IGE consulting

MCFC Project Taverna

Remedial Strategy Report

For: Manchester City Football Club

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1.0 INTRODUCTION

This Remedial Strategy Report has been prepared at the request of Manchester City Football Club. Instructions to proceed with this report were received in June 2026. This report primarily follows the findings and recommendations of the IGE Consulting *Phase 2 Geo-Environmental Report* (Ref. 4490-03A, July 2026). Additionally, this report uses findings and recommendations from the following documents:

- **IGE Consulting** *Phase 1 Geo-Environmental Report* (Ref. 0165-CAL-ZZ-ZZ-RP-G-3000, January 2026);
- **IGE Consulting** *Coal Mining Risk Assessment (4490-02B, May 2026);*
- **IGE Consulting** *Phase 2 Geo-Environmental Report* (Ref. 4490-03A, July 2026); and
- **Planit I.E.** *Landscape General Arrangement* (3679.3-PLA-XX-XX-DR-L-0001, March 2026).

This report pertains to a c. 0.63 Ha site located to the east of the Etihad Stadium, Etihad Campus, Manchester, c. 3km northeast of Manchester City Centre, at the approximate post code M11 3FF. The Ordnance Survey Grid Reference for the centre of the site is 386925E, 398736N.

The site is currently partially used as a site compound for the Etihad Stadium north stand extension, operated by Sisk. The site is bound by a Metrolink cutting to the north with Ashton Canal and the Co-op Live Arena beyond to the North, Alan Turing Way to the east, Gibbon Street to the south and the Sisk site compound to the west. Access to the site is via Gibbon Street off Alan Turing Way. An aerial photo of the site is included below, and a site location plan is contained in Appendix 2.

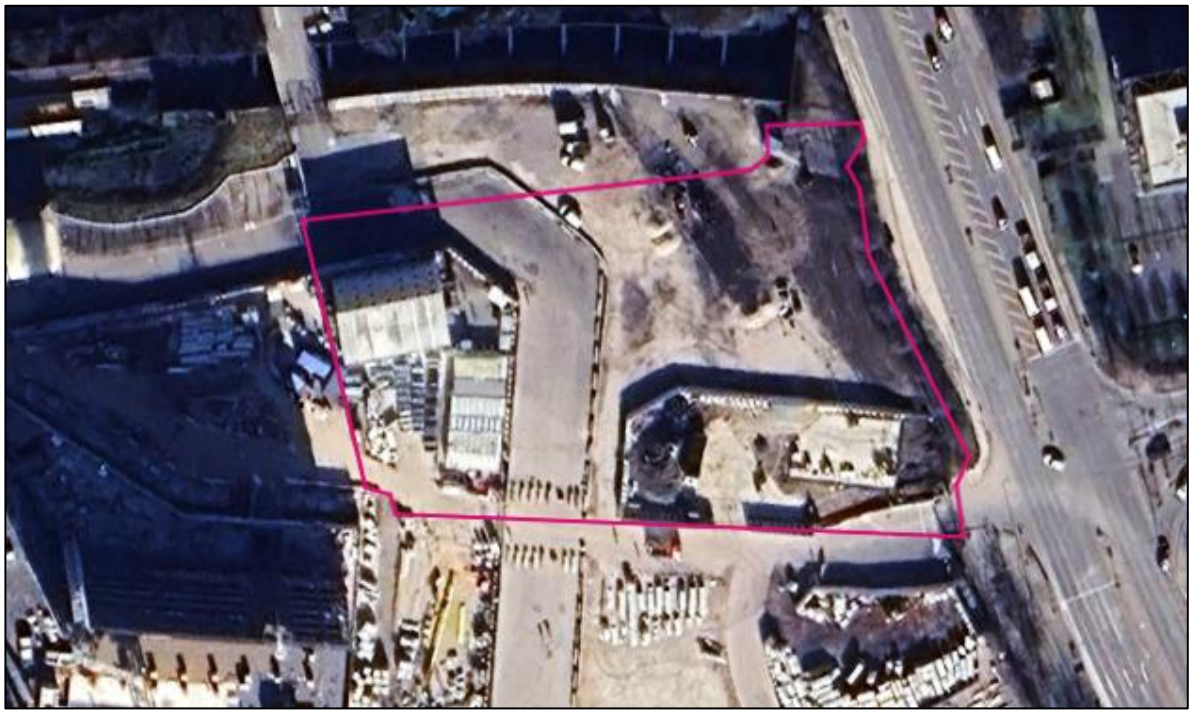


Figure 1: Aerial image of the site dated March 2025. The approximate site boundary is highlighted in magenta.

1.1 Scope

This Remedial Strategy Report has been undertaken to determine the remedial requirements of the site based upon the existing site investigation works and to assess the ground gas risk for the site. It is the client's intention to develop the site into an immersive events space with associated soft landscaping and access roads.

The proposed development plan is contained in Appendix 2. An extract of the proposed development plan is shown below:

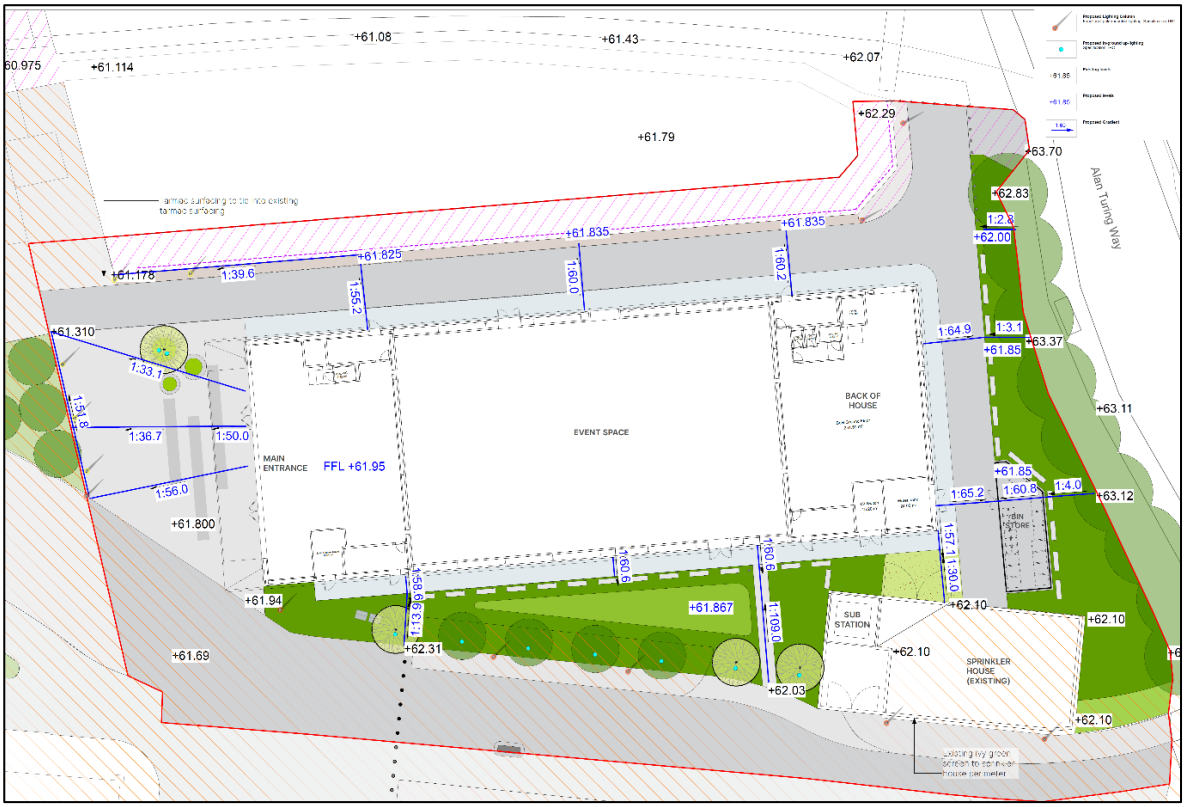


Figure 2: Extract of the proposed development plan (dated March 2026).

This report is subject to the approval of the regulators. No remediation works should commence before all pre-commencement conditions have been discharged following liaison with the relevant regulatory authorities.

It should be noted that aspects of environmental permitting and waste regulation cannot be registered until planning permission has been granted.

1.2 Brief

This report has been undertaken following the findings and recommendations of the IGE Consulting *Phase 2 Geo-Environmental Investigation* (Ref. 4490-03A, July 2026). Based on the IGE Consulting ground investigation findings, this report will outline the remedial strategy with regard to human health, controlled waters and ground gas risk on site.

The limitations of the report are contained in Appendix 1.

1.3 Summary of Previous Earthworks and Remediation

As presented and discussed in the IGE Consulting Phase 1 Geo-Environmental Report, the site has a considerable industrial history and has been subjected to multiple stages of earthworks and remediation prior to the IGE Consulting ground investigation works. During earthworks, contaminated ground is understood to have been ‘turned over’ and replaced to an engineering specification. According to the remediation reports, the works also involved the removal of contaminated material from within the infilled canal and replacement with geotechnically suitable material.

Given the presence of underground coal workings associated with the former Bradford Colliery, as discussed in the Phase 1 and Coal Mining Risk Assessment reports, the eastern site section has been subject to treatment by drilling and grouting during earthworks. The remaining site section is understood to have remained untreated during this stage of earthworks. The details of previous works undertaken on site are included in the IGE Consulting *Phase 1 Geo-Environmental Report* (4490-01, dated January 2026) and the IGE Consulting *Coal Mining Risk Assessment* (4490-02B, dated May 2026).

Conceptual Site Models have been developed based on the IGE Consulting ground investigation including subsequent laboratory testing and ground gas and groundwater depth monitoring.

1.4 Summary of Phase 2 Investigation Findings

IGE undertook an intrusive investigation of the site in March and April 2026, comprising 2 No. cable percussion boreholes to depths of 16.91m and 16.83m bgl (45.19m and 45.22m AOD), 8 No. dynamic sample boreholes to depths of between 0.90m and 3.38m bgl (61.20m and 58.68m AOD), 12 No. mechanically excavated trial pits to depths of between 2.40m and 5.10m bgl (59.71m and 57.01m AOD) and 16 No. California Bearing Ratio (CBR) determinations via plate load tests.

Subsequent laboratory testing was undertaken between 2nd April and 22nd April 2026 including 18 No. samples submitted for environmental analysis. 3 No. samples taken for environmental purposes (TP303 at 2.90m bgl, TP304 at 4.10m bgl and TP309 at 3.60m bgl) targeted visual and olfactory evidence of hydrocarbon impact encountered in an infilled canal running through the centre of the site. The remaining samples were taken spatially to gain a representative understanding of contaminant concentrations across the site.

1.4.1 Polycyclic Aromatic Hydrocarbons (PAHs)

Elevated concentrations of PAHs and TPH have been recorded, with 2 No. samples exceeding the GAC for a *public open space – park* end use scenario. No exceedances of the GAC were recorded for TPH in any of the samples tested. Elevated VOC concentrations were recorded in samples taken within the infilled canal, however the elevated determinands do not have an associated GAC. The below table summarises the findings of the chemical analysis of the samples.

Determinand	Location	Depth of Sample (m bgl)	Result (mg/kg)	GAC (mg/kg)
benzo(b)fluoranthene	TP309	3.60	16.00	15.00
benzo(a)pyrene	DS306	0.40	14.00	12.00
	TP309	3.60	18.00	
dibenz(a,h)anthracene	DS306	0.40	1.60	1.30
	TP07	3.60	1.70	

1.4.2 Asbestos

Asbestos was recorded within 12 No. samples out of 18 No. submitted for environmental analysis. Asbestos was recorded in the form of chrysotile and amosite loose fibres, loose fibrous debris, asbestos cement, bitumen and sheeting / board debris. The below table summarises the findings of the chemical analysis of the samples. An Asbestos Management assessment using the CL:AIRE JIWG Decision Support Tool has been undertaken as part of the remedial recommendations and is detailed in Section 2.1.

Location	Depth (m bgl)	Asbestos Type	Quantification (%w/w)
TP304	2.70	Sheeting / Board Debris, Loose Fibrous Debris	0.006
DS307	1.50	Bitumen, Loose Fibres	0.003
TP309	2.90	Loose Fibres, Loose Fibrous Debris	0.002
TP303	1.20	Loose Fibres	<0.001
TP301	0.30	Loose Fibres, Loose Fibrous Debris	<0.001
DS302	1.00	Loose Fibres	<0.001
TP302	0.60	Loose Fibres	<0.001
DS306	0.40	Loose Fibres	<0.001
DS304	0.50	Loose Fibres	<0.001
TP306	1.20	Loose Fibres, Loose Fibrous Debris	<0.001
TP303	2.90	Asbestos Cement	<0.001
TP304	4.10	Loose Fibres	<0.001

Based on the findings of the ground investigation, remedial measures are required for the proposed soft landscaped areas to negate exposure pathway risks with existing site materials.

1.4.3 Volatile Organic Compounds (VOCs)

3 No samples taken from the infilled canal area were tested for the presence of VOCs. Although selected VOCs were recorded at concentrations above the laboratory detection limit within these samples, the VOCs in question (1,1,2,2 Tetrachlorethane, n-Propylbenzene, 1,3,5– Trimethylbenzene, 1,2,4–

Trimethylbenzene and p-Isopropyltoluene) are considered low risk and do not have an associated general assessment criteria (GAC) value.

Headspace tests were undertaken via Photo Ionization Detector (PID) on samples taken within the infilled canal where visual and / or olfactory evidence of hydrocarbon contamination were encountered. A peak result of 64 ppm was recorded in TP309 at 3.60m bgl, corresponding with a strong hydrocarbon odour and sheen as well as elevated concentrations of TPHs and VOCs. The results of the headspace tests are summarised below:

Location	Depth (m bgl)	Evidence	PID
TP303	1.20	Mild hydrocarbon odour	0.20 ppm at 1.20m bgl
	2.90	Slight hydrocarbon sheen	2.10 ppm at 2.90m bgl
	3.00 – 4.20	Mild hydrocarbon odour and sheen	1.20 ppm at 3.20m bgl 2.30 ppm at 4.20m bgl
TP304	2.70	Mild hydrocarbon odour	2.60 ppm at 2.70m bgl
	4.00 – 4.40	Mild hydrocarbon odour and sheen	12.00 ppm at 4.10m bgl
TP309	2.30	Slight hydrocarbon odour	-
	2.70 – 4.00	Strong hydrocarbon odour and sheen	24.30 ppm at 2.90m bgl 64.00 ppm at 3.60m bgl
TP312	2.40	Slight hydrocarbon odour	-

PID tests were also undertaken during ground gas monitoring and a peak result of 5.20 ppm was recorded in CP301. Given the concentrations encountered during the ground investigation and subsequent ground gas monitoring, VOCs are not considered to pose a significant ground gas risk.

1.5 Enabling Works

Enabling works, including import of general fill for adjusting site levels, will be required prior to development but are not discussed in this report. All details of earthworks and enabling works will be discussed in a separate report by Calibre Consulting Engineers Ltd. The enabling works will require ground improvement works comprising drill and grout treatment given the potential for underground coal mine workings; the details and specification of which are discussed in the IGE Consulting *Coal Mining Treatment Specification (Ref: 4490-04, dated May 2026).*

2.0 REMEDIAL STRATEGY FOR HUMAN HEALTH

The proposed development is to include an area of soft landscaping in the southern and eastern site section. The IGE Consulting Phase 2 Ground Investigation report recommended a cover system in these areas to break any pathways between the existing site soils and the end user. It is understood that a cover system is already proposed within the development to consist of 300mm topsoil underlain by 400mm subsoil.

2.1 Asbestos Management – JIWG Decision Support Tool

Asbestos in the form of chrysotile fibre bundles was encountered within 12 No. samples of Made Ground, with concentrations between 0.001% and 0.006% wt/wt. Consequently, the Made Ground on site is considered unsuitable for re-use within 450mm of the proposed soft landscaping.

Based on the findings of the chemical laboratory the chemical laboratory test results, a risk assessment has been using the *JIWG Decision Support Tool for the Categorisation of Work Activities Involving Asbestos in Soil or Construction & Demolition Materials in accordance with CAR 2012* (FINAL Version 2.1, March 2017).

The risk assessment has been undertaken based on the identified 0.006% amosite sheeting / board debris in TP304. A copy of this JIWG asbestos risk assessment is contained in Appendix 3 and is included below:

Stage 1
Hazard Factors

		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Unspecified fibrous board	2
Extent of degradation of ACMs at outset of work	Degraded (Significant degradation in ACM; material has lost its basic integrity)	3
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not firmly linked in a matrix	2
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Very Low quantities - <0.001 to 0.01 %wt/wt	1
Sub-total		8

Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs

Hazard ranking: Low

Stage 2
Exposure Factors

		Score
Anticipated airborne fibre concentration - Control Limit or SALI?	<0.01 fibres/ml	1
Anticipated duration of exposure to asbestos	> 2 hours in a 7 day period and Up to 10 hours in a day (e.g. full time occupational exposure)	4
Activity type and effect on deterioration of ACMs during work	Not low intensity, significant deterioration expected	4
Best description of primary host material matrix (soil/made ground)	Made Ground - Recycled Aggregate, Track Ballast	4
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Low	2
Sub-total		15
Exposure ranking		Medium
Combined hazard and exposure ranking	23	Medium

Stage 3

Risk Assessment Outputs

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

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

The above JIWG risk assessment concludes that re-use of the Made Ground would be non-notifiable, non-licensed work, but would require the use of EN149 type FFP3 disposable face masks and localised dust suppression and localised and basic personal decontamination facilities.

The Made Ground is therefore considered to pose a risk to human health given that credible pathways exist in the site's current condition. The Made Ground is unbound, i.e. present at the ground surface without a suitable break of pathway between the source and potential receptors. However, pathways will be broken by encapsulation via the installation of a clean cover system in the southern and eastern site section and the installation of a concreted external ground surface in the remaining areas of the site. The risk to human health will therefore be significantly reduced through this process and the primary risk would be posed to construction workers involved in the excavation and transport of the contaminated Made Ground.

Although the details of proposed earthworks are unknown at this stage, based on the current proposed development plan, dated March 2026, significant level reductions are not proposed with a general raising or maintenance of current site levels proposed across the scheme. The risk to construction workers will therefore be prevalent during the construction of the cover system in the eastern site section, as material is excavated and removed to facilitate installation. This risk is significantly reduced if the above mentioned protective measures are utilised during enabling works. An asbestos assessment is recommended as part of the remedial strategy.

2.2 Infilled Canal

An infilled canal is present running through the centre of the site covering an on-site area of c. 350m^2. The infilled canal historically connected Bradford Colliery to the Ashton Canal and was infilled between 1977 and 1985, though the exact date is not known. An extract of the exploratory hole plan overlain onto the 1893 historical OS map, below, shows the extents of the infilled canal.

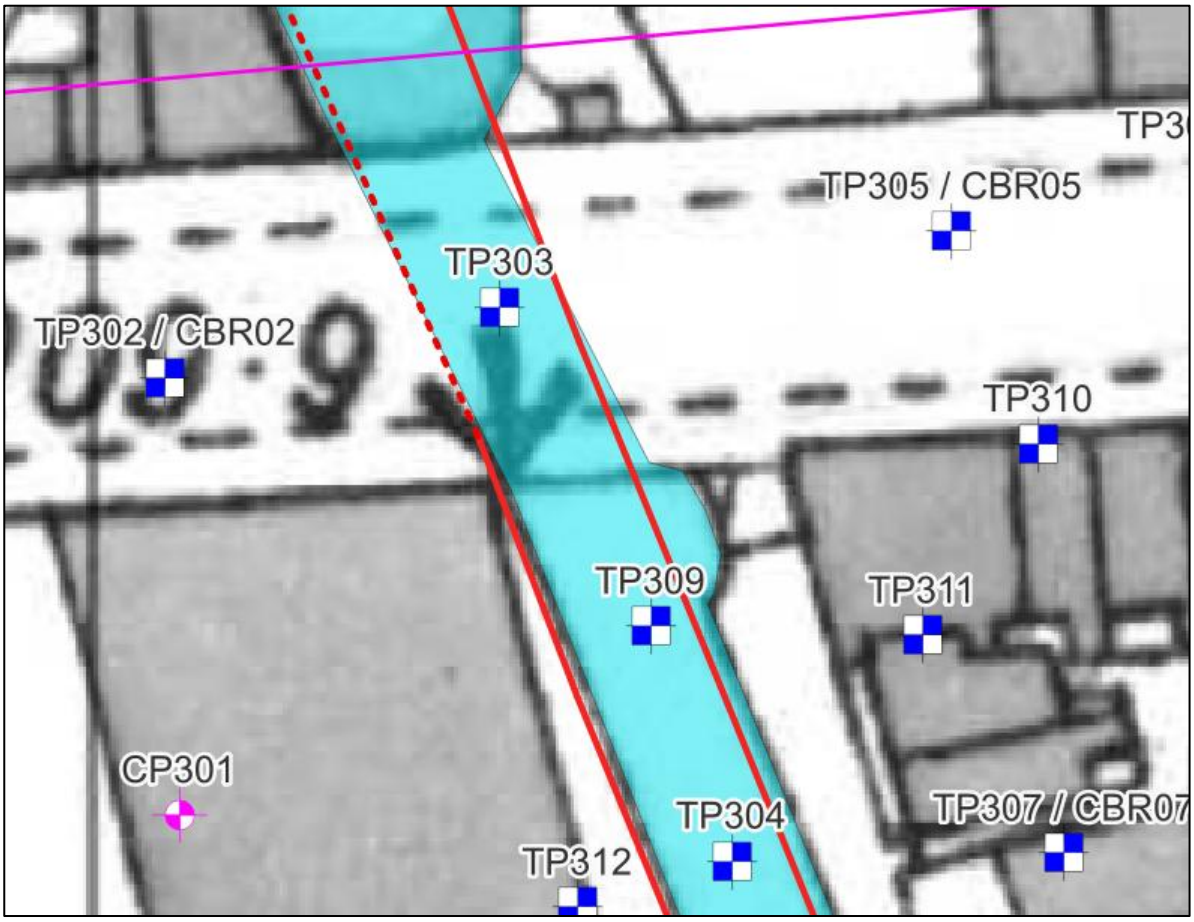


Figure 3: Locations of exploratory holes targeting the historical infilled canal overlain onto the 1893 historical OS map. The location of the canal on the historical map is shown in blue. Extents measured during ground investigation are shown with red lines and inferred extents are shown with a dashed red line.

During previous ground investigations, elevated contaminant concentrations were recorded within the infilled canal and were recorded to have been treated by stabilisation. However, during the IGE Consulting ground investigation, residual contamination was noted during exploratory hole construction including visual and olfactory evidence and elevated contaminant concentration in laboratory testing. The infilled canal therefore remains a contaminative source despite the previous remediation efforts, however given the depth of the contaminated material between depths of 2.20m and 4.40m bgl (59.91m and 57.72m AOD) and relatively low VOC concentrations, based on the *POS – Park* end use, the risk to human health is

considered low. The contaminated material is buried beneath c. 2.20m Made Ground and will be capped with concrete at the ground surface for the proposed development.

Based on laboratory testing and the depth of material, the infilled canal is not considered to pose a significant risk to human health.

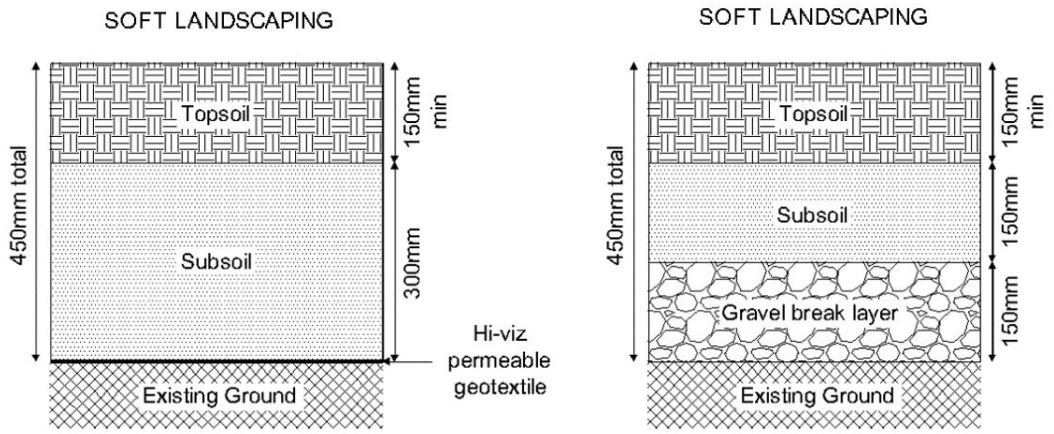
2.3 Installation of a Clean Cover System

A c. 987m^2 area of soft landscaping is proposed in the southern and eastern site sections whilst the remaining site area is proposed to be surfaced with concrete overlying the Made Ground deposits.

Made Ground containing asbestos and elevated PAHs, TPH and VOCs is present below finalised POS levels at depths shallower than 450mm across the site. Therefore, in-line with Manchester City Council Planning and Contaminated Land Technical Guidance (dated February 2021), a cover system for the soft landscaping will be required and must be 450mm thick, due to the presence of asbestos on site, and consist of:

- A minimum of 150mm suitable topsoil, underlain by;
- Suitable subsoil, to a total thickness of 450mm.

This is shown diagrammatically below:



Guidance for the correct installation of cover systems is included in Appendix 6.

Soils for use in the above recommended cover system must be validated as detailed below to ensure their suitability for use.

2.4 Validation of Clean Cover System

The installation of the clean cover system must be verified in accordance with *Manchester City Council Planning and Contaminated Land Technical Guidance (dated February 2021), Section 6.4.*

2.4.1 Soft Landscaping

Once the clean cover system is installed to break contaminative linkages, validation requirements include:

- Details of the source of the cover material;
- Chemical test results to demonstrate that the soil is free from contamination and 'suitable for use' in-line with the below chemical testing suites and rates;
- Waste transfer notes to provide evidence of source; and
- Confirmation of cover depth by either measurement tape or topographical survey with photographs based on a 25m grid in the POS_{park} area.

No topsoil or subsoil is present on-site therefore all topsoil and subsoil will need to be imported and this must be validated as detailed below to ensure its suitability for use (i.e., no glass or plastic is to be included and meets chemical testing acceptability criteria). All topsoil and subsoil, whether site-won or imported is required to be tested at the following frequency in line with Manchester City Council Planning and Contaminated Land Technical Guidance (dated February 2021):

End-Use	Greenfield Soils	Remediated Soils	Brownfield Soils	Unknown Soil Source
~~Residential Gardens~~	~~1:200m³~~	~~1:100m³~~	~~1:50m³~~	~~1:50m³~~
Soft Landscaping	1:200m³	1:150m³	1:150m³	1:150m³
Other	1:200m³	1:200m³	1:200m³	1:200m³

Based on the ground investigation findings, all site-won soils should be classified as 'brownfield soils' within the above table. Given that no private gardens are proposed within the scheme, the 'Residential Gardens' end-use in the above table has been omitted.

Testing Suites:

A. Asbestos ID, Asbestos quantification.

B. pH, total and free cyanide, soluble sulfate, organic matter.

C. Arsenic, Beryllium, Boron, Cadmium, Chromium (III and VI) Copper, Lead, Inorganic Mercury, Nickel, Selenium, Vanadium, Zinc.

D. Speciated PAHs: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(ghi)perylene.

E. Total (non-speciated) PAHs.

F. Speciated Total Petroleum Hydrocarbons (TPH): Aliphatic >EC5 - EC6, >EC6 - EC8, >EC8 - EC10, >EC10 - EC12, >EC12 - EC16, >EC16 - EC21, >EC21 - EC35, and > EC35 - EC44, and Aromatic >EC5 - EC7, >EC7 - EC8, >EC8 - EC10, >EC10 - EC12, >EC12 - EC16, >EC16 - EC21, >EC21 - EC35, > EC35 - EC44.

G. Total Petroleum Hydrocarbons (TPH): TPH EC6 – EC40.

H. BTEX: Benzene, Toluene, Ethylbenzene, p- & m-xylene, o-xylene. Methyl tertiary butyl ether (MTBE).

Once tested, the results are to be compared against the Acceptability Criteria contained in Appendix 6:

Once complete, the information gathered should be compiled into a Validation Report for the site, detailing the completion of the remedial and verification measures.

2.4.3 Clean Cover System Verification Report

The verification report shall include, as a minimum, the following:

- Site Name / location, developer name, development use;
- Plot No / description of landscaped area and National Grid Reference;
- Inspection visit date;
- Description of remediation (as per agreed Remediation Strategy including depths / thickness checks, topographical readings);
- Plans showing pertinent information relating to remediation (including a plan of remediation areas, stockpile locations, and areas of further investigation, if applicable);
- Pertinent data relating to fill materials/wastes, including volumetric data (i.e. how much was imported to site), source data (i.e. where the material came from) and waste transfer data (where applicable);
- Material tracking information (including way tickets etc.);
- Name of groundwork's remediation contractor;
- Name of supervising environmental consultant;
- Site Specific chemical analysis results (all raw laboratory data, analytical test certificate, and calculations in line with CIEH/CL:AIRE guidance);
- Verification Photographs (inc. remarks);
- Pass/fail and if material fails, how will this be managed i.e. removed, treated;

- Detail any further remedial works and/or inspection; and
- ‘Signed off’.

Following on from the requirements detailed above, the below verification checklist, in line with Manchester City Councils guidance, should be included within the final verification report:

- Details of works carried out and contamination encountered during investigation.
- Details and justification of any changes from the original remediation strategy.
- Demonstration of compliance and description of validation methods.
    - Laboratory and in-situ results.
    - Monitoring results for groundwater and gases.
    - Summary data plots and tables relating to clean up criteria.
    - Plans showing treatment areas and details of any differences from the original remediation strategy.
    - Photographic and other media records.
    - Waste management details and records.
- Ongoing environmental monitoring or works to be carried out.
- Confirmation that remediation objectives have been met.

2.5 General Fill Import

Although the full details of enabling works and earthworks will be provided in a separate report by Calibre Consulting Engineers, the following general principles should be followed:

Any material imported onto site must be chemically suitable for its intended use. Consequently, a distinction should be made between material intended for use in areas of soft landscaping and any soils intended for use as general fill outside of

landscaped areas. Materials intended for use as general fill must meet the requirements for general fill detailed below.

The following targets for 'General Fill' are proposed to address any material imported onto site to achieve proposed levels. General Fill is material used primarily to raise levels, specifically not within areas of public open space or soft landscaping i.e. below -450mm finished levels. The following validatory samples must be taken during the enabling works phase:

Soil	Testing Frequency	Testing Suite	Acceptability Criteria
Site-won aggregate	1 per 1000m^3 of crush	A	Asbestos <0.01%. Where placed within -1.0m of finished level, <0.001%
Imported aggregate	1 per 500m^3	A	Asbestos <0.01%. Where placed within -1.0m of finished level, <0.001%
Imported General Fill	1 per 1000m^3	As below Acceptability Criteria for General Fill	General Fill
Sides and base of excavated and removed hotspots (if applicable)	1 sample every 10m^2 from sides and base of excavation, min 1 every face	As below Acceptability Criteria for General Fill plus contaminants of concern based on hotspot removed	General Fill

1) 'General Fill' is material used primarily to raise levels, specifically not within areas of public open space or soft landscaping, e.g. 6F2.
2) Imported aggregate should also contain <1% deleterious anthropogenic materials (by eye).

Testing Suites:

A. Asbestos ID, Asbestos quantification.
B. pH, total and free cyanide, soluble sulfate, organic matter.
C. Arsenic, Beryllium, Boron, Cadmium, Chromium (III and VI) Copper, Lead, Inorganic Mercury, Nickel, Selenium, Vanadium, Zinc.
D. Speciated PAHs: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(ghi)perylene.
E. Total (non-speciated) PAHs.
F. Speciated Total Petroleum Hydrocarbons (TPH): Aliphatic >EC5 - EC6, >EC6 - EC8, >EC8 - EC10, >EC10 - EC12, >EC12 - EC16, >EC16 - EC21, >EC21 - EC35, and > EC35 - EC44, and Aromatic >EC5 - EC7, >EC7 - EC8, >EC8 - EC10, >EC10 - EC12, >EC12 - EC16, >EC16 - EC21, >EC21 - EC35, > EC35 - EC44.
G. Total Petroleum Hydrocarbons (TPH): TPH EC6 – EC40.
H. BTEX: Benzene, Toluene, Ethylbenzene, p- & m-xylene, o-xylene. Methyl tertiary butyl ether (MTBE).

Once tested, the results are to be compared against the following Acceptability Criteria for General Fill:

Suite	Determinand (mg/kg unless stated)	Acceptability Criteria for General Fill
A	Asbestos (%)	See Above
B	pH	>5 - <10[3]
	Total Cyanide	0.5[3]
	Free Cyanide	0.5[3]
	Soluble Sulfate (mg/l)	500[3]
C	Arsenic	640
	Beryllium	12
	Boron	240000
	Cadmium	190
	Chromium (III)	8600
	Chromium (VI)	33
	Copper	68000
	Lead	2330[1]
	Inorganic Mercury	1100
	Nickel	980
	Selenium	12000
	Vanadium	9000
	Zinc	730000
E	Total PAHs	200[4]
G	TPH > EC6 - EC40	1000[4]

LQM/CIEH S4ULs for Human Health Risk Assessment (3rd edition, 2015) used unless stated:

1) *Category 4 Screening Levels (March 2014)*
2) *CL:AIRE Soil GAC for Human Health Assessment (January 2010)*
3) *In-house screening criteria used as no GAC methodology currently exists*
4) *This limit only applies to imported material, not to in-situ soil.*

Assumed 1% SOM (most conservative) for those values dependent upon SOM.
ND = Not Detected
LOD = Limit of Detection
**Exceeds vapour saturation limit*
***Exceeds solubility saturation limit*

The general fill will also be subject to geotechnical testing as detailed within an Earthworks Specification.

3.0 REMEDIAL STRATEGY FOR GROUND GAS PROTECTION

3.1 Ground Gas Risk Assessment

The ground gas sources identified during the IGE Consulting Phase 1 Geo-Environmental Report include coal mine workings, on-site Made Ground and the infilled canal. Subsequently, the ground gas risk assessment has been split into ground gas risk from the Made Ground and infilled canal.

3.1.1 Mine Gas Risk Assessment

Shallow coal workings were identified as a potential ground gas source in the Phase 1 Geo-Environmental Report. Following the completion of the IGE Consulting *Coal Mining Risk Assessment* (Ref: 4490-02A) and the intrusive ground investigation, the conceptual site model with respect to mine gas emissions has been updated below:

No evidence of shallow coal seams or shallow coal workings were identified during the ground investigation given that the cable percussion boreholes were not progressed to significant depths within bedrock. During drilling and grouting works undertaken previously in the eastern site section, the Bradford Three Quarter coal seam was encountered at depths of 16.60m to 29.60m bgl and was noted to be mostly intact aside from broken ground combined with flush loss in 2 No. boreholes at depths of 24.60m to 26.30m bgl. Therefore, there is a potential for broken ground / shallow workings further west on site. The shallowest recorded workings on site are at a depth of c. 47.00m bgl as indicated by the Coal Mining Consultants Report and abandonment plans obtained for the IGE Consulting Coal Mining Risk Assessment.

During the previous drilling and grouting works, the presence of 2 No. mine shafts north of the site were investigated by probing with 1 No. shaft found to be present and appropriately treated and the other not identified after 150 probe holes undertaken in a spiral pattern out from the recorded centre of the shaft.

Therefore, based on the above findings, without any further consideration the site is deemed to be at moderate risk based on the CL:AIRE Good Practice for Risk

Assessment of Coal Mine Gas Emissions (October 2021) Figure 13.1: Decision Support Tool For Mine Gas Risk Assessment, therefore, a detailed mine gas risk assessment is recommended and has been undertaken below.

Based on the ground investigation undertaken, including the trial pits, dynamic sample boreholes and cable percussion boreholes, fine Glacial Till is present on site to a depth of between 15.00m and 15.40m bgl. Therefore, generally across the site there is at least 11.00m of fine Glacial Till underlying the Made Ground. The presence of a significant thickness of cohesive Glacial Till will significantly reduce. if not negate. the vertical migration of ground gas from the underlying suspected workings at c. 47.00m bgl.

Additionally, mudstone was recorded at rockhead which will also significantly reduce the possibility of vertical migration of mine gas. No faults, including underground faults, are recorded on site or in close proximity to the site, therefore migration along faults and fissures is also not considered a feasible pathway.

Therefore, no significant vertical migration pathways have been identified on site. However, numerous mine shafts are recorded off site to the north and northeast. 2 No. shafts (Ref: 386398-012 and 386398-013) are located c. 17m and 20m north of the site, respectively, based on the MRA recorded location. Mine entry 386398-012 has been identified and treated by grouting and capped whilst mine entry 386398-013 has been subject to a comprehensive probing investigation involving 150 probe holes. The investigation did not locate the mine entry but concluded that it lies further to the north than recorded on the MRA drawings.

Mine entries are considered significant pathways for mine gas migration as they may provide direct conduits for mine gas migration. Where mine shafts have been grouted or backfilled with concrete and capped, the likelihood of migration of mine gas is reduced given the low permeability of the backfill material. However, as it is unknown if the mine shafts adjacent to the site have been backfilled, mine gas migration up the mine shafts may occur.

Although the mine shafts are located off-site, given their proximity to the site, the risk of mine gas migrating from the shafts onto the site cannot be discounted.

Migration from shaft ref: 386398-012 is unlikely given the previous investigation and treatment; migration from 386398-013 is unlikely given the low probability that lateral migration will occur at depth due to the low permeability Glacial Till and mudstone which will reduce diffuse gas migration. Although some granular bands may be present within the Glacial Till, they are not anticipated to be continuous or present at consistent depths and are often water bearing, therefore lateral migration of mine gas from the shaft along granular bands is also deemed unlikely. However, where unsaturated granular Made Ground is present near the surface, or where service trenches are present leading from the vicinity of the shaft onto the site, lateral mine gas migration may occur.

However, abandoned mine gas emissions are characterised by a high rate of emissions immediately following closure of the mine, with the emission rate falling to much lower rates over a period of c. 10 years. Therefore, as the last recorded workings beneath the site are more than 130 years ago in 1891 as recorded by the MRA, it is envisaged that the desorption of methane from the coal workings will be very low at present. This is also likely to be true for the oxidation of coal and the generation of carbon dioxide, as the longer the duration since the coal was exposed to the atmosphere (i.e., during mining), the lower the risk. Weathered / oxidised coal also consumes oxygen at a rate much lower than freshly mined coal, therefore the risk of oxygen deficient air being emitted is also considered to be low. Therefore, although pathways may be present along shallow granular deposits from the off-site mine entry, given the anticipated very low concentrations of mine gas which will be diluted and dispersed, the accumulation of significant concentrations of mine gas within proposed structures is deemed unlikely.

The mine entries located more than 50m from the site have not been considered in this risk assessment given the relatively low risk associated with mine shafts located more than 50m from the site given their distance.

Given the ground conditions encountered on site and the anticipated load of the proposed development, the structure will utilise a piled foundation solution. The piles are unlikely to be driven into the bedrock given the presence of Glacial Till to c. 15.00m bgl. Additionally, ground gas migration along piled foundations is not considered a feasible pathway as the piles are in intimate contact with the

surrounding soil. A considerable thickness of cohesive Glacial Till will be present beneath the foundations, consequently, additional pathways will not be created by the construction of piled foundations.

The installation of possible soakaways, attenuation tanks and deep drainage in the proposed development is unknown at this stage. However, if any of the aforementioned features are installed, an increase in the mine gas risk is not anticipated as a significant thickness of Glacial Till will negate the possibility of vertical migration and accumulation within service trenches or drainage features.

It should also be noted that given the relatively shallow depth of investigation, none of the exploratory holes are deemed to be potential pathways to the future developments as they were backfilled with arisings or bentonite upon completion. Nonetheless, it is recommended that prior to development, the ground gas monitoring wells are appropriately decommissioned.

Based on the above conceptual site model, given the lack of feasible pathways of mine gas migration, the risk posed by mine gas remains moderate.

3.1.2 Ground Gas and Groundwater Depth Monitoring

As part of the ground investigation works, IGE have undertaken ground gas monitoring between 8th April and 16th June 2026. 2 No. cable percussion boreholes and 1 No. dynamic sample boreholes were installed with combined ground gas and groundwater depth monitoring wells. The response zones of the installed wells are detailed below.

Exploratory Hole	Response Zone Stratum	Response Zone Depth m bgl *(m AOD)*	
		Top of Response Zone	Base of Response Zone
DS302	**Made Ground** comprising very gravelly clayey fine to coarse SAND	0.50 *(61.62)*	1.00 *(61.12)*
CP301		1.00 *(61.10)*	3.00 *(59.10)*
CP302	**Glacial Till** comprising slightly gravelly slightly sandy CLAY	5.00 *(57.05)*	8.00 *(54.05)*

The results of a programme of 6 No. ground gas and groundwater depth monitoring visits undertaken over 3 No. months are detailed in the below tables.

Gas Monitoring Well	Steady O_2 Concentration (%)	Peak CO_2 Concentration (%)	Peak CH_4 Concentration (%)	Peak H_2S Concentration (ppm)	Atmospheric Pressure (mbar)	Steady Gas Flow (l/hr)
DS302	18.7 – 19.2	0.1	0.1	1	1004 – 1022	0.1
CP301	18.9 – 19.8	0.1	0.1	1	1001 – 1023	0.1
CP302	3.3 – 14.1	0.2 – 1.5	0.1	1	1004 – 1022	0.1

Ground gas monitoring was undertaken utilising a GFM 4300 gas analyser. Grey = Result below instrument detection limit

A peak carbon dioxide concentration of 1.5% was recorded during the ground investigation. No methane concentrations or steady flows above instrument detection limits were recorded during any of the visits. Reduced oxygen was recorded in CP302 and is anticipated to be a result of plant rootlets along fissures within the Glacial Till deposits.

A peak and steady carbon monoxide concentration of 27ppm was recorded in CP302 during the first monitoring visit which correlated with oxygen depletion at the time of monitoring.

Carbon monoxide is an odourless, colourless and tasteless gas produced by incomplete combustion of fossil fuels such as coal, wood, gas or oil. The 'Workplace Exposure Limits' safety level as specified by the Health and Safety Executive is 35mg/m^3 or 30ppm for long term exposure (8-hour period) which is greater than the recorded concentration in CP302. The source of the carbon monoxide is anticipated to be due to the presence of significant quantities of coal within the fine Glacial Till deposits. Given the level of carbon monoxide recorded and the proposed development, carbon monoxide is deemed to pose a low risk.

The groundwater depth monitoring results are summarised below:

Groundwater Monitoring Well	Response Zone (m bgl)	Water Level (m bgl)
DS302	0.50 – 1.00	0.25 – 0.75
CP301	1.00 – 3.00	1.46 – 1.80
CP302	5.00 – 8.00	7.13 – 7.69

The results of the 6 No. ground gas monitoring visits have been assessed in accordance with BS 8485 (2015) + A1 (2019). The characteristic Gas Screening Value (GSV) is calculated by dividing the maximum methane or carbon dioxide concentration by 100 and multiplying by the maximum steady flow rate recorded at the same monitoring point (the instrument detection limit of 0.1l/hr is utilised when below detection limit flow rates are recorded). If required, the worst case GSV can be calculated by dividing the maximum carbon dioxide and methane concentration by 100 and multiplying by the maximum steady flow rate on-site.

Ground gas monitoring has recorded a maximum peak carbon dioxide concentration of 1.5%v/v. No methane concentrations or steady flow rates above detection limits were recorded.

As no steady flow rates were recorded on site, the GSV and the worst case GSV for carbon dioxide at the site can be calculated as (1.5/100)*0.1= 0.0015l/hr.

Based on the ground gas monitoring and based on a traditional assessment utilising a gas screening value, the site falls in-line with Characteristic Situation 1. However, based on the mine gas risk assessment, there is a moderate risk of mine gas as sources and possible pathways have been recorded. Consequently, the site is designated as a **Characteristic Situation (CS3).** Based on the proposed development being a Type C building in accordance with BS8485 (2015) + A1 (2019), ground gas protection measures will be required to mitigate the ground gas risk, achieving a minimum of **3.0 points.**

Suitable ground gas protection measures to achieve the required points and the required validation will be detailed in a separate ground gas protection measures design report.

3.1.3 Radon

The Indicative Atlas of Radon in England and Wales produced by the Health Protection Agency and British Geological Survey indicates that the site lies within a lower probability area, less than 1% of homes are above the action level. Consequently, no radon protection measures are necessary in the construction of new dwellings or extensions.

4.0 OTHER REMEDIAL REQUIREMENTS

4.1 Decommissioning of Boreholes

It is imperative that all boreholes drilled into the site are located and appropriately grouted to negate any possible preferential ground gas pathways. Utilising guidance provided in the Environment Agency's '*Good practice for decommissioning redundant boreholes and wells*' (October 2012), it is prudent to secure redundant boreholes to ensure that no groundwater pollution can occur. The Environment Agency (EA) offer advice on the methods of sealing wells to ensure that the preferential pathway is removed. The following diagram taken from the EA guidance shows a monitoring well (A) and 3 No. options for decommissioning (B, C and D):

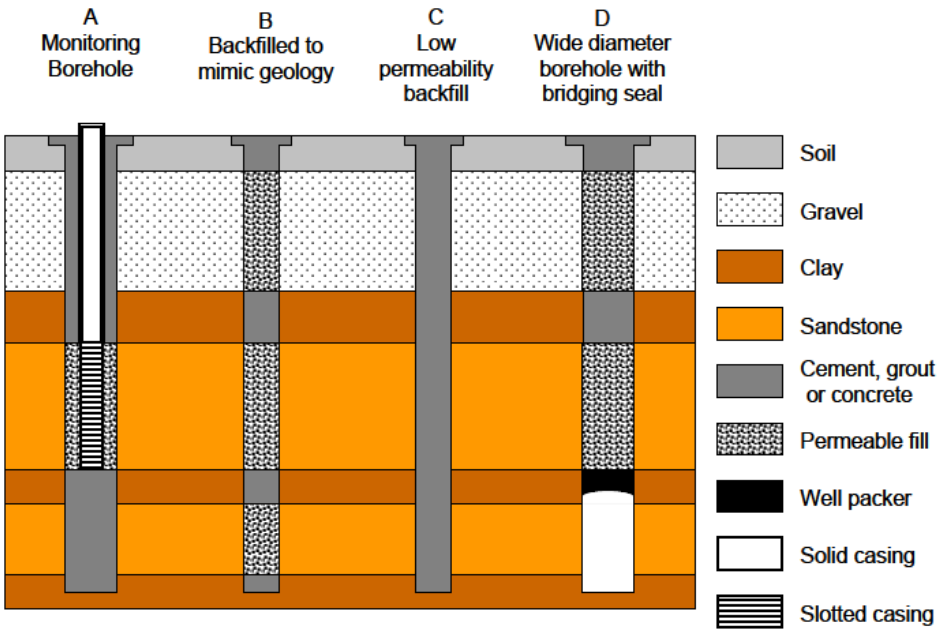


Figure 1: Schematic options (B–D) for decommissioning wells and boreholes

It is considered prudent to utilise Option C – low permeability backfill, shown in the diagram above, to adequately seal the borehole. The guidance recommends that 'the backfill materials must be clean, inert and non-polluting', e.g. bentonite. It is recommended to remove the standpipe and seal with bentonite to ground level. This will be sufficient to prevent contaminant transport.

4.2 Definition of Waste: Code of Practice

Due to the recommended handling and re-use of excavated site-won materials, it is possible to avoid complex waste legislation by utilising the Definition of Waste: Code of Practice (2011, DoW:CoP). This allows assessment of whether or not excavated materials are waste, and when excavated and treated waste can be classified as 'no longer waste'.

It is recommended that in line with DoW:CoP, a robust, site-specific material management plan (MMP) may need to be emplaced and adhered to and verified in an appropriate verification report. This must be reviewed by a 'Qualified Person' who must provide a Declaration to the EA prior to works within the MMP being commenced.

4.3 Material Management

4.3.1 Export of Materials

Any soils to be removed from site must be classified in accordance with WM3 under the definition of waste and chemically tested to determine their destination, i.e. reuse or landfill. Waste ticket records must also be retained as proof of the export of materials from site.

4.3.2 Stockpile Management

During the course of the development there will be areas of stockpiled soils intended for use within the soft landscaping area. These will have been subjected to off-site testing and approved for use on site.

It is imperative that the stockpiles are well managed to avoid inadvertent mixing or depositing of surplus or deleterious materials that would compromise the continued use. We would recommend that the site management reviews the proposed positions for placement of stockpiles and places either fencing or warning signs to ensure compliance.

4.4 Discovery Strategy

In the event of unexpected contamination being discovered, the Discovery Strategy must be followed – this is contained in Appendix 8.

4.5 Design Variation

Following any variation in a finalised proposed development layout and / or detailed design including earthworks design it is recommended that the above conclusions are re-appraised to determine their suitability.

4.6 United Utilities Risk Assessment

A United Utilities Risk Assessment (UURA) has been undertaken for the site, based on the chemical laboratory testing results included in Appendix 5. The UURA is contained in Appendix 7 and recommends PE Barrier Type A pipework.

APPENDIX 1

LIMITATIONS OF INVESTIGATION WORK AND REPORT

LIMITATIONS OF REPORT

This consultancy report was compiled and carried out by IGE Consulting Limited ('IGE') for the client, as defined in the main report (the 'client'), on the basis of a defined programme and scope of works and the terms of a contract between IGE and the client. IGE undertook this with all reasonable skill and care, taking into account the limits of the scope of works required by the client, the prevailing site conditions, the time scale involved and the resources, including financial and manpower resources, agreed between IGE and the client. IGE cannot accept responsibility to any parties whatsoever, following the issue of this report, for any matters arising which may be considered outwith the agreed scope of works.

Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted consulting practices. This report may not be relied upon, or transferred to, by any other party without the written agreement of its author. If a third party relies on this report, it does so wholly at its own and sole risk and IGE disclaims any liability to such parties.

It is IGE's understanding that this report is to be used for the purpose described in the 'Brief' section of this report. That purpose was a significant factor in determining the scope and the services to be provided. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of, or reliance upon the report in those circumstances by the client without IGE's review and advice shall be at the client's sole and own risk.

The information contained in this report is protected by disclosure under Part 3 of the Environmental Information Regulations 2004 pursuant to the provisions of Regulation 12(5) without the consent in writing of a Director of IGE.

This report is a function of the date it was written and should be read in light of any subsequent changes in legislation, statutory requirements and industry practices. Ground conditions can also change over time and further investigations or assessment should be made if there is any significant delay in acting on the findings of this report. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of IGE. In the absence of such written advice of IGE, reliance on the report in the future shall be at the client's own and sole risk. Should IGE be requested to review the report in the future, IGE shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between IGE and the client.

The observations and conclusions described in this report are based solely upon the scope of works agreed between the client and IGE. IGE has not performed any observations, investigations, studies or testing not specifically set out or mentioned within this report. IGE is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the agreed scope of works. For the avoidance of doubt, this report is strictly limited to the nature of contamination contained within the ground and groundwater at the site. The report does not cover environmental aspects such as air or noise pollution and ground vibrations and the like. In addition, ecological matters relating to wildlife, flora and fauna have not been investigated as part of this report. In particular, the site has not been inspected for the presence or otherwise of invasive species (e.g. Japanese Knotweed). It is recommended that the client appoints a specialist in this subject to carry out a detailed inspection / survey of the site if its presence is suspected. Where mention has been made to the identification of asbestos or asbestos-containing materials this is for indicative purposes only and does not constitute or replace full and proper surveys.

LIMITATIONS OF INVESTIGATION WORK

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable and as investigation excavations only allow examination of the ground at discrete locations, the potential exists for ground conditions to be encountered which are different to those considered in this report. The explored extent of the site area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition, chemical analysis was carried

out for a limited number of parameters, based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The normal speed of investigation usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Exploratory Holes

Where exploratory holes have been carried out as part of this investigation, the spacing has been determined to provide a reasonable indication of the general ground conditions across the site, but the number has ultimately been limited by commercial constraints. The findings of the exploratory holes relate specifically to the exploratory hole locations and are no absolute guarantee of the ground conditions between such locations. Due allowance should be made for the possibility of variation in conditions between exploratory hole locations.

Extent of Contamination Testing

The extent of contaminated land testing carried out on samples obtained from the site has been determined in accordance with the latest legal guidance issued by the government to provide, with reasonable certainty, the probable general levels of contamination present on site that could pose a significant hazard to human health or waters. The extent of site investigation works including chemical testing has also been limited by reasonable commercial constraints. Although extensive testing of samples has been carried out, the volume of samples taken for testing are a minute fraction of the total volume of soils and groundwater present on site. Therefore, there is a residual risk that undetected pockets of contamination may be present on site, situated between testing locations.

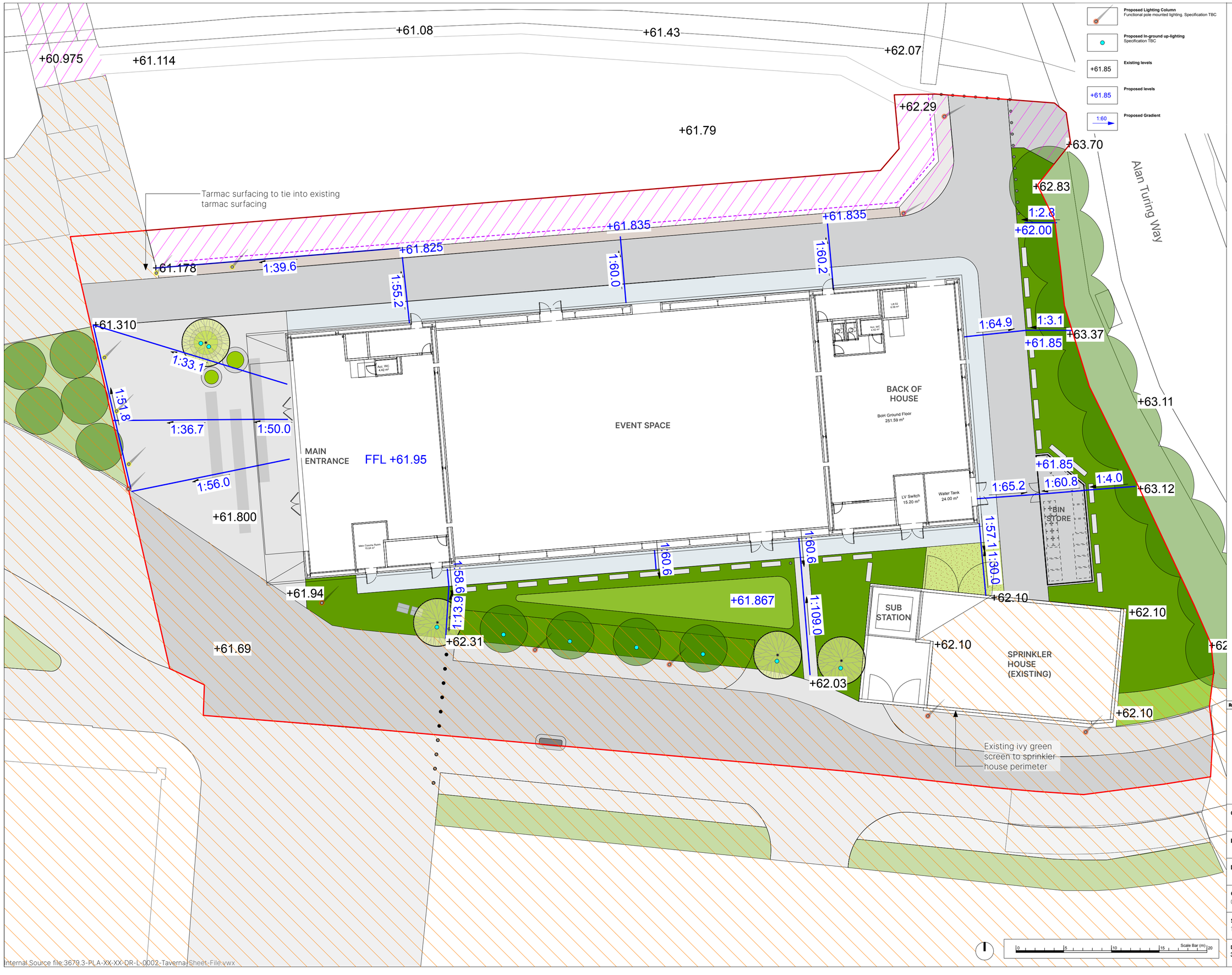
When investigating or developing potentially contaminated land it is important to recognise that sub-surface conditions may vary spatially and temporally. The absence of certain ground, ground gas, contamination or groundwater conditions at the positions tested is not a guarantee that such conditions do not exist anywhere across the site. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities. The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the site.

Extent of Geo-Environmental Studies

This report is strictly limited to the nature of contamination contained within the ground and groundwater at the site. The report does not cover environmental aspects such as air or noise pollution and ground vibrations and the like. In addition, ecological matters relating to wildlife, flora and fauna have not been investigated as part of this report. In particular, the site has not been inspected for the presence or otherwise of invasive species e.g. Japanese Knotweed. It is recommended that the Client appoints a specialist in this subject to carry out a detailed inspection / survey of the site if its presence is suspected. Where mention has been made to the identification asbestos or asbestos-containing materials this is for indicative purposes only and does not constitute or replace a full and proper survey. If an Unexploded Ordnance (UXO) report has been obtained within the report, it has been so on the basis of Health and Safety concerns and no assessment has been made other than transcribing the recommendations of the sub-contractor contained within the report. In terms of a potential contaminative source, unless ordnance has been manufactured / stored on site, UXOs will only be determined as a contaminative source following a positive identification on site.

APPENDIX 2

FIGURES AND DRAWINGS



Proposed Lighting Column
Functional pole mounted lighting. Specification TBC

Proposed In-ground up-lighting
Specification TBC

Existing levels
+61.85

Proposed levels
+61.85

Proposed Gradient
1:60

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NOTES:
1. Do not scale from this drawing.
2. Always work to noted dimensions.
3. All dimensions are in millimetres unless otherwise stated.
4. All setting out, levels and dimensions to be agreed on site.
5. The dimensions of all materials must be checked on site before being laid out.
6. This drawing must be read with the relevant specification clauses and detail drawings.
7. Order of construction and setting out to be agreed on site.

Key

Ornamental Planting
Mixed shrub, herbaceous perennial and ornamental grass planting (plant species to tie into existing North Stand works)
Notes: 300mm topsoil oveer 400mm subsoil

Rain Garden Planting
Rain garden suitable planting mix
Notes: 300mm topsoil oveer 400mm subsoil

Climbers
Tensile wire system with climbing plants to soften and screen the new substation enclosure. Twining climber species - final extent to be coordinated with substation ventilation requirements

Proposed Street tree
Semi-mature tree
20-25cm girth
Notes: 300mm topsoil over 600mm subsoil

Existing Tree

Surface Type 1
Insitu concrete with large format precast concrete banding to arrival plaza

Surface Type 2
Concrete block paving to footpath around the perimiter of the building. Specification to be in keeping with the North Stand development

Surface Type 3
Tarmac to access road to match existing surfacing on North Stand development.

Surface Type 4
Filter Drain along northern edge of access road to form part of the drainage strategy

Surface Type 5
Reinforced grass to sprinkler house access point

Large pre cast concrete planters
Placed in the arrival plaza, the raised concrete planters help soften the entrance facade and allow people to perch on the planter edge

Fixed Bollard
To form HVM line. Specification TBC

Fixed Concrete Block
Fixed concrete block with gabion cladding / artwork to improve appearance. To form HVM line. Specification TBC

Timber Post and rail fence
1.2m high to the northern edge of the access road
Product TBC

Bin Store
Steel frame with timber uprights and lockable gates.
Product TBC

Proposed Lighting Column
Column mounted projectors. Specification TBC

Area to Remain as Existing

Emerging Context Under North Stand Public Realm Works

Revision	Date	Description	Drawn	Apprvd.
P05	02/03/26	Incorporating Architects Comments	CB	SC
P04	27/02/26	Planning	CB	SPL
P03	30/01/26	Review and comment	CB	SPL
P02	28/01/26	For Review and Comment	CB	SPL
P01	22/01/226	For Review and Comment	CB	SPL

PLANIT
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Manchester
2 Back Grafton Street,
Altrincham,
Cheshire,
WA14 1DY
W: planit-ie.com
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T: 0161 928 9281

Client Manchester City Football Club

Project Project Taverna

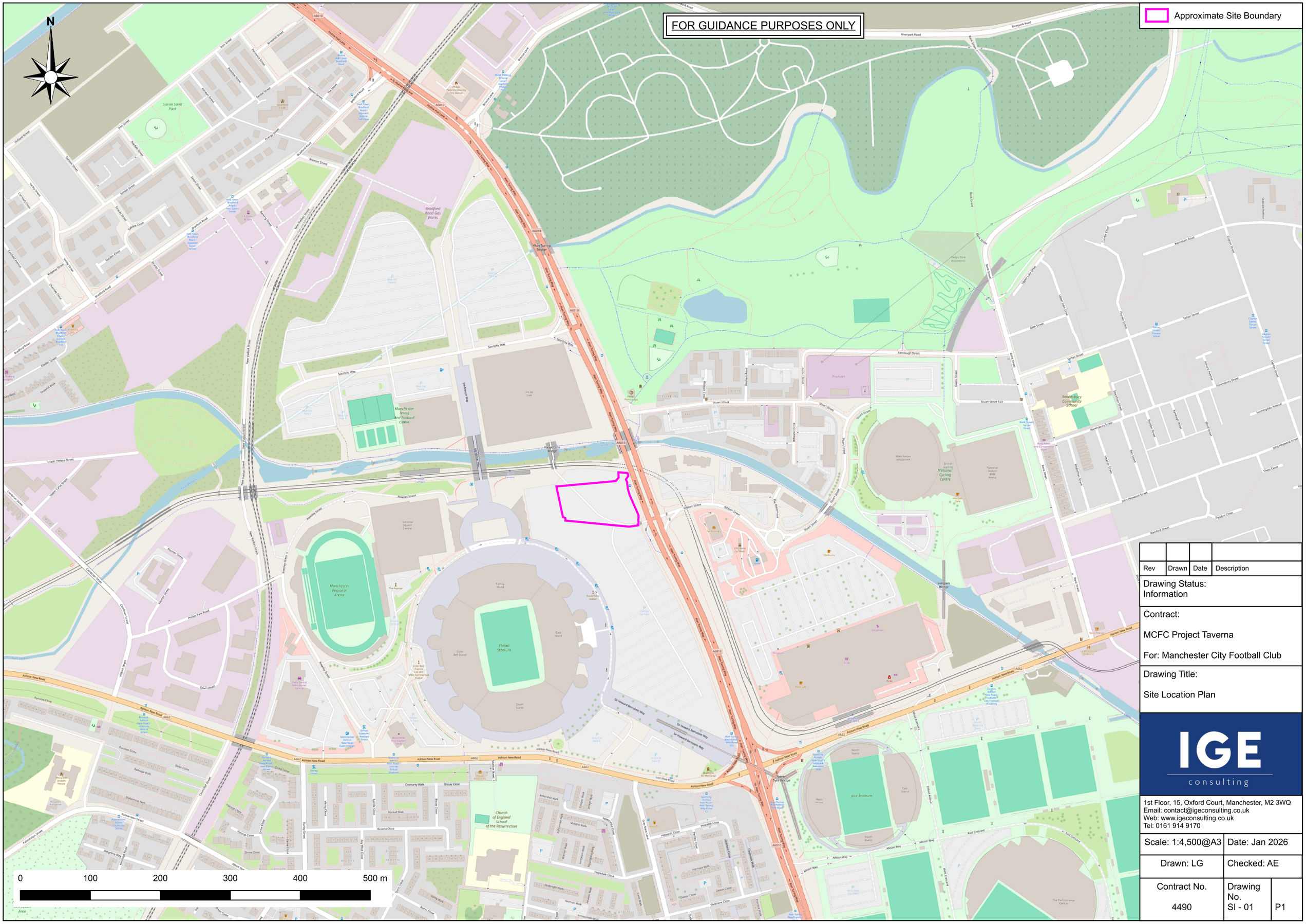
Drg Title Landscape General Arrangement

Created on	Created by	Approved by
09-01-26	CB	SPL

Scale	Size	Workstage
1:250	A2	Planning

Drg No. 3679.3-PLA-XX-XX-DR-L-0001
Suitability S2
Revision P05

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Rev	Drawn	Date	Description

Drawing Status:
Information

Contract:

MCFC Project Taverna

For: Manchester City Football Club

Drawing Title:

Site Location Plan

IGE consulting

1st Floor, 15, Oxford Court, Manchester, M2 3WQ
Email: contact@igeconsulting.co.uk
Web: www.igeconsulting.co.uk
Tel: 0161 914 9170

Scale: 1:4,500@A3	Date: Jan 2026	
Drawn: LG	Checked: AE	
Contract No. 4490	Drawing No. SI - 01	P1

Notes

1 This drawings is indicative and not to scale.

2 This drawing is to be read in conjunction with all relevant Architects and Service Engineers drawings.

SOURCES

PATHWAYS

RECEPTORS

Sources
1. On site Made Ground
2. On site Historical Industrial Land Use
3. On site Historical Infilled Canal Arm
4. Off site Historical Industrial Land Use

Secondary Sources
5. Pooling beneath current and / or future foundations
6. Pooling in relative low points above low permeability deposits
7. Pooling within granular lenses within low permeability deposits

Ground Gas Sources
1. On site Made Ground
2. On site Historical Underground workings

Pathways To Human Health
A. Ingestion of dust and soil
B. Dermal contact with dust and soil
C. Inhalation (dust)
D. Inhalation (vapours)
E. Inhalation and oral backgrounds

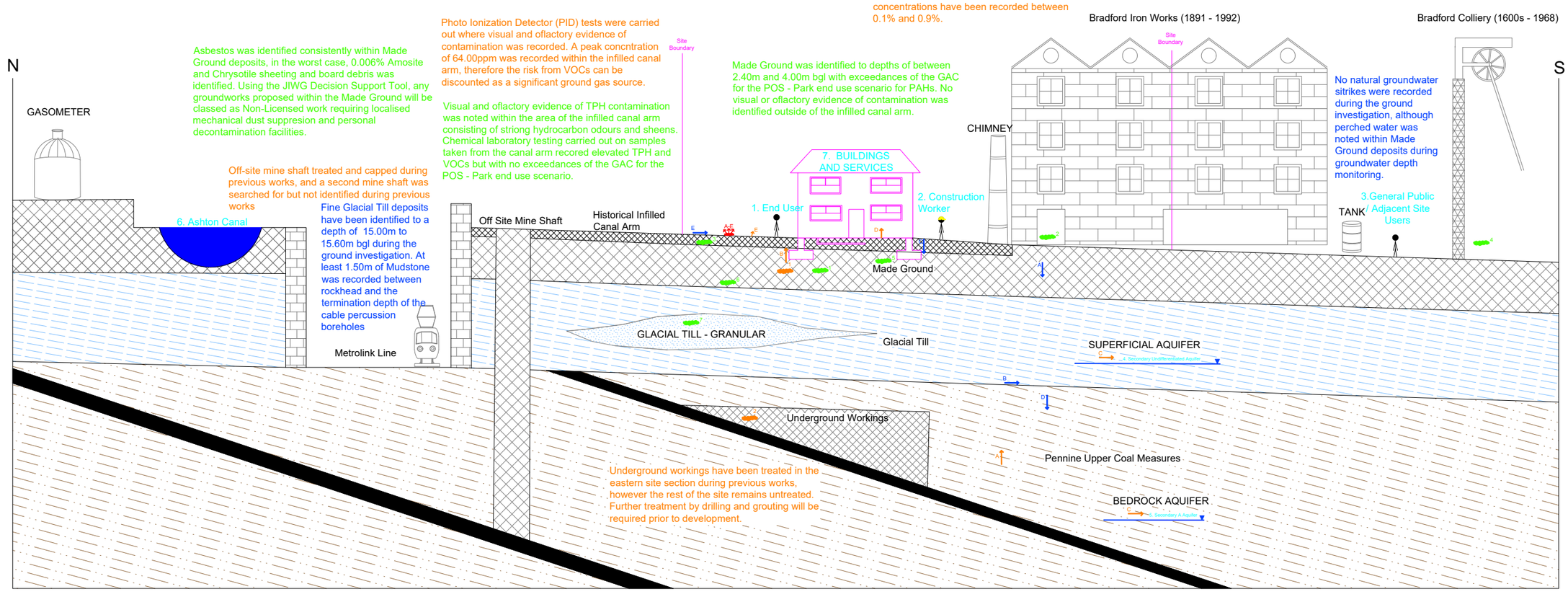
Pathways To Controlled Waters
A. Vertical migration athrough coarse Made Ground and coarse soils.
B. Lateral migration along low permeability natural soils & pooling at relative low points.
C. Vertical migration along future foundations and pooling at base.
D. Migration through porous bedrock
E. Overland flow

Ground Gas Pathways
A. Migration through fractures and fissures in bedrock
B. Preferential migration along foundations and service ducts
C. Migration within groundwater
D. Ingress through cavity walls and floors
E. Inhalation

Receptors
1. End user
2. Construction workers
3. General public / adjacent site users
4. Secondary Undifferentiated aquifer in superficial deposits
5. Secondary A aquifer aquifer in bedrock
6. Surface water - Off-site Ashton Canal
7. Buildings and services

Ground gas monitoring has recorded no steady flows or methane concentrations above instrument detection limits. Peak Carbon Dioxide concentrations have been recorded between 0.1% and 0.9%.

A single peak Carbon Monoxide concentration of 27ppm was recored at CP02 during the 1st ground gas monitoring visit. The 'Workplace Expsoure Limits' safety level as specified by the HSE is 30ppm for long term exposure which is greater than then recorded concentration in CP302.



Rev	Drawn	Date	Description
A	LG	MAY 2026	Revised following intrusive ground investigation

Drawing Status
INFORMATION

Contract
MCFC PROJECT TAVERNA

FOR: MANCHESTER CITY FOOTBALL CLUB

Drawing Title
REVISED CONCEPTUAL SITE MODEL

IGE consulting

1st Floor, 15, Oxford Court, Manchester, M2 3WQ
email: contact@igeconsulting.co.uk
web: www.igeconsulting.co.uk

Scale	Date
NTS	Feb 2026
Drawn LG	**Checked** AE

Contract No.	Drawing No.	
4490	SI-05	P1

FOR GUIDANCE PURPOSES ONLY

N

Tarmac surfacing to tie into existing tarmac surfacing

+61.79

+62.29

+63.70

+62.83

+62.00

+61.835

+61.825

+61.778

+61.310

+61.800

+61.94

+61.69

+62.31

+61.867

+62.03

+62.10

+63.37

+61.85

+63.11

+63.12

1:39.6
1:55.2
1:1.0
1:60.2
1:64.9
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1:56.0
1:13.9
1:60.6
1:109.0
1:65.2
1:57.1
1:30.0
1:60.8
1:4.0

DS301
DS302
DS303
DS304
DS305
DS306
DS307
DS308

TP301 / CBR01
TP302 / CBR02
TP303 / CBR03
TP304 / CBR04
TP305 / CBR05
TP306 / CBR06
TP307 / CBR07
TP308 / CBR08
TP309
TP310
TP311
TP312

CP301
CP302

MAIN ENTRANCE
FFL +61.95
EVENT SPACE
BACK OF HOUSE
BUS STOP
BIN STORE
SUB STATION
SPRINKLER HOUSE (EXISTING)
Existing ivy green screen to sprinkler house perimeter

BUILDING MATERIALS
TEMPORARY FENCE
CONTAINER
TANKS
ROUGH GROUND
BURGER VAN
GRAVEL
TARMAC
PAVING
KERB
CONC
Acc. WC 4.42 m²
Water Tank 24.00 m³
LV Switch 15.20 m²

0 10 20 30 40 50 m

Approximate Site Boundary

IGE Ground Investigation (April 2026)

- Trial Pits
- CBR Tests and Trial Pits
- Dynamic Sample Boreholes
- Cable Percussion Logs

Site Features

- +61.79 Existing Levels (m AOD)
- +61.835 Proposed Levels (m AOD)
- Infilled Canal Edges (Measured)
- Infilled Canal Edges (Inferred)

Rev	Drawn	Date	Description

Drawing Status: Information

Contract:

MCFC Project Taverna

For: Manchester City Football Club

Drawing Title:

Exploratory Hole Location Plan

IGE consulting

1st Floor, 15, Oxford Court, Manchester, M2 3WQ
Email: contact@igeconsulting.co.uk
Web: www.igeconsulting.co.uk
Tel: 0161 914 9170

Scale: 1:300@A3	Date: April 2026	
Drawn: LG	Checked: AE	
Contract No. 4490	Drawing No. SI - 07	P1

APPENDIX 3

CHEMICAL LABORATORY TESTING RESULTS AND SCREENING TABLES

IGE Consulting
Office 11
Bartle House
Oxford Court
Manchester
M2 3WQ

t: [redacted]

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

t: 01923 225404
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Analytical Report Number : 26-017499

Project / Site name:	MCFC Entertainment	**Samples received on:**	02/04/2026
Your job number:	4490	**Samples instructed on/ Analysis started on:**	07/04/2026
Your order number:		**Analysis completed by:**	15/04/2026
Report Issue Number:	1	**Report issued on:**	15/04/2026
Samples Analysed:	12 soil samples		

[redacted]

Signed:

Anna Goc
PL Head of Reporting Team
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
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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: 26-017499
Project / Site name: MCFC Entertainment

Lab Sample Number				879892	879893	879894	879895	879896
Sample Reference				TP303	TP303	TP309	TP304	TP301
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1.20	4.50	2.90	2.70	0.30
Date Sampled				02/04/2026	02/04/2026	02/04/2026	02/04/2026	02/04/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Mass of stone >10mm	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	38.7
Moisture Content	%	0.01	NONE	14	13	21	12	7.3
Total mass of sample received	kg	0.1	NONE	0.6	0.4	0.8	0.6	0.8
Whole Sample Crushed	N/A	N/A	NONE	-	-	-	-	-

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Detected	-	Detected	Detected	Detected
Asbestos Analyst ID	N/A	N/A	N/A	KMC	-	KMC	KMC	KMC
Analysis completed	N/A	N/A	N/A	15/04/2026	-	15/04/2026	15/04/2026	15/04/2026
Actinolite detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	Not-detected
Amosite detected	Type	N/A	ISO 17025	Detected	-	Detected	Detected	Detected
Anthophyllite detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	Detected	-	Detected	Detected	Detected
Crocidolite detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	Not-detected
Tremolite detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	Not-detected
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	< 0.001	-	0.002	0.006	0.001
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	Loose Fibres	-	Loose Fibres, Loose Fibrous Debris	Sheeting/Board Debris, Loose Fibres	Loose Fibres, Loose Fibrous Debris

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	9.6	7.7	9.5	9.5	11.2
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	1.7	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO_4	%	0.005	MCERTS	0.232	0.022	-	0.283	-
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1100	59	840	1200	480
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	540	29.6	419	585	239
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	24	13	-	53	-
Total Sulphur	mg/kg	50	MCERTS	1100	1900	-	1700	-
Total Sulphur	%	0.005	MCERTS	0.106	0.186	-	0.174	-
Ammoniacal Nitrogen as NH_4^+	mg/kg	0.5	MCERTS	8.3	1.8	-	11	-
Ammonium as NH_4^+ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	0.55	0.12	-	0.73	-
Organic Matter (automated)	%	0.1	MCERTS	3.3	1.3	2.8	3.5	2.9
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.9	0.8	1.6	2	1.7
Nitrate as NO_3 (Water Soluble) (2:1)	mg/kg	0.9	NONE	< 0.90	< 0.90	-	< 0.90	-
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	0.9	N/A	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90

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Analytical Report Number: 26-017499
Project / Site name: MCFC Entertainment

Lab Sample Number				879892	879893	879894	879895	879896
Sample Reference				TP303	TP303	TP309	TP304	TP301
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1.20	4.50	2.90	2.70	0.30
Date Sampled				02/04/2026	02/04/2026	02/04/2026	02/04/2026	02/04/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	1.6	< 0.05	4.5	2.6	1.4
Acenaphthylene	mg/kg	0.05	MCERTS	0.12	< 0.05	0.54	0.25	0.22
Acenaphthene	mg/kg	0.05	MCERTS	1.3	< 0.05	4	1.5	0.7
Fluorene	mg/kg	0.05	MCERTS	1.1	< 0.05	2.8	1.2	0.41
Phenanthrene	mg/kg	0.05	MCERTS	7.1	0.14	12	7.6	6.3
Anthracene	mg/kg	0.05	MCERTS	1.8	< 0.05	3.3	1.8	1.4
Fluoranthene	mg/kg	0.05	MCERTS	9.5	0.1	11	8.9	7.8
Pyrene	mg/kg	0.05	MCERTS	8.9	0.09	12	8.7	7.7
Benzo(a)anthracene	mg/kg	0.05	MCERTS	4.5	0.07	6.3	4.5	3.8
Chrysene	mg/kg	0.05	MCERTS	4.5	0.07	5.6	4.1	3.8
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	5.4	0.09	5.5	4.9	4.4
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2.1	< 0.05	2.2	2	1.7
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.7	< 0.05	5.7	4.4	4
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.2	< 0.05	2.2	2	1.8
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.44	< 0.05	0.5	0.42	0.36
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.5	< 0.05	2.5	2.4	2.1
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	57.7	< 0.80 ##	80.8	57.2	47.8
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	20	8.9	24	22	12
Barium (aqua regia extractable)	mg/kg	1	MCERTS	210	150	240	720	200
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.3	1.1	1.4	1.2	0.88
Boron (water soluble)	mg/kg	0.2	MCERTS	3.2	0.8	3.9	3.6	4.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.8	< 0.2	0.8	0.9	0.7
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	27	68	67	38
Copper (aqua regia extractable)	mg/kg	1	MCERTS	69	26	110	94	63
Lead (aqua regia extractable)	mg/kg	1	MCERTS	160	12	190	180	93
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	36	33	34	33	29
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	1.4	1.2	1.3
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	44	29	42	46	31
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	350	63	290	360	220
Magnesium (leachate equivalent)	mg/l	2.5	NONE	3.4	6.2	-	3.1	-
Magnesium (water soluble)	mg/kg	5	NONE	6.8	12	-	6.2	-

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Analytical Report Number: 26-017499
Project / Site name: MCFC Entertainment

Lab Sample Number				879892	879893	879894	879895	879896
Sample Reference				TP303	TP303	TP309	TP304	TP301
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1.20	4.50	2.90	2.70	0.30
Date Sampled				02/04/2026	02/04/2026	02/04/2026	02/04/2026	02/04/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	< 0.010	< 0.010	< 0.010
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	6	-	5.9	5.5	13
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	19	-	20	19	46
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	110	-	130	120	280
TPHCWG - Aliphatic >EC35 - EC44 $_{EH_CU_1D_AL}$	mg/kg	8.4	NONE	60	-	46	66	110
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	140	-	160	150	340
TPHCWG - Aliphatic >EC5 - EC44 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	200	-	200	210	450
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	-	0.016	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	-	0.012	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.02	MCERTS	< 0.020	-	0.044	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	1	-	1.1	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	12	-	18	5.1	7.7
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	51	-	59	31	48
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	120	-	150	140	220
TPHCWG - Aromatic >EC35 - EC44 $_{EH_CU_1D_AR}$	mg/kg	8.4	NONE	55	-	58	72	110
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	180	-	220	180	270
TPHCWG - Aromatic >EC5 - EC44 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	240	-	280	250	380
TPH Total >EC6 - EC40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	NONE	-	< 10	-	-	-
Petroleum Range Organics (EC6 - EC10) $_{HS_1D_TOTAL}$	mg/kg	1	ISO 17025	-	< 1.0	-	-	-
TPH (EC10 - EC40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	MCERTS	-	< 10	-	-	-
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	-	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	-	15	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	-	10	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	-	12	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	-	12	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	-	8.5	< 5.0	< 5.0

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

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Analytical Report Number: 26-017499
Project / Site name: MCFC Entertainment

Lab Sample Number				879897	879898	879899	879900	879901
Sample Reference				DS302	TP309	TP302	TP302	DS307
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1.00	4.20	0.60	2.70	1.50
Date Sampled				02/04/2026	02/04/2026	02/04/2026	02/04/2026	02/04/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Mass of stone >10mm	%	0.1	NONE	60.5	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	17	12	13	11
Total mass of sample received	kg	0.1	NONE	0.6	0.4	0.7	0.6	0.6
Whole Sample Crushed	N/A	N/A	NONE	Crushed	-	-	-	-
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Detected	-	Detected	-	Detected
Asbestos Analyst ID	N/A	N/A	N/A	KMC	-	KMC	-	KMC
Analysis completed	N/A	N/A	N/A	15/04/2026	-	15/04/2026	-	15/04/2026
Actinolite detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Amosite detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Detected
Anthophyllite detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	Detected	-	Detected	-	Detected
Crocidolite detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Tremolite detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	< 0.001	-	< 0.001	-	0.003
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	Loose Fibres	-	Loose Fibres	-	Bitumen, Loose Fibres
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	10.3	7.8	10.5	8.1	9.4
Total Cyanide	mg/kg	1	MCERTS	3.9	< 1.0	1.1	< 1.0	1.3
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO_4	%	0.005	MCERTS	-	0.025	-	0.019	0.373
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1400	110	780	86	1800
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	702	54	389	43.2	914
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	13	-	15	110
Total Sulphur	mg/kg	50	MCERTS	-	140	-	1800	5100
Total Sulphur	%	0.005	MCERTS	-	0.014	-	0.184	0.509
Ammoniacal Nitrogen as NH_4^+	mg/kg	0.5	MCERTS	-	12	-	4.3	19
Ammonium as NH_4^+ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	0.76	-	0.29	1.29
Organic Matter (automated)	%	0.1	MCERTS	3.9	1.7	2.5	1.3	3.9
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.3	1	1.5	0.8	2.3
Nitrate as NO_3 (Water Soluble) (2:1)	mg/kg	0.9	NONE	-	< 0.90	-	< 0.90	< 0.90
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	0.9	N/A	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90

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Analytical Report Number: 26-017499
Project / Site name: MCFC Entertainment

Lab Sample Number				879897	879898	879899	879900	879901
Sample Reference				DS302	TP309	TP302	TP302	DS307
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1.00	4.20	0.60	2.70	1.50
Date Sampled				02/04/2026	02/04/2026	02/04/2026	02/04/2026	02/04/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	2	0.1	1.9	0.1	2.3
Acenaphthylene	mg/kg	0.05	MCERTS	0.32	< 0.05	0.16	< 0.05	0.28
Acenaphthene	mg/kg	0.05	MCERTS	1.8	< 0.05	1.1	0.12	1.6
Fluorene	mg/kg	0.05	MCERTS	1.8	< 0.05	0.94	0.11	1.2
Phenanthrene	mg/kg	0.05	MCERTS	11	0.2	5.9	0.68	7.3
Anthracene	mg/kg	0.05	MCERTS	2.9	< 0.05	1.5	0.24	3.3
Fluoranthene	mg/kg	0.05	MCERTS	13	0.17	7.4	1.1	8.7
Pyrene	mg/kg	0.05	MCERTS	13	0.18	7.2	1.1	9
Benzo(a)anthracene	mg/kg	0.05	MCERTS	6.6	0.12	3.7	0.56	4.3
Chrysene	mg/kg	0.05	MCERTS	6.5	0.13	3.8	0.57	4.5
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	7.6	0.13	4.4	0.5	5
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2.7	< 0.05	1.7	0.23	2.3
Benzo(a)pyrene	mg/kg	0.05	MCERTS	6.8	0.1	3.9	0.41	4.9
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3	0.05	1.8	0.19	2.3
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.63	< 0.05	0.34	< 0.05	0.57
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.4	0.06	2	0.23	2.7
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	83.3	1.24	47.5	6.15	60.3
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	8	15	7.6	24
Barium (aqua regia extractable)	mg/kg	1	MCERTS	180	170	180	120	250
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.2	1.4	0.97	1	1.3
Boron (water soluble)	mg/kg	0.2	MCERTS	2.7	0.4	2.9	0.3	4.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	< 0.2	0.7	< 0.2	1
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	33	29	25	74
Copper (aqua regia extractable)	mg/kg	1	MCERTS	200	31	65	26	160
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	14	130	14	210
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	27	40	23	32	60
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	37	34	40	28	41
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	190	73	270	58	390
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	6.7	-	5.6	3.6
Magnesium (water soluble)	mg/kg	5	NONE	-	13	-	11	7.2

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Analytical Report Number: 26-017499
Project / Site name: MCFC Entertainment

Lab Sample Number				879897	879898	879899	879900	879901
Sample Reference				DS302	TP309	TP302	TP302	DS307
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1.00	4.20	0.60	2.70	1.50
Date Sampled				02/04/2026	02/04/2026	02/04/2026	02/04/2026	02/04/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	< 0.010	-	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	< 0.010	-	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	< 0.010	-	< 0.010
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	22	-	2.3	-	5.1
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	43	-	12	-	28
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	130	-	94	-	390
TPHCWG - Aliphatic >EC35 - EC44 $_{EH_CU_1D_AL}$	mg/kg	8.4	NONE	66	-	39	-	240
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	200	-	110	-	420
TPHCWG - Aliphatic >EC5 - EC44 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	260	-	150	-	660
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	0.018	-	< 0.010	-	0.012
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	-	< 0.010	-	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.02	MCERTS	0.023	-	< 0.020	-	0.025
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	2.4	-	< 1.0	-	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	22	-	5.1	-	8.8
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	96	-	34	-	54
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	230	-	140	-	260
TPHCWG - Aromatic >EC35 - EC44 $_{EH_CU_1D_AR}$	mg/kg	8.4	NONE	92	-	68	-	200
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	350	-	180	-	330
TPHCWG - Aromatic >EC5 - EC44 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	440	-	240	-	530
TPH Total >EC6 - EC40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	NONE	-	< 10	-	< 10	-
Petroleum Range Organics (EC6 - EC10) $_{HS_1D_TOTAL}$	mg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-
TPH (EC10 - EC40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	MCERTS	-	< 10	-	< 10	-
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	-	< 5.0	-	< 5.0
Benzene	µg/kg	5	MCERTS	17	-	< 5.0	-	12
Toluene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	-	5.8
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	-	7.5
p & m-Xylene	µg/kg	8	MCERTS	9.5	-	< 8.0	-	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	-	< 5.0

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

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Analytical Report Number: 26-017499
Project / Site name: MCFC Entertainment

Lab Sample Number				879902	879903
Sample Reference				DS306	DS304
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.40	0.50
Date Sampled				02/04/2026	02/04/2026
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		
Mass of stone >10mm	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	9.3	7.8
Total mass of sample received	kg	0.1	NONE	0.7	0.7
Whole Sample Crushed	N/A	N/A	NONE	-	-

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Detected	Detected
Asbestos Analyst ID	N/A	N/A	N/A	PKU	PKU
Analysis completed	N/A	N/A	N/A	15/04/2026	15/04/2026
Actinolite detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Amosite detected	Type	N/A	ISO 17025	Detected	Detected
Anthophyllite detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Crocidolite detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Tremolite detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	< 0.001	< 0.001
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	Loose Fibres	Loose Fibres

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	10.1	10.3
Total Cyanide	mg/kg	1	MCERTS	1.4	1.5
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO_4	%	0.005	MCERTS	-	-
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1100	880
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	532	438
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-
Total Sulphur	mg/kg	50	MCERTS	-	-
Total Sulphur	%	0.005	MCERTS	-	-
Ammoniacal Nitrogen as NH_4^+	mg/kg	0.5	MCERTS	-	-
Ammonium as NH_4^+ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	-
Organic Matter (automated)	%	0.1	MCERTS	5	3.2
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.9	1.9
Nitrate as NO_3 (Water Soluble) (2:1)	mg/kg	0.9	NONE	-	-
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	0.9	N/A	< 0.90	< 0.90

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Analytical Report Number: 26-017499
Project / Site name: MCFC Entertainment

Lab Sample Number				879902	879903
Sample Reference				DS306	DS304
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.40	0.50
Date Sampled				02/04/2026	02/04/2026
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		
Speciated PAHs					
Naphthalene	mg/kg	0.05	MCERTS	8.6	3.4
Acenaphthylene	mg/kg	0.05	MCERTS	0.45	0.37
Acenaphthene	mg/kg	0.05	MCERTS	6.4	2.8
Fluorene	mg/kg	0.05	MCERTS	5.8	2.5
Phenanthrene	mg/kg	0.05	MCERTS	32	16
Anthracene	mg/kg	0.05	MCERTS	8.8	4.3
Fluoranthene	mg/kg	0.05	MCERTS	31	16
Pyrene	mg/kg	0.05	MCERTS	29	16
Benzo(a)anthracene	mg/kg	0.05	MCERTS	15	8
Chrysene	mg/kg	0.05	MCERTS	14	7.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	14	7.3
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	7.7	4.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	14	7.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	6.4	3.3
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.6	1
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	7.4	4
Total PAH					
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	200	104
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	20	14
Barium (aqua regia extractable)	mg/kg	1	MCERTS	220	150
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.2	0.81
Boron (water soluble)	mg/kg	0.2	MCERTS	1.5	2.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.8	0.9
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	33	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	74	49
Lead (aqua regia extractable)	mg/kg	1	MCERTS	160	210
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	32	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.1	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	70	41
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	310	210
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-
Magnesium (water soluble)	mg/kg	5	NONE	-	-

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Analytical Report Number: 26-017499
Project / Site name: MCFC Entertainment

Lab Sample Number				879902	879903
Sample Reference				DS306	DS304
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.40	0.50
Date Sampled				02/04/2026	02/04/2026
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		
Petroleum Hydrocarbons					
TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	2.5	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	18	12
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	41	23
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	200	120
TPHCWG - Aliphatic >EC35 - EC44 EH_CU_1D_AL	mg/kg	8.4	NONE	88	52
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	260	160
TPHCWG - Aliphatic >EC5 - EC44 EH_CU+HS_1D_AL	mg/kg	10	NONE	350	210
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	MCERTS	0.012	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	0.032	< 0.020
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	4.2	1.1
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	33	18
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	140	83
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	480	210
TPHCWG - Aromatic >EC35 - EC44 EH_CU_1D_AR	mg/kg	8.4	NONE	240	97
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	660	310
TPHCWG - Aromatic >EC5 - EC44 EH_CU+HS_1D_AR	mg/kg	10	NONE	900	400
TPH Total >EC6 - EC40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	-	-
Petroleum Range Organics (EC6 - EC10) HS_1D_TOTAL	mg/kg	1	ISO 17025	-	-
TPH (EC10 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	-	-
VOCs					
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	11	7.3
Toluene	µg/kg	5	MCERTS	6.8	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	12	< 8.0
o-Xylene	µg/kg	5	MCERTS	9.4	< 5.0

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

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Analytical Report Number: **26-017499**
Project / Site name: **MCFC Entertainment**
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample	Analysis completed	Analyst ID
879892	TP303	1.2	204	Loose Fibres	**Amosite & Chrysotile**	< 0.001	**< 0.001**	15/04/2026	KMC
879894	TP309	2.9	208	Loose Fibres, Loose Fibrous Debris	**Amosite & Chrysotile**	0.002	**0.002**	15/04/2026	KMC
879895	TP304	2.7	218	Sheeting/Board Debris, Loose Fibres	**Amosite & Chrysotile**	0.006	**0.006**	15/04/2026	KMC
879896	TP301	0.3	204	Loose Fibres, Loose Fibrous Debris	**Amosite & Chrysotile**	0.001	**0.001**	15/04/2026	KMC
879897	DS302	1	197	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**	15/04/2026	KMC
879899	TP302	0.6	207	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**	15/04/2026	KMC
879901	DS307	1.5	225	Bitumen, Loose Fibres	**Amosite & Chrysotile**	0.003	**0.003**	15/04/2026	KMC
879902	DS306	0.4	229	Loose Fibres	**Amosite**	< 0.001	**< 0.001**	15/04/2026	PKU
879903	DS304	0.5	230	Loose Fibres	**Amosite**	< 0.001	**< 0.001**	15/04/2026	PKU

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

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Analytical Report Number : 26-017499
Project / Site name: MCFC Entertainment

* 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 *
879892	TP303	None Supplied	1.2	Brown clay and sand with gravel
879893	TP303	None Supplied	4.5	Brown clay with vegetation
879894	TP309	None Supplied	2.9	Brown clay and sand with gravel and vegetation
879895	TP304	None Supplied	2.7	Brown sand with gravel and vegetation
879896	TP301	None Supplied	0.3	Brown clay and sand with gravel and stones
879897	DS302	None Supplied	1	Brown clay and sand with gravel and stones
879898	TP309	None Supplied	4.2	Brown clay
879899	TP302	None Supplied	0.6	Brown clay and sand with gravel
879900	TP302	None Supplied	2.7	Brown clay
879901	DS307	None Supplied	1.5	Brown clay and sand with gravel and vegetation
879902	DS306	None Supplied	0.4	Brown sand with gravel and vegetation
879903	DS304	None Supplied	0.5	Brown clay and sand with gravel and brick

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Analytical Report Number : 26-017499
Project / Site name: MCFC Entertainment

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
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, 2021	A001B	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references	HSE Report No: 83/1996, HSG 248 (2021), HSG 264 (2012) & SCA Blue Book (draft)	A006B	D	ISO 17025
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
Total organic carbon (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 (Wet Weight)	Moisture content (% wet weight), determined gravimetrically (up to 30°C)	In-house-procedure based on BS EN 12880:2000	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
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	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES	In-house method based on TRL 447	L038B	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES	In-house method	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
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
Total petroleum hydrocarbons with carbon banding by GC-FID in soil	Determination of total petroleum hydrocarbons in soil by GC-FID with carbon banding aliphatic and aromatic	In-house method	L076B	D	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil (Summed Bands)	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic (Summed Bands).	Calculation	L076B/L088-PL	D/W	NONE

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Analytical Report Number : 26-017499
Project / Site name: MCFC Entertainment

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
Hexavalent chromium in soil (low 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
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser	In-house method	L082B	D	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by HS-GC/MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC/MS with carbon banding aliphatic and aromatic	In-house method	L088-PL	W	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
Water Soluble Nitrate (2:1) as NO3 in soil	Determination of nitrate as NO3 in soil by discrete method	In-house method by discrete analyzer based on TON as N, Total Oxidized Nitrogen (Vanadium Chloride reduction), Thermo Fisher Scientific, MANUAL 2015-0	L082B	W	NONE
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE
Total petroleum hydrocarbons by GC-FID in soil	Determination of total petroleum hydrocarbons in soil by GC-FID	In-house method	L076B	D	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil (Summed Bands)	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS (Summed Bands).	Calculation	L076B/L088-PL	D/W	NONE
Total petroleum hydrocarbons by HS-GC-MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC-MS	In-house method	L129-PL	W	ISO 17025
Whole Sample Crushed	Either: Client specific preparation instructions - sample(s) crushed whole prior to analysis OR Sample unsuitable for standard preparation and therefore crushed whole prior to analysis	In house method, applicable to dry samples only	L019B	D	NONE

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.

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

Analytical Report Number : 26-017499
Project / Site name: MCFC Entertainment

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

##- 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.

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[redacted]

Analytical Report Number : 26-018094

Project / Site name:	MCFC	**Samples received on:**	07/04/2026
Your job number:	4490	**Samples instructed on/ Analysis started on:**	08/04/2026
Your order number:	4490 LG	**Analysis completed by:**	16/04/2026
Report Issue Number:	1	**Report issued on:**	17/04/2026
Samples Analysed:	6 soil samples		

[redacted]

Signed:

Anna Goc
PL Head of Reporting Team
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
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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: 26-018094
Project / Site name: MCFC
Your Order No: 4490 LG

Lab Sample Number				882999	883000	883001	883002	883003
Sample Reference				TP303	TP309	TP304	TP305	TP306
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				2.90	3.60	4.10	2.60	1.20
Date Sampled				01/04/2026	01/04/2026	01/04/2026	02/04/2026	02/04/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Mass of stone >10mm	%	0.1	NONE	3.9	0.1	2.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	23	23	13	13
Total mass of sample received	kg	0.1	NONE	0.9	0.8	1	1	1

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Detected	Not-detected	Detected	-	Detected
Asbestos Analyst ID	N/A	N/A	N/A	KJK	KJK	KJK	-	KJK
Analysis completed	N/A	N/A	N/A	14/04/2026	14/04/2026	14/04/2026	-	14/04/2026
Actinolite detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Amosite detected	Type	N/A	ISO 17025	Not-detected	-	Detected	-	Detected
Anthophyllite detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	Detected	-	Detected	-	Detected
Crocidolite detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Tremolite detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	< 0.001	-	< 0.001	-	< 0.001
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	Asbestos Cement	-	Loose Fibres	-	Loose Fibres, Loose Fibrous Debris

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	9.2	8.7	9.1	8.5	9.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	1.1	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1900	900	2000	320	1100
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	933	452	1020	158	530
Organic Matter (automated)	%	0.1	MCERTS	4.2	3.7	3.3	1.6	3
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.4	2.1	1.9	0.9	1.8
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	0.9	N/A	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-

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Analytical Report Number: 26-018094
Project / Site name: MCFC
Your Order No: 4490 LG

Lab Sample Number				882999	883000	883001	883002	883003
Sample Reference				TP303	TP309	TP304	TP305	TP306
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				2.90	3.60	4.10	2.60	1.20
Date Sampled				01/04/2026	01/04/2026	01/04/2026	02/04/2026	02/04/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	3.8	32	3.7	0.06	2.7
Acenaphthylene	mg/kg	0.05	MCERTS	0.28	5.3	0.42	< 0.05	0.41
Acenaphthene	mg/kg	0.05	MCERTS	2.7	29	2.2	< 0.05	2
Fluorene	mg/kg	0.05	MCERTS	2.2	22	1.8	< 0.05	2
Phenanthrene	mg/kg	0.05	MCERTS	12	73	9.4	0.09	13
Anthracene	mg/kg	0.05	MCERTS	3.1	21	2.5	< 0.05	3.5
Fluoranthene	mg/kg	0.05	MCERTS	15	37	9.2	0.1	16
Pyrene	mg/kg	0.05	MCERTS	14	53	9.6	0.09	16
Benzo(a)anthracene	mg/kg	0.05	MCERTS	6.2	23	4.7	0.07	7.8
Chrysene	mg/kg	0.05	MCERTS	5.8	21	4.4	0.06	7.1
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	7.3	16	5	< 0.05	8.6
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2.5	5.4	1.6	< 0.05	2.9
Benzo(a)pyrene	mg/kg	0.05	MCERTS	6	18	4.4	< 0.05	7.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3	5.4	1.9	< 0.05	3.3
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.7	1.7	0.49	< 0.05	0.75
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.4	6.2	2.2	< 0.05	3.7
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	88	370	63.5	< 0.80	97.3
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	24	32	19	4.9	18
Barium (aqua regia extractable)	mg/kg	1	MCERTS	200	340	230	100	190
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.3	1.3	1.3	1.1	1.1
Boron (water soluble)	mg/kg	0.2	MCERTS	4.3	2.4	7.1	0.8	1.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.1	0.6	0.8	< 0.2	0.8
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	34	50	55	30	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	79	86	81	27	66
Lead (aqua regia extractable)	mg/kg	1	MCERTS	200	130	150	12	150
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	34	40	36	32	29
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	1.3
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	49	37	43	28	41
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	390	290	400	61	260
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	-	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	-	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	0.02	< 0.010	-	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	1.3	8.4	1.4	-	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	11	29	5.3	-	3.4
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	30	53	20	-	10
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	230	330	98	-	71
TPHCWG - Aliphatic >EC35 - EC44 $_{EH_CU_1D_AL}$	mg/kg	8.4	NONE	130	130	57	-	35
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	270	420	130	-	85
TPHCWG - Aliphatic >EC5 - EC44 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	400	550	180	-	120
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	0.017	0.013	-	< 0.010

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Analytical Report Number: 26-018094
Project / Site name: MCFC
Your Order No: 4490 LG

Lab Sample Number				882999	883000	883001	883002	883003
Sample Reference				TP303	TP309	TP304	TP305	TP306
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				2.90	3.60	4.10	2.60	1.20
Date Sampled				01/04/2026	01/04/2026	01/04/2026	02/04/2026	02/04/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	< 0.010	0.011	0.012	-	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	< 0.020	0.43	0.082	-	< 0.020
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	3.3	14	< 1.0	-	1.2
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	18	110	6	-	6.7
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	73	210	29	-	28
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	300	280	81	-	87
TPHCWG - Aromatic >EC35 - EC44 EH_CU_1D_AR	mg/kg	8.4	NONE	200	82	51	-	39
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	400	620	120	-	120
TPHCWG - Aromatic >EC5 - EC44 EH_CU+HS_1D_AR	mg/kg	10	NONE	600	700	170	-	160
TPH Total >EC6 - EC40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	-	-	-	< 10	-
Petroleum Range Organics (EC6 - EC10) HS_1D_TOTAL	mg/kg	1	ISO 17025	-	-	-	< 1.0	-
TPH (EC10 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	-	-	-	< 10	-

VOCs

Chloromethane	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Chloroethane	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Bromomethane	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Vinyl Chloride	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	-	-
Trichlorofluoromethane	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
1,1-Dichloroethene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Trans 1,2-dichloroethylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	< 5.0
1,1-Dichloroethane	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
2,2-Dichloropropane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	-	-
Chloroform	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
1,1,1-Trichloroethane	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
1,2-Dichloroethane	µg/kg	7	MCERTS	< 7.0	< 7.0	< 7.0	-	-
1,1-Dichloropropene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Cis-1,2-dichloroethene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Benzene	µg/kg	5	MCERTS	< 5.0	15	12	-	< 5.0
Carbontetrachloride	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
1,2-Dichloropropane	µg/kg	6	MCERTS	< 6.0	< 6.0	< 6.0	-	-
Trichloroethene	µg/kg	10	MCERTS	< 10	< 10	< 10	-	-
Dibromomethane	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Bromodichloromethane	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Cis-1,3-dichloropropene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Trans-1,3-dichloropropene	µg/kg	10	MCERTS	< 10	< 10	< 10	-	-
Toluene	µg/kg	5	MCERTS	< 5.0	8.5	12	-	< 5.0
1,1,2-Trichloroethane	µg/kg	6	MCERTS	< 6.0	< 6.0	< 6.0	-	-
1,3-Dichloropropane	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Dibromochloromethane	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Tetrachloroethene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
1,2-Dibromoethane	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Chlorobenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-

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Analytical Report Number: 26-018094
Project / Site name: MCFC
Your Order No: 4490 LG

Lab Sample Number				882999	883000	883001	883002	883003
Sample Reference				TP303	TP309	TP304	TP305	TP306
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				2.90	3.60	4.10	2.60	1.20
Date Sampled				01/04/2026	01/04/2026	01/04/2026	02/04/2026	02/04/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
1,1,1,2-Tetrachloroethane	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	190	25	-	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	36	20	-	< 8.0
Styrene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Bromoform	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
o-Xylene	µg/kg	5	MCERTS	< 5.0	85	17	-	< 5.0
Isopropylbenzene	µg/kg	5	MCERTS	< 5.0	59	< 5.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	-	-
Bromobenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
n-Propylbenzene	µg/kg	5	MCERTS	< 5.0	15	< 5.0	-	-
2-Chlorotoluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
4-Chlorotoluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
1,3,5-Trimethylbenzene	µg/kg	5	MCERTS	< 5.0	70	< 5.0	-	-
tert-Butylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
1,2,4-Trimethylbenzene	µg/kg	5	MCERTS	< 5.0	450	32	-	-
sec-Butylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
1,3-Dichlorobenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
p-Isopropyltoluene	µg/kg	5	MCERTS	< 5.0	43	< 5.0	-	-
1,4-Dichlorobenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
1,2-Dichlorobenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Butylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	-	-
1,2,4-Trichlorobenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Hexachlorobutadiene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
1,2,3-Trichlorobenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-

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

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Analytical Report Number: 26-018094
Project / Site name: MCFC
Your Order No: 4490 LG

Lab Sample Number				883004
Sample Reference				TP308
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				1.70
Date Sampled				02/04/2026
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**	
Mass of stone >10mm	%	0.1	NONE	2.2
Moisture Content	%	0.01	NONE	14
Total mass of sample received	kg	0.1	NONE	0.9

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KJK
Analysis completed	N/A	N/A	N/A	14/04/2026
Actinolite detected	Type	N/A	ISO 17025	-
Amosite detected	Type	N/A	ISO 17025	-
Anthophyllite detected	Type	N/A	ISO 17025	-
Chrysotile detected	Type	N/A	ISO 17025	-
Crocidolite detected	Type	N/A	ISO 17025	-
Tremolite detected	Type	N/A	ISO 17025	-
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	10.1
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1300
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	630
Organic Matter (automated)	%	0.1	MCERTS	2.2
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.3
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	0.9	N/A	< 0.90

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-

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Lab Sample Number				883004
Sample Reference				TP308
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				1.70
Date Sampled				02/04/2026
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**	
Speciated PAHs				
Naphthalene	mg/kg	0.05	MCERTS	1.4
Acenaphthylene	mg/kg	0.05	MCERTS	0.26
Acenaphthene	mg/kg	0.05	MCERTS	1
Fluorene	mg/kg	0.05	MCERTS	1
Phenanthrene	mg/kg	0.05	MCERTS	6.5
Anthracene	mg/kg	0.05	MCERTS	1.9
Fluoranthene	mg/kg	0.05	MCERTS	7.1
Pyrene	mg/kg	0.05	MCERTS	6.9
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.3
Chrysene	mg/kg	0.05	MCERTS	3.1
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	3
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.4
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.9
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.3
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.39
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.7
Total PAH				
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	43.3
Heavy Metals / Metalloids				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	23
Barium (aqua regia extractable)	mg/kg	1	MCERTS	220
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.2
Boron (water soluble)	mg/kg	0.2	MCERTS	3.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35
Copper (aqua regia extractable)	mg/kg	1	MCERTS	82
Lead (aqua regia extractable)	mg/kg	1	MCERTS	160
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	39
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	48
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	300
Petroleum Hydrocarbons				
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010
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 >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	100
TPHCWG - Aliphatic >EC35 - EC44 $_{EH_CU_1D_AL}$	mg/kg	8.4	NONE	49
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	100
TPHCWG - Aliphatic >EC5 - EC44 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	150
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010

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Analytical Report Number: 26-018094
Project / Site name: MCFC
Your Order No: 4490 LG

Lab Sample Number				883004
Sample Reference				TP308
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				1.70
Date Sampled				02/04/2026
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**	
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	< 0.020
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	3.8
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	33
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	120
TPHCWG - Aromatic >EC35 - EC44 EH_CU_1D_AR	mg/kg	8.4	NONE	61
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	160
TPHCWG - Aromatic >EC5 - EC44 EH_CU+HS_1D_AR	mg/kg	10	NONE	220
TPH Total >EC6 - EC40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	-
Petroleum Range Organics (EC6 - EC10) HS_1D_TOTAL	mg/kg	1	ISO 17025	-
TPH (EC10 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	-

VOCs

Chloromethane	µg/kg	5	MCERTS	-
Chloroethane	µg/kg	5	MCERTS	-
Bromomethane	µg/kg	5	MCERTS	-
Vinyl Chloride	µg/kg	5	NONE	-
Trichlorofluoromethane	µg/kg	5	MCERTS	-
1,1-Dichloroethene	µg/kg	5	MCERTS	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	MCERTS	-
Trans 1,2-dichloroethylene	µg/kg	5	MCERTS	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0
1,1-Dichloroethane	µg/kg	5	MCERTS	-
2,2-Dichloropropane	µg/kg	5	NONE	-
Chloroform	µg/kg	5	MCERTS	-
1,1,1-Trichloroethane	µg/kg	5	MCERTS	-
1,2-Dichloroethane	µg/kg	7	MCERTS	-
1,1-Dichloropropene	µg/kg	5	MCERTS	-
Cis-1,2-dichloroethene	µg/kg	5	MCERTS	-
Benzene	µg/kg	5	MCERTS	< 5.0
Carbontetrachloride	µg/kg	5	MCERTS	-
1,2-Dichloropropane	µg/kg	6	MCERTS	-
Trichloroethene	µg/kg	10	MCERTS	-
Dibromomethane	µg/kg	5	MCERTS	-
Bromodichloromethane	µg/kg	5	MCERTS	-
Cis-1,3-dichloropropene	µg/kg	5	MCERTS	-
Trans-1,3-dichloropropene	µg/kg	10	MCERTS	-
Toluene	µg/kg	5	MCERTS	< 5.0
1,1,2-Trichloroethane	µg/kg	6	MCERTS	-
1,3-Dichloropropane	µg/kg	5	MCERTS	-
Dibromochloromethane	µg/kg	5	MCERTS	-
Tetrachloroethene	µg/kg	5	MCERTS	-
1,2-Dibromoethane	µg/kg	5	MCERTS	-
Chlorobenzene	µg/kg	5	MCERTS	-

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Project / Site name: MCFC
Your Order No: 4490 LG

Lab Sample Number				883004
Sample Reference				TP308
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				1.70
Date Sampled				02/04/2026
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
1,1,1,2-Tetrachloroethane	µg/kg	5	MCERTS	-
Ethylbenzene	µg/kg	5	MCERTS	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0
Styrene	µg/kg	5	MCERTS	-
Bromoform	µg/kg	5	MCERTS	-
o-Xylene	µg/kg	5	MCERTS	< 5.0
Isopropylbenzene	µg/kg	5	MCERTS	-
1,1,2,2-Tetrachloroethane	µg/kg	5	NONE	-
Bromobenzene	µg/kg	5	MCERTS	-
n-Propylbenzene	µg/kg	5	MCERTS	-
2-Chlorotoluene	µg/kg	5	MCERTS	-
4-Chlorotoluene	µg/kg	5	MCERTS	-
1,3,5-Trimethylbenzene	µg/kg	5	MCERTS	-
tert-Butylbenzene	µg/kg	5	MCERTS	-
1,2,4-Trimethylbenzene	µg/kg	5	MCERTS	-
sec-Butylbenzene	µg/kg	5	MCERTS	-
1,3-Dichlorobenzene	µg/kg	5	MCERTS	-
p-Isopropyltoluene	µg/kg	5	MCERTS	-
1,4-Dichlorobenzene	µg/kg	5	MCERTS	-
1,2-Dichlorobenzene	µg/kg	5	MCERTS	-
Butylbenzene	µg/kg	5	MCERTS	-
1,2-Dibromo-3-chloropropane	µg/kg	8	MCERTS	-
1,2,4-Trichlorobenzene	µg/kg	5	MCERTS	-
Hexachlorobutadiene	µg/kg	5	MCERTS	-
1,2,3-Trichlorobenzene	µg/kg	5	MCERTS	-

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

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UKAS TESTING
4041

Normec i2 Analytical

Analytical Report Number: **26-018094**
Project / Site name: **MCFC**
Your Order No: **4490 LG**

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample	Analysis completed	Analyst ID
882999	TP303	2.9	220	Asbestos Cement	**Chrysotile**	< 0.001	**< 0.001**	14/04/2026	KJK
883001	TP304	4.1	205	Loose Fibres	**Amosite & Chrysotile**	< 0.001	**< 0.001**	14/04/2026	KJK
883003	TP306	1.2	225	Loose Fibres, Loose Fibrous Debris	**Amosite & Chrysotile**	< 0.001	**< 0.001**	14/04/2026	KJK

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

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Project / Site name: MCFC

* 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 *
882999	TP303	None Supplied	2.9	Brown loam and clay with vegetation and stones
883000	TP309	None Supplied	3.6	Brown clay and loam with stones
883001	TP304	None Supplied	4.1	Brown clay and loam with stones
883002	TP305	None Supplied	2.6	Brown clay and loam with gravel
883003	TP306	None Supplied	1.2	Brown loam and clay with gravel
883004	TP308	None Supplied	1.7	Brown loam and sand with stones

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Analytical Report Number : 26-018094
Project / Site name: MCFC

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
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, 2021	A001B	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references	HSE Report No: 83/1996, HSG 248 (2021), HSG 264 (2012) & SCA Blue Book (draft)	A006B	D	ISO 17025
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
Total organic carbon (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 (Wet Weight)	Moisture content (% wet weight), determined gravimetrically (up to 30°C)	In-house-procedure based on BS EN 12880:2000	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
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	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
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
Total petroleum hydrocarbons with carbon banding by GC-FID in soil	Determination of total petroleum hydrocarbons in soil by GC-FID with carbon banding aliphatic and aromatic	In-house method	L076B	D	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil (Summed Bands)	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic (Summed Bands).	Calculation	L076B/L088-PL	D/W	NONE
Hexavalent chromium in soil (low 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
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS

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Project / Site name: MCFC

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 cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Total petroleum hydrocarbons with carbon banding by HS-GC/MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC/MS with carbon banding aliphatic and aromatic	In-house method	L088-PL	W	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
Water Soluble Nitrate (2:1) as NO3 in soil	Determination of nitrate as NO3 in soil by discrete method	In-house method by discrete analyzer based on TON as N, Total Oxidized Nitrogen (Vanadium Chloride reduction), Thermo Fisher Scientific, MANUAL 2015-0	L082B	W	N/A
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE
Total petroleum hydrocarbons by GC-FID in soil	Determination of total petroleum hydrocarbons in soil by GC-FID	In-house method	L076B	D	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil (Summed Bands)	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS (Summed Bands).	Calculation	L076B/L088-PL	D/W	NONE
Total petroleum hydrocarbons by HS-GC-MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC-MS	In-house method	L129-PL	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.

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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IGE consulting

Project: MCFC

Job No: 4490

Lab Sample Number			879892.00	879894.00	879895.00	879896.00	879897.00	879899.00	879901.00	879902.00	879903.00	883003.00	883004.00	882999.00	883000.00	883001.00	879898.00	879900.00	883002.00	879893.00
Sample Reference			TP303	TP309	TP304	TP301	DS302	TP302	DS307	DS306	DS304	TP306	TP308	TP303	TP309	TP304	TP309	TP302	TP305	TP303
Stratum			Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground (Infilled Canal)	Made Ground (Infilled Canal)	Made Ground (Infilled Canal)	Glacial Till	Glacial Till	Glacial Till	Glacial Till
Depth (m)			1.20	2.90	2.70	0.30	1.00	0.60	1.50	0.40	0.50	1.20	1.70	2.90	3.60	4.10	4.20	2.70	2.60	4.50
Date Sampled			02/04/2026	02/04/2026	02/04/2026	02/04/2026	02/04/2026	02/04/2026	02/04/2026	02/04/2026	02/04/2026	02/04/2026	02/04/2026	01/04/2026	01/04/2026	01/04/2026	02/04/2026	02/04/2026	02/04/2026	02/04/2026
Analytical Parameter (Soil Analysis)	**Units**	**LoD**																		
Stone Content	%	0.1	0.10	0.10	0.10	38.70	60.50	0.10	0.10	0.10	0.10	0.10	2.20	3.90	0.10	2.10	0.10	0.10	0.10	0.10
Moisture Content	%	0.01	14.00	21.00	12.00	7.30	12.00	12.00	11.00	9.30	7.80	13.00	14.00	15.00	23.00	23.00	17.00	13.00	13.00	13.00
Total mass of sample received	kg	0.1	0.60	0.80	0.60	0.80	0.60	0.70	0.60	0.70	0.70	1.00	0.90	0.90	0.80	1.00	0.40	0.60	1.00	0.40
Asbestos in Soil Screen	Type	N/A	Amosite and Chrysotile	Amosite and Chrysotile	Amosite and Chrysotile	Amosite and Chrysotile	Chrysotile	Chrysotile	Amosite and Chrysotile	Amosite	Amosite	Amosite and Chrysotile	Not-detected	Chrysotile	Not-detected	Amosite and Chrysotile	-	-	-	-
Asbestos Containing Material (ACM) Detected	Type	N/A	Loose Fibres	Loose Fibres, Loose Fibrous Debris	Sheeting / Board Debris, Loose Fibres	Loose Fibres, Loose Fibrous Debris	Loose Fibres	Loose Fibres	Bitumen, Loose Fibres	Loose Fibres	Loose Fibres	Loose Fibres, Loose Fibrous Debris	-	Asbestos Cement	-	Loose Fibres	-	-	-	-
Asbestos Quantification Total	%	0.001	0.001	0.002	0.006	0.001	0.001	0.001	0.003	0.001	0.001	0.001	-	0.001	-	0.001	-	-	-	-
General Inorganics																				
pH - Automated	pH Units	N/A	9.60	9.50	9.50	11.20	10.30	10.50	9.40	10.10	10.30	9.90	10.10	9.20	8.70	9.10	7.80	8.10	8.50	7.70
Total Cyanide	mg/kg	1	1.00	1.00	1.70	1.00	3.90	1.10	1.30	1.40	1.50	1.00	1.00	1.00	1.00	1.10	1.00	1.00	1.00	1.00
Free Cyanide	mg/kg	1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Total Sulphate as SO4	%	0.005	0.23	-	0.28	-	-	-	0.37	-	-	-	-	-	-	-	0.03	0.02	-	0.02
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.50	1100.00	840.00	1200.00	480.00	1400.00	780.00	1800.00	1100.00	880.00	1100.00	1300.00	1900.00	900.00	2000.00	110.00	86.00	320.00	59.00
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	540.00	419.00	585.00	238.00	702.00	389.00	914.00	532.00	438.00	530.00	630.00	933.00	452.00	1020.00	54.00	43.20	158.00	29.60
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	24.00	-	53.00	-	-	-	110.00	-	-	-	-	-	-	-	13.00	15.00	-	13.00
Total Sulphur	%	0.005	0.11	-	0.17	-	-	-	0.51	-	-	-	-	-	-	-	0.01	0.18	-	0.19
Ammoniacal Nitrogen as NH4	mg/kg	0.5	8.30	-	11.00	-	-	-	19.00	-	-	-	-	-	-	-	12.00	4.30	-	1.80
Ammonium as NH4 (10:1 leachate equivalent)	mg/l	0.05	0.55	-	0.73	-	-	-	1.29	-	-	-	-	-	-	-	0.76	0.29	-	0.12
Organic Matter (automated)	%	0.1	3.30	2.80	3.50	2.90	3.90	2.50	3.90	5.00	3.20	3.00	2.20	4.20	3.70	3.30	1.70	1.30	1.60	1.30
Total Organic Carbon (automated)	%	0.100	1.90	1.60	2.00	1.70	2.30	1.50	2.30	2.90	1.90	1.80	1.30	2.40	2.10	1.90	1.00	0.80	0.90	0.80
Water Soluble Nitrate (2:1) as NO3	mg/kg	0.9	0.90	-	0.90	-	-	-	0.90	-	-	-	-	-	-	-	0.90	0.90	-	0.90
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	0.9	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Speciated PAHs																				
Naphthalene	mg/kg	0.05	1.60	4.50	2.60	1.40	2.00	1.90	2.30	8.60	3.40	2.70	1.40	3.80	32.00	3.70	0.10	0.10	0.06	0.05
Acenaphthylene	mg/kg	0.05	0.12	0.54	0.25	0.22	0.32	0.16	0.28	0.45	0.37	0.41	0.26	0.28	5.30	0.42	0.05	0.05	0.05	0.05
Acenaphthene	mg/kg	0.05	1.30	4.00	1.50	0.70	1.80	1.10	1.60	6.40	2.80	2.00	1.00	2.70	29.00	2.20	0.05	0.12	0.05	0.05
Fluorene	mg/kg	0.05	1.10	2.80	1.20	0.41	1.80	0.94	1.20	5.80	2.50	2.00	1.00	2.20	22.00	1.80	0.05	0.11	0.05	0.05
Phenanthrene	mg/kg	0.05	7.10	12.00	7.60	6.30	11.00	5.90	7.30	32.00	16.00	13.00	6.50	12.00	73.00	9.40	0.20	0.68	0.09	0.14
Anthracene	mg/kg	0.05	1.80	3.30	1.80	1.40	2.90	1.50	3.30	8.80	4.30	3.50	1.90	3.10	21.00	2.50	0.05	0.24	0.05	0.05
Fluoranthene	mg/kg	0.05	9.50	11.00	8.90	7.80	13.00	7.40	8.70	31.00	16.00	16.00	7.10	15.00	37.00	9.20	0.17	1.10	0.10	0.10
Pyrene	mg/kg	0.05	8.90	12.00	8.70	7.00	13.00	7.20	9.00	29.00	16.00	16.00	6.90	14.00	53.00	9.60	0.18	1.10	0.09	0.09
Benzo(a)anthracene	mg/kg	0.05	4.50	6.30	4.50	3.80	6.60	3.70	4.30	15.00	8.00	7.80	3.30	6.20	23.00	4.70	0.12	0.56	0.07	0.07
Chrysene	mg/kg	0.05	4.50	5.60	4.10	3.80	6.50	3.80	4.50	14.00	7.40	7.10	3.10	5.80	21.00	4.40	0.13	0.57	0.06	0.07
Benzo(b)fluoranthene	mg/kg	0.05	5.40	5.50	4.90	4.40	7.60	4.40	5.00	14.00	7.30	8.60	3.30	5.50	16.00	5.00	0.13	0.50	0.05	0.09
Benzo(k)fluoranthene	mg/kg	0.05	2.10	2.20	2.00	1.70	2.70	1.70	2.30	7.70	4.10	2.90	1.40	2.50	5.40	1.60	0.05	0.23	0.05	0.05
Benzo(a)pyrene	mg/kg	0.05	4.70	5.70	4.40	4.00	6.80	3.90	4.90	14.00	7.60	7.20	2.90	6.00	14.00	4.40	0.10	0.41	0.05	0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	2.20	2.20	2.00	1.80	3.00	1.80	2.30	3.30	3.30	3.30	1.30	3.00	3.40	2.00	0.05	0.19	0.05	0.05
Dibenz(a,h)anthracene	mg/kg	0.05	0.44	0.50	0.42	0.36	0.63	0.34	0.57	1.60	1.00	0.75	0.39	0.70	1.70	0.49	0.05	0.05	0.05	0.05
Benzo(ghi)perylene	mg/kg	0.05	2.50	2.50	2.40	2.10	3.40	2.00	2.70	7.40	4.00	3.70	1.70	3.40	6.20	2.20	0.06	0.23	0.05	0.05
Total PAH																				
Speciated Total EPA-16 PAHs	mg/kg	0.8	57.70	80.80	57.20	47.80	83.30	47.50	60.30	200.00	104.00	97.30	43.30	88.00	370.00	63.50	1.24	6.15	0.80	0.80
Heavy Metals / Metalloids																				
Arsenic (aqua regia extractable)	mg/kg	1	20.00	24.00	22.00	12.00	16.00	15.00	24.00	20.00	14.00	18.00	23.00	24.00	32.00	19.00	8.00	7.60	4.90	8.90
Barium (aqua regia extractable)	mg/kg	1	210.00	240.00	720.00	200.00	180.00	180.00	250.00	220.00	150.00	190.00	220.00	200.00	340.00	230.00	170.00	120.00	100.00	150.00
Boron (water soluble)	mg/kg	0.2	3.20	3.90	3.60	4.10	2.70	2.90	4.90	1.50	2.20	1.40	3.10	4.30	2.40	7.10	0.40	0.30	0.80	0.80
Cadmium (aqua regia extractable)	mg/kg	0.2	0.80	0.80	0.90	0.70	0.50	0.70	1.00	0.80	0.90	0.80	0.70	1.10	1.00	0.60	0.20	0.20	0.20	0.20
Chromium (hexavalent)	mg/kg	1.2	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
Chromium (aqua regia extractable)	mg/kg	1	35.00	68.00	67.00	38.00	25.00	29.00	74.00	33.00	22.00	28.00	35.00	34.00	50.00	55.00	33.00	25.00	30.00	27.00
Copper (aqua regia extractable)	mg/kg	1	69.00	110.00	94.00	63.00	200.00	65.00	160.00	74.00	49.00	66.00	82.00	79.00	86.00	81.00	31.00	25.00	27.00	26.00
Lead (aqua regia extractable)	mg/kg	1	160.00	190.00	180.00	93.00	110.00	130.00	210.00	160.00	210.00	150.00	160.00	200.00	130.00	150.00	14.00	14.00	12.00	12.00
Mercury (aqua regia extractable)	mg/kg	0.3	0.30	0.30	0.30	0.30	0.40	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Nickel (aqua regia extractable)	mg/kg	1	36.00	34.00	33.00	29.00	27.00	23.00	60.00	32.00	21.00	29.00	39.00	34.00	40.00	36.00	40.00	32.00	32.00	33.00
Selenium (aqua regia extractable)	mg/kg	1	1.00	1.40	1.20	1.30	1.00	1.00	1.00	1.10	1.00	1.30	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Vanadium (aqua regia extractable)	mg/kg	1	44.00	42.00	46.00	31.00	37.00	40.00	41.00	70.00	41.00	41.00	48.00	49.00	37.00	43.00	34.00	28.00	28.00	29.00
Zinc (aqua regia extractable)	mg/kg	1	350.00	290.00	360.00	220.00	190.00	270.00	390.00	310.00	210.00	260.00	300.00	390.00	290.00	400.00	73.00	58.00	61.00	63.00
Magnesium (water soluble)	mg/kg	5	6.80	-	6.20	-	-	-	7.20	-	-	-	-	-	-	-	13.00	11.00	-	12.00
Magnesium (leachate equivalent)	mg/l	2.5	3.40	-	3.10	-	-	-	3.60	-	-	-	-	-	-	-	6.70	5.60	-	6.20
Monoaromatics & Oxygenates																				
Benzene	µg/kg	5	5.00	15.00	5.00	5.00	17.00	5.00	12.00	11.00	7.30	5.00	5.00	5.00	15.00	12.00	-	-	-	-
Toluene	µg/kg	5	5.00	10.00	5.00	5.00	5.00	5.00	5.00	6.80	5.00	5.00	5.00	5.00	8.50	12.00	-	-	-	-
Ethylbenzene	µg/kg	5	5.00	12.00	5.00	5.00	5.00	5.00	7.50	5.00	5.00	5.00	5.00	5.00	190.00	25.00	-	-	-	-
p & m-xylene	µg/kg	8	8.00	12.00	8.00	8.00	9.50	8.00	8.00	12.00	8.00	8.00	8.00	8.00	36.00	20.00	-	-	-	-
o-xylene	µg/kg	5	5.00	8.50	5.00	5.00	5.00	5.00	5.00	9.40	5.00	5.00	5.00	5.00	85.00	17.00	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	-	-	-	-
Petroleum Hydrocarbons																				
Petroleum Range Organics (C6 - C10)	mg/kg	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	1.00	1.00
TPH C10 - C40	mg/kg	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.00	10.00	10.00	10.00
TPH C6 - C40	mg/kg	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.00	10.00	10.00	10.00
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.50	1.00	1.00	1.00	1.30	8.40	1.40	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	6.00	5.90	5.50	13.00	22.00	2.30	5.10	18.00	12.00	3.40	2.00	11.00	29.00	5.30	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	19.00	20.00	19.00	46.00	43.00	12.00	28.00	41.00	23.00	10.00	8.00	30.00	53.00	20.00	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	110.00	130.00	120.00	280.00	130.00	94.00	390.00	200.00	120.00	71.00	100.00	230.00	330.00	98.00	-	-	-	-
TPH-CWG - Aliphatic >EC35 - EC44	mg/kg	8.4	60.00	46.00	66.00	110.00	66.00	39.00	240.00	88.00	52.00	35.00	49.00	130.00	130.00	57.00	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	140.00	160.00	150.00	340.00	200.00	110.00	420.00	260.00	160.00	85.00	100.00	270.00	420.00	130.00	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	200.00	200.00	210.00	450.00	260.00	150.00	660.00	350.00	210.00	120.00	150.00	400.00	550.00	180.00	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.01	0.01	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.02	0.02	0.04	0.02	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.43	0.08	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	1.00	1.10	1.00	1.00	2.40	1.00	1.00	4.20	1.10	1.20	1.00	3.30	14.00	1.60	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	12.00	18.00	5.10	7.70	22.00	5.10	8.80	33.00	18.00	6.70	3.80	18.00	110.00	6.00	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	51.00	59.00	31.00	48.00	96.00	34.00	54.00	140.00	83.00	28.00	33.00	73.00	210.00	29.00	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	120.00	150.00	140.00	220.00	230.00	140.00	260.00	480.00	210.00	87.00	120.00	300.00	280.00	81.00	-	-	-	-
TPH-CWG - Aromatic >EC35 - EC44	mg/kg	8.4	55.00	58.00	72.00	110.00	92.00	68.00	200.00	240.00	97.00	39.00	61.00	200.00	82.00	51.00	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	180.00	220.00	180.00	270.00	350.00	180.00	330.00	660.00	310.00	120.00	160.00	400.00	620.00	120.00	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	240.00	280.00	250.00	380.00	440.00	240.00	530.00	900.00	400.00	160.00	220.00	600.00	700.00	170.00	-	-	-	-
VOCs - All below detection limit except the following:																				
Chloromethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Chloroethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Bromomethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Vinyl Chloride	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Trichlorofluoromethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
1,1-Dichloroethene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
1,1-Dichloroethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
2,2-Dichloropropane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Trichloromethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
1,1,1-Trichloroethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
1,2-Dichloroethane	µg/kg	7	-	-	-	-	-	-	-	-	-	-	-	7.00	7.00	7.00	-	-	-	-
1,1-Dichloropropene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Benzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	15.00	12.00	-	-	-	-
Tetrachloromethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
1,2-Dichloropropane	µg/kg	6	-	-	-	-	-	-	-	-	-	-	-	6.00	6.00	6.00	-	-	-	-
Trichloroethene	µg/kg	10	-	-	-	-	-	-	-	-	-	-	-	10.00	10.00	10.00	-	-	-	-
Dibromomethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Bromodichloromethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	10	-	-	-	-	-	-	-	-	-	-	-	10.00	10.00	10.00	-	-	-	-
Toluene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	8.50	12.00	-	-	-	-
1,1,2-Trichloroethane	µg/kg	6	-	-	-	-	-	-	-	-	-	-	-	6.00	6.00	6.00	-	-	-	-
1,3-Dichloropropane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Dibromochloromethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Tetrachloroethene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
1,2-Dibromoethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Chlorobenzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Ethylbenzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	190.00	25.00	-	-	-	-
p & m-Xylene	µg/kg	8	-	-	-	-	-	-	-	-	-	-	-	8.00	36.00	20.00	-	-	-	-
Styrene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Tribromomethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
o-Xylene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	85.00	17.00	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	59.00	5.00	-	-	-	-
Isopropylbenzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Bromobenzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
n-Propylbenzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	15.00	5.00	-	-	-	-
2-Chlorotoluene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
4-Chlorotoluene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	70.00	5.00	-	-	-	-
tert-Butylbenzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	450.00	32.00	-	-	-	-
sec-Butylbenzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
1,3-Dichlorobenzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
p-Isopropyltoluene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	43.00	5.00	-	-	-	-
1,2-Dichlorobenzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
1,4-Dichlorobenzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Butylbenzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	8	-	-	-	-	-	-	-	-	-	-	-	8.00	8.00	8.00	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
Hexachlorobutadiene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	5	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	5.00	-	-	-	-

Statistical Analysis					GAC - S4UL unless stated				C4SL		
					Statistical Results						
Count	Standard Deviation	Minimum	Maximum	Mean	Maximum	2.5% Public Open Space - Park	Pass/Fail	Exceedances	2.5% Public Open Space - Park	Pass/Fail	Exceedances
18	16.32	0.1	60.5	6.0	60.5						
18	4.55	7.30	23.00	13.91	23.00						
18	0.19	0.400	1.000	0.728	1.000						
14	-	-	-	-							
12	-			-							
12	0.00	0.00	0.01	0.00							
18	0.97	7.70	11.20	9.42							
18	0.69	1.00	3.90	1.28	3.90	**60**	Pass	0			
18	0.00	1.00	1.00	1.00	1.00	**60**	Pass	0			
6	0.157	0.019	0.373	0.159							
18	598.58	59.00	2000.00	964.17							
18	299.82	29.60	1020.00	478.21							
6	38.4	13.0	110.0	38.0							
6	0.167	0.014	0.509	0.196							
6	6.11	1.80	19.00	9.40							

APPENDIX 4

CL:AIRE JIWG DECISION SUPPORT TOOL

JIWG

Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Project Reference	4490
Site Name	MCFC
Client	Manchester City Football Club
Run by	LG
Date	16-Apr-26
Scenario details	

Decision Support Tool for CAR2012 Work Categories

Stage 1

Hazard Factors

		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Unspecified fibrous board	2
Extent of degradation of ACMs at outset of work	Degraded (Significant degradation in ACM; material has lost its basic integrity)	3
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not firmly linked in a matrix	2
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Very Low quantities - <0.001 to 0.01 %wt/wt	1
Sub-total		**8**

Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs

Hazard ranking **Low**

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

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Stage 2

Exposure Factors

		Score
Anticipated airborne fibre concentration - Control Limit or SALI?	<0.01 fibres/ml	1
Anticipated duration of exposure to asbestos	> 2 hours in a 7 day period and Up to 10 hours in a day (e.g. full time occupational exposure)	4
Activity type and effect on deterioration of ACMs during work	Not low intensity, significant deterioration expected	4
Best description of primary host material matrix (soil/made ground)	Made Ground - Recycled Aggregate, Track Ballast	4
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Low	2
Sub-total		**15**
Exposure ranking		Medium
Combined hazard and exposure ranking	**23**	Medium

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Stage 3

Risk Assessment Outputs

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

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

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APPENDIX 5

GROUND GAS AND GROUNDWATER DEPTH MONITORING RESULTS

Gas & Groundwater Monitoring

Site: **MCFC**

Job No.: **4490**

Exploratory Hole	Date	Time	Engineer	Response zone range	Water level	Base level	Atm. pressure	Pressure Trend	Flow		CH_4		LEL		Hex		CO_2		O_2			H_2S	CO	Total Volatiles (PID)		Remarks
				(m bgl)	(m bgl)	(m bgl)	(mbar)		(l/hr)		(%)		(%)		(%)		(%)		(%)			(ppm)	(ppm)	(ppm)		
									peak	steady	peak	steady	peak	steady	peak	steady	peak	steady	high	steady	low	peak	peak	peak	steady	
CP301	08/04/2026	10:42:00	LG	1.00 - 3.00	1.63	3.05	1019	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.1	0.1	19.5	19.1	19.1	1.0	1.0	-	-	Bailed to 2.72m bgl at 10:54; redipped to 2.65m bgl at 11:22
	22/04/2026	13:15:00	LG		1.77	3.06	1023	Falling	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.1	0.1	19.8	19.8	19.2	1.0	1.0	5.2	4.5	Bailed to 2.26m bgl at 13:34; redipped to 2.22m bgl at 14:17
	05/05/2026	10:14:00	CC		1.80	3.07	1009	Falling	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.1	0.1	19.2	19.2	15.1	1.0	1.0	-	-	Bailed to 3.04m bgl; redipped to 3.04m bgl at 10:46.
	15/05/2026	11:14:00	LG		1.53	3.06	1003	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.2	0.2	19.1	19.0	18.8	1.0	1.0	-	-	Bailed to 2.27m bgl at 11:23; redipped tp 2.22m bgl at 11:50.
	03/06/2026	09:12:00	NR		1.46	3.05	1001	Falling	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.3	0.3	19.2	18.9	18.9	1.0	1.0	-	-	-
	16/06.2026	14:47:00	NR		1.67	3.09	1007	Falling	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.1	0.1	19.9	19.7	19.7	1.0	1.0	-	-	-
DS302	08/04/2026	10:57:00	LG	0.60 - 1.20	0.25	1.04	1020	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.1	0.1	19.7	19.7	19.3	1.0	1.0	-	-	Bailed to 0.99m bgl at 11:05; redipped to 0.90m bgl at 11:23
	22/04/2026	13:30:00	LG		0.75	1.05	1022	Falling	59.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.1	0.1	19.3	18.7	18.7	1.0	1.0	2.3	1.7	Flow fell below instrument detection limits after 10 seconds. Bailed to 0.95m bgl at 13:40; redipped to 0.94m bgl at 14:22
	05/05/2026	09:35:00	CC		0.51	1.03	1010	Falling	70.8	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.1	0.1	18.8	0.1	0.1	1.0	1.0	-	-	Flow fell below instrument detection limits after 15 seconds. Bailed to 0.93m bgl at 9:50; redipped to 0.80 m bgl at 10:44.
	15/05/2026	11:27:00	LG		0.64	1.04	1004	Rising	92.6	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.1	0.1	19.3	19.2	19.2	1.0	1.0	-	-	ell below detection limits after 5 minutes. Bailed to 0.99m bgl at 11:37; redipped to 0.96m bgl at
	03/06/2026	09:26:00	NR		0.56	1.02	1001	Falling	86.3	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.1	0.1	19.4	19.3	19.3	1.0	1.0	-	-	Flow fell below instrument detection limit after 30 seconds
	16/06.2026	14:56:00	NR		0.43	1.07	1007	Falling	60.3	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.1	0.1	20.1	20.0	20.0	1.0	1.0	-	-	-
CP302	08/04/2026	11:09:00	LG	5.00 - 8.00	7.69	7.92	1019	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.2	0.2	19.6	14.1	14.1	1.0	27.0	-	-	-
	22/04/2026	13:50:00	LG		7.49	7.89	1022	Falling	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.5	0.5	19.4	7.8	7.8	1.0	1.0	3.8	3.0	-
	05/05/2026	10:30:00	CC		7.51	7.91	1009	Falling	0.4	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.9	0.9	16.3	5.4	5.4	1.0	1.0	-	-	Flow fell below instrument detection limits after 2 seconds.
	15/05/2026	11:41:00	LG		7.21	7.91	1004	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	1.0	1.0	19.2	3.3	3.3	1.0	1.0	-	-	-
	03/06/2026	09:41:00	NR		7.13	7.90	1001	Falling	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	1.2	1.2	19.4	3.7	3.7	1.0	1.0	-	-	-
	16/06.2026	15:10:00	NR		7.34	7.94	1007	Falling	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	1.5	1.5	19.6	3.4	3.4	1.0	1.0	-	-	-

Response zone partially flooded. Results should be treated with caution in accordance with BS8485:2015 + A1 2019

Response zone flooded. Results considered unreliable in accordance with BS8485:2015 + A1 2019

Values recorded below instrument detection limit

APPENDIX 6

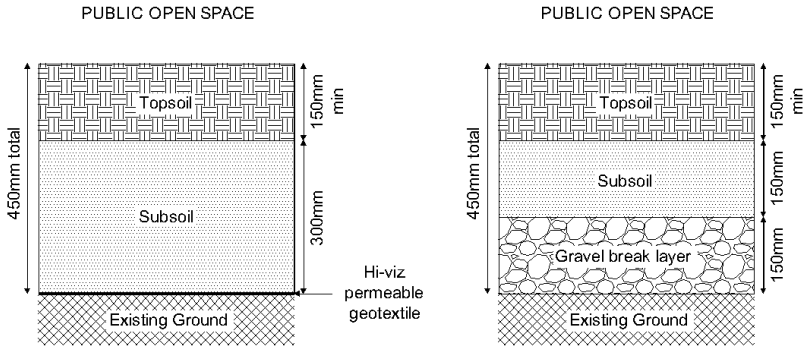
ACCEPTABILITY CRITERIA

EXAMPLE CLEAN COVER SYSTEM REQUIREMENTS

1st Floor
15 Oxford Court
Manchester
M2 3WQ

Tel: 0161 914 9171
Email: contact@igeconsulting.co.uk
Web: www.igeconsulting.co.uk

The following diagrams show example clean cover system installations for public open space.



Refer to site specific Remediation Strategy for recommended installation.

CLEAN COVER SYSTEM TESTING RATES

Soils intended for use in private gardens, public open space, and soft landscaping must be tested to confirm their suitability for use.

Imported topsoil and subsoil is required to be tested at source prior to import to confirm suitability. All topsoil and subsoil, whether site-won or imported is required to be tested at the following frequency in line with Manchester City Council Planning and Contaminated Land Technical Guidance (dated February 2021):

End-Use	Greenfield Soils	Remediated Soils	Brownfield Soils	Unknown Soil Source
Soft Landscaping	1:200m^3	1:150m^3	1:150m^3	1:150m^3
Other	1:200m^3	1:200m^3	1:200m^3	1:200m^3

Minimum 3 samples regardless of volume.

Testing Suites:

A. Asbestos ID, Asbestos quantification.

B. pH, total and free cyanide, soluble sulphate, organic matter.

C. Arsenic, Beryllium, Boron, Cadmium, Chromium (III and VI) Copper, Lead, Inorganic Mercury, Nickel, Selenium, Vanadium, Zinc.

D. Speciated PAHs: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(ghi)perylene.

E. Total (non-speciated) PAHs.

F. Speciated Total Petroleum Hydrocarbons (TPH): Aliphatic >EC5 - EC6, >EC6 - EC8, >EC8 - EC10, >EC10 - EC12, >EC12 - EC16, >EC16 - EC21, >EC21 - EC35, and > EC35 - EC44, and Aromatic >EC5 - EC7, >EC7 - EC8, >EC8 - EC10, >EC10 - EC12, >EC12 - EC16, >EC16 - EC21, >EC21 - EC35, > EC35 - EC44.

G. 3-band Total Petroleum Hydrocarbons (TPH): TPH EC6-10, EC10-25, EC25-40.

H. Total Petroleum Hydrocarbons (TPH): TPH EC6 – EC40.

Once tested, the results are to be compared against the following Acceptability Criteria:

CLEAN COVER SYSTEM ACCEPTABILITY CRITERIA

Soils intended for use in public open space, and general fill must be tested at the rates outlined above and compared to the following acceptability criteria, to confirm their suitability for use:

Suite	Determinand (mg/kg unless stated)	Acceptability Criteria for:	
		Soft Landscaping or Public Open Space (Park)	General Fill
A	Asbestos (%)	ND	<0.001 – 0.01%
B	pH	>6 - <8[3]	>5 - <10[3]
	Total Cyanide	0.5[3]	0.5[3]
	Free Cyanide	0.5[3]	0.5[3]
	Soluble Sulphate (mg/l)	500[3]	500[3]
C	Arsenic	170	640
	Beryllium	63	12
	Boron	46000	240000
	Cadmium	560	190
	Chromium (III)	33000	8600
	Chromium (VI)	220	33
	Copper	44000	68000
	Lead	1300	2330[1]
	Inorganic Mercury	240	1100
	Nickel	800	980
	Selenium	1800	12000
	Vanadium	5000	9000
	Zinc	170000	730000
D	Naphthalene	1200	
	Acenaphthylene	29000	
	Acenaphthene	29000	
	Fluorene	20000	
	Phenanthrene	6200	
	Anthracene	150000	
	Fluoranthene	6300	
	Pyrene	15000	
	Benzo(a)anthracene	49	
	Chrysene	93	
	Benzo(b)fluoranthene	13	
	Benzo(k)fluoranthene	370	
	Benzo(a)pyrene	11	
	Indeno(1,2,3-cd)pyrene	150	
	Dibenz(a,h)anthracene	1.1	
	Benzo(ghi)perylene	1400	
E	Total PAHs		1000[4]
F	TPH-CWG - Aliphatic >EC5 - EC6	95000	
	TPH-CWG - Aliphatic >EC6 - EC8	150000	
	TPH-CWG - Aliphatic >EC8 - EC10	14000	
	TPH-CWG - Aliphatic >EC10 - EC12	21000	
	TPH-CWG - Aliphatic >EC12 - EC16	25000	
	TPH-CWG - Aliphatic >EC16 - EC21	450000	
	TPH-CWG - Aliphatic >EC21 - EC35		
	TPH-CWG - Aliphatic > EC35 - EC44	450000	
	TPH-CWG - Aromatic >EC5 - EC7	76000	
	TPH-CWG - Aromatic >EC7 - EC8	87000	
	TPH-CWG - Aromatic >EC8 - EC10	7200	
	TPH-CWG - Aromatic >EC10 - EC12	9200	
	TPH-CWG - Aromatic >EC12 - EC16	10000	
	TPH-CWG - Aromatic >EC16 - EC21	7600	
	TPH-CWG - Aromatic >EC21 - EC35	7800	
	TPH-CWG - Aromatic > EC35 - EC44	7800	
G	TPH > EC6 - EC40		5000[4]
H	Benzene	90	

	Toluene	87000*	
	Ethylbenzene	17000*	
	p & m-xylene	17000*&**	
	o-xylene	17000*	
	MTBE (Methyl Tertiary Butyl Ether)	LOD(3)	

LQM/CIEH S4ULs for Human Health Risk Assessment (3rd edition, 2015) used unless stated:

1) *Category 4 Screening Levels (March 2014)*
2) *CL:AIRE Soil GAC for Human Health Assessment (January 2010)*
3) *In-house screening criteria used as no GAC methodology currently exists*
4) *Hazardous waste thresholds. This limit only applies to imported material, not to in-situ soil.*

Assumed 1% SOM (most conservative) for those values dependent upon SOM.
ND = Not Detected
LOD = Limit of Detection
**Exceeds vapour saturation limit*
***Exceeds solubility saturation limit*

APPENDIX 7

UNITED UTILITIES RISK ASSESSMENT

Supplementary guidance for the selection of water pipes in land potentially affected by contamination

United Utilities
Water for the North West

Introduction

In January 2011, UK Water Industry Research (UKWIR) published "Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites" (Ref 10/WM/03/21; the 'UKWIR Guidance'). Its aim is to ensure that the correct materials are selected for water pipes and components to be used below ground in brownfield sites to protect the quality of drinking water whilst taking into account the service life of the water distribution system. It supersedes the Water Regulations Advisory Scheme (WRAS) Information and Guidance Note 9-04-03 "Laying Pipes in Contaminated Land" which has been withdrawn.

The UKWIR Guidance is for use by developers, self-lay organisations, water companies and consultants when planning, designing and constructing water mains and/or services in brownfield sites. It defines brownfield sites as "land or premises that have previously been used or developed. They may also be vacant or derelict. However, they are not necessarily contaminated." The UKWIR Guidance states that it does not apply to greenfield sites; however, we consider this supplementary guidance and the relevant sections of the UKWIR guidance as being equally suitable for application to those greenfield sites considered to be potentially affected by contamination. Where greenfield sites are not affected by contamination a preliminary risk assessment (see below) will suffice.

The UKWIR Guidance also states that there should be no departure from its provisions *"except where formally approved by the Water Company, such departure being technically justifiable or representing advances in knowledge or product development"*.

We have adopted the UKWIR Guidance in principle and produced this company specific supplementary guidance (the 'UUW Guidance') which includes the Risk Assessment for Water Pipes (the 'RA').

This guidance does not cover operative safety, health exposure modelling or accidental pipe damage.

Risk Assessment for Water Pipes in Land Potentially Affected by Contamination

Any application for new water supplies to a development (construction of new properties, or renovation or conversion of existing buildings) in land potentially affected by contamination shall include a completed RA.

As a minimum a desk study (preliminary risk assessment) shall be provided with the RA in accordance with the framework in Environment Agency publication "Model Procedures for the Management of Land Contamination" (ref: CLR11) that sets out whether the land through which the pipes are to be laid may be affected by contamination. The application of the source, pathway, receptor concept will be an integral part of any pipeline risk assessment. For each potential source (the contamination) and each potential receptor (the water pipe), consideration shall be given to whether a potential pathway between source and receptor exists, or may exist in the future, linking the two. There are normally only three pathways by which contamination may come into contact with water pipes. These are direct contact with the soil or backfill, an excessive vapour phase or a contaminated groundwater regime. If none of these conditions exist on site (adopting the source, pathway, receptor concept) then it is likely that extended and/or targeted soil testing will not be required and a simple risk assessment will suffice. For those sites where land may be affected by contamination appropriate testing shall be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. The testing requirements are as described in the following section.

The signatories of the Water Supply Application Form and the RA must ensure that all assessments of land condition have been carried out in accordance with applicable current standards and guidelines by or under the direction of a suitably qualified competent person.

We require the competent person to be a) a chartered member of an appropriate professional body (such as the Institution of Civil Engineers, the Geological Society of London or the Royal Institution of Chartered Surveyors) with relevant experience of investigating contaminated sites or b) a Specialist in Land Condition (SiLC) with appropriate geo-environmental experience.

How to contact us about the information in this leaflet



DeveloperServicesWater@uuplc.co.uk



0345 072 6067
Opening hours:
8am-5pm Mon to Thurs
8am-4.30pm Fri

Testing Requirements

The soil, rock and if appropriate groundwater tests that are required on all sites where the potential for organic contamination has been identified in the desk study and where water pipes are proposed to be laid must be accredited by United Kingdom Accreditation Service (UKAS) as a minimum and where commercially available the Environment Agency's Monitoring Certification Service (MCERTS). These accredited tests should be undertaken for:

Banded hydrocarbons EC5-EC10, EC10-EC16, EC16-EC40 (Total aliphatic and aromatic hydrocarbons for each banding may be summed). Aliphatic/aromatic fractionation and subsequent banding may be required should a more detailed site specific risk assessment be undertaken. The bandings have been amended to take into account readily available laboratory tests. The equivalent carbon number (EC) is used to assess petroleum hydrocarbon mixtures rather than the actual number of carbon atoms in the molecule in line with guidance issued by the Environment Agency (2005).

Volatile organic compounds (VOCs) (method by head space or purge & trap GCMS) with tentative identification of compounds greater than 20µg/kg. The method used should be capable of detecting a wide range of compounds listed in US EPA Method 8260C or similar. The method should include analysis of naphthalene.

BTEX (Benzene, toluene, ethyl benzene and xylenes) plus MTBE (Methyl-tertiary butyl ether) (by head space GCMS)

Semi-Volatile Organic Compounds (SVOCs) (method by GCMS) with tentative identification of compounds greater than 20µg/kg The method used should be capable of detecting the compounds listed in US EPA Method 8270D or similar. The total concentration of SVOCs excludes polycyclic aromatic hydrocarbons, ethers, nitrobenzene, ketones, aldehydes, phenols, cresols and chlorinated phenols. Phenols, cresols and chlorinated phenols which are detected by the SVOC analysis are given their own assessment criteria.

We do not consider Table G1 and Table 3.1 of the UKWIR Guidance to be a definitive guide for assessing total concentrations. Table 1 in the RA below replaces Table 3.1 of the UKWIR Guidance.

Where previous site uses include the use, storage, treatment, disposal or manufacture of any of the following, appropriate testing for these substances will be required:

- Ethers, nitrobenzene, ketones, aldehydes and amines. Note that the presence of amines on any site at the proposed pipe depth +/- 1.0m precludes the use of polyethylene. The methods of analysis and method of calculation of total concentrations of these compounds will need to be agreed with UUW.

To comply with the testing requirements, the suites of tests that are required on all brownfield sites where wrapped steel, wrapped ductile iron or copper pipes are to be laid as minimum must include:

- pH, Conductivity and redox potential

Sufficiency of Testing

Water pipes are normally laid at between 0.75 and 1.35m from finished ground level to crown of pipe. Samples taken and tested must represent both a) the soil in which the water pipes are to be laid and b) the soil down to at least 500mm below the underside of the proposed pipe. Where the proposed depth of the pipes is unknown at the time of application, soil samples representative of the ground condition between surface level and 1.5m below finished ground level shall be taken as a minimum. Where appropriate (see UKWIR Guidance) groundwater sampling and groundwater monitoring will also be necessary. Photo-ionisation detection (PID) monitoring along the proposed route of the pipeline may be employed, though this does not provide a definitive guide to the suitability of water pipe materials.

Where required a sufficient number of test results should be obtained from the material in which the pipes are to be laid. CLAIRE/CIEH 2008 "Guidance on comparing soil contamination data with a critical concentration" may be used, where appropriate, to justify the number of soil samples tested; however, this statistical model should not be used on heterogeneous materials or used to average test results from different types of materials.

Further guidance on representative sampling is contained within BS10175:2011 Code of Practice for the Investigation of Potentially Contaminated Sites, the Department of the Environment's Contaminated Land Research Report "Sampling strategies for contaminated land" prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4; 1994) and the Environment Agency's "Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination" (ref: R&D Technical Report P5-066/TR; 2000).

Where remediation has been carried out on the site, the test results obtained from validation samples will be used in the assessment. Where a horizontal capping system has been or will be employed using materials spread across a site, sufficient samples will need to be taken to characterise the capping material used and the results presented to UUW. However, the sufficiency of sampling on the horizontal capping system, in which the pipeline will be placed, may be assessed on the basis of the source, quantity and type of materials used.

Detection Limits

Only positive concentrations, ie those above the limit of detection should be used in summation of VOC and SVOC (or other test groups of compounds ie phenols, cresols and chlorinated phenols). Laboratory methods shall provide a minimum limit of detection of 10µg/kg for each individual VOC or SVOC (or other test groups of compounds) quantitatively detected in accordance with the methods described above. For tentatively identified compounds (TICs), only those compounds with a concentration of 20µg/kg or greater shall be used in the summation of VOC and SVOC (or other test groups of compounds).

Protective Measures

Where polyethylene, ductile iron, steel or copper pipes are to be laid on a brownfield site or other land potentially affected by contamination (whether or not it has been remediated) and where the concentrations exceed the generic guideline values set out in Table 1 of the RA, the developer shall provide either:

a) a robust risk assessment to show how any contaminants will not significantly impact on proposed water supplies or buried assets over the lifetime of the assets; or

b) more suitable pipe materials; or

c) an engineering solution to protect the pipe work backed up by an adequate assessment of the risk.

Liquid free phase product (e.g. oil or free solvent layers) shall not remain in the ground or groundwater in the vicinity of water pipes, whether barrier pipe or any other pipe materials are used.

When designing pipe routes on land potentially affected by contamination, new preferential contamination pathways along the route of new water pipes shall not be created. Particular measures may be required to prevent the possible migration of contamination through pipe bedding and into controlled waters.

References

BS10175: 2011
"Investigation of Potentially Contaminated Sites Code of Practice"

CLAIRE/CIEH
"Guidance on comparing soil contamination data with a critical concentration" 2008

Department of the Environment Contaminated Land Research Report
"Sampling strategies for contaminated land" prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4) 1994

Environment Agency
"Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination"
(ref: R&D Technical Report P5-066/TR) 2000

Environment Agency
"Model Procedures for the Management of Land Contamination" (ref: CLR11), 2004

Environment Agency P5-080/TR3
"The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils", 2005

UK Water Industry Research (UKWIR)
"Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites" (Ref 10/WM/03/21) January 2011

Water Regulations Advisory Scheme (WRAS) Information and Guidance Note 9-04-03
"Laying Pipes in Contaminated Land" 2002

Frequently asked questions

Why has UUW published supplementary guidance to the 'UKWIR Guidance for the Selection of Water Pipes to be used in Brownfield Sites'?

UUW agrees with the UKWIR Guidance in principle; we have published supplementary guidance to clarify some of the areas in which it will operate.

Does the UKWIR Guidance only apply to 'brownfield sites'?

Yes, the UKWIR Guidance does apply to brownfield sites; in addition United Utilities Water will apply this guidance and the UUW supplementary guidance to any greenfield sites which are potentially affected by contamination.

Who is responsible for completing/ signing the Risk Assessment for Water Pipes (RA)?

This may be the Developer, the Developers representative, or the competent person directing the land assessment. The signatory of the Risk Assessment for Water Pipes (RA) must ensure that all land assessments have been carried out in accordance with current standards and guidelines by or under the direction of a suitably qualified competent person. For water supply applications on land potentially affected by contamination, UUW requires the competent person to be either a chartered member of an appropriate professional body (such as the Institution of Civil Engineers, the Geological Society of London or the Royal Institution of Chartered Surveyors) with relevant experience of investigating contaminated sites or a Specialist in Land Condition (SiLC). This level of competency is intended to promote good practice and high professional standards and is no greater than that required for planning purposes by Local Authorities.

Do we need to agree the number and location of soil samples with the Water Company as indicated by the UKWIR guidance following the Preliminary Risk Assessment (PRA)?

Where a preliminary risk assessment (PRA) highlights the need for a site investigation UUW considers it is a responsibility of the qualified competent person directing the land assessment to determine the location and frequency of sampling. UUW's role would be to confirm that the appropriate choice of pipe material has been made on the basis of the information provided.

What do we do if the pipe route is not known when the Site Investigation report is commissioned?

Where the route of the pipe is not known at the site investigation stage, then any resultant pipe selection needs to take account of any contamination found on the site. Consideration should be given to identifying the route and depth of the pipeline at the site investigation stage to avoid unnecessary testing.

Is it acceptable not to undertake a site investigation and specify the use of barrier pipe which seems to be suitable for all conditions?

Not all brownfield land is contaminated, and because of that a default to barrier pipe is not an acceptable approach to UUW, due to the possibility of higher installation and future maintenance costs. The approach as to whether a site investigation is needed should be risk based. For those sites where land may be affected by contamination appropriate testing shall be undertaken on the ground materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials.

Examples where defaulting to barrier pipe would not be acceptable:

- Where a capping layer (non-contaminated) is introduced within which the pipes will be installed.
- Sites with a potential low risk for contamination.
- Where liquid free phase product (e.g. oil or free solvent layers) is in the ground or groundwater in the vicinity of water pipes.
- Where the route of the pipe could be diverted to another suitable location free from contamination.

Are UUW employees who will assess the Design Proposals for contaminated sites suitably qualified?

It is the role of the Developer's suitably qualified competent person to deal with or direct the assessment of land. UUW's role is to assess the Risk Assessment for Water Pipes and supporting Site Assessment Report (SAR) which is provided with any new water supply application (ie. it has been provided in the correct format, proposals for pipe selection are included, the methodology is in line with the UKWIR Guidance and UUW Supplementary Guidance, it has been directed by a suitably qualified competent person etc.). If UUW do need to provide assistance or information in deciding pipe materials then the assessment would be carried out under the direction of a suitably qualified competent person.

What happens to existing PE that is in the ground under the "old" guidelines?

The latest UKWIR guidance and UUW's supplementary guidance are intended to be used to decide what pipe materials will be used for new water mains and services. It will have no effect for developers with regard to any parts of UUW's existing network.

Will the Developer be required to submit a fully completed Risk Assessment for Water Pipes (RA) and supporting Site Assessment Report (SAR), including pipe material recommendation, for both the option of a mains requisition application and the option of a self-lay application?

Yes, UUW expect the 'Developer', as defined in UUW Supplementary Guidance, to submit a Risk Assessment for Water Pipes (RA) and supporting Site Assessment Report (SAR), including pipe material recommendation, in respect of any water pipes being installed on the development irrespective of who is to install them.

Does Table 1 in UUW's Risk Assessment for Water Pipes (RA) replace any of the tables to be completed in the Site Assessment Report (SAR) as required in the UKWIR Guidance?

UUW does not consider Table G1 and Table 3.1 of the UKWIR Guidance to be a definitive guide for assessing total concentrations. Table 1 in UUW's RA replaces Table 3.1 of the UKWIR Guidance.

Have any other Water Companies adopted the UKWIR Guidance yet?

You will need to contact the water company concerned if you are intending to install water pipes outside UUW's licensed area.

United Utilities
Water for the North West

About us

United Utilities is the North West's water company. We keep the taps flowing and toilets flushing for seven million customers every day. From Crewe to Carlisle, we work hard behind the scenes to help your life flow smoothly.

United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Warrington WA5 3LP.
Registered in England and Wales. Registered Number 2366678.

LRA1A-11/19v0

11/19/SD/8483f-1

Risk assessment for water pipes (RA)

United Utilities
Water for the North West

The risk assessment for water pipes will help you choose appropriate materials for your development. We are happy to deal with a risk assessment for water pipes in advance of any formal application for a new water supply.

If you need any help completing the form please call us on **0345 072 6067.**

Section 1: Development details	
Development name *(if it has one)*	MCFC Project Taverna
Development address	Etihad Campus, Manchester M11 3FF
OS Grid reference *(mid point)*	386925E, 398736N
Developer's name	Manchester City Football Club
UUW reference number *(for UU use only)*	

Please provide details below of the current and historical use of the site and adjacent sites.

If your supporting information has details of the current and historical site use, please reference below the relevant sections of your report.

The site is currently partially vacant and partially used as a site compound for the Etihad Stadium north stand extension, operated by Sisk.
1848 – 1891 On the earliest historical map, the site is occupied by Bradford Mill a smallwares mill in the east and 2 No. coal pits in the west separated by the Ashton canal running north to the south through the centre of the site. A row of terraced houses is present in the southwest of the site.
1891 – 1932 Bradford Iron works occupies the western site section from 1891, and Phillips Park Road appears crossing the site from east to west. Unspecified works are recorded occupying the site section east of the canal arm. The canal arm was narrowed through the site from 1893. A chimney is present in the southwestern section from 1891, no longer recorded from 1931, with a second chimney recorded in the southeastern section from 1931. From 1908, a small railway is present in the western site section, and the canal arm is labelled 'Colliery Arm' associated with Bradford Colliery c. 250m south of the site. The residential properties in the south of the site
1932 – 1992 Bradford Iron Works extends into the eastern site section from 1932 following demolition of the unspecified buildings and further extends to the northern section from 1948. The chimney in the southeastern section is no longer present from 1958 and the railway in the western section is absent from 1979.
1992 – present The site is vacant from 1992 associated with the widescale demolition, earthworks and remediation carried out on site.

Section 2: Preliminary risk assessment	
Has your desk study and site walkover identified any land potentially affected by contamination?	☑ Yes ☐ No

If the site is potentially affected by contamination but you have not completed any intrusive site investigation please provide details below of the rationale behind the intended pipe selection.

If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.

N/A intrusive works being undertaken.

Section 3: Intrusive site investigation

Have you completed any intrusive site investigation?	☑ Yes ☐ No
Have you completed any none intrusive site investigation?	☑ Yes ☐ No
Date(s) when the site investigation(s) undertaken	30 03 2026 02 04 2026 D D M M Y Y Y Y
At what level has groundwater been encountered?	0.70 - 3.10 metres below ground level or ☐ Not encountered

Table 1 (Pipeline Selection Risk Assessment Summary (PSRAS)) below classifies testing required where the preliminary risk assessment has identified land potentially affected by contamination. Please provide details below of any test groups which have not been tested and the rationale for not testing.

If your supporting information has details of the rationale behind not testing any particular test groups, please reference below the relevant sections of your report.

SVOCs, Phenols and Cresols as no significant sources identified

If the intrusive site investigation has identified concentrations above the PE threshold (see PSRAS) and your intended pipe selection is PE. Please provide details below of the rationale behind the intended pipe selection.

If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.

N/A

Section 4: Site remediation

Please provide details below of any site remediation (which may include a change in site levels) already completed.

If your supporting information has details of the site remediation already completed, please reference below the relevant sections of your report.

Historical remediation noted to include a site turnover and partial removal of infilled canal material across the surrounding site area

Has the PSRAS (Table 1) been completed using appropriate data after remediation?	☐ Yes ☐ No ☑ N/A

Please provide details below of any proposed site remediation and an analysis of whether this will affect your intended pipe selection.

If your supporting information has details of any proposed site remediation and whether this will affect your intended pipe selection, please reference below the relevant sections of your report.

Unknown at this stage.

Section 5: Final use of site

Please provide details below of any chemicals (including fuel) to be stored on site and any other future contamination risks which may affect your intended pipe selection.

If your supporting information has details of potential contamination risks which may affect your intended pipe selection, please reference below the relevant sections of your report.

None.

What water pipe materials are intended to be used on site?	☐ PE ☑ PE Barrier Pipe Type A ☐ PE Barrier Pipe Type B Other *(please specify):*

Section 6: Additional information

Please use the section below to provide any additional details to support your intended pipe selection.

PE Type A barrier pipe deemed appropriate as samples with elevated VOCs and TPH were recorded in the infilled canal.

Section 7: Risk assessor

Name and relevant qualifications of person directing the risk assessment for water pipes	Mr Andrew Edwards (CEnv Institution of Environmental Sciences)
Name and address of risk assessor's company	IGE Consulting Ltd. 15 Oxford Court, Manchester, M2 3WQx
Date risk assessment performed	01072026

Section 8: Declaration

I confirm I have completed this form and provided supporting information in accordance with 'UKWIR Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites' and UUW's Supplementary Guidance. I also confirm that if any further site investigation is needed and carried out, I will be required to submit an additional Risk Assessment for Water Pipes with the relevant supporting information.
I understand that failure to supply any of the required information may delay my application being processed.

Name	Mr Andrew Edwards CEnv	Company	IGE Consulting Ltd.
Telephone	0161 914 9170	Date	01072026

Please email the completed form and supporting information to **DeveloperServicesWater@uuplc.co.uk** or post to us at United Utilities Water, Developer Services, Second floor Grasmere House, Lingley Mere, Warrington WA5 3LP.

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Table 1 - Pipe selection risk assessment summary (PSRAS)

1. Testing must be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. Please use the appropriate testing data to complete Table 1 below.

2. If more than one pipe selection is being made, for example, for pipes in different areas of a large site, a completed PSRAS is required for each selection.

What materials have been tested to populate Table 1 below?	☑ Existing ground materials ☐ Remediated materials ☐ Imported capping materials

All concentrations in mg/kg

Test Group	Testing Required?	PE threshold	Metal Pipes/ Barrier Pipe	Laboratory Detection Limit	Testing UKAS accredited Y/N	Maximum concentration at proposed pipeline depth *See Note [2]*	Maximum site concentration *See Note [3]*	Locations and depths where concentrations exceed proposed pipeline threshold
Total VOCs	Where Preliminary Risk Assessment (PRA) has identified land potentially affected by contamination	0.5	Pass	0.005	Y	N/A	0.972	TP303 @ 2.90m bgl, TP304 @
Total BTEX & MTBE		0.1	Pass	0.005	Y	0.0392	0.335	TP309 @3.60m bgl
Total SVOCs (excluding PAHs and those substances marked with an *)		2	Pass	-	N/A	-	-	-
EC5-EC10 aliphatic and aromatic hydrocarbons		2	Pass	0.002	Y	0.04	0.46	N/A
EC10-EC16 aliphatic and aromatic hydrocarbons		10	Pass	2	Y	47.40	161.40	TP303 @ 1.20m bgl, TP309 @
EC16-EC40 aliphatic and aromatic hydrocarbons		500	Pass	10	Y	814	1189	TP301 @ 0.30m bgl, DS302 @
Phenols* (from SVOC analysis)		2	Pass	-	N/A	-	-	-
Cresols and chlorinated phenols* (from SVOC analysis)		2	Pass	-	N/A	-	-	-
Ethers*	Only where identified	0.5	Pass	-	N/A	-	-	-
Nitrobenzene*		0.5	Pass	-	N/A	-	-	-
Ketones*		0.5	Pass	-	N/A	-	-	-
Aldehydes*		0.5	Pass	-	N/A	-	-	-
Amines		Fail	Pass	-	N/A	-	-	-
Corrosive	Conductivity, Redox and pH	Pass	*See Note [1]*	-	N/A	-	-	-

Note [1] Threshold: For wrapped steel, corrosive if pH<7 and conductivity > 400µS/cm. For wrapped ductile iron corrosive if pH<5, Eh not neutral and conductivity > 400µS/cm. For copper, corrosive if pH<5 or >8 and Eh positive.

Note [2] Water pipes are normally laid at 0.75-1.35m below finished ground level.

Note [3] Also state if liquid free product is present in soil or groundwater.

APPENDIX 8

DISCOVERY STRATEGY

DISCOVERY STRATEGY

1st Floor
15
Oxford Court
Manchester
M2 3WQ

Tel: 0161 914 9171
Email: contact@igeconsulting.co.uk
Web: www.igeconsulting.co.uk

What to Look Out For

Potentially contaminative material can be identified as follows:

- Appears oily / has an iridescent sheen
- Hydrocarbon odour e.g., oily or petroleum odour
- Solvent odour e.g., sharp or sweet odour
- Waste materials e.g., metals, plastic etc.
- Asbestos e.g., fibrous sheeting / roofing / board / lagging etc.
- 'Landfill' odour e.g., rotten / putrefying / leachate odour

Or any other material that looks man-made or does not match its surroundings – if in doubt, check.

Procedure for Discovery of Unexpected Contamination

If any of the above material is discovered, the following procedure must be carried out:

a) Stop works in the area of the contamination discovery.
b) Inform the Site Manager.
c) Record the visual and olfactory evidence of contamination.
d) Suitably qualified geo-environmental engineer to investigate the contamination; take samples, photographs and in-situ tests and discover the extents of the contamination, and to identify potential contaminants and specify chemical testing, if necessary.
e) Either dig out the contaminated material and stockpile, on an impermeable membrane if necessary, or leave in-situ whilst awaiting chemical test results, if needed – whichever presents the least risk.

f) Suitably qualified geo-environmental engineer to re-visit the site's risk assessment, taking into account the newly discovered contamination and recommend remediation, if necessary, or other next steps.
g) If the risk assessment and remediation strategy is changed as a result, the Local Authority and/or the Environment Agency should be informed and/or consulted.
h) Lastly, undertake remediation of the affected area if this has been deemed appropriate.

Procedure for Discovery of an Unexpected Tank

Former industrial sites may contain unrecorded underground storage tanks (USTs). Follow the below steps if a UST is found:

a) Stop works in the area of the UST discovery.
b) Inform the Site Manager.
c) Suitably qualified geo-environmental engineer to investigate the tank, including measuring the size, contents, condition, and visual and olfactory evidence of contamination. Geo-environmental engineer to record the location of the tank on a site plan, take photographs, and sample the contents to send for chemical testing to determine the contents.
d) Suitably qualified contractor to empty the tank and dispose of contents at a suitably licensed disposal facility.
e) Suitably qualified contractor to undertake integrity testing in line with the 'Blue Book' method (APEA / EI '*Design, Construction, Modification, Maintenance and Decommissioning of Petrol Filling Stations*' 4th ed. (April 2018)), to determine whether the tank is intact or has been compromised.
f) Suitably qualified geo-environmental engineer to undertake a risk assessment based on the contents of the tank and the results of the integrity testing, to determine whether to decommission the tank and leave in-situ or to remove the tank.
g) Suitably qualified contractor to clean and 'inert' the tank, and provide a gas safe certificate, in line with the 'Blue Book' method.

h) Suitably qualified contractor to either decommission the tank in-situ in line with the ‘Blue Book’ method or remove the tank and dispose of at an appropriate facility.
i) If excavated and removed, suitably qualified geo-environmental engineer to investigate the base and the sides of the resultant excavations and if any contamination is found, undertake the Procedure for Discovery of Unexpected Contamination above.

IGE

consulting

IGE Consulting Ltd: 1st Floor, 15 Oxford Court, Manchester, M2 3WQ

Email: contact@igeconsulting.co.uk