



Topsoil Verification Letter Report Bignor Street Park (Olive School) Cheetham Hill

Prepared for Conlon Construction Ltd

October 2024

10/2204/005 Rev 00

Phil Hill
Senior Geo-Environmental Engineer
phil.hill@clancy.co.uk

enquiries@clancy.co.uk
www.clancy.co.uk

Clancy Consulting Limited
Dunam Court
2 Dunham Road
Altrincham
Cheshire
WA14 4NX

18th October 2024
Conlon Construction Ltd
Charnley Fold Lane
Bamber Bridge
Preston
PR5 6BE

Dear Sirs,

Bridge Street Park (Olive School), Chetham Hill. Topsoil Verification Letter Report

Introduction

Clancy Consulting Ltd (CCL) has been instructed by Conlon Construction Ltd to prepare a Verification Report for the redevelopment of the above site. The site covers an approximate area of 1.22 ha and is currently occupied by a public park comprising soft landscaped areas with a number of trees along the southern, eastern and western site boundaries. Hard surfaced play areas are present to the north with Brentfield Avenue beyond. Surrounding land uses are typical of a sub-urban area including housing estates, schools and public open space.

The proposal is for the redevelopment of the site with a new two storey primary school building with car parking and access in the central and northern area. A mini football field is proposed in the southern part of the site along with a multi-use games area (MUGA), habitat area and hard surfaced play areas in the west. The southern boundary of the site, adjacent to the mini football pitch is currently occupied by trees (with root protection zones) and is proposed to be planted with wildflowers.

The proposed development layout and landscape masterplan are shown on the drawings in Appendix I.

This Verification Report follows previous phases of investigation works which have been undertaken by CCL, the findings of which are presented in the following documents:

- Phase 1 Desk Study report Bignor Street Park, Cheetham Hill: Clancy Consulting Ltd: reference 10/2204/001 dated December 2022.
- Phase 2 Site Investigation Report, Bignor Street Park, Cheetham Hill: Clancy Consulting report ref 10/2204/002 dated April 2023.
- Remediation Strategy, Bignor Street Park, Cheetham Hill: Clancy Consulting report ref 10/2204/003 Rev 01.
- Verification Letter Report, Bignor Street Park, Cheetham Hill: Clancy Consulting report ref 10/2204/004 dated September 2024

It is recommended that this current report be read in conjunction with those referenced above.

Remediation Strategy

The following mitigation measures are recommended to break the pollutant linkages associated with the site, summarised above:

- It is recommended that a 300mm thickness of clean capping layer, comprising at least 100mm thickness of topsoil and 200mm of subsoil be placed in areas of soft landscaping readily accessible to pupils to form a barrier between recorded contaminants of concern and future site users.
- Chemical testing of soils imported for use within the clean soil cover layer.
- Validation of clean cover depth where required in soft landscaped areas.
- Provision of a Verification Report demonstrating the works above have been completed in a satisfactory manner.

This document deals solely with the validation of the clean cover material (chemical composition, sampling and depth).

Clean Soil Cover

Given the nature of the Made Ground soils and presence of elevated soil contaminant concentrations some form of remediation is required. In the location of the mini football field, habitat area and general soft landscaping a 300mm layer of verified clean soil cover should be provided, including a minimum 100mm thickness of topsoil and 200mm subsoil in accordance with guidance set out in the NHBC Technical Standards 2022. The clean cover layer will form a barrier between recorded contaminants of concern and future site users, thus breaking the pollutant linkage.

The areas requiring clean soil cover are shown on the Landscape Masterplan drawing in Appendix I. In particular this relates to areas of landscaping annotated as Amenity Turf, Sports Turf and Ornamental Shrub Planting. Areas of wildflower seeding and tree protection zones are excluded given these areas will remain largely inaccessible and to avoid potential damage to the protected tree root systems.

It will be necessary to carry out chemical testing on any material proposed for use within the clean cover layer to demonstrate it is suitable for use. The testing is recommended to be carried out at source prior to importation but can be done following placement (though there is a risk that if the material fails, it will need to be removed and replaced).

Topsoil / subsoil testing should be carried out by a qualified geo-environmental consultant, at a frequency of one sample per 50m³ for imported topsoil and one sample per 250m³ for subsoil (imported or site won).

Samples would require chemical testing for pH, metals / metalloids, speciated PAHs and screening for the presence of asbestos as a minimum. If the imported soils are from a Brownfield / recycled source, chemical testing should also include speciated TPH analyses.

Topsoil provided in the top 100mm of the clean cover (minimum) should be compliant with the specification provided within NHBC Technical Standards (2022)

The test results will then be compared against the relevant Soil Screening Values (SSVs) for a residential without plant uptake end use scenario, deemed appropriate to the proposed development due to the proposals to include a primary school. A list of the SSVs is appended to this report.

The thickness of the clean cover provided should be confirmed by the geo-environmental consultant by excavating a hand dug pit to the base of the clean cover. Within areas of soft landscaping, two pits should be dug to confirm thickness for each separate area or one per 100m² of each landscaped area, whichever is the greater. Scaled photographs should be taken of each pit, demonstrating the thickness and quality of clean cover provided.

Following completion of the works, the evidence summarised above (including chemical laboratory certificates and scaled photographs demonstrating thickness of cover provided) should be detailed in a Verification Report. This will be required by the Local Authority to demonstrate that specified remediation works have been carried out successfully.

Clean Cover Validation

In total 584m³ of topsoil / subsoil (sand) was imported to site and used in the construction of the mini football field, habitat area and 12.6m³ for general areas of landscaping.

Clancy Consulting took 12 samples of topsoil and 3 samples of sand, equating to a frequency of one sample per 49m³ for topsoil in accordance with the requirements of the remediation strategy.

Clancy Consulting attended site on the 4th September 2024 to validate cover depths within the area of the mini football field. In order to allow for appropriate drainage characteristics the construction consisted of 230mm topsoil, 50mm sand with a 30mm turf cover equating to a total thickness of 310mm. Depth validation within

this area was undertaken after the placement of the topsoil, but before the laying of the sand and turf in order to prevent damage to the playing surface. Photographs showing the depths of cover are presented in Appendix

Clancy Consulting also attended site on 15th October 2024 to assess the depth of topsoil in the remaining areas of the site.

Five hand dug trial pits (VP01 – VP05) were excavated within the Habitat area of the site, within this area the presence of existing trees which were to be retained prevented significant excavations being undertaken. All trial pits encountered a minimum of 200mm of topsoil, overlying a stiff brown gravelly clay. It should be noted that the area in question has a demarcated pathway through, access to the areas of planting will not be undertaken by the children.

Two trial pits (VP06 and VP07) were excavated in small areas of landscaping adjacent to the newly constructed car park. In both instances 200mm of topsoil was encountered directly overlying a stiff brown gravelly clay. This area of the site is outside the secure area of the site and not accesses by the school children.

One trial pit (VP08) was excavated in a small area of landscaping adjacent to the main school entrance, this encountered 200mm of topsoil directly overlying a stiff brown / mottled grey gravelly clay. This area of landscaping is on the Public (Visitors) side of the school building and will not be accessed by school children during the normal school day.

VP09 was excavated in a small area of Ornamental Shrub and wildflower planting adjacent to the Reception Class Play Area. The presence of existing trees which were to be retained prevented significant excavations being undertaken prior to construction of the flower beds. Within this area 200mm of topsoil was recorded overlying a stiff mottled grey / brown gravelly clay.

Human Health Risk Assessment

The result of the verification sampling have been compared against the agreed remedial target concentrations as provided within the Remediation Strategy report, for values associated with a Residential End Use Without Plant Uptake, copies of the laboratory test certificates are presented in Appendix III.

The samples of topsoil taken all have concentrations of contaminants below those required and are therefore considered to be suitable for use.

With reference to deviations from the Remediation Strategy Clancy Consulting consider the reduction in topsoil depths in the areas of the site indicated above will not have a detrimental effect, due to the short duration of exposure children will have to these areas over the course of the school day, the majority of the Habitat area is laid with either a rubberised gravel path, or turf preventing possible contact with remnant contaminants which may be present. Likewise the areas adjacent to the car park and school visitors entrance will not be accessed by either staff of children for any significant length of time and therefore the risks of either ingestion or contact with any remaining contaminants is considered to be low.

Potable Water Supply Pipelines

CCL undertook an assessment of ground conditions for selection of a potable water supply pipe in accordance with the United Utilities Supplementary guidance for the selection of water pipes in land potentially affected by contamination.

The results of the assessment indicated that PE Barrier Pipe Type A is required.

Installation of the pipeline was undertaken in accordance with CCL Proposed External Services Layout, drawing no. FS0766-6902 Revision C07 (attached) at a minimum depth of 900mm bgl, and in conjunction with the Water UK document "Code of Practice for the Self-Laying of Water Mains and Services – England and Wales" (Edition 3.1 – May 2017).

We hope the above is satisfactory however, if you require any further information then please contact the undersigned.

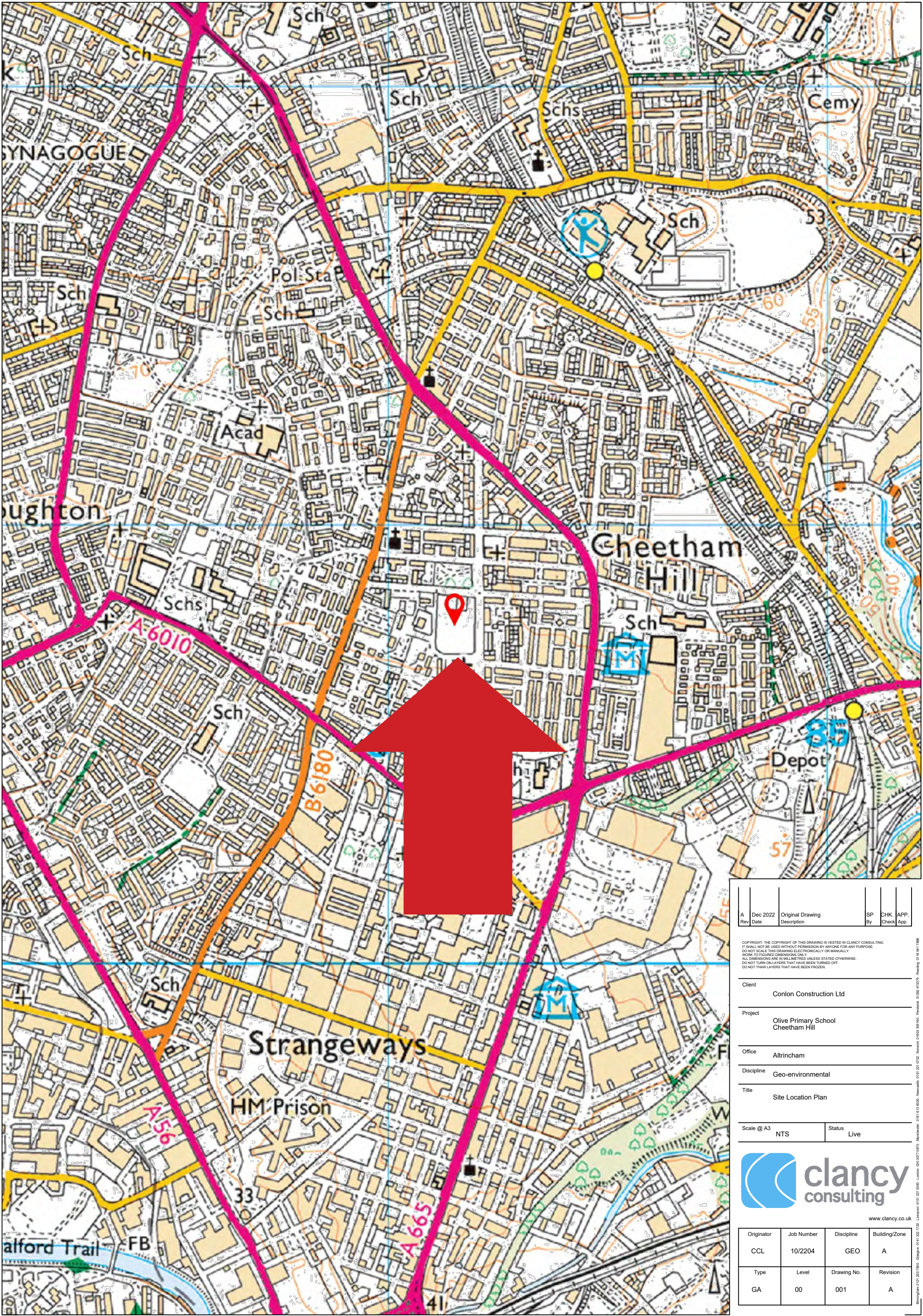
Yours sincerely,



Phil Hill
Senior Geo-Environmental Engineer
For and on behalf of Clancy Consulting Ltd

Appendix I: Drawings
Appendix II Photographic Record
Appendix III Chemical Laboratory Results

APPENDIX I
DRAWINGS



A	Dec 2022	Original Drawing	SP	CHK.	APP.
Rev	Date	Description	By	Check	App.

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ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
DO NOT TURN ON LAYERS THAT HAVE BEEN TURNED OFF.
DO NOT THAW LAYERS THAT HAVE BEEN FROZEN.

Client
Conlon Construction Ltd

Project
Olive Primary School
Cheetham Hill

Office
Altrincham

Discipline
Geo-environmental

Title
Site Location Plan

Scale @ A3
NTS

Status
Live



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Originator	Job Number	Discipline	Building/Zone
CCL	10/2204	GEO	A
Type	Level	Drawing No.	Revision
GA	00	001	A

Birmingham 0121 303 7600, Glasgow 0141 222 7730, Liverpool 0151 227 5300, London 0203 3076970, Manchester 0161 613 0000, Newcastle 0191 221 0702, Norwich 01603 305100, Preston 01752 475375, Reading 0118 9417888



LANDSCAPE IMAGE EXAMPLES

REV	DATE	DESCRIPTION	BY	CHK	APP
Rev	Date	Description	By	Check	App.

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Client
Conlon Construction Ltd

Project
Bridge Street Car Park (Olive School)

Office
Manchester

Discipline
Geo

Title
Cover Depth Validation

Drawn	PJH	Date	October 2024
Checked	DK	Scale	@ A3
Approved	NR	Status	Live

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consulting

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Job number	Drawing number	Revision
10/2204	005	-

APPENDIX II
PHOTOGRAPHIC RECORDS



Plate 1: Topsoil laid over sports pitch with sand drainage layer being installed prior to turfing.



Plate 2: SP01 Validation showing approx. 270mm topsoil prior to sand layer and turf



Plate 3: Sports Pitch validation (SP02) showing approx. 270mm topsoil prior to sand layer and turf



Plate 4: Sports Pitch validation (SP03) showing approx. 270mm topsoil prior to sand layer and turf



Plate 5: Sports Pitch validation (SP04) showing approx. 270mm topsoil prior to sand layer and turf



Plate 6: Sports Pitch Validation (SP05) showing approx. 280mm topsoil prior to sand layer and turf



Plate 7: Sports Pitch Validation (SP06) showing approx. 270mm topsoil prior to sand layer and turf.



Plate 8: Sports Pitch Validation (SP07) showing approx. 270mm topsoil prior to sand layer and turf.



Plate 9: Sports Pitch Validation (SP08) showing approx. 270mm topsoil prior to sand layer and turf.



Plate 10: Sports Pitch Validation (SP09) showing approx. 270mm topsoil prior to sand layer and turf.



Plate 11: VP01 Showing 220mm topsoil



Plate 12: VP01 location – Ornamental Shrub planting – Habitat Area



Plate 13: VP02 showing 220mm topsoil



Plate 14: VP02 Location- Ornamental Shrub planting – Habitat Area



Plate 15: VP03 showing 210mm topsoil: Location Ornamental Shrub Planting - Habitat Area



Plate 16: VP04 showing 300mm topsoil: Location Ornamental Shrub Planting - Habitat Area



Plate 17: VP05 showing 250mm topsoil: Location adjacent to amenity turf – Habitat Area



Plate 18: VP06 showing 200mm topsoil: Location Amenity Turf area adjacent to Bin Store



Plate 19: VP07 showing 200mm topsoil: Location Amenity Turf area adjacent to Car Park



Plate 20: VP08 showing 200mm topsoil: Location Ornamental and wildflower planting Front Entrance



Plate 21: VP09 showing 200mm topsoil: Location Ornamental shrub and wildflower area adjacent to Reception Play Area.

APPENDIX III
CHEMICAL LABORATORY RESULTS

Clancy Consulting
Dunham Court
2 Dunham Road
Altrincham

t: 0161 613 6000

e: max.starr@clancy.co.uk
phil.hill@clancy.co.uk

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

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

Analytical Report Number : 24-032293

Project / Site name:	Olive School	Samples received on:	23/07/2024
Your job number:	OCT 04	Samples instructed on/ Analysis started on:	24/07/2024
Your order number:	34298	Analysis completed by:	30/07/2024
Report Issue Number:	1	Report issued on:	30/07/2024
Samples Analysed:	3 soil samples		

Signed: 

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

Analytical Report Number: 24-032293
Project / Site name: Olive School
Your Order No: 34298

Lab Sample Number	265797	265798	265799
Sample Reference	TS1	TS2	TS3
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status

Stone Content	%	0.1	NONE	9.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	9.9	13	17
Total mass of sample received	kg	0.1	NONE	1.3	1.4	1.4

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	NNI	NNI	NNI

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.5	8.3	8.1
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.08	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.17	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.19	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.7	0.16	0.21
Anthracene	mg/kg	0.05	MCERTS	0.37	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	2	0.31	0.29
Pyrene	mg/kg	0.05	MCERTS	2	0.26	0.23
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.91	0.16	0.13
Chrysene	mg/kg	0.05	MCERTS	0.93	0.16	0.1
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.93	< 0.05	0.15
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.35	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.81	0.14	0.09
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.39	0.09	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.43	< 0.05	0.08

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	11.3	1.28	1.29
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5	3	4
Barium (aqua regia extractable)	mg/kg	1	MCERTS	39	43	37
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.49	0.25	0.17
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	0.9	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	10	12	7.2
Copper (aqua regia extractable)	mg/kg	1	MCERTS	13	11	11
Lead (aqua regia extractable)	mg/kg	1	MCERTS	35	19	16
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	9.3	6.5	5.9
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	12	11	8.5
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	33	31	32

Analytical Report Number: 24-032293
Project / Site name: Olive School
Your Order No: 34298

Lab Sample Number	265797	265798	265799
Sample Reference	TS1	TS2	TS3
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	Deviating	Deviating	Deviating
Time Taken	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	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	22	35
TPHCWG - Aliphatic >EC35 - EC40 _{EH_CU_1D_AL}	mg/kg	10	NONE	< 10	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC40 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	22	35

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010
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	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	16	38
TPHCWG - Aromatic >EC35 - EC40 _{EH_CU_1D_AR}	mg/kg	10	NONE	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC40 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	16	38

TPH Total >EC5 - EC40 _{EH_CU+HS_1D_TOTAL}	mg/kg	10	NONE	< 10	38	73
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0

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

Analytical Report Number : 24-032293

Project / Site name: Olive School

* 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 *
265797	TS1	None Supplied	None Supplied	Brown loam and sand with vegetation and stones
265798	TS2	None Supplied	None Supplied	Brown loam with gravel and vegetation
265799	TS3	None Supplied	None Supplied	Brown loam with gravel and vegetation

Analytical Report Number : 24-032293
Project / Site name: Olive School

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
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
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/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L08B	D/W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazine followed by colorimetry	In-house method	L080	W	MCERTS

Analytical Report Number : 24-032293
Project / Site name: Olive School

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

Analytical Report Number : 24-032293

Project / Site name: Olive School

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

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TS1	N/A	S	265797	a	Asbestos identification in Soil	A001B	a
TS1	N/A	S	265797	a	Asbestos types if id possible	N/A	a
TS1	N/A	S	265797	a	BTEX and/or Volatile organic compounds in soil	L073B	a
TS1	N/A	S	265797	a	Boron, water soluble, in soil	L038B	a
TS1	N/A	S	265797	a	Hexavalent chromium in soil	L080	a
TS1	N/A	S	265797	a	Metals in soil by ICP-OES	L038B	a
TS1	N/A	S	265797	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TS1	N/A	S	265797	a	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088	a
TS1	N/A	S	265797	a	pH in soil (automated)	L099	a
TS2	N/A	S	265798	a	Asbestos identification in Soil	A001B	a
TS2	N/A	S	265798	a	Asbestos types if id possible	N/A	a
TS2	N/A	S	265798	a	BTEX and/or Volatile organic compounds in soil	L073B	a
TS2	N/A	S	265798	a	Boron, water soluble, in soil	L038B	a
TS2	N/A	S	265798	a	Hexavalent chromium in soil	L080	a
TS2	N/A	S	265798	a	Metals in soil by ICP-OES	L038B	a
TS2	N/A	S	265798	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TS2	N/A	S	265798	a	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088	a
TS2	N/A	S	265798	a	pH in soil (automated)	L099	a
TS3	N/A	S	265799	a	Asbestos identification in Soil	A001B	a
TS3	N/A	S	265799	a	Asbestos types if id possible	N/A	a
TS3	N/A	S	265799	a	BTEX and/or Volatile organic compounds in soil	L073B	a
TS3	N/A	S	265799	a	Boron, water soluble, in soil	L038B	a
TS3	N/A	S	265799	a	Hexavalent chromium in soil	L080	a
TS3	N/A	S	265799	a	Metals in soil by ICP-OES	L038B	a
TS3	N/A	S	265799	a	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TS3	N/A	S	265799	a	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088	a
TS3	N/A	S	265799	a	pH in soil (automated)	L099	a



Clancy Consulting
Dunham Court
2 Dunham Road
Altrincham

t: 0161 613 6000

e: max.starr@clancy.co.uk
phil.hill@clancy.co.uk

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

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

Analytical Report Number : 24-040106

Project / Site name:	Olive School	Samples received on:	04/09/2024
Your job number:	10 2204	Samples instructed on/ Analysis started on:	04/09/2024
Your order number:	34477	Analysis completed by:	12/09/2024
Report Issue Number:	1	Report issued on:	12/09/2024
Samples Analysed:	12 soil samples		

Signed: 

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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



Analytical Report Number: 24-040106
Project / Site name: Olive School
Your Order No: 34477

Lab Sample Number	306066	306067	306068	306069	306070
Sample Reference	TP01	TP02	TP03	TP04	TP05
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.23	0.20	0.15	0.10	0.20
Date Sampled	03/09/2024	03/09/2024	03/09/2024	03/09/2024	03/09/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	17	14	12	14	15
Total mass of sample received	kg	0.1	NONE	0.9	0.8	0.5	0.9	1.1

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS	EWS	EWS	EWS

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.4	7	7	7.7	7.6
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.06	< 0.05	< 0.05	0.06	0.06
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.05	< 0.05	< 0.05	< 0.05	0.14
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.08
Phenanthrene	mg/kg	0.05	MCERTS	0.33	0.06	0.06	0.29	0.7
Anthracene	mg/kg	0.05	MCERTS	0.08	< 0.05	< 0.05	0.06	0.15
Fluoranthene	mg/kg	0.05	MCERTS	0.76	0.1	0.12	0.56	1.2
Pyrene	mg/kg	0.05	MCERTS	0.71	0.09	0.11	0.55	1.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.36	0.06	0.06	0.27	0.58
Chrysene	mg/kg	0.05	MCERTS	0.36	< 0.05	0.08	0.3	0.61
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.47	< 0.05	< 0.05	0.36	0.62
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.23	< 0.05	< 0.05	0.18	0.29
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.42	< 0.05	0.07	0.27	0.58
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.23	< 0.05	0.06	0.15	0.32
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.07
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.26	< 0.05	0.07	0.2	0.35

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	4.34	< 0.80	< 0.80	3.26	6.88
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	4.1	3.3	3.4	4.2	4.7
Barium (aqua regia extractable)	mg/kg	1	MCERTS	38	30	27	39	36
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.25	0.21	0.31	0.26	0.26
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.5	0.6	0.6	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	-	-	-	-
Chromium (VI) in soil by IC	mg/kg	1.8	NONE	< 1.80	< 1.80	< 1.80	< 1.80	< 1.80
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	7.1	6.2	5.7	7.3	7.2
Copper (aqua regia extractable)	mg/kg	1	MCERTS	18	16	34	17	32
Lead (aqua regia extractable)	mg/kg	1	MCERTS	29	24	23	31	27
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	6.3	5.3	8.6	7	6.4
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	8.4	7.1	6.7	9	8.6
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	44	40	85	44	46

Analytical Report Number: 24-040106
Project / Site name: Olive School
Your Order No: 34477

Lab Sample Number	306066	306067	306068	306069	306070
Sample Reference	TP01	TP02	TP03	TP04	TP05
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.23	0.20	0.15	0.10	0.20
Date Sampled	03/09/2024	03/09/2024	03/09/2024	03/09/2024	03/09/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 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	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 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	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	16	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 _{EH_CU_1D_AL}	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC40 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	16	< 10	< 10	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	0.011	0.012	0.017	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	10	14	17	< 10	14
TPHCWG - Aromatic >EC35 - EC40 _{EH_CU_1D_AR}	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC40 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	10	14	17	< 10	14

TPH Total >EC5 - EC40 _{EH_CU+HS_1D_TOTAL}	mg/kg	10	NONE	26	14	17	< 10	14
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	7.3	12	13	18	7.6
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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

Analytical Report Number: 24-040106
Project / Site name: Olive School
Your Order No: 34477

Lab Sample Number	306071	306072	306073	306074	306075
Sample Reference	TP06	TP07	TP08	TP09	TP10
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.10	0.20	0.23	0.10	None Supplied
Date Sampled	03/09/2024	03/09/2024	03/09/2024	03/09/2024	03/09/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	12	14	16	9.6
Total mass of sample received	kg	0.1	NONE	1	1.1	1	1.1	1.1

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS	EWS	EWS	EWS

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.8	7.7	7.7	7.5	8.9
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.06	< 0.05	0.11	0.06	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.38	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.25	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.11	0.06	2.6	0.09	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.59	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.18	0.11	3.8	0.15	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.17	0.11	3.7	0.14	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.11	0.08	1.6	0.09	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.1	0.05	1.6	0.08	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.13	< 0.05	1.5	0.13	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.08	< 0.05	0.71	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.12	< 0.05	1.6	0.11	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.07	< 0.05	0.67	0.07	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.14	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.1	< 0.05	0.91	0.08	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1.23	< 0.80	20.1	0.99	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	4	3.2	5.2	4	< 1.0
Barium (aqua regia extractable)	mg/kg	1	MCERTS	30	27	53	32	17
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.24	0.2	0.34	0.23	0.07
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.5	1.4	0.6	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	-	-	-	< 1.8
Chromium (VI) in soil by IC	mg/kg	1.8	NONE	< 1.80	< 1.80	< 1.80	< 1.80	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	6.9	5.6	7.6	6.9	2.1
Copper (aqua regia extractable)	mg/kg	1	MCERTS	17	16	20	16	3.5
Lead (aqua regia extractable)	mg/kg	1	MCERTS	26	24	36	25	< 1.0
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	6.1	4.8	7.3	5.8	2.1
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	8.1	6.6	9.8	8	2.6
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	44	40	50	42	5.4

Analytical Report Number: 24-040106
Project / Site name: Olive School
Your Order No: 34477

Lab Sample Number	306071	306072	306073	306074	306075
Sample Reference	TP06	TP07	TP08	TP09	TP10
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.10	0.20	0.23	0.10	None Supplied
Date Sampled	03/09/2024	03/09/2024	03/09/2024	03/09/2024	03/09/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 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	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 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	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 _{EH_CU_1D_AL}	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC40 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	0.037	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	26	13	25	< 10	< 10
TPHCWG - Aromatic >EC35 - EC40 _{EH_CU_1D_AR}	mg/kg	10	NONE	16	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC40 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	42	13	25	< 10	< 10

TPH Total >EC5 - EC40 _{EH_CU+HS_1D_TOTAL}	mg/kg	10	NONE	42	13	25	< 10	< 10
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	37	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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



Analytical Report Number: 24-040106
Project / Site name: Olive School
Your Order No: 34477

Lab Sample Number				306076	306077
Sample Reference				TP11	TP12
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				03/09/2024	03/09/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	7.8
Total mass of sample received	kg	0.1	NONE	1	1

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.1	7
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Speciated PAHs

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

Total PAH

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

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Barium (aqua regia extractable)	mg/kg	1	MCERTS	13	12
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.06	< 0.06
Boron (water soluble)	mg/kg	0.2	MCERTS	0.2	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (VI) in soil by IC	mg/kg	1.8	NONE	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	1.8	1.8
Copper (aqua regia extractable)	mg/kg	1	MCERTS	2.9	3.1
Lead (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	1.7	1.7
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	2.4	2.3
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	6.4	5.3



Analytical Report Number: 24-040106
Project / Site name: Olive School
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Lab Sample Number	306076			306077	
Sample Reference	TP11			TP12	
Sample Number	None Supplied			None Supplied	
Depth (m)	None Supplied			None Supplied	
Date Sampled	03/09/2024			03/09/2024	
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	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 _{EH_CU_1D_AL}	mg/kg	10	NONE	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC40 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 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	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10
TPHCWG - Aromatic >EC35 - EC40 _{EH_CU_1D_AR}	mg/kg	10	NONE	< 10	< 10
TPHCWG - Aromatic >EC5 - EC40 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	< 10

TPH Total >EC5 - EC40 _{EH_CU+HS_1D_TOTAL}	mg/kg	10	NONE	< 10	< 10
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0

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



Analytical Report Number : 24-040106
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* 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 *
306066	TP01	None Supplied	0.23	Brown sand with vegetation
306067	TP02	None Supplied	0.2	Brown sand with vegetation
306068	TP03	None Supplied	0.15	Brown sand with vegetation
306069	TP04	None Supplied	0.1	Brown sand with vegetation
306070	TP05	None Supplied	0.2	Brown sand with vegetation
306071	TP06	None Supplied	0.1	Brown sand with vegetation
306072	TP07	None Supplied	0.2	Brown sand with vegetation
306073	TP08	None Supplied	0.23	Brown sand with vegetation
306074	TP09	None Supplied	0.1	Brown sand with vegetation
306075	TP10	None Supplied	None Supplied	Brown sand
306076	TP11	None Supplied	None Supplied	Brown sand
306077	TP12	None Supplied	None Supplied	Brown sand

Analytical Report Number : 24-040106
Project / Site name: Olive School

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
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
Cr(VI) in soils by Ion chromatography	Determination of hexavalent chromium in alkaline soil extract by use of ion chromatography with spectrophotometric detection	In-house method	L130B	W	NONE
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/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-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

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 30°C.
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