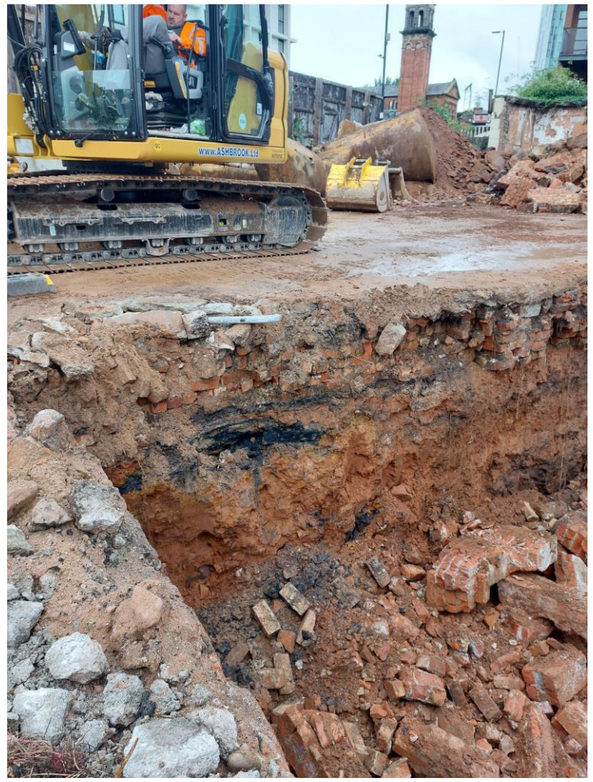


PHOTO 14



PHOTO 15



PHOTO 16

Photo Descriptions

PHOTO NO.	DETAILS
13	North side wall excavation for testing 12/09/23
14	Visual contamination staining 12/09/23
15	West side wall excavation for testing 12/09/23
16	Visually “clean” soils in the west side wall excavation 12/09/23

REV	DATE	DESCRIPTION	BY	CKD

BROWNFIELD SOLUTIONS LTD
GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

CLIENT
DOMIS CONSTRUCTION LTD

PROJECT TITLE
FUSION, MANCHESTER

TITLE
TANK REMOVAL PHOTOBOARD

Associated Document Ref No.
NS/C5511/12505

COMPLIED BY
MB

CHECKED BY
NS



PHOTO 17



PHOTO 18

Photo Descriptions

PHOTO NO.	DETAILS
17	Northern Wall (eastern extent) demonstrating dense brick made ground to ~1.00m bgl over an ashy made ground strata Visual & olfactory contamination staining noted from ~1.60m to 2.85m bgl on the left half of the excavation in the image, associated with Tank 2. Clen bedrock was encountered from 1.65m bgl on the right half of the excavation. 300mm diameter pipe preent in centre of the image – no visual / olfactory evidence of contamination within. Black strata in RHS of excavation at ~0.80m bgl is a cobble sett road. 13/09/23
18	

REV	DATE	DESCRIPTION	BY	CKD

BROWNFIELD SOLUTIONS LTD
GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

CLIENT
DOMIS CONSTRUCTION LTD

PROJECT TITLE
FUSION, MANCHESTER

TITLE
TANK REMOVAL PHOTOBOARD

Associated Document Ref No.
NS/C5511/12505

COMPLIED BY
MB

CHECKED BY
NS

APPENDIX B

Chemical Test Results

Nicola Swallow
Brownfield Solutions Ltd
William Smith House
173 - 183 Witton Street
Northwich
Cheshire
CW9 5LP

e: n.swallow@brownfield-solutions.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 23-55896

Project / Site name:	Fusion, Manchester	**Samples received on:**	12/09/2023
Your job number:	C5511	**Samples instructed on/ Analysis started on:**	12/09/2023
Your order number:	4564	**Analysis completed by:**	18/09/2023
Report Issue Number:	1	**Report issued on:**	18/09/2023
Samples Analysed:	4 soil samples		

[redacted]

Signed:

Joanna Szwagrzak
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-55896
Project / Site name: Fusion, Manchester
Your Order No: 4564

Lab Sample Number				2807897	2807898	2807899	2807900
Sample Reference				TKVAL1	TKVAL2	TKVAL3	SP01
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				4.20	2.50	2.50	None Supplied
Date Sampled				07/09/2023	07/09/2023	07/09/2023	07/09/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	10	9.5	10	8.3
Total mass of sample received	kg	0.001	NONE	0.8	0.7	0.7	0.9
Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	N/A	N/A	N/A	JBH

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	-	-	10.3
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	-	-	220
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	-	0.112
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	-	112
Organic Matter (automated)	%	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	-	-	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	< 0.05
Anthracene	mg/kg	0.05	MCERTS	-	-	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	< 0.05
Pyrene	mg/kg	0.05	MCERTS	-	-	-	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	< 0.05
Chrysene	mg/kg	0.05	MCERTS	-	-	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	-	-	< 0.80

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	2.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	-	-	-	< 1.2
Chromium (III)	mg/kg	1	NONE	-	-	-	4.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	4.2
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	5
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	10
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	4.7
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	19

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-55896
Project / Site name: Fusion, Manchester
Your Order No: 4564

Lab Sample Number				2807897	2807898	2807899	2807900
Sample Reference				TKVAL1	TKVAL2	TKVAL3	SP01
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				4.20	2.50	2.50	None Supplied
Date Sampled				07/09/2023	07/09/2023	07/09/2023	07/09/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Monoaromatics & Oxygenates							
Total BTEX & MTBE	mg/kg	0.007	NONE	< 0.007	< 0.007	< 0.007	< 0.007
Monoaromatics & Oxygenates							
Benzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005
Toluene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005
Ethylbenzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005
p & m-xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005
o-xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	< 0.005	< 0.005	< 0.005	< 0.005
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	18
TPH-CWG - Aliphatic >EC16 - EC35 $_{EH_CU_1D_AL}$	mg/kg	10	MCERTS	< 10	< 10	< 10	18
TPH-CWG - Aliphatic >EC35 - EC40 $_{EH_CU_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	19
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC35 - EC40 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPH Total C5 - C40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	NONE	< 10	< 10	< 10	23
TPH (C5 - C10) $_{HS_1D_TOTAL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
TPH (C10 - C16) $_{EH_CU_1D_TOTAL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPH (C16 - C40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	NONE	< 10	< 10	< 10	23
VOCs							
Chloromethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Chloroethane	µg/kg	5	NONE	-	-	-	< 5.0
Bromomethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Vinyl Chloride	µg/kg	5	NONE	-	-	-	< 5.0
Trichlorofluoromethane	µg/kg	5	NONE	-	-	-	< 5.0
1,1-dichloroethene	µg/kg	5	NONE	-	-	-	< 5.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	-	-	-	< 5.0
Trans 1,2-dichloroethylene	µg/kg	5	NONE	-	-	-	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	< 5.0
1,1-dichloroethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
2,2-Dichloropropane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Chloroform	µg/kg	5	NONE	-	-	-	< 5.0
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	-	-	-	< 5.0

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-55896
Project / Site name: Fusion, Manchester
Your Order No: 4564

Lab Sample Number				2807897	2807898	2807899	2807900
Sample Reference				TKVAL1	TKVAL2	TKVAL3	SP01
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				4.20	2.50	2.50	None Supplied
Date Sampled				07/09/2023	07/09/2023	07/09/2023	07/09/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
1,2-dichloroethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,1-Dichloropropene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Benzene	µg/kg	5	MCERTS	-	-	-	< 5.0
Carbontetrachloride	µg/kg	5	NONE	-	-	-	< 5.0
1,2-dichloropropane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Trichloroethene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Dibromomethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Bromodichloromethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Toluene	µg/kg	5	MCERTS	-	-	-	< 5.0
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,3-Dichloropropane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Dibromochloromethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Tetrachloroethene	µg/kg	5	NONE	-	-	-	< 5.0
1,2-Dibromoethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Chlorobenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	< 5.0
p & m-xylene	µg/kg	5	MCERTS	-	-	-	< 5.0
Styrene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Bromoform	µg/kg	5	NONE	-	-	-	< 5.0
o-xylene	µg/kg	5	MCERTS	-	-	-	< 5.0
Isopropylbenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,1,2,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Bromobenzene	µg/kg	5	NONE	-	-	-	< 5.0
N-Propylbenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
2-Chlorotoluene	µg/kg	5	ISO 17025	-	-	-	< 5.0
4-Chlorotoluene	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,3,5-Trimethylbenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Tert-Butylbenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Sec-Butylbenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,3-dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
P-Isopropyltoluene	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,4-dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,2-dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Butylbenzene	µg/kg	5	NONE	-	-	-	< 5.0
1,2-Dibromo-3-chloropropane	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,2,4-Trichlorobenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Hexachlorobutadiene	µg/kg	5	NONE	-	-	-	< 5.0
1,2,3-Trichlorobenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0

Sum of the above VOCs	µg/kg	5	NONE	-	-	-	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-55896
Project / Site name: Fusion, Manchester

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2807897	TKVAL1	None Supplied	4.2	Brown sand.
2807898	TKVAL2	None Supplied	2.5	Brown sand.
2807899	TKVAL3	None Supplied	2.5	Brown sand.
2807900	SP01	None Supplied	None Supplied	Brown sand.

Analytical Report Number : 23-55896
Project / Site name: Fusion, Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Analytical Report Number : 23-55896
Project / Site name: Fusion, Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 23-56397

Project / Site name:	Fusion, Manchester	**Samples received on:**	14/09/2023
Your job number:	C5511	**Samples instructed on/ Analysis started on:**	14/09/2023
Your order number:	C5511-154-NS	**Analysis completed by:**	20/09/2023
Report Issue Number:	1	**Report issued on:**	20/09/2023
Samples Analysed:	3 soil samples		

Signe [redacted]

Joanna Szwagrzak
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-56397
Project / Site name: Fusion, Manchester
Your Order No: C5511-154-NS

Lab Sample Number				2810670	2810671	2810672
Sample Reference				TKVAL4	TKVAL5	TKVAL7
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				2.50	2.00	1.00
Date Sampled				12/09/2023	12/09/2023	12/09/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	10	8.3
Total mass of sample received	kg	0.001	NONE	0.8	0.7	0.9
General Inorganics						
Organic Matter (automated)	%	0.1	MCERTS	0.2	0.4	0.2
Monoaromatics & Oxygenates						
Total BTEX & MTBE	mg/kg	0.007	NONE	< 0.007	< 0.007	< 0.007
Monoaromatics & Oxygenates						
Benzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005
Toluene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005
Ethylbenzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005
p & m-xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005##
o-xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	< 0.005	< 0.005	< 0.005
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35 $_{EH_CU_1D_AL}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aliphatic >EC35 - EC40 $_{EH_CU_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC35 - EC40 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH Total C5 - C40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	NONE	< 10	13	< 10
TPH (C5 - C10) $_{HS_1D_TOTAL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0
TPH (C10 - C16) $_{EH_CU_1D_TOTAL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH (C16 - C40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	NONE	< 10	13	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-56397
Project / Site name: Fusion, Manchester

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2810670	TKVAL4	None Supplied	2.5	Brown sand with gravel.
2810671	TKVAL5	None Supplied	2	Brown sand with gravel.
2810672	TKVAL7	None Supplied	1	Brown sand with gravel.

Analytical Report Number : 23-56397
Project / Site name: Fusion, Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

APPENDIX C

PID Calibration Certificates

ESS
11 MICKELTON ROAD
RIVERSIDE INDUSTRIAL ESTATE
MIDDLESBROUGH
TS2 1RQ
TEL: 01642 458886

CERTIFICATE OF CALIBRATION

ESS
Safety, Survey, Test & Measurement

CUSTOMER	BROWNFIELD SOLUTIONS LTD
JOB/CERTIFICATE NO:	21004530
MAKE/MODEL	IONSCIENCE PHOCHECK TIGER PID
SERIAL NO:	T-119478

VISUAL INSPECTION	OK

OPERATIONAL	OK

	CHANNEL 1	CHANNEL 2	CHANNEL 3	CHANNEL 4	CHANNEL 5	CHANNEL 6
SENSOR TYPE:	ISOBUTYLENE					
GAS CYL NO:	WO272326					
CAL GAS USED:	ISOBUTYLENE					
HIGH ALARM:	100PPM					
LOW ALARM:	50PPM					
DATE OF SERVICE:	24/07/2023					
CAL DUE DATE:	24/01/2024					

ESS Safety, Survey, Test & Measurement

THE INSTRUMENT DETAILED ABOVE HAS BEEN TESTED & CALIBRATED AGAINST THE MANUFACTURERS SPECIFICATION USING EQUIPMENT TRACEABLE TO THE MANUFACTURERS STANDARDS AND IN ACCORDANCE WITH ISO 9001:2021. EVERY PRECAUTION HAS BEEN TAKEN TO ENSURE THAT THE EQUIPMENT SPECIFIED HAS BEEN INSPECTED IN FULL AND IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS. IT IS THE OWNERS RESPONSIBILTY TO ENSURE IT FUNCTIONS CORRECTLY BEFORE EACH USE. ESS VP WILL NOT ACCEPT LIABILITY FOR ANY DAMAGE OR LOSS THAT OCCURS AS A RESULT OF INPROPER CHECKS AND/OR USE OF EQUIPMENT.



APPENDIX D

Photographic Volume – Reduced Level Dig

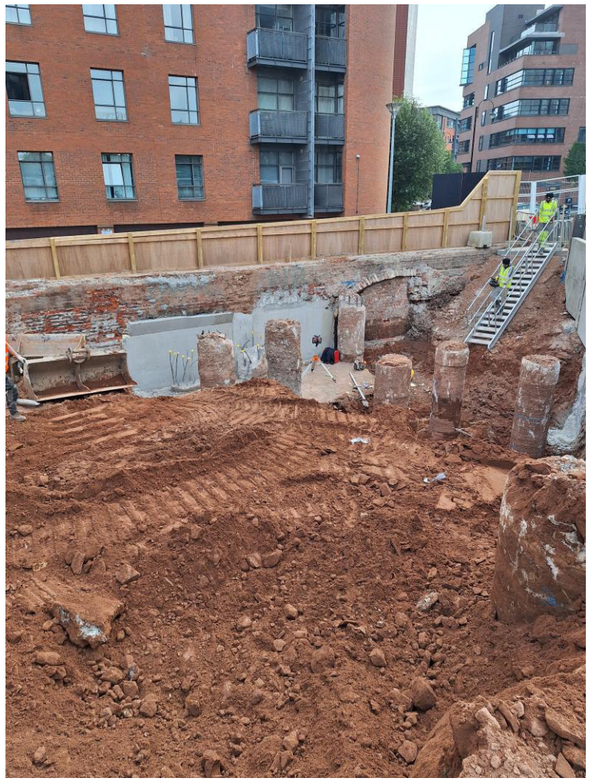


PHOTO 1



PHOTO 2



PHOTO 3

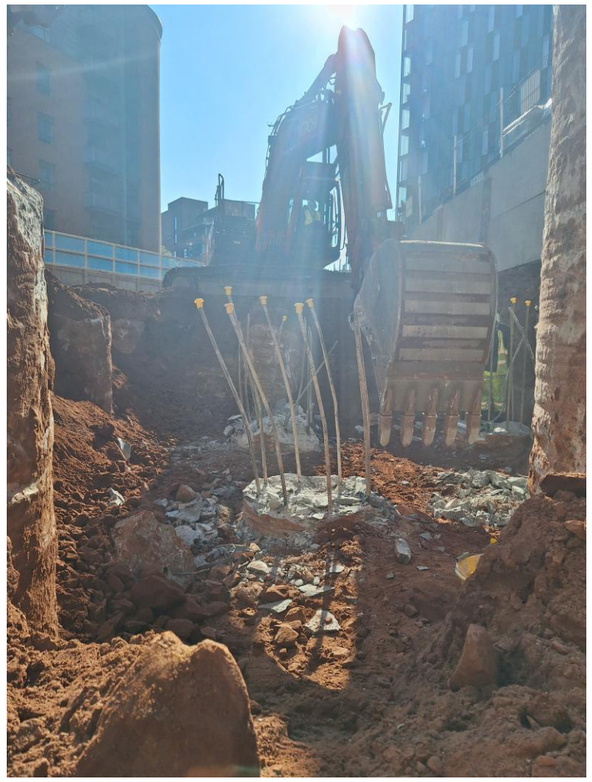


PHOTO 4

Photo Descriptions

PHOTO NO.	DETAILS
1	Site overview from the west (20.06.2024).
2	Site overview from the south (24.06.2024).
3	Site overview from the west (25.06.2024).
4	Site overview from the west (26.06.2024).

REV	DATE	DESCRIPTION	BY	CKD

BROWNFIELD SOLUTIONS LTD
GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

CLIENT
DOMIS CONSTRUCTION LTD

PROJECT TITLE
FUSION, MANCHESTER

TITLE
PHOTOGRAPHIC VOLUME - REDUCE LEVEL DIG

Associated Document Ref No.
AH/C5511/13795

COMPLIED BY
AH

CHECKED BY
NS

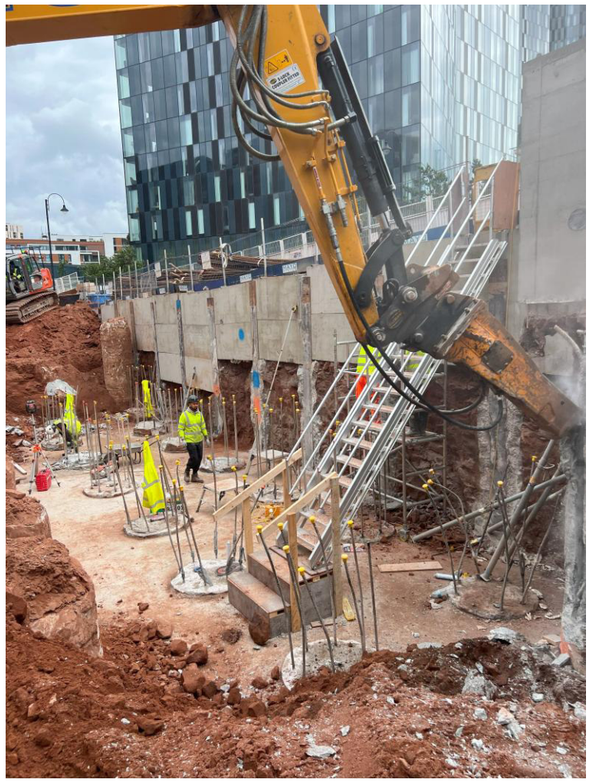


PHOTO 1

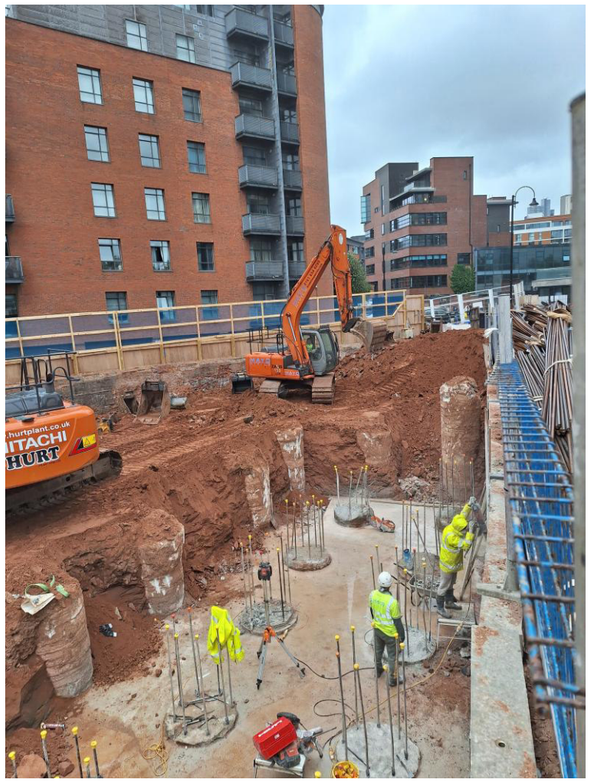


PHOTO 2

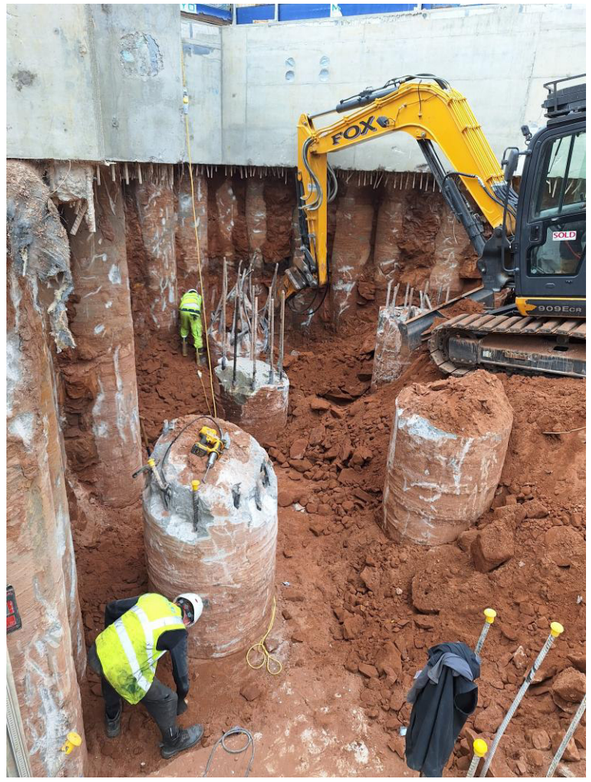


PHOTO 3



PHOTO 4

Photo Descriptions

PHOTO NO.	DETAILS
1	Site overview from the west (28.06.2024).
2	Site overview from the south-west (01.07.2024).
3	Site overview from the south-east (02.07.2024).
4	Site overview from the west (04.07.2024).

REV	DATE	DESCRIPTION	BY	CKD

BROWNFIELD SOLUTIONS LTD
GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

CLIENT
DOMIS CONSTRUCTION LTD

PROJECT TITLE
FUSION, MANCHESTER

TITLE
PHOTOGRAPHIC VOLUME - REDUCE LEVEL DIG

Associated Document Ref No.
AH/C5511/13795

COMPLIED BY
AH

CHECKED BY
NS



PHOTO 1

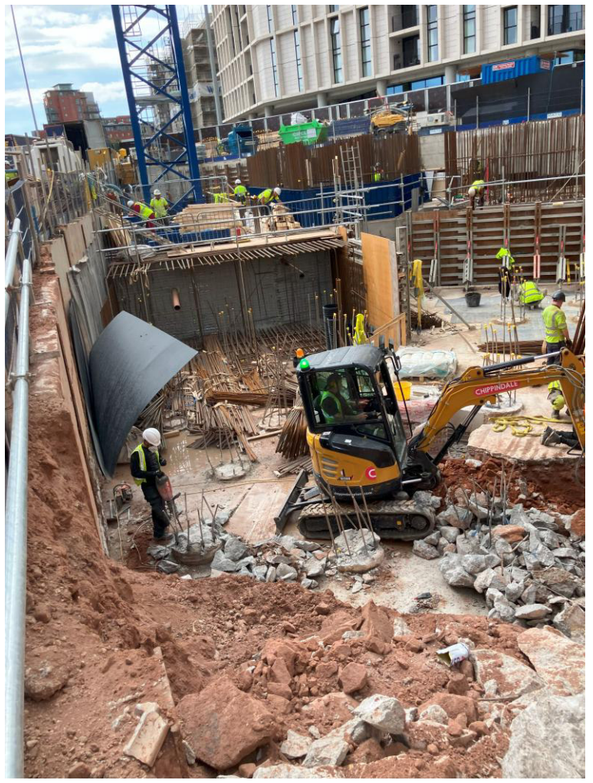


PHOTO 2

Photo Descriptions

PHOTO NO.	DETAILS
1	Site overview from the south-west (09.07.2024).
2	Site overview from the south-west (13.08.2024).

REV	DATE	DESCRIPTION	BY	CKD

BROWNFIELD SOLUTIONS LTD
GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

CLIENT
DOMIS CONSTRUCTION LTD

PROJECT TITLE
FUSION, MANCHESTER

TITLE
PHOTOGRAPHIC VOLUME - REDUCE LEVEL DIG

Associated Document Ref No.
AH/C5511/13795

COMPLIED BY
AH

CHECKED BY
NS

APPENDIX E

Chemical Testing Results – Reduced Level Dig

Brownfield Solutions Ltd
William Smith House
173 - 183 Witton Street
Northwich
Cheshire
CW9 5LP

e: n.swallow@brownfield-solutions.co.uk
c.mcshane@brownfield-solutions.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 24-028817

Project / Site name:	Fusion Manchester	**Samples received on:**	03.07.2024
Your job number:	C5511	**Samples instructed on/ Analysis started on:**	03.07.2024
Your order number:	5466	**Analysis completed by:**	09.07.2024
Report Issue Number:	1	**Report issued on:**	09.07.2024
Samples Analysed:	3 soil samples		

Signed: [redacted]

Rafał Szczepańczyk
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 24-028817
Project / Site name: Fusion Manchester
Your Order No: 5466

Lab Sample Number				247199	247200	247201
Sample Reference				HSVAL4	HSVAL5	HSVAL16
Sample Number				BASE	BASE	BASE
Depth (m)				3.50	3.50	3.50
Date Sampled				25/06/2024	25/06/2024	01/07/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	35.9	38.1	54.5
Moisture Content	%	0.01	NONE	6.6	5.9	7.6
Total mass of sample received	kg	0.1	NONE	0.8	0.7	0.8
General Inorganics						
Organic Matter (automated)	%	0.1	MCERTS	0.2	0.2	0.1
Petroleum Hydrocarbons						
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC16 - EC35 $_{EH_CU_1D_AL}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 $_{EH_CU_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC40 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC35 - EC40 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC40 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH (>EC5 - EC10) $_{HS_1D_TOTAL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0
TPH (>EC16 - EC40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH Total >EC5 - EC40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	NONE	< 10	< 10	< 10
VOCs						
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	< 0.005	< 0.005	< 0.005
Benzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005
Toluene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005
Ethylbenzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005
p & m-xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005
o-Xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 24-028817
Project / Site name: Fusion Manchester

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
247199	HSVAL4	BASE	3.5	Brown sand with gravel and stones
247200	HSVAL5	BASE	3.5	Brown sand with gravel and stones
247201	HSVAL16	BASE	3.5	Brown sand with gravel and stones

Analytical Report Number : 24-028817
Project / Site name: Fusion Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	NONE
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

Brownfield Solutions Ltd
William Smith House
173 - 183 Witton Street
Northwich
Cheshire
CW9 5LP

e: n.swallow@brownfield-solutions.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 24-028201

Project / Site name:	Fusion, Manchester	**Samples received on:**	02.07.2024
Your job number:	C5511	**Samples instructed on/ Analysis started on:**	02.07.2024
Your order number:	5452	**Analysis completed by:**	08.07.2024
Report Issue Number:	1	**Report issued on:**	08.07.2024
Samples Analysed:	1 soil sample		

Signed: [redacted]

Rafał Sz[redacted]
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 24-028201
Project / Site name: Fusion, Manchester
Your Order No: 5452

Lab Sample Number				243686
Sample Reference				HSVAL14
Sample Number				SIDE
Depth (m)				1.50
Date Sampled				28/06/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	6.3
Total mass of sample received	kg	0.1	NONE	0.8
General Inorganics				
Organic Matter (automated)	%	0.1	MCERTS	0.2
Petroleum Hydrocarbons				
TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0
TPHCWG - Aliphatic >EC16 - EC35 EH_CU_1D_AL	mg/kg	10	MCERTS	< 10
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 EH_CU_1D_AL	mg/kg	10	NONE	< 10
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10
TPHCWG - Aliphatic >EC5 - EC40 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10
TPHCWG - Aromatic >EC35 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10
TPHCWG - Aromatic >EC5 - EC40 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10
TPH (>EC5 - EC10) HS_1D_TOTAL	mg/kg	1	NONE	< 1.0
TPH (>EC16 - EC40) EH_CU_1D_TOTAL	mg/kg	10	NONE	< 10
TPH Total >EC5 - EC40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	< 10
VOCs				
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	< 0.005
Benzene	mg/kg	0.005	MCERTS	< 0.005
Toluene	mg/kg	0.005	MCERTS	< 0.005
Ethylbenzene	mg/kg	0.005	MCERTS	< 0.005
p & m-xylene	mg/kg	0.005	MCERTS	< 0.005
o-Xylene	mg/kg	0.005	MCERTS	< 0.005

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 24-028201
Project / Site name: Fusion, Manchester

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
243686	HSVAL14	SIDE	1.5	Brown sand with gravel

Analytical Report Number : 24-028201
Project / Site name: Fusion, Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	NONE
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

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Analytical Report Number : 24-028061

Project / Site name:	Fusion, Manchester	**Samples received on:**	28.06.2024
Your job number:	C5511	**Samples instructed on/ Analysis started on:**	28.06.2024
Your order number:	5444	**Analysis completed by:**	05.07.2024
Report Issue Number:	1	**Report issued on:**	05.07.2024
Samples Analysed:	5 soil samples		

Signed: [redacted]

Rafał Szczepańczyk
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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

Analytical Report Number: 24-028061
Project / Site name: Fusion, Manchester
Your Order No: 5444

Lab Sample Number				243074	243075	243076	243077	243078
Sample Reference				HSVAL7	HSVAL8	HSVAL9	HSVAL11	HSVAL13
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.50	3.50	1.50	1.50	1.50
Date Sampled				26/06/2024	26/06/2024	26/06/2024	26/06/2024	26/06/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	10.7	< 0.1	13.2	< 0.1
Moisture Content	%	0.01	NONE	6.3	6.9	7.3	5.5	6.3
Total mass of sample received	kg	0.1	NONE	0.3	0.3	0.3	0.3	0.3
General Inorganics								
Organic Matter (automated)	%	0.1	MCERTS	0.2	0.1	0.2	0.2	0.2
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC16 - EC35 $_{EH_CU_1D_AL}$	mg/kg	10	MCERTS	< 10	< 10	< 10	16	< 10
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	16	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 $_{EH_CU_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	16	< 10
TPHCWG - Aliphatic >EC5 - EC40 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	16	< 10
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC35 - EC40 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC40 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH (>EC5 - EC10) $_{HS_1D_TOTAL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (>EC16 - EC40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	NONE	< 10	< 10	< 10	18	< 10
TPH Total >EC5 - EC40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	NONE	< 10	< 10	< 10	16	< 10
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Benzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Toluene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Ethylbenzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
p & m-xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
o-Xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 24-028061
Project / Site name: Fusion, Manchester

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Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
243074	HSVAL7	None Supplied	1.5	Brown clay and sand with gravel
243075	HSVAL8	None Supplied	3.5	Brown sand with stones
243076	HSVAL9	None Supplied	1.5	Brown sand with gravel
243077	HSVAL11	None Supplied	1.5	Brown sand with gravel and stones
243078	HSVAL13	None Supplied	1.5	Brown sand with gravel

Analytical Report Number : 24-028061
Project / Site name: Fusion, Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	NONE
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

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Analytical Report Number : 24-030899

Project / Site name:	Fusion Manchester	**Samples received on:**	16/07/2024
Your job number:	C5511	**Samples instructed on/ Analysis started on:**	16/07/2024
Your order number:	223	**Analysis completed by:**	22/07/2024
Report Issue Number:	1	**Report issued on:**	22/07/2024
Samples Analysed:	6 soil samples		

Sig [redacted]

Iza
Senior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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

Analytical Report Number: 24-030899
Project / Site name: Fusion Manchester
Your Order No: 223

Lab Sample Number				257958	257959	257960	257961	257962
Sample Reference				HSVAL27	HSVAL28	HSVAL30	HSVAL33	HSVAL31
Sample Number				BASE	BASE	BASE	BASE	SIDE
Depth (m)				3.50	3.50	3.50	3.50	1.50
Date Sampled				09/07/2024	09/07/2024	09/07/2024	09/07/2024	09/07/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	7.9	14	10	7.4	8.3
Total mass of sample received	kg	0.1	NONE	1	0.9	0.9	0.8	0.9
General Inorganics								
Organic Matter (automated)	%	0.1	MCERTS	< 0.1	0.2	0.2	0.3	0.3
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.05	MCERTS	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC16 - EC35 $_{EH_CU_1D_AL}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 $_{EH_CU_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC40 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.05	MCERTS	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC35 - EC40 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC40 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH (>EC5 - EC10) $_{HS_1D_TOTAL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (>EC16 - EC40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH Total >EC5 - EC40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Benzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Toluene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Ethylbenzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
p & m-xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
o-Xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 24-030899
Project / Site name: Fusion Manchester
Your Order No: 223

Lab Sample Number				257963
Sample Reference				HSVAL32
Sample Number				SIDE
Depth (m)				1.50
Date Sampled				09/07/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	7
Total mass of sample received	kg	0.1	NONE	0.8
General Inorganics				
Organic Matter (automated)	%	0.1	MCERTS	0.4
Petroleum Hydrocarbons				
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.02	MCERTS	< 0.020
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.02	MCERTS	< 0.020
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.05	MCERTS	< 0.050
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0
TPHCWG - Aliphatic >EC16 - EC35 $_{EH_CU_1D_AL}$	mg/kg	10	MCERTS	< 10
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 $_{EH_CU_1D_AL}$	mg/kg	10	NONE	< 10
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10
TPHCWG - Aliphatic >EC5 - EC40 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.05	MCERTS	< 0.050
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10
TPHCWG - Aromatic >EC35 - EC40 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10
TPHCWG - Aromatic >EC5 - EC40 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10
TPH (>EC5 - EC10) $_{HS_1D_TOTAL}$	mg/kg	1	NONE	< 1.0
TPH (>EC16 - EC40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	NONE	< 10
TPH Total >EC5 - EC40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	NONE	< 10
VOCs				
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	< 0.005
Benzene	mg/kg	0.005	MCERTS	< 0.005
Toluene	mg/kg	0.005	MCERTS	< 0.005
Ethylbenzene	mg/kg	0.005	MCERTS	< 0.005
p & m-xylene	mg/kg	0.005	MCERTS	< 0.005
o-Xylene	mg/kg	0.005	MCERTS	< 0.005

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 24-030899
Project / Site name: Fusion Manchester

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
257958	HSVAL27	BASE	3.5	Brown sand
257959	HSVAL28	BASE	3.5	Brown sand
257960	HSVAL30	BASE	3.5	Brown sand
257961	HSVAL33	BASE	3.5	Brown sand
257962	HSVAL31	SIDE	1.5	Brown sand
257963	HSVAL32	SIDE	1.5	Brown sand

Analytical Report Number : 24-030899
Project / Site name: Fusion Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	NONE
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

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Analytical Report Number : 24-030058

Project / Site name:	Fusion, Manchester	**Samples received on:**	10/07/2024
Your job number:	C551	**Samples instructed on/ Analysis started on:**	10/07/2024
Your order number:	217	**Analysis completed by:**	16/07/2024
Report Issue Number:	1	**Report issued on:**	16/07/2024
Samples Analysed:	4 soil samples		

Sig [redacted]

Rafał Szczepańczyk
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 24-030058
Project / Site name: Fusion, Manchester
Your Order No: 217

Lab Sample Number				253404	253406	253410	253412
Sample Reference				HSVAL10	HSVAL20	HSVAL24	HSVAL26
Sample Number				Base	Base	Base	Base
Depth (m)				3.50	3.50	3.50	3.50
Date Sampled				05/07/2024	05/07/2024	05/07/2024	05/07/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**				
Stone Content	%	0.1	NONE	48.1	7	16.7	12.3
Moisture Content	%	0.01	NONE	6.5	6.6	6.5	6.4
Total mass of sample received	kg	0.1	NONE	0.8	0.9	0.8	0.8
General Inorganics							
Organic Matter (automated)	%	0.1	MCERTS	0.2	0.2	0.3	0.3
Petroleum Hydrocarbons							
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC16 - EC35 $_{EH_CU_1D_AL}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 $_{EH_CU_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC40 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC35 - EC40 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC40 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPH (>EC5 - EC10) $_{HS_1D_TOTAL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
TPH (>EC16 - EC40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPH Total >EC5 - EC40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
VOCs							
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	< 0.005	< 0.005	< 0.005	< 0.005
Benzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005
Toluene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005
Ethylbenzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005
p & m-xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005
o-Xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 24-030058
Project / Site name: Fusion, Manchester

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
253404	HSVAL10	Base	3.5	Brown loam and sand
253406	HSVAL20	Base	3.5	Brown loam and sand
253410	HSVAL24	Base	3.5	Brown loam and sand
253412	HSVAL26	Base	3.5	Brown loam and sand

Analytical Report Number : 24-030058
Project / Site name: Fusion, Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	NONE
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

APPENDIX F

Waste Transfer Notes

WTNs can be accessed via the link below:

WTNs

Should you have any issues accessing the above link, please contact Brownfield Solutions.

APPENDIX G

TEC Groundwater Monitoring Reports

2006023.003.01 Deansgate, Manchester - GW Monitoring Pre-Piling.pdf
2006023.003.02 Deansgate, Manchester - Interim GW Monitoring.pdf

APPENDIX H

BSL Exploratory Hole Logs

BROWNFIELD SOLUTIONS LTD

Borehole Log

Rotary Open Hole Borehole No.

BH301

Sheet 1 of 1

PROJECT NO:	C5511	**CO-ORDS:**	**Hole Type** RO
PROJECT NAME:	FUSION, MANCHESTER	**LEVEL:**	**Scale** 1:100
CLIENT:	DOMIS CONSTRUCTION LTD	**DATES:** 06/08/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
								MADE GROUND: Orangish brown gravelly sand with low cobble content. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of brick, concrete, plastic and sandstone. Cobbles are angular to sub-angular of sandstone and concrete up to 300mm in diameter.
					2.60			Orangish red SAND and GRAVEL. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of sandstone.
					3.00			Orangish red SANDSTONE.
								Moderate hydrocarbon odour at 6.00m bgl.
					20.00			End of Borehole at 20.00m

1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0 19.0 20.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny.
2. Groundwater encountered from 14.00m bgl.
3. Borehole sides unstable from 12.00m bgl.
4. Installation to 20.00m bgl: 14.00m plain, 6.00m slotted 50mm HDPE with Geosock upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Rotary Open Hole Borehole No.

BH302

Sheet 1 of 1

PROJECT NO:	C5511	**CO-ORDS:**	**Hole Type** RO
PROJECT NAME:	FUSION, MANCHESTER	**LEVEL:**	**Scale** 1:125
CLIENT:	DOMIS CONSTRUCTION LTD	**DATES:** 07/08/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
					0.20			MADE GROUND: White concrete.
					1.90			MADE GROUND: Orangish brown gravelly sand with low cobble content. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of brick, concrete, plastic and sandstone. Cobbles are angular to sub-angular of sandstone and concrete up to 300mm in diameter.
					2.90			Orangish red SAND and GRAVEL. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of sandstone.
								Orangish red SANDSTONE.
					25.00			End of Borehole at 25.00m

1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0 19.0 20.0 21.0 22.0 23.0 24.0 25.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny.
2. Groundwater encountered from 9.70m bgl.
3. Borehole sides stable.
4. Installation to 25.00m bgl: 18.50m plain, 6.50m slotted 50mm HDPE with Geosock upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

APPENDIX I

BSL Chemical Testing Results – Groundwater

Low Flow Data Parameters Input Sheet

Job No	C5511	Site	Fusion, Manchester

BH	Response Zone	GW Level (m bgl)	BH Base (m bgl)	Well Vol (m3)	Purge Vol (l)	GW Level after Purge (mbgl)	Recharge Rate	Sheen	Odour	pH	ORP (mV)	DO (%)	EC (µSKM)	Res (KΩcm)	Temp (°C)	No of Containers
VISIT 1/3 - POST PILING											Date	13/08/2024		Weather	Clear/ warm	
BH301	14.00 - 20.00	7.4	20.08	0.02490	74.69	7.52	-	NO	NO	8.43	24.6	20.5	11	77	16.48	4
BH302	18.50 - 25.00	5.62	25.63	0.03929	117.87	6.12	-	NO	YES	8.62	35.4	19.6	49	55.6	14.77	4
VISIT 2/3 - POST PILING											Date	17/09/2024		Weather	Sunny	
BH301	14.00 - 20.00	7.36	20.02	0.02486	74.57	7.42	-	YES	NO	7.67	-111.3	16.6	837	1.2	13.49	4
BH302	18.50 - 25.00	5.88	25.66	0.03884	116.51	5.5	-	NO	NO	8.03	-19.1	16.7	579	1.7	12.4	4
VISIT 3/3 - POST PILING											Date	14/10/2024		Weather	Intermittent Cloud	
BH301	14.00 - 20.00	7.23	20	0.02507	75.22	7.98	-	YES	YES	7.22	-114.9	16.6	739	1.4	14.24	4
BH302	18.50 - 25.00	5.1	25.43	0.03992	119.75	5.28	-	YES	NO	7.3	42.3	16.7	669	1.5	12.43	4
VISIT 4/3 - POST PILING											Date	18/11/2024		Weather	Cold	
BH301	14.00 - 20.00	7.23	20	0.02507	75.22	7.49	-	NO	YES	7.75	2.5	17	5	200	8.62	4
BH302	18.50 - 25.00	5.1	25.43	0.03992	119.75	5.37	-	NO	NO	7.63	19.7	16.7	669	1.6	11.97	4

Comments — Borehole ID	BH301 (1/4)	BH302 (1/4)	BH301 (2/4)	BH302 (2/4)	BH301 (3/4)	BH302 (3/4)	BH301 (4/4)	BH302 (3/3)		
Has the equipment snagged on the sides of the casing?	N	N	N	N	N	N	N	N		
Any major response to pumping (rate, drawdown at end of pumping?)	NO	NO	NO	NO	NO	NO	NO	NO		
Time taken for parameters to stabilise (MM:SS)	04:00	05:00	04:00	03:00	04:00	05:00	03:00	04:00		
Turbidity (cloudiness) and colour of water sample	BROWN / CLOUDY WATER	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR		
Condition of headworks. Cracks, other damage, flooded?	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	DAMAGE	GOOD		
Did the well purge dry? Purged water in sample?	NO	NO	N	N	N	N	N	N		
Odour description	NO	SLIGHT HC ODOUR	N/A	N/A	SLIGHT HC ODOUR	NA	HC ODOUR	NA		
Sheen description	NO	NO	Env Sheen	N/A	Env Sheen	Env Sheen	NO	NO		
Other Comments				N/A			NA	NA		

Form No	Revision	Date
CMR 22	0.0	Sep-22

Well vol: Volume of well: $V = \pi r^2 x\, L$ (where π = 3.141, r = half of internal diameter of well in m, L = length of well in m)

Purge Vol: Volume of water purged from the installation prior to sampling (estimate from bucket).

Recharge Rate: Rate at which groundwater level returns from purged level to pre-purged level (l per minute)

N = No recharge	S = <0.5 l/min	M = 0.5-2 l/min	F = >2 l/min
For 35mm borehole:	S = <0.5m/min	M = 0.5-2 m/min	F = >2 m/min
For 50mm borehole:	S = <0.25m/min	M = 0.25-1 m/min	F = >1 m/min

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Analytical Report Number : 24-036812

Project / Site name:	Fusion, Manchester	**Samples received on:**	15/08/2024
Your job number:	C5511	**Samples instructed on/ Analysis started on:**	15/08/2024
Your order number:	224	**Analysis completed by:**	23/08/2024
Report Issue Number:	1	**Report issued on:**	23/08/2024
Samples Analysed:	2 water samples		

Signe [redacted]

Rafał
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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

Analytical Report Number: 24-036812
Project / Site name: Fusion, Manchester

Your Order No: 224

Lab Sample Number				289016	289017
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				13/08/2024	13/08/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
General Inorganics					
pH (L099)	pH Units	N/A	ISO 17025	7.9	7.7
Electrical Conductivity at 20°C	µS/cm	10	ISO 17025	640	900
Turbidity	NTU	1	NONE	6.9	15
Sulphate as SO_4	mg/l	0.045	ISO 17025	43.3	96.5
Sulphide	µg/l	5	NONE	< 5.0	< 5.0
Chloride	mg/l	0.15	ISO 17025	64	70
Ammoniacal Nitrogen as NH_4^+	µg/l	15	ISO 17025	3800	< 15
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	2.79	3.24
Nitrate as N	mg/l	0.01	ISO 17025	0.12	0.49
Nitrate as NO_3	mg/l	0.05	ISO 17025	0.52	2.17
Nitrite as NO_2	µg/l	5	ISO 17025	24	110
Total Suspended Solids (L004B)	mg/l	2	ISO 17025	180	470
Hardness - Total	mgCaCO3/l	1	ISO 17025	231	369
Speciated PAHs					
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Total PAH					
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16

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UKAS TESTING
4041

Analytical i2 Environmental Science

Analytical Report Number: 24-036812
Project / Site name: Fusion, Manchester

Your Order No: 224

Lab Sample Number				289016	289017
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				13/08/2024	13/08/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
Heavy Metals / Metalloids					
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.43	0.59
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	0.05
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.4
Copper (dissolved)	µg/l	0.5	ISO 17025	4.1	3.3
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2
Manganese (dissolved)	µg/l	0.05	ISO 17025	44	590
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.3	2.7
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.9	4.1
Boron (dissolved)	µg/l	10	ISO 17025	120	240
Calcium (dissolved)	mg/l	0.012	ISO 17025	56	82
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0
Chromium (III)	µg/l	5	NONE	< 5.0	< 5.0
Petroleum Hydrocarbons					
TPH - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aliphatic >EC10 - EC12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aliphatic >EC12 - EC16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aliphatic >EC16 - EC21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aliphatic >EC21 - EC35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aliphatic >EC5 - EC35 $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aliphatic >EC35 - EC40 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aliphatic >EC5 - EC40 $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aromatic >EC10 - EC12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aromatic >EC12 - EC16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aromatic >EC16 - EC21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aromatic >EC21 - EC35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aromatic >EC5 - EC35 $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aromatic >EC35 - EC40 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aromatic >EC5 - EC40 $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH (>EC5 - EC10) $_{HS_1D_TOTAL}$	µg/l	10	NONE	< 10	< 10
TPH (>EC10 - EC16) $_{EH_1D_TOTAL_MS}$	µg/l	10	NONE	< 10	< 10
TPH (>EC16 - EC40) $_{EH_1D_TOTAL_MS}$	µg/l	10	NONE	< 10	< 10
TPH Total (>EC5 - EC40) $_{HS+EH_1D_TOTAL_MS}$	µg/l	10	NONE	< 10	< 10

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Analytical Report Number: 24-036812
Project / Site name: Fusion, Manchester

Your Order No: 224

Lab Sample Number				289016	289017
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				13/08/2024	13/08/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
VOCs					
Chloromethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Chloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Bromomethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Vinyl Chloride	µg/l	3	NONE	< 3.0	< 3.0
Trichlorofluoromethane	µg/l	3	NONE	< 3.0	< 3.0
1,1-Dichloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Trans 1,2-dichloroethylene	µg/l	3	ISO 17025	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1-Dichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
2,2-Dichloropropane	µg/l	3	NONE	< 3.0	< 3.0
Chloroform	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,1-Trichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1-Dichloropropene	µg/l	3	ISO 17025	< 3.0	< 3.0
Cis-1,2-dichloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0
Carbontetrachloride	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dichloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0
Trichloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0
Dibromomethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Bromodichloromethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Cis-1,3-dichloropropene	µg/l	3	ISO 17025	< 3.0	< 3.0
Trans-1,3-dichloropropene	µg/l	3	ISO 17025	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,2-Trichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,3-Dichloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0
Dibromochloromethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Tetrachloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dibromoethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Chlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,1,2-Tetrachloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0
Styrene	µg/l	3	ISO 17025	< 3.0	< 3.0
Bromoform	µg/l	3	ISO 17025	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0
Isopropylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,2,2-Tetrachloroethane	µg/l	3	NONE	< 3.0	< 3.0
Bromobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
n-Propylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
2-Chlorotoluene	µg/l	3	ISO 17025	< 3.0	< 3.0
4-Chlorotoluene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,3,5-Trimethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
tert-Butylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2,4-Trimethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
sec-Butylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,3-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
p-Isopropyltoluene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,4-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0

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Analytical Report Number: 24-036812
Project / Site name: Fusion, Manchester

Your Order No: 224

Lab Sample Number				289016	289017
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				13/08/2024	13/08/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
Butylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dibromo-3-chloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2,4-Trichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
Hexachlorobutadiene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2,3-Trichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	mg/l	0.003	ISO 17025	< 0.003	< 0.003
Benzene	mg/l	0.003	ISO 17025	< 0.003	< 0.003
Toluene	mg/l	0.003	ISO 17025	< 0.003	< 0.003
Ethylbenzene	mg/l	0.003	ISO 17025	< 0.003	< 0.003
p & m-xylene	mg/l	0.003	ISO 17025	< 0.003	< 0.003
o-xylene	mg/l	0.003	ISO 17025	< 0.003	< 0.003
SVOCs					
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	0.39
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05

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Analytical Report Number: 24-036812
Project / Site name: Fusion, Manchester

Your Order No: 224

Lab Sample Number				289016	289017
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				13/08/2024	13/08/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05
3+4-Methylphenol	µg/l	0.1	NONE	< 0.10	< 0.10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 24-036812
Project / Site name: Fusion, Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Suspended Solids in water	Determined gravimetrically with GFC filtration papers	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004B	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW	In-house method based on USEPA Method 6020 & 200.8 for the determination of trace elements in water by ICP-MS	L012B	W	ISO 17025
Sulphide in water	Determination of sulphide in water by ion selective electrode	In-house method	L029	W	NONE
Electrical conductivity at 20°C of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031B	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved organic carbon in water by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices: SW, GW, PW, PrW (Al, Cu, Fe,Zn)	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045B	W	ISO 17025
Total petroleum hydrocarbons with carbon banding by GC-MS in water	Determination of total petroleum hydrocarbons in water by GC-MS/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L070B	W	NONE
Total petroleum hydrocarbons by GC-MS in water	Determination of total petroleum hydrocarbons in water by GC-MS/GC-MS	In-house method	L070B	W	NONE
BTEX and/or Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA 8260	L073B	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08	L078	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08	L078	W	ISO 17025
Chromium III in water	In-house method by calculation from total Cr and Cr VI	In-house method by calculation	L080	W	NONE
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW	L080	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW,PW, GW,FSE,LL	L082B	W	ISO 17025
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	ISO 17025

Analytical Report Number : 24-036812
Project / Site name: Fusion, Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Nitrite in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry).Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	ISO 17025
Turbidity of in water	Determination of sample turbidity by colorimeter and comparison with standard reference samples	In-house method based on Standard Method 8237	L083B	W	NONE
Total petroleum hydrocarbons by GC-MS HS in water	Determination of total petroleum hydrocarbons in water by GC-MS HS	In-house method	L088B	W	ISO 17025
pH at 20°C in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method	L099	W	ISO 17025
Speciated PAHs and/or Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds (including PAH) in leachate by extraction in dichloromethane followed by GC-MS	In-house method based on USEPA 8270	L102B	W	ISO 17025
Phenols in water by GC-MS	Determination of phenols in water by GC-MS	In-house method	L102B	W	NONE
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW, LL	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

UKAS TESTING
4041

Environmental Science

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Analytical Report Number : 24-043063

Project / Site name:	fusion Manchester	**Samples received on:**	20/09/2024
Your job number:	C5511	**Samples instructed on/ Analysis started on:**	20/09/2024
Your order number:	5667	**Analysis completed by:**	26/09/2024
Report Issue Number:	1	**Report issued on:**	27/09/2024
Samples Analysed:	2 water samples		

Sign [redacted]

Rach
Key Account Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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

4041

Analytical Report Number: 24-043063
Project / Site name: fusion Manchester

Your Order No: 5667

Lab Sample Number				321941	321942
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				17/09/2024	17/09/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
General Inorganics					
pH (L099)	pH Units	N/A	ISO 17025	7.6	7.8
Electrical Conductivity at 20°C	µS/cm	10	ISO 17025	670	550
Turbidity	NTU	1	NONE	6.5	2.4
Sulphate as SO_4	mg/l	0.045	ISO 17025	90.8	45.1
Sulphide	µg/l	5	NONE	< 5.0	< 5.0
Chloride	mg/l	0.15	ISO 17025	61	67
Ammoniacal Nitrogen as NH_4^+	µg/l	15	ISO 17025	< 15	4600
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	5.38	1.52
Nitrate as N	mg/l	0.01	ISO 17025	0.05	0.33
Nitrate as NO_3	mg/l	0.05	ISO 17025	0.21	1.46
Nitrite as NO_2	µg/l	5	ISO 17025	< 5.0	170
Total Suspended Solids (L004B)	mg/l	2	ISO 17025	160	120
Hardness - Total	mgCaCO3/l	1	ISO 17025	377	260
Speciated PAHs					
Naphthalene	µg/l	0.01	ISO 17025	40	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	0.05	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	0.09	< 0.01
Fluorene	µg/l	0.01	ISO 17025	0.16	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	0.22	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	0.21	< 0.01
Pyrene	µg/l	0.01	ISO 17025	0.2	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Total PAH					
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	40.9	< 0.16

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Analytical Report Number: 24-043063
Project / Site name: fusion Manchester

Your Order No: 5667

Lab Sample Number				321941	321942
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				17/09/2024	17/09/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
Heavy Metals / Metalloids					
Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.34	0.37
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2
Copper (dissolved)	µg/l	0.5	ISO 17025	0.5	2.1
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2
Manganese (dissolved)	µg/l	0.05	ISO 17025	4800	110
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	3.8	1.2
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	18	4.8
Boron (dissolved)	µg/l	10	ISO 17025	220	120
Calcium (dissolved)	mg/l	0.012	ISO 17025	91	67
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0
Chromium (III)	µg/l	5	NONE	< 5.0	< 5.0
Petroleum Hydrocarbons					
TPH - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aliphatic >EC10 - EC12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	42	< 10
TPH - Aliphatic >EC12 - EC16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	70	< 10
TPH - Aliphatic >EC16 - EC21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	430	< 10
TPH - Aliphatic >EC21 - EC35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	700	< 10
TPH - Aliphatic >EC5 - EC35 $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	1200	< 10
TPH - Aliphatic >EC35 - EC40 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aliphatic >EC5 - EC40 $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	1200	< 10
TPH - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	9.9	< 1.0
TPH - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	98	< 1.0
TPH - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	1700	< 1.0
TPH - Aromatic >EC10 - EC12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	250	< 10
TPH - Aromatic >EC12 - EC16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	230	< 10
TPH - Aromatic >EC16 - EC21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	50	< 10
TPH - Aromatic >EC21 - EC35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aromatic >EC5 - EC35 $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	2400	< 10
TPH - Aromatic >EC35 - EC40 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aromatic >EC5 - EC40 $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	2400	< 10
TPH (>EC5 - EC10) $_{HS_1D_TOTAL}$	µg/l	10	NONE	1800	< 10
TPH (>EC10 - EC16) $_{EH_1D_TOTAL_MS}$	µg/l	10	NONE	290	< 10
TPH (>EC16 - EC40) $_{EH_1D_TOTAL_MS}$	µg/l	10	NONE	1200	< 10
TPH Total (>EC5 - EC40) $_{HS+EH_1D_TOTAL_MS}$	µg/l	10	NONE	3600	< 10

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Analytical Report Number: 24-043063
Project / Site name: fusion Manchester

Your Order No: 5667

Lab Sample Number				321941	321942
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				17/09/2024	17/09/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
VOCs					
Chloromethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Chloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Bromomethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Vinyl Chloride	µg/l	3	NONE	< 3.0	< 3.0
Trichlorofluoromethane	µg/l	3	NONE	< 3.0	< 3.0
1,1-Dichloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Trans 1,2-dichloroethylene	µg/l	3	ISO 17025	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1-Dichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
2,2-Dichloropropane	µg/l	3	NONE	< 3.0	< 3.0
Chloroform	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,1-Trichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1-Dichloropropene	µg/l	3	ISO 17025	< 3.0	< 3.0
Cis-1,2-dichloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0
Benzene	µg/l	3	ISO 17025	7.5	< 3.0
Carbontetrachloride	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dichloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0
Trichloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0
Dibromomethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Bromodichloromethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Cis-1,3-dichloropropene	µg/l	3	ISO 17025	< 3.0	< 3.0
Trans-1,3-dichloropropene	µg/l	3	ISO 17025	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	97.3	< 3.0
1,1,2-Trichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,3-Dichloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0
Dibromochloromethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Tetrachloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dibromoethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Chlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,1,2-Tetrachloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	25.9	< 3.0
p & m-xylene	µg/l	3	ISO 17025	881 $^{\$\%}$	< 3.0
Styrene	µg/l	3	ISO 17025	< 3.0	< 3.0
Bromoform	µg/l	3	ISO 17025	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	895 $^{\$\%}$	< 3.0
Isopropylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,2,2-Tetrachloroethane	µg/l	3	NONE	< 3.0	< 3.0
Bromobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0

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Analytical Report Number: 24-043063
Project / Site name: fusion Manchester

Your Order No: 5667

Lab Sample Number				321941	321942
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				17/09/2024	17/09/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
n-Propylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
2-Chlorotoluene	µg/l	3	ISO 17025	< 3.0	< 3.0
4-Chlorotoluene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,3,5-Trimethylbenzene	µg/l	3	ISO 17025	168	< 3.0
tert-Butylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2,4-Trimethylbenzene	µg/l	3	ISO 17025	40.6	< 3.0
sec-Butylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,3-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
p-Isopropyltoluene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,4-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
Butylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dibromo-3-chloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2,4-Trichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
Hexachlorobutadiene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2,3-Trichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0

MTBE (Methyl Tertiary Butyl Ether)	mg/l	0.003	ISO 17025	< 0.003	< 0.003
Benzene	mg/l	0.003	ISO 17025	0.008	< 0.003
Toluene	mg/l	0.003	ISO 17025	0.097	< 0.003
Ethylbenzene	mg/l	0.003	ISO 17025	0.026	< 0.003
p & m-xylene	mg/l	0.003	ISO 17025	0.88	< 0.003
o-xylene	mg/l	0.003	ISO 17025	0.9	< 0.003

SVOCs

Aniline	µg/l	0.05	NONE	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	20	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05

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4041

Analytical Report Number: 24-043063
Project / Site name: fusion Manchester

Your Order No: 5667

Lab Sample Number				321941	321942
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				17/09/2024	17/09/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	7	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05
3+4-Methylphenol	µg/l	0.1	NONE	< 0.10	< 0.10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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4041

Analytical Report Number : 24-043063
Project / Site name: fusion Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Suspended Solids in water	Determined gravimetrically with GFC filtration papers	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004B	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW	In-house method based on USEPA Method 6020 & 200.8 for the determination of trace elements in water by ICP-MS	L012B	W	ISO 17025
Sulphide in water	Determination of sulphide in water by ion selective electrode	In-house method	L029-PL	W	NONE
Electrical conductivity at 20°C of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031B	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved organic carbon in water by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices: SW, GW, PW, PrW (Al, Cu, Fe,Zn)	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045B	W	ISO 17025
Total petroleum hydrocarbons with carbon banding by GC-MS in water	Determination of total petroleum hydrocarbons in water by GC-MS/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L070B	W	NONE
Total petroleum hydrocarbons by GC-MS in water	Determination of total petroleum hydrocarbons in water by GC-MS/GC-MS	In-house method	L070B	W	NONE
BTEX and/or Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA 8260	L073B	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08	L078-PL	W	ISO 17025
Chromium III in water	In-house method by calculation from total Cr and Cr VI	In-house method by calculation	L080-PL	W	NONE
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW	L080-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW,PW, GW,FSE,LL	L082B	W	ISO 17025

4041

Analytical Report Number : 24-043063
Project / Site name: fusion Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	ISO 17025
Nitrite in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry).Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	ISO 17025
Turbidity of in water	Determination of sample turbidity by colorimeter and comparison with standard reference samples	In-house method based on Standard Method 8237	L083-PL	W	NONE
Total petroleum hydrocarbons by GC-MS HS in water	Determination of total petroleum hydrocarbons in water by GC-MS HS	In-house method	L088-PL	W	ISO 17025
pH at 20°C in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method	L099-PL	W	ISO 17025
Speciated PAHs and/or Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds (including PAH) in leachate by extraction in dichloromethane followed by GC-MS	In-house method based on USEPA 8270	L102B	W	ISO 17025
Phenols in water by GC-MS	Determination of phenols in water by GC-MS	In-house method	L102B	W	NONE
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW, LL	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Analytical Report Number : 24-043063
Project / Site name: fusion Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

$% - Concentration has been determined by extrapolated calibration as analyte concentration is above the concentration range for the procedure. The result should be considered as deviating and should be interpreted with caution. The result is not accredited.

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Analytical Report Number : 24-048518

Project / Site name:	Fusion, Manchester	**Samples received on:**	17/10/2024
Your job number:	C5511	**Samples instructed on/ Analysis started on:**	17/10/2024
Your order number:	300	**Analysis completed by:**	25/10/2024
Report Issue Number:	1	**Report issued on:**	25/10/2024
Samples Analysed:	2 water samples		

Signed [redacted]

Trevor Hill
Customer Service Advisor
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 24-048518
Project / Site name: Fusion, Manchester

Your Order No: 300

Lab Sample Number				352217	352218
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				14/10/2024	14/10/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
General Inorganics					
pH (L099)	pH Units	N/A	ISO 17025	7.4	7.8
Electrical Conductivity at 20°C	µS/cm	10	ISO 17025	640	580
Turbidity	NTU	1	NONE	350	42
Sulphate as SO_4	mg/l	0.045	ISO 17025	44.3	4.56
Sulphide	µg/l	5	NONE	< 5.0	< 5.0
Chloride	mg/l	0.15	ISO 17025	58	71
Ammoniacal Nitrogen as NH_4^+	µg/l	15	ISO 17025	32	4600
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	8.07	0.74
Nitrate as N	mg/l	0.01	ISO 17025	0.07	0.61
Nitrate as NO_3	mg/l	0.05	ISO 17025	0.31	2.72
Nitrite as NO_2	µg/l	5	ISO 17025	< 5.0	93
Total Suspended Solids (L004B)	mg/l	2	ISO 17025	510	44
Hardness - Total	mgCaCO3/l	1	ISO 17025	264	25.6
Speciated PAHs					
Naphthalene	µg/l	0.01	ISO 17025	100 $ % &	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01 &	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	0.18 &	< 0.01
Fluorene	µg/l	0.01	ISO 17025	0.31 &	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	0.25 &	< 0.01
Anthracene	µg/l	0.01	ISO 17025	0.05 &	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	0.09 &	< 0.01
Pyrene	µg/l	0.01	ISO 17025	0.1 &	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01 &	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01 &	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01 &	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01 &	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01 &	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01 &	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01 &	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01 &	< 0.01
Total PAH					
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	103	< 0.16

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Analytical Report Number: 24-048518
Project / Site name: Fusion, Manchester

Your Order No: 300

Lab Sample Number				352217	352218
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				14/10/2024	14/10/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
Heavy Metals / Metalloids					
Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.41	0.25
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.02	< 0.02
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.5
Copper (dissolved)	µg/l	0.5	ISO 17025	3.5	3.3
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2
Manganese (dissolved)	µg/l	0.05	ISO 17025	5400	110
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	2.8	21
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	17	3.4
Boron (dissolved)	µg/l	10	ISO 17025	130	13
Calcium (dissolved)	mg/l	0.012	ISO 17025	78	7
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0
Chromium (III)	µg/l	5	NONE	< 5.0	< 5.0
Petroleum Hydrocarbons					
TPH - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aliphatic >EC10 - EC12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	140	< 10
TPH - Aliphatic >EC12 - EC16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	160	< 10
TPH - Aliphatic >EC16 - EC21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	560	< 10
TPH - Aliphatic >EC21 - EC35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	240	< 10
TPH - Aliphatic >EC5 - EC35 $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	1100	< 10
TPH - Aliphatic >EC35 - EC40 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aliphatic >EC5 - EC40 $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	1100	< 10
TPH - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	5.8	< 1.0
TPH - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	61	< 1.0
TPH - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	1600	< 1.0
TPH - Aromatic >EC10 - EC12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	580	< 10
TPH - Aromatic >EC12 - EC16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	410	< 10
TPH - Aromatic >EC16 - EC21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	170	< 10
TPH - Aromatic >EC21 - EC35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aromatic >EC5 - EC35 $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	2800	< 10
TPH - Aromatic >EC35 - EC40 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aromatic >EC5 - EC40 $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	2800	< 10
TPH (>EC5 - EC10) $_{HS_1D_TOTAL}$	µg/l	10	NONE	1700	< 10
TPH (>EC10 - EC16) $_{EH_1D_TOTAL_MS}$	µg/l	10	NONE	1300	< 10
TPH (>EC16 - EC40) $_{EH_1D_TOTAL_MS}$	µg/l	10	NONE	970	< 10
TPH Total (>EC5 - EC40) $_{HS+EH_1D_TOTAL_MS}$	µg/l	10	NONE	3900	< 10

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Analytical Report Number: 24-048518
Project / Site name: Fusion, Manchester

Your Order No: 300

Lab Sample Number				352217	352218
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				14/10/2024	14/10/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
VOCs					
Chloromethane	µg/l	3	ISO 17025	< 3.0 #	< 3.0 #
Chloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Bromomethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Vinyl Chloride	µg/l	3	NONE	< 3.0	< 3.0
Trichlorofluoromethane	µg/l	3	NONE	< 3.0	< 3.0
1,1-Dichloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Trans 1,2-dichloroethylene	µg/l	3	ISO 17025	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1-Dichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
2,2-Dichloropropane	µg/l	3	NONE	< 3.0	< 3.0
Chloroform	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,1-Trichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1-Dichloropropene	µg/l	3	ISO 17025	< 3.0	< 3.0
Cis-1,2-dichloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0
Benzene	µg/l	3	ISO 17025	4.9	< 3.0
Carbontetrachloride	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dichloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0
Trichloroethene	µg/l	3	ISO 17025	< 3.0 #	< 3.0 #
Dibromomethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Bromodichloromethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Cis-1,3-dichloropropene	µg/l	3	ISO 17025	< 3.0	< 3.0
Trans-1,3-dichloropropene	µg/l	3	ISO 17025	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	60.3	< 3.0
1,1,2-Trichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,3-Dichloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0
Dibromochloromethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Tetrachloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dibromoethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Chlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,1,2-Tetrachloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	630	< 3.0
Styrene	µg/l	3	ISO 17025	< 3.0	< 3.0
Bromoform	µg/l	3	ISO 17025	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	556	< 3.0
Isopropylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,2,2-Tetrachloroethane	µg/l	3	NONE	< 3.0	< 3.0
Bromobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
n-Propylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
2-Chlorotoluene	µg/l	3	ISO 17025	< 3.0	< 3.0
4-Chlorotoluene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,3,5-Trimethylbenzene	µg/l	3	ISO 17025	207	< 3.0
tert-Butylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2,4-Trimethylbenzene	µg/l	3	ISO 17025	124	< 3.0
sec-Butylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,3-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
p-Isopropyltoluene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,4-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0

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Analytical Report Number: 24-048518
Project / Site name: Fusion, Manchester

Your Order No: 300

Lab Sample Number				352217	352218
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				14/10/2024	14/10/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
Butylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dibromo-3-chloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2,4-Trichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
Hexachlorobutadiene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2,3-Trichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0

MTBE (Methyl Tertiary Butyl Ether)	mg/l	0.003	ISO 17025	< 0.003	< 0.003
Benzene	mg/l	0.003	ISO 17025	0.005	< 0.003
Toluene	mg/l	0.003	ISO 17025	0.06	< 0.003
Ethylbenzene	mg/l	0.003	ISO 17025	< 0.003	< 0.003
p & m-xylene	mg/l	0.003	ISO 17025	0.63	< 0.003
o-xylene	mg/l	0.003	ISO 17025	0.56	< 0.003

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Analytical Report Number: 24-048518
Project / Site name: Fusion, Manchester

Your Order No: 300

Lab Sample Number				352217	352218
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				14/10/2024	14/10/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
SVOCs					
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	2.09	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	2.57	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	42 $%	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	47 $%	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	9.5	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	4.9	0.31
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05

3+4-Methylphenol	µg/l	0.1	NONE	2.6	< 0.10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 24-048518
Project / Site name: Fusion, Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total Suspended Solids in water	Determined gravimetrically with GFC filtration papers. Accredited matrices: SW, PW, GW, PrW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004B	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited matrices: SW, PW, GW, except B - SW,GW, Hg - SW,PW, Al - SW,PW	In-house method based on USEPA Method 6020 & 200.8 for the determination of trace elements in water by ICP-MS	L012B	W	ISO 17025
Sulphide in water	Determination of sulphide in water by ion selective electrode	In-house method	L029-PL	W	NONE
Electrical Conductivity at 20°C in water	Determination of electrical conductivity in water by electrochemical measurement. Accredited matrices: SW, PW, GW, FSE	In-house method	L031B	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved organic carbon in water by TOC/DOC NDIR Analyser. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited matrices: SW, PW, GW, FSE, LL; PrW, DI PrW (Al, Cu, Fe,Zn)	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Total Hardness of water	Determination of total hardness of water by calculation from calcium and magnesium. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045B	W	ISO 17025
Total Petroleum Hydrocarbons with carbon banding in water by GC-MS	Determination of total petroleum hydrocarbons in water by GC-MS with carbon banding aliphatic and aromatic	In-house method	L070B	W	NONE
Total Petroleum Hydrocarbons in water by GC-MS	Determination of total petroleum hydrocarbons in water by GC-MS. Accredited matrices (TPH C12 - C35): SW, PW, GW	In-house method	L070B	W	NONE
BTEX and/or Volatile Organic Compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW, PW, GW	In-house method based on USEPA 8260	L073B	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate followed by colorimetry. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate followed by colorimetry. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08	L078-PL	W	ISO 17025
Chromium(III) in water	In-house method by calculation from total Cr and Cr(VI)	In-house method by calculation	L080-PL	W	NONE
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5-diphenylcarbazide, followed by colorimetry. Accredited matrices: SW, PW, GW, FSE, LL	In-house method by continuous flow analyser	L080-PL	W	ISO 17025
Chloride in water	Determination of chloride in water by colorimetry using discrete analyser. Accredited matrices: SW, PW, GW, FSE, LL	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025
Ammonium as NH4 in water	Determination of ammonium/ammonia/ammoniacal nitrogen by the colorimetric salicylate/nitroprusside method using discrete analyser. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	ISO 17025

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Analytical Report Number : 24-048518
Project / Site name: Fusion, Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Nitrite in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by colorimetry using discrete analyser. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	ISO 17025
Turbidity of water	Determination of sample turbidity by colorimeter and comparison with standard reference samples	In-house method based on Standard Method 8237	L083-PL	W	NONE
Total Petroleum Hydrocarbons in water by HS-GC-MS	Determination of total petroleum hydrocarbons in water by headspace GC-MS. Accredited matrices: SW, PW, GW	In-house method	L088-PL	W	ISO 17025
pH of water at 20°C (automated)	Determination of pH of water by electrochemical measurement. Accredited matrices: SW, PW, GW, FSE, LL	In-house method	L099-PL	W	ISO 17025
Speciated PAHs and/or Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds (including PAHs) in water by extraction in dichloromethane followed by GC-MS. Accredited matrices (PAHs): SW, PW, GW	In-house method based on USEPA 8270	L102B	W	ISO 17025
Phenols in water by GC-MS	Determination of phenols in water by GC-MS	In-house method	L102B	W	NONE
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited matrices: SW, PW, GW, PrW, DI PrW, FSE, LL	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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Analytical Report Number : 24-048518
Project / Site name: Fusion, Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

$% - Concentration has been determined by extrapolated calibration as analyte concentration is above the concentration range for the procedure. The result should be considered as deviating and should be interpreted with caution. The result is not accredited.

& - Sample required dilution above the concentration range for the procedure due to matrix effect/ analyte concentration. The method limit of detection has been raised in line with the dilution. The result should be considered deviating and should be interpreted with caution. The result is not accredited.

- Quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as deviating and should be interpreted with caution. The result is not accredited.

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Sample Deviation Report

Analytical Report Number : 24-048518

Project / Site name: Fusion, Manchester

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH301	N/A	W	352217	c	Ammonium as NH4 in water	L082B	c
BH301	N/A	W	352217	c	Electrical Conductivity at 20°C in water	L031B	c
BH301	N/A	W	352217	c	Turbidity of water	L083-PL	c
BH301	N/A	W	352217	c	pH of water at 20°C (automated)	L099-PL	c
BH302	N/A	W	352218	c	Ammonium as NH4 in water	L082B	c
BH302	N/A	W	352218	c	Electrical Conductivity at 20°C in water	L031B	c
BH302	N/A	W	352218	c	Turbidity of water	L083-PL	c
BH302	N/A	W	352218	c	pH of water at 20°C (automated)	L099-PL	c

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Analytical Report Number : 24-055335

Project / Site name:	Fusion, Manchester	**Samples received on:**	21/11/2024
Your job number:	C5511	**Samples instructed on/ Analysis started on:**	21/11/2024
Your order number:	5888	**Analysis completed by:**	29/11/2024
Report Issue Number:	1	**Report issued on:**	29/11/2024
Samples Analysed:	2 water samples		

[redacted]

Matthew O'Connell
Key Account Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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

4041

Analytical Report Number: 24-055335
Project / Site name: Fusion, Manchester

Your Order No: 5888

Lab Sample Number				387542	387543
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Water Matrix				Ground water	Ground water
Depth (m)				None Supplied	None Supplied
Date Sampled				19/11/2024	19/11/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
General Inorganics					
pH (L099)	pH Units	N/A	ISO 17025	7.6	7.7
Electrical Conductivity at 20°C	µS/cm	10	ISO 17025	770	620
Turbidity	NTU	1	NONE	1.7	< 1.0
Sulphate as SO_4	mg/l	0.045	ISO 17025	84.3	39.5
Sulphide	µg/l	5	NONE	< 5.0	< 5.0
Chloride	mg/l	0.15	ISO 17025	55	70
Ammoniacal Nitrogen as NH_4^+	µg/l	15	ISO 17025	19	5300
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	2.05	1.19
Nitrate as N	mg/l	0.01	ISO 17025	0.26	0.44
Nitrate as NO_3	mg/l	0.05	ISO 17025	1.16	1.96
Nitrite as NO_2	µg/l	5	ISO 17025	45	33
Total Suspended Solids (L004B)	mg/l	2	ISO 17025	280	46
Hardness - Total	mgCaCO3/l	1	ISO 17025	353	248
Speciated PAHs					
Naphthalene	µg/l	0.01	ISO 17025	12	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01 ##	< 0.01 ##
Acenaphthene	µg/l	0.01	ISO 17025	0.04	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	0.05	< 0.01
Pyrene	µg/l	0.01	ISO 17025	0.05	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Total PAH					
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	12.2	< 0.16
Heavy Metals / Metalloids					
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.45	0.19
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.2	0.3
Copper (dissolved)	µg/l	0.5	ISO 17025	2	1.8
Lead (dissolved)	µg/l	0.2	ISO 17025	0.2	< 0.2
Manganese (dissolved)	µg/l	0.05	ISO 17025	830	130
Mercury (dissolved)	µg/l	0.05	NONE	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	2.1	0.7
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	16	2.2

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Analytical Report Number: 24-055335
Project / Site name: Fusion, Manchester

Your Order No: 5888

Lab Sample Number				387542	387543
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Water Matrix				Ground water	Ground water
Depth (m)				None Supplied	None Supplied
Date Sampled				19/11/2024	19/11/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
Boron (dissolved)	µg/l	10	ISO 17025	230	120
Calcium (dissolved)	mg/l	0.012	ISO 17025	81	65
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0
Chromium (III)	µg/l	5	NONE	< 5.0	< 5.0
Petroleum Hydrocarbons					
TPH - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aliphatic >EC10 - EC12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aliphatic >EC12 - EC16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	200
TPH - Aliphatic >EC16 - EC21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	730
TPH - Aliphatic >EC21 - EC35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	2400
TPH - Aliphatic >EC5 - EC35 $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	3300
TPH - Aliphatic >EC35 - EC40 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aliphatic >EC5 - EC40 $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	3300
TPH - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	3.7	< 1.0
TPH - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	240	< 1.0
TPH - Aromatic >EC10 - EC12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	91	< 10
TPH - Aromatic >EC12 - EC16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	47	< 10
TPH - Aromatic >EC16 - EC21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	10	< 10
TPH - Aromatic >EC21 - EC35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aromatic >EC5 - EC35 $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	400	< 10
TPH - Aromatic >EC35 - EC40 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH - Aromatic >EC5 - EC40 $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	400	< 10
TPH (>EC5 - EC10) $_{HS_1D_TOTAL}$	µg/l	10	NONE	140	< 10
TPH (>EC10 - EC16) $_{EH_1D_TOTAL_MS}$	µg/l	10	NONE	140	200
TPH (>EC16 - EC40) $_{EH_1D_TOTAL_MS}$	µg/l	10	NONE	10	3100
TPH Total (>EC5 - EC40) $_{HS+EH_1D_TOTAL_MS}$	µg/l	10	NONE	400	3300
VOCs					
Chloromethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Chloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Bromomethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Vinyl Chloride	µg/l	3	NONE	< 3.0	< 3.0
Trichlorofluoromethane	µg/l	3	NONE	< 3.0	< 3.0
1,1-Dichloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Trans 1,2-dichloroethylene	µg/l	3	ISO 17025	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1-Dichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
2,2-Dichloropropane	µg/l	3	NONE	< 3.0	< 3.0
Chloroform	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,1-Trichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1-Dichloropropene	µg/l	3	ISO 17025	< 3.0	< 3.0
Cis-1,2-dichloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0

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Analytical Report Number: 24-055335
Project / Site name: Fusion, Manchester

Your Order No: 5888

Lab Sample Number				387542	387543
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Water Matrix				Ground water	Ground water
Depth (m)				None Supplied	None Supplied
Date Sampled				19/11/2024	19/11/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0
Carbontetrachloride	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dichloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0
Trichloroethene	µg/l	3	ISO 17025	< 3.0 #	< 3.0 #
Dibromomethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Bromodichloromethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Cis-1,3-dichloropropene	µg/l	3	ISO 17025	< 3.0	< 3.0
Trans-1,3-dichloropropene	µg/l	3	ISO 17025	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	3.3	< 3.0
1,1,2-Trichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,3-Dichloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0
Dibromochloromethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Tetrachloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dibromoethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Chlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,1,2-Tetrachloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	38.7	< 3.0
p & m-xylene	µg/l	3	ISO 17025	147	< 3.0
Styrene	µg/l	3	ISO 17025	< 3.0	< 3.0
Bromoform	µg/l	3	ISO 17025	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	38	< 3.0
Isopropylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,1,2,2-Tetrachloroethane	µg/l	3	NONE	< 3.0	< 3.0
Bromobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
n-Propylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
2-Chlorotoluene	µg/l	3	ISO 17025	< 3.0	< 3.0
4-Chlorotoluene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,3,5-Trimethylbenzene	µg/l	3	ISO 17025	25.5	< 3.0
tert-Butylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2,4-Trimethylbenzene	µg/l	3	ISO 17025	21.6	< 3.0
sec-Butylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,3-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
p-Isopropyltoluene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,4-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
Butylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2-Dibromo-3-chloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2,4-Trichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
Hexachlorobutadiene	µg/l	3	ISO 17025	< 3.0	< 3.0
1,2,3-Trichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0

MTBE (Methyl Tertiary Butyl Ether)	mg/l	0.003	ISO 17025	< 0.003	< 0.003
Benzene	mg/l	0.003	ISO 17025	< 0.003	< 0.003
Toluene	mg/l	0.003	ISO 17025	0.003	< 0.003
Ethylbenzene	mg/l	0.003	ISO 17025	0.039	< 0.003
p & m-xylene	mg/l	0.003	ISO 17025	0.15	< 0.003
o-xylene	mg/l	0.003	ISO 17025	0.038	< 0.003

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4041

Analytical Report Number: 24-055335
Project / Site name: Fusion, Manchester

Your Order No: 5888

Lab Sample Number				387542	387543
Sample Reference				BH301	BH302
Sample Number				None Supplied	None Supplied
Water Matrix				Ground water	Ground water
Depth (m)				None Supplied	None Supplied
Date Sampled				19/11/2024	19/11/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
SVOCs					
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	4.5	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	1.6	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	0.31	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05
3+4-Methylphenol	µg/l	0.1	NONE	< 0.10	< 0.10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 24-055335
Project / Site name: Fusion, Manchester

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total Suspended Solids in water	Determined gravimetrically with GFC filtration papers. Accredited matrices: SW, PW, GW, PrW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004B	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited matrices: SW, PW, GW, except B - SW,GW, Hg - SW,PW, Al - SW,PW	In-house method based on USEPA Method 6020 & 200.8 for the determination of trace elements in water by ICP-MS	L012B	W	ISO 17025
Sulphide in water	Determination of sulphide in water by ion selective electrode	In-house method	L029-PL	W	NONE
Electrical Conductivity at 20°C in water	Determination of electrical conductivity in water by electrochemical measurement. Accredited matrices: SW, PW, GW, FSE	In-house method	L031B	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved organic carbon in water by TOC/DOC NDIR Analyser. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited matrices: SW, PW, GW, FSE, LL; PrW, DI PrW (Al, Cu, Fe,Zn)	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Total Hardness of water	Determination of total hardness of water by calculation from calcium and magnesium. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045B	W	ISO 17025
Total Petroleum Hydrocarbons with carbon banding in water by GC-MS	Determination of total petroleum hydrocarbons in water by GC-MS with carbon banding aliphatic and aromatic	In-house method	L070B	W	NONE
Total Petroleum Hydrocarbons in water by GC-MS	Determination of total petroleum hydrocarbons in water by GC-MS. Accredited matrices (TPH C12 - C35): SW, PW, GW	In-house method	L070B	W	NONE
BTEX and/or Volatile Organic Compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW, PW, GW	In-house method based on USEPA 8260	L073B	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate followed by colorimetry. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate followed by colorimetry. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08	L078-PL	W	ISO 17025
Chromium(III) in water	In-house method by calculation from total Cr and Cr(VI)	In-house method by calculation	L080-PL	W	NONE
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5-diphenylcarbazide, followed by colorimetry. Accredited matrices: SW, PW, GW, FSE, LL	In-house method by continuous flow analyser	L080-PL	W	ISO 17025
Chloride in water	Determination of chloride in water by colorimetry using discrete analyser. Accredited matrices: SW, PW, GW, FSE, LL	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025
Ammonium as NH4 in water	Determination of ammonium/ammonia/ammoniacal nitrogen by the colorimetric salicylate/nitroprusside method using discrete analyser. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	ISO 17025

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Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Nitrite in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by colorimetry using discrete analyser. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	ISO 17025
Turbidity of water	Determination of sample turbidity by colorimeter and comparison with standard reference samples	In-house method based on Standard Method 8237	L083-PL	W	NONE
Total Petroleum Hydrocarbons in water by HS-GC-MS	Determination of total petroleum hydrocarbons in water by headspace GC-MS. Accredited matrices: SW, PW, GW	In-house method	L088-PL	W	ISO 17025
pH of water at 20°C (automated)	Determination of pH of water by electrochemical measurement. Accredited matrices: SW, PW, GW, FSE, LL	In-house method	L099-PL	W	ISO 17025
Speciated PAHs and/or Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds (including PAHs) in water by extraction in dichloromethane followed by GC-MS. Accredited matrices (PAHs): SW, PW, GW	In-house method based on USEPA 8270	L102B	W	ISO 17025
Phenols in water by GC-MS	Determination of phenols in water by GC-MS	In-house method	L102B	W	NONE
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited matrices: SW, PW, GW, PrW, DI PrW, FSE, LL	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

4041

Analytical Report Number : 24-055335
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Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

- Quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as deviating and should be interpreted with caution. The result is not accredited.

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