

Contamination Assessment and Groundwater Detailed Quantitative Risk Assessment

On behalf of The Trustees of the Alitex DBSSAS

2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

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EXECUTIVE SUMMARY	
PROPOSED DEVELOPMENT	The proposed development was understood to comprise the demolition of the majority of the existing buildings on-site and the construction of eight new commercial units varying in size from 100 – 120m² with new access roads onto the site as well as new car parking spaces. A bin store was noted on the northern portion of the site near the proposed site entranceway. The existing office building located on the centre of the site is to remain. Due to the on-site ground conditions that were found during the previous site investigation, traditional strip and pad foundations are required to all units, including those on the southern site boundary. Suspended reinforced slabs are proposed and will not be ground-bearing.
GEOLOGY AND HYDROGEOLOGY	The ground conditions encountered within the trial holes constructed on the site conformed to that anticipated from examination of the geology map. A capping of Made Ground (<~1.00m) was noted to overlie the superficial Head Deposits/River Terrace Deposits (Secondary A Aquifer) over bedrock London Clay Formation (Unproductive Strata).
CONTAMINATION	The risk assessments undertaken within this section of the report have identified that the contaminants do not represent an unacceptable risk to the surface water receptor of the River Ems as a result of contamination relating to our site.
REMEDIATION	Decommissioning of wells and standard good practices on-site (full PPE and good hygiene required. No further remediation with respect of groundwater recommended at this stage. For information on the soils and vapour risks, the report the Remediation Method Statement and Ground-Gas Design Report, produced by Ground and Water Limited (reference: GWPR6668/RMS&GGDR/August 2025) should be consulted.

1. INTRODUCTION

1.1. General

Ground and Water Limited were instructed by The Trustees of the Alitex DBSSAS on the 7th November 2025 to conduct a Contamination Assessment with Detailed Groundwater Quantitative Risk Assessment (DQRA) on the site at 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH. The scope of the investigation was detailed within the FW email, dated 6th November 2025.

1.2. Aims of the Investigation

The aim of this report was to supply the client and their designers with information regarding the ground conditions underlying the site to assist them in preparing an appropriate scheme for development.

The investigation was to be undertaken to provide chemical testing undertaken on groundwater samples recovered from installed standpipes. The report was to provide a contamination assessment into the condition of the groundwater at the site and through combining all reliable site data, the production of a remediation strategy, enabling a safe redevelopment of the site.

The site has undergone various phases of investigation, reference should be made to the following documentation:

- The Phase 1 Desk Study, produced by Ground and Water Limited (reference: GWPR5385/DS/June 2023);
- The Phase 2 Site Investigation Report, produced by Ground and Water Limited (reference: GWPR5385/SIR/June 2023);
- The Phase 2 Site Investigation Report, produced by Ground and Water Limited (reference: GWPR5475/SIR/November 2023);
- The Remediation Method Statement and Ground-Gas Design Report, produced by Ground and Water Limited (reference: GWPR6668/RMS&GGDR/August 2025).

This Risk Assessment must be read in conjunction with the previous reports detailed above.

The techniques adopted for the investigation were chosen considering the requirements of the client, anticipated ground conditions, and bearing in mind the nature of the site, limitations to site access and other logistical limitations.

1.3. Conditions and Limitations

This report has been prepared based on the terms, conditions and limitations outlined within Appendix A.

This version of the report supersedes the previous with minor amendments.

1.4. Technical Glossary

Generic technical terms and their description can be viewed within the glossary provided within Appendix B.

2. SITE SETTING

2.1. Site Location

The site comprised a ~2,800m² roughly rectangular shaped plot of land, orientated in a west to east direction, along the southern side of Seagull Lane. The site was located in the northern portion of the town of Emsworth in the county of Hampshire. The national grid reference for the centre of the site was approximately SU 74955 06184. A site location plan has been provided within Figure 1, with a plan of the site development area provided within Figure 2.

2.2. Site Description

A Site Walkover was undertaken on the 12th May 2023. A description of the site, as noted during the Site Walkover, is tabulated below. An aerial view of the site is provided within Figure 3.

Site Description Sheet	
Use of site	At the time of the site walkover, 12 th May 2023, the site comprised old abandoned warehouse and works buildings as well as an office building located on the central area of the site. The office was still in use.
Site topography	The site was sloping gently from the west to the east.
Area topography	The site environs were sloping gently from the west to the east.
Structures onsite	A mixture of office buildings (in use) and derelict warehouses, works and other buildings in varying states of repair across the entire site area.
Structures off-site	Residential flats and houses were noted to the north and west of the site, works buildings were noted to the east. The land directly to the south was undeveloped but residential houses and a works were also noted further to the south of the site.
Use of surrounding ground	Mainly residential land use with some areas of industrial land associated with works to the east and south of the site.
Boundary features	Northern Boundary: Seagull Lane with residential houses beyond. Eastern Boundary: Brick wall with works buildings beyond. Southern Boundary: Brick wall with undeveloped land directly to the south of the south. Western Boundary: Brick wall with residential houses beyond.
Site covering	The majority of the site was covered with concrete hardstanding, in some areas bushes and grass had grown in cracks of the concrete hardstanding or in corners of the site close to certain buildings.
Existing Drainage	The site currently comprises a series of light industrial buildings and concrete hardstanding, which are both impermeable. Due to the topography of the site, no runoff discharges to the existing surface water sewer along Seagull Lane and instead flows into the existing below ground drainage before conveyance to the foul sewer to the east of the site. The existing connection is therefore a combined sewer overflow (CSO).
Contamination sources onsite	An oil interceptor was noted on the south-east corner of the site. General industrial setting including fly tipped material across the western portion of the site.
Contamination sources off-site	Works buildings were noted to the east of the site. The undeveloped land to the south of the site had old foundations for a gas holder.
Vegetation onsite	Vegetation was limited on site to small bushes, weeds and small patches of grass which was overgrown and coming from cracks in the concrete hardstanding and around derelict buildings.
Vegetation off-site	Mature trees were noted to the north-east of the site. Semi-mature trees and shrubs were noted along the northern and southern boundary walls.
Services	Oil Interceptor was noted in the south-east corner of the site. Electricity and gas was noted going into the office building in the centre of the site, Electricity and water was noted to be underneath the eastern portion of the site.

2.3. Proposed Development

The proposed development was understood to comprise the demolition of the majority of the existing buildings on-site and the construction of eight new commercial units varying in size from 100 – 120m² with new access roads onto the site as well as new car parking spaces. A bin store was noted on the northern portion of the site near the proposed site entranceway. The existing office building located on the centre of the site is to remain.

Due to the on-site ground conditions that were found during the previous site investigation, traditional strip and pad foundations are required to all units, including those on the southern site boundary. Suspended reinforced slabs are proposed and will not be ground-bearing.

Information on the proposed development can be viewed within Appendix C.

2.4. Geology, Hydrogeology and Hydrology

The British Geological Survey Solid and Drift Geology Map for the Emsworth area (Fareham Sheet No. 316) revealed that the site was underlain by superficial River Terrace Deposits on the western portion of the site, Head Deposits on the central and eastern portion of the site and possible alluvial deposits located on the eastern boundary/near the eastern boundary of the site with bedrock deposits of the London Clay Formation. No areas of Made Ground or Reworked Ground were noted within a 250m radius.

A study of the aquifer maps on the DEFRA website revealed the site was underlain by a Secondary A Aquifer comprising the superficial River Terrace Deposits and Head Deposits, underlain by Unproductive Strata comprising bedrock deposits of the London Clay Formation.

Examination of the Environment Agency records showed that the site did not fall within a Groundwater Source Protection Zone (SPZ) as classified in the Policy and Practice for the Protection of Groundwater.

The nearest surface water feature was the River Ems located ~50m east of the site and was flowing in a north to south direction. Emsworth harbour was noted 630m south of the site.

From analysis of hydrogeological and topographical maps the actual groundwater table was anticipated to be encountered at shallow to moderate depths within the River Terrace Deposits/Head Deposits. Some amounts of groundwater however may be present at shallower depths within Made ground. It was considered that groundwater was flowing in an easterly direction toward the River Ems in line with local topography.

2.5. BGS Borehole Records

A BGS borehole (SU70NE/100) located ~90m north-east of the site revealed a 0.15m capping of Topsoil over a clayey Sand and Gravel (potential Made Ground) down to 0.30m bgl. From 0.30-0.80m a soft to firm light to dark brown organic Clay, with a very soft organic peaty Clay to 1.00m bgl. A light grey Clay was recorded below to 1.90m with a loose flint gravel below to 2.20m. From 2.20-6.00m (base of the borehole) a stiff dark grey fissured silty Clay with thin partings of silt and fine sand. Groundwater was noted at 1.10m bgl.

2.6. Radon

A review of the freely available UK Health Security Agency radon database, UK Radon, indicated that the site was located within a 1km grid square, where the maximum radon potential of 5 – 10% was recorded. Radon protection measures are required in areas where more than 3% of houses are at or above the Action Level.

The site was in an area where a risk assessment was required.

The UKHSA advises that radon gas should be measured in all properties within radon Affected Areas and that homes with radon levels at or above the Action Level (200 Bq m⁻³) should be remediated. Householders with levels between the Target Level (100 Bq m⁻³) and Action Level should seriously consider reducing their radon level, especially if they are at greater risk, such as if they are current or ex-smokers. Whether or not a home is in fact above or below the Action Level or Target Level can only be established by having the building tested.

Based on the report, the property is in a radon affected area where 5 to 10% of homes are estimated to be at or above the action level.

Basic radon protective measures are required for the report area.

2.7. Findings of the Previous Investigations

2.7.1. 1st Phase of Site Works and Encountered Ground Conditions

Site works were undertaken on 15th May 2023 and comprised the drilling of 5No. Windowless Sampler Boreholes (WS1-WS5) to a depth of 5.00m bgl. Standard Penetration Tests were carried out at 1.00m intervals within the boreholes. A combined ground-gas/groundwater monitoring standpipe, with an internal diameter of 50mm, was installed to depths of between 3.50 – 5.00m bgl within WS1, WS3 and WS5, with a response zone between 1.00 – 5.00m bgl. A trial hole location plan has been provided within Figure 4.

The ground conditions encountered within the trial holes constructed on the site did generally conform to that anticipated from examination of the geology map. A capping of Made Ground was noted to overlie the superficial Head Deposits and River Terrace Deposits and the bedrock London Clay Formation. The succession of conditions and description of soils encountered in the trial holes in descending order is tabulated below.

Summary of Strata Encountered (First Set of Boreholes)			
Strata	Top Depth (m bgl)	Base Depth (m bgl)	Thickness (m)
MADE GROUND: Concrete	GL	0.10 – 0.30	0.10 – 0.30
MADE GROUND: Dark brown black slightly sandy gravelly CLAY/ gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse sub-angular to sub-rounded flint, glass, Ash, brick and concrete. Strong hydrocarbon odour in WS1 and WS5.	0.10 – 0.30	1.00 – 1.60	0.80 – 1.45
HEAD DEPOSITS (WS1, WS2, WS4, WS5): Light brown very sandy gravelly CLAY/ sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse sub-angular to sub-rounded flint.	1.00 – 1.60	2.20 – >5.00	1.10 – >4.00
RIVER TERRACE DEPOSITS (WS3 Only): Brown, grey, orange, slightly gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint.	1.10	2.50	1.40

LONDON CLAY FORMATION: Mottled grey, brown, slightly gravelly CLAY with selenite crystals. Gravel is fine sub-angular to sub-rounded flint.	2.20 – 3.40	>5.00	>1.60 – >2.80
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Groundwater strikes were noted between 0.70 – 1.23m bgl within WS1 and WS3 – WS5 during drilling, with no groundwater encountered within WS2 during drilling. Groundwater monitoring was undertaken on 26th May 2023 and 8th June 2023 within the standpipes installed within WS1, WS3 and WS5, where groundwater was recorded at 0.30 – 0.90m bgl.

2.7.2. 2nd Phase of Site Works and Encountered Ground Conditions

Due to the standpipes being demolished, further site works were undertaken on 18th February 2025 and comprised the drilling of 4No. Windowless Sampler Boreholes (WS1 – WS4) to a depth of 2.00 – 3.00m bgl, where deeper drilling refused due to dense granular material. A combined ground-gas/groundwater monitoring standpipe, with an internal diameter of 50mm, was installed to depths of between 2.00 - 3.00m bgl within WS1 – WS4, with a response zone between 1.00 – 2.00/3.00m bgl. A trial hole location plan has been provided within Figure 4. Trial hole logs can be viewed within Appendix D.

Summary of Strata Encountered (Second Set of Boreholes)			
Strata	Top Depth (m bgl)	Base Depth (m bgl)	Thickness (m)
MADE GROUND: CONCRETE. (WS2 only).	GL	0.10	0.10
MADE GROUND: Brown sandy gravelly silty CLAY. Sand was fine to coarse. Gravel was fine to coarse, angular to sub-rounded brick and flint. (WS1 only).	GL	0.70	0.70
MADE GROUND: Reddish brown sandy GRAVEL. Sand was fine to coarse. Gravel was fine to coarse, angular to sub-rounded brick and flint. (WS2 only)	0.10	1.00	0.90
MADE GROUND: Brown sandy gravelly silty CLAY. Sand was fine to coarse. Gravel was fine to coarse, angular to sub-rounded brick and flint. Strong odour. Black oily contamination noted. (WS1, WS3 and WS4 only).	GL – 0.70	1.00	0.30 – 1.00
HEAD DEPOSITS: Stiff dark brown silty CLAY. (All trial holes).	1.00	2.00 – >4.00	1.00 – >3.00
RIVER TERRACE DEPOSITS: Dense dark brown silty/clayey sandy GRAVEL. Sand was fine to coarse. Gravel was fine to coarse, sub-angular to sub-rounded flint. (WS2 only)	2.00	2.40	0.40
RIVER TERRACE DEPOSITS: Stiff dark brown silty CLAY. (WS2 only)	2.40	4.00	>1.60

Groundwater strikes were noted between 0.50 – 0.70 within WS1, WS3 and WS4 during drilling, with no groundwater encountered within WS2 during drilling.

2.7.3. 3rd Phase of Site Works and Encountered Ground Conditions

Additional site works were undertaken on the 16th July 2025 and comprised the machine excavation of 8no. trial pits (TP1-TP9) to a depth of 0.50-2.00m bgl. A trial hole location plan has been provided within Figure 5. Trial hole logs can be viewed within Appendix D.

The site works also comprised groundwater sampling from the 4no. previously installed wells (WS1-WS4) for laboratory analysis.

Summary of Strata Encountered (Third Set of Boreholes)			
Strata	Top Depth (m bgl)	Base Depth (m bgl)	Thickness (m)
MADE GROUND: Dark brown to black slightly gravelly CLAY to sandy GRAVEL. Sand was fine to coarse and gravel was fine to coarse sub-angular to sub-rounded flint and brick.	GL	0.10 – 0.60	0.10 – 0.60
HEAD DEPOSITS: Stiff light brown to black sandy CLAY to slightly gravelly sandy CLAY. Sand was fine to medium and gravel was fine to medium sub-angular flint.	0.10 – 0.60	0.50 – >2.00	>0.30 – >1.80

2.7.4. 4th (current) Phase of Site Works and Encountered Ground Conditions

Additional site works were undertaken on the 11th November 2025 and comprised the drilling of 1No. Cut Down Cable Percussion Borehole (BH101) to a depth of 5.00m bgl and a hand excavated trial pit (TP101) to a depth of 1.00m bgl. The locations were chosen to assess the groundwater and vapour risks under the former workshop building in north-west of the site.

A trial hole location plan has been provided within Figure 4. Trial hole logs can be viewed within Appendix D.

The site works also comprised groundwater sampling from the 3no. previously installed wells (WS1, WS3 and WS4) for laboratory analysis. A canister was also retrieved from BH101 for laboratory analysis.

Summary of Strata Encountered (Fourth Set of Boreholes)			
Strata	Top Depth (m bgl)	Base Depth (m bgl)	Thickness (m)
REWORKED HEAD DEPOSITS (BH101 only): Soft brown mottled orangish brown slightly Sandy gravelly CLAY. Sand is fine and medium. Gravel is subangular to rounded fine to coarse of flint.	GL	2.00	2.00
MADE GROUND (TP101 only): Soft dark brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is Subangular to rounded fine and medium of flint, brick and chalk.	GL	0.40	0.40
HEAD DEPOSITS (TP101 only): Firm brown mottled orange brown slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of flint.	0.40	>1.00	>0.60
LONDON CLAY FORMATION (BH101 only): Stiff fissured brown CLAY. Fissures are sub horizontal to sub vertical smooth and matt. Blueish grey gleying noted on fissure surfaces.	2.00	>5.00	>3.00

No groundwater strikes were recorded during the 4th phase of site works.

2.7.5. Soil Risk Assessment

Chemical laboratory testing, scheduled by Ground and Water Limited, and carried out by ALS Laboratories UK Limited, was undertaken on five samples of the Made Ground, taken from the 1st Phase of Boreholes. The samples were subjected to a combination of analysis that comprised asbestos, metals, PAHs, TPHs and VOCs.

During the 3rd phase of works additional chemical laboratory testing, scheduled by Ground and Water Limited, and carried out by ALS Laboratories UK Limited, was undertaken on five samples of the Made

Ground from the trial pits.

During the 4th phase of works additional chemical laboratory testing, scheduled by Ground and Water Limited, and carried out by I2 Analytical Limited, was undertaken on one sample of Made Ground and one sample of reworked Head Deposits from the two locations.

Chemical laboratory testing of the Made Ground during both phases of site investigation did not reveal any elevated levels of determinands above the guideline levels for a 'Commercial' land-use scenario; therefore, no significant risk to human health was posed by the soils on-site; however, the levels of zinc were elevated above the guideline levels for phytotoxicity; therefore, a risk was posed to the health of plants from the soils on-site. Chrysotile asbestos fibres (<0.001%) were also identified during the 4th phase within BH101.

2.7.6. Water Supply Pipe Risk Assessment

Due to elevated levels of TPHs (EC5 – EC10 and EC10 – EC16) within soil samples taken from the 1st Phase of Boreholes, the use of PE pipe was considered inappropriate and barrier pipes were required.

2.7.7. Controlled Waters Risk Assessment

In the UK, the water environment is protected under a number of regulatory regimes, mainly governed by the Environment Agency. The Environment Agency is consulted when there may be a risk to Controlled Waters, or where a pollution incident has occurred historically. The Water Framework Directive is implemented in various guises covering groundwater, surface water and drinking water supply. In addition to the water environment receptors, contaminated groundwater has the potential to cause unacceptable risk to human health through vapours.

2.7.7.1. Background Information

A study of the aquifer maps on the DEFRA website revealed the site was underlain by a Secondary A Aquifer comprising the superficial River Terrace Deposits and Head Deposits, underlain by Unproductive Strata comprising bedrock deposits of the London Clay Formation.

The nearest surface water feature was the River Ems located ~50m east of the site and was flowing in a north to south direction. Emsworth harbour was noted 630m south of the site.

From analysis of hydrogeological and topographical maps the actual groundwater table was anticipated to be encountered at shallow to moderate depths within the River Terrace Deposits/Head Deposits. Some amounts of groundwater however may be present at shallower depths within Made ground. It was considered that groundwater was flowing in an easterly direction toward the River Ems in line with local topography.

During the site investigation, a capping of Made Ground was encountered to 1.00 – 1.60m bgl, overlying Head Deposits (granular and cohesive bands), River Terrace Deposits (cohesive) and the London Clay Formation (cohesive). Groundwater was noted at shallow depth (~0.50 – 1.50m bgl).

Comparison between the soil laboratory analysis and the derived Level 1 (soils) target concentrations indicate that some determinands have the theoretical potential to pose a risk to Controlled Waters. It should be noted that a number of determinands at laboratory limit of detection exceed the target concentration for a Level 1 (soils) risk assessment. Where a determinand is identified at the laboratory

limit of detection, no further assessment is considered necessary.

It should be noted that the recent history of the site is industrial, with the proposed development also industrial. It is considered that the Level 1 risk assessment does not consider dilution, dispersion or attenuation; therefore, the risk to the River Ems is considered low; however, to further assess the risk to controlled waters, groundwater samples were obtained from the site and tested, and a Level 2 (Groundwater) Risk Assessment is undertaken, in order to validate this risk assessment.

2.7.7.2. Level 2 Groundwater Risk Assessment

On 5th March 2025, samples were recovered from WS1 – WS3 (2nd Phase Boreholes) following the removal of three times the borehole volume. Samples were collected within a series of plastic and glass bottles, glass vials and bottles with preservatives to meet the requirements of BS5667 and as requested by the laboratory.

Additional groundwater sampling was also conducted during the July 2025 works. Samples were obtained from each of the 4no. monitoring wells.

Additional groundwater sampling was also conducted during the November 2025 works. Samples were obtained from each of the WS1, WS3 and WS4. WS2 could not be located. A groundwater sample was also obtained from BH101 in December 2025, which had to be taken at least a week post installation in November.

As the site is located on a Secondary A Aquifer of the River Terrace Deposits and Head Deposits, it is considered that the aquifer may support base flow to rivers and surface water at a local level. It is therefore concluded that the most applicable screening values to be used is the Environmental Quality Standards (EQS), which are protective of ecology within the water. Where no EQS is available, other water quality standards have been noted within the table. A level 2 (groundwater) risk assessment compares the recorded concentration of a determinand to a pre-defined GAC (EQS, USEPA and UK drinking water standard).

The chemical laboratory results from both phases of sampling are presented in Appendix E and have been summarised within the tables below and overleaf. Only determinands that have an appropriate screening value have been included within the table. The Groundwater Assessment Criteria can be viewed within Appendix F.

Groundwater Contamination Test Results and Screening Values (March 2025)				
Determinand	Minimum Concentration (µg/l)	Maximum Concentration (µg/l)	Adopted Screening Value (µg/l)	Was the adopted screening value exceeded?
INORGANICS				
pH	7.59	7.94	6 – 9 ¹	No
Cyanide	<50	120	1 ¹	WS1
Phenols	<2	<2	7.7 ¹	No
TOTAL PETROLEUM HYDROCARBONS (TPHs)				
Aliphatic >C5 – C6	<10	<10	15,000 ³	No
Aliphatic >C6 – C8	<10	17		No
Aliphatic >C8 – C10	<10	170	300 ³	No
Aliphatic >C10 – C12	<10	697		WS1, WS3

Groundwater Contamination Test Results and Screening Values (March 2025)				
Determinand	Minimum Concentration (µg/l)	Maximum Concentration (µg/l)	Adopted Screening Value (µg/l)	Was the adopted screening value exceeded?
Aliphatic >C12 – C16	<10	21,400		WS1, WS3
Aliphatic >C16 – C21	<10	20,700	Not derived	WS1, WS3
Aliphatic >C21 – C35	<10	12,600	Not derived	WS1, WS3
Aromatic >EC5 – EC7	<10	<10	10 ³	No
Aromatic >EC7 – EC8	<10	<10	700 ³	No
Aromatic >EC8 – EC10	<10	116	300 ³	No
Aromatic >EC10 – EC12	<10	465	90 ³	WS3
Aromatic >EC12 – EC16	<10	13,300		WS3
Aromatic >EC16 – EC21	<10	8,520	90 ³	WS1, WS3
Aromatic >EC21 – EC35	<10	6,180		WS1, WS3
Total Petroleum Hydrocarbons (TPH)	<10	84,200	10 ⁴	WS1, WS3
VOLATILE ORGANIC CARBONS (VOCs)				
Benzene	<1	<1	10 ¹	No
Toluene	<1	<1	74 ¹	No
Ethylbenzene	<1	<1	20 ¹	No
Xylene	<1	<1	30 ¹	No
POLYCYCLIC-AROMATIC HYDROCARBONS (PAHs)				
Anthracene	<0.005	115	0.1 ¹	WS3
Benzo(a)anthracene	0.0132	225	0.01 ⁵	WS1, WS2, WS3
Benzo(a)pyrene	0.02	256	0.00017 ¹	WS1, WS2, WS3
Benzo(b)fluoranthene	0.0354	313	0.00017 ¹	WS1, WS2, WS3
Benzo(k)fluoranthene	0.0117	145		WS1, WS2, WS3
Benzo(ghi)perylene	0.0118	144	0.0082 ¹	WS1, WS2, WS3
Dibenzo(a,h)anthracene	<0.005	34.6	0.0034 ⁵	WS3
Fluoranthene	0.0368	465	0.0063 ¹	WS1, WS2, WS3
Fluorene	<0.005	67.1	290 ⁵	No
Indeno(1,2,3-cd)pyrene	0.0157	179	0.002 ¹	WS1, WS2, WS3
Naphthalene	<0.1	15.4	2 ¹	WS3
Pyrene	0.0335	402	120 ⁵	WS3
Total EPA-16 PAHs	0.212	2940	0.1 ⁵	WS1, WS2, WS3
¹ Environmental Quality Standards (Annual Average)				
² Screening value changes as a result of calcium carbonate concentration of aquifer				
³ Site specific threshold calculated based on the bio-availability per sample				
⁴ UK Drinking Water Standards				
⁵ United States Environmental Protection Agency				

Groundwater Contamination Test Results and Screening Values (July 2025)				
Determinand	Minimum Concentration (µg/l)	Maximum Concentration (µg/l)	Adopted Screening Value (µg/l)	Was the adopted screening value exceeded?
INORGANICS				
pH	7	7.6	6.5 – 9.5 ⁵	No
Cyanide	40	68	1 ¹	WS1, WS2, WS3
Phenols	< 10	< 10	7.7 ¹	Below LOD
METALS				
Arsenic	1.45	17.9	50 ¹	No
Boron	380	1100	750 ¹	WS4
Cadmium	< 0.02	0.06	0.08 – 0.25 ^{1,2}	No
Chromium (III)	0.30	0.80	4.7 ¹	No

Chromium (Hexavalent)	< 5	< 5	3.4 ¹	Below LOD
Copper	1.10	16.0	1 ^{1,4}	WS1, WS2, WS3, WS4
Lead	0.20	0.50	1.2 ¹	No
Mercury	< 0.05	< 0.05	0.07 ¹	No
Nickel	13	29	4 ¹	WS1, WS2, WS3, WS4
Selenium	0.80	9.1	7.5 ¹	WS3
Vanadium	0.60	1.30	86 ⁶	No
Zinc	2.50	8.40	10.9 ^{1,4}	No
PETROLEUM HYDROCARBONS				
Aliphatic >C5 – C6	<1.0	<1.0	15,000 ³	No
Aliphatic >C6 – C8	<1.0	<1.0		No
Aliphatic >C8 – C10	<1.0	<1.0	300 ³	No
Aliphatic >C10 – C12	<10	30		No
Aliphatic >C12 – C16	<10	340		WS1, WS2
Aliphatic >C16 – C21	<10	430	Not derived	No
Aliphatic >C21 – C35	<10	430	Not derived	No
Aromatic >EC5 – EC7	<1.0	<1.0	10 ³	No
Aromatic >EC7 – EC8	<1.0	<1.0	700 ³	No
Aromatic >EC8 – EC10	<1.0	<1.0	300 ³	No
Aromatic >EC10 – EC12	<10	<10	90 ³	No
Aromatic >EC12 – EC16	<10	<10		No
Aromatic >EC16 – EC21	<10	<10	90 ³	No
Aromatic >EC21 – EC35	<10	<10		No
Total TPH	<10	1300	10 ⁵¹	WS1, WS2
Benzene	< 1	1.10	10 ¹	No
Toluene	< 1	<1	74 ¹	No
Ethylbenzene	< 1	< 1	300 ³	No
Xylene	< 1	< 1	15.5-63.6 ¹	No
POLYCYCLIC-AROMATIC HYDROCARBONS				
Anthracene	< 0.001	5.30	0.1 ¹	WS4
Benzo(a)pyrene	< 0.001	< 0.001	0.00017 ¹	Below LOD
Benzo(b)fluoranthene	< 0.001	< 0.001	7	Below LOD
Benzo(k)fluoranthene	< 0.001	< 0.001		Below LOD
Benzo(ghi)perylene	< 0.001	< 0.001	7	Below LOD
Dibenzo(a,h)anthracene	< 0.001	< 0.001	0.0025 ⁶	No
Fluoranthene	< 0.001	9.40	0.0063 ¹	WS1, WS2, WS4
Fluorene	< 0.001	8.30	290 ⁶	No
Indeno(1,2,3-cd)pyrene	< 0.001	< 0.001	7	Below LOD
Naphthalene	< 0.01	16	2 ¹	WS4
Total EPA-16 PAHs	<0.16	80.30	0.1 ⁵	WS1, WS2, WS4
¹ Environmental Quality Standards (EQS) ² Screening value changes as a result of calcium carbonate concentration of aquifer ³ WHO Guidelines for drinking water quality, 2022 ⁴ Site specific threshold calculated based on the bio-availability per sample ⁵ UK Drinking Water Standards ⁶ United States Environmental Protection Agency ⁷ For the group of priority substances for PAH, the AA EQS in water refer to the concentration of Benzo(a)pyrene on the toxicity of which they are based. Benzo(a)pyrene can be considered as a marker for other PAH's, hence only Benzo(a)pyrene must be monitored for comparison with the AA EQS.				

Groundwater Contamination Test Results and Screening Values (Nov 2025)				
Determinand	Minimum Concentration (µg/l)	Maximum Concentration (µg/l)	Adopted Screening Value (µg/l)	Was the adopted screening value exceeded?
INORGANICS				
pH	7.55	7.71	6.5 – 9.5 ⁵	No
Cyanide	<50	110	1 ¹	WS1, WS3, WS4

Phenols	< 2	< 2	7.7 ¹	Below LOD
METALS				
Due to their being too much sediment in the samples it was not possible to undertake the metals testing.				
PETROLEUM HYDROCARBONS				
Aliphatic >C5 – C6	<10	<10	15,000 ³	No
Aliphatic >C6 – C8	<10	23		No
Aliphatic >C8 – C10	<10	24		No
Aliphatic >C10 – C12	<10	40	300 ³	No
Aliphatic >C12 – C16	<50	629		WS1
Aliphatic >C16 – C21	<50	1,200	Not derived	No
Aliphatic >C21 – C35	<10	4,060	Not derived	No
Aromatic >EC5 – EC7	<10	<10	10 ³	No
Aromatic >EC7 – EC8	<10	<10	700 ³	No
Aromatic >EC8 – EC10	<10	16	300 ³	No
Aromatic >EC10 – EC12	<10	27	90 ³	No
Aromatic >EC12 – EC16	<50	<200		WS1, WS4
Aromatic >EC16 – EC21	<50	<200	90 ³	WS1, WS4
Aromatic >EC21 – EC35	<50	542		WS1, WS4
Total TPH	42	6,880	10 ⁵¹	WS1, WS3, WS4
Benzene	< 1	<1	10 ¹	No
Toluene	< 1	<1	74 ¹	No
Ethylbenzene	< 1	< 1	300 ³	No
Xylene	< 1	< 1	15.5-63.6 ¹	No
POLYCYCLIC-AROMATIC HYDROCARBONS				
Anthracene	< 0.005	<0.1	0.1 ¹	No
Benzo(a)pyrene	0.0173	0.119	0.00017 ¹	WS1, WS3, WS4
Benzo(b)fluoranthene	0.0594	< 0.1	7	WS1, WS3, WS4
Benzo(k)fluoranthene	0.0195	< 0.1		WS1, WS3, WS4
Benzo(ghi)perylene	0.0352	0.13	7	WS1, WS3, WS4
Dibenzo(a,h)anthracene	< 0.005	<0.1	0.0025 ⁶	Below LOD
Fluoranthene	< 0.05	0.336	0.0063 ¹	WS1, WS3, WS4
Fluorene	< 0.001	0.23	290 ⁶	No
Indeno(1,2,3-cd)pyrene	0.025	< 0.1	7	WS1, WS3, WS4
Naphthalene	0.0119	0.46	2 ¹	No
Total EPA-16 PAHs	1.41	2.23	0.1 ⁵	WS1, WS3, WS4
¹ Environmental Quality Standards (EQS) ² Screening value changes as a result of calcium carbonate concentration of aquifer ³ WHO Guidelines for drinking water quality, 2022 ⁴ Site specific threshold calculated based on the bio-availability per sample ⁵ UK Drinking Water Standards ⁶ United States Environmental Protection Agency ⁷ For the group of priority substances for PAH, the AA EQS in water refer to the concentration of Benzo(a)pyrene on the toxicity of which they are based. Benzo(a)pyrene can be considered as a marker for other PAH's, hence only Benzo(a)pyrene must be monitored for comparison with the AA EQS.				

Groundwater Contamination Test Results and Screening Values (Dec 2025)

Determinand	Concentration (µg/l)	Adopted Screening Value (µg/l)	Was the adopted screening value exceeded?
pH	7.01	6.5 – 9.5 ⁵	No
Cyanide	<50	1 ¹	Below LOD
Phenols	< 2	7.7 ¹	Below LOD
Aliphatic >C5 – C6	<10	15,000 ³	No
Aliphatic >C6 – C8	<10		No
Aliphatic >C8 – C10	<10		No
Aliphatic >C10 – C12	<10	300 ³	No
Aliphatic >C12 – C16	<10		No

Aliphatic >C16 – C21	<10	Not derived	No
Aliphatic >C21 – C35	<10	Not derived	No
Aromatic >EC5 – EC7	<10	10 ³	No
Aromatic >EC7 – EC8	<10	700 ³	No
Aromatic >EC8 – EC10	<10	300 ³	No
Aromatic >EC10 – EC12	<10	90 ³	No
Aromatic >EC12 – EC16	<10		No
Aromatic >EC16 – EC21	<10	90 ³	No
Aromatic >EC21 – EC35	<10		No
Total TPH	<10	10 ⁵¹	No
Benzene	< 1	10 ¹	No
Toluene	< 1	74 ¹	No
Ethylbenzene	< 1	300 ³	No
Xylene	< 1	15.5-63.6 ¹	No
Anthracene	< 0.005	0.1 ¹	No
Benzo(a)pyrene	0.13	0.00017 ¹	BH101
Benzo(b)fluoranthene	0.16	7	BH101
Benzo(k)fluoranthene	0.07		BH101
Benzo(ghi)perylene	0.11	7	BH101
Dibenzo(a,h)anthracene	0.01	0.0025 ⁶	BH101
Fluoranthene	0.1	0.0063 ¹	BH101
Fluorene	< 0.005	290 ⁶	No
Indeno(1,2,3-cd)pyrene	0.09	7	BH101
Naphthalene	<0.01	2 ¹	No
Total EPA-16 PAHs	0.98	0.1 ⁵	BH101

A level 2 (groundwater) risk assessment has been undertaken on the results from both phases of sampling and has identified numerous exceedances within the groundwater at the site, relating to PAHs, TPHs, cyanide and some metals.

The Level 2 (Groundwater) Risk Assessment has been undertaken and found determinands that are likely to have a detrimental effect on the underlying aquifer and potentially impacting the nearby River Ems. Given the hydrogeological model for the site, and the overall CSM, the determinands are thought to be originating from the previous land-uses of the site, such as the gas works (present until the early 20th century on and off-site) or works/yards (noted from the 1970s to current day).

It is more likely that the contamination is gas works sourced due to the following evidence:

- It is noted that the groundwater flow direction is to the south-east, with a gasworks noted immediately to the south and west of the site. With the contaminants also being fairly typical of gasworks, it is likely that the contamination is sourced off-site from the gasworks, rather than on-site sources. Given the location of the site, it is also considered likely that there are tidal effects on the data. The below data summarises the different tides during the sampling visits.

Groundwater Sampling Visit	Tide
05/03/2025 (Visit 1) – WS1, WS2, WS3 (blue locations on location plan)	Low tide
10/07/2025 (Visit 2) – WS1, WS2, WS3, WS4 (orange locations)	Rising tide
11/11/2025 (Visit 3) – WS1, WS3, WS4 (orange locations)	Low tide
03/12/2025 (Visit 4) – BH101 (green location)	High tide

- Hydrocarbon odours and black oily contamination were noted within WS1 and WS5 of the 1st Phase Boreholes, as well as within WS1, WS3 and WS4 of the 2nd Phase Boreholes. These were

mainly localised within the centre and south-east of the site, bordering the gasworks.

- During the third phase of investigation, a significant hydrocarbon odour and black staining was noted within TP5, TP6 and TP7. A site visit to the neighbouring gas works site during excavation of the historic holder also indicated that the material identified on-site was similar in appearance and smell to that seen within the holder. Photos from the visit can be found within Appendix G. It is understood since this visit, the gas holder to the west has been remediated.
- During the fourth phase of investigation, no visual or olfactory evidence of contamination was encountered, it should be noted that the two locations were located the furthest away from the former gas works and up groundwater gradient.
- Cyanide was not found within the on-site soil samples; however, it is found within the groundwater during all three phases of analysis, which may have been contaminated off-site. Cyanide is a typical gas works contaminant.

2.7.8. Ground-Gas Risk Assessment

Soil Derived Method

As part of the ground investigation works, five samples of the Made Ground were submitted to the laboratory for analysis, which identified TOC to vary between 0.402 and 3.69% in the Made Ground. The trial hole logs identified the gravels within the Made Ground to comprise; flint, glass, bituminous material, ash brick and concrete. Made Ground was identified to a maximum depth between 1.00m and 1.60m bgl. Based on the soil derived method outlined and the maximum TOC concentration encountered, the soils from site would warrant classification as Characteristic Situation CS3. It should be noted that the Made Ground thickness was generally limited; therefore, gas monitoring or other means may provide a more realistic classification. It should be noted that this only represents the assessment from an on-site source.

Ground-Gas Monitoring Method

Ground-gas monitoring was undertaken a total of two occasions, during periods of steady pressure. Methane was detected at concentrations up to 31%v/v. Carbon dioxide concentrations were recorded up to 3.90%. No hydrogen sulphide or carbon monoxide has been detected during monitoring. Monitoring did not detect any flow.

Due to the high concentrations of methane recorded, the site was classified as CS2; however, it should be noted however that groundwater was very shallow in both rounds and results should not really be taken directly into consideration, but rather they can be used as a guide to consider other methods like testing for dissolved gasses in groundwater and gas canisters, which would provide more reliable and accurate data.

It should however be noted that the response zone within standpipes were flooded during the monitoring rounds and the results should be considered null and void during these visits. This is due to the elevated pressure in the unsaturated section of the standpipe potentially producing higher concentrations of ground-gas than the natural land would be emitting.

Dissolved Gases in Groundwater Method

Groundwater samples were taken from all three standpipes on 13th July 2023. The groundwater testing results recorded 4.5ug/l dissolved methane and 16,700-64,300 ug/l dissolved carbon dioxide.

It is not considered the concentration of methane identified within the groundwater would be cause for concern given it is less than standard background levels. However, given there is no assessment

value given for carbon dioxide and the concentration of 16,700-64,300µg/l it is considered carbon dioxide may still pose a risk.

Gas Canister Sampling and Testing Method

Gas canister samples were taken from all three standpipes on the 3rd July 2023. The gas canister test recorded 40.5% methane and carbon dioxide at 3.83%.

Summary

Four methods of ground gas risk assessment have been applied to the site following site investigation, comprising a review of organic content of soils, ground gas monitoring, gas cannister sampling and dissolved gases in Groundwater. Based on the results of the dissolved gas testing, as well as the gas cannister results, a **Characteristic Situation CS2** is required for the site, due to the levels of carbon dioxide encountered.

2.7.9. Vapour Risk Assessment

Soil Derived Method

In order to assess the potential for a vapour risk at the site, soil samples were sent to the laboratory for analysis. The testing suites included contaminants that may be present in the vapour phase (Mercury, Naphthalene, TPHs and volatile Organic Compounds (VOCs)) taken within Made Ground samples. No elevated values of Mercury, Naphthalene, TPHs or BTEX were noted within all samples tested.

During the 1st phase of works the samples scheduled for direct volatile testing (2No. of the Made Ground) identified the majority of the VOCs at concentrations lower than the laboratory limit of detection. Some concentrations of SVOC's were recorded in WS1/0.20m bgl, which included 2-Methylnaphthalene and VOC concentrations of Isopropylbenzene, 1,2,4,-Trimethylbenzene, and sec-Butylbenzene were recorded in the same sample. The concentrations within WS1/0.20m for VOC's Isopropylbenzene 0.00794mg/kg and 1,2,4,-Trimethylbenzene 0.177mg/kg were both significantly below the commercial threshold limited of 1400mg/kg and 42mg/kg. PAHs were also noted but not elevated.

During the 3rd phase of works additional samples were scheduled for direct volatile testing (2no. of the Made Ground) and identified each of the VOCs and SVOCs at concentrations lower than the laboratory limit of detection. PAHs were also noted but not elevated.

During the 4th phase of works additional samples were scheduled for direct volatile testing (1no. of Made Ground and 1No. reworked Head Deposits) where only 2-Methylnaphthalene was marginally noted above the limit of detection (0.1mg/kg) at 0.4mg/kg, all other VOCs and SVOCs were at concentrations lower than the laboratory limit of detection. PAHs were also noted but not elevated.

Human Health Risk Assessment from Dissolved Contaminants

In order to assess potential risk to site users, dissolved concentrations of potential contaminants have been compared to generic assessment criteria (GAC_{gwwap}) for assessing vapour risk to human health for volatile contaminants in groundwater for a commercial end-use, published by the Society for Brownfield Risk Assessment (SoBRA). The table below and overleaf summarizes the results of the laboratory analysis. Potential contaminants have been split into the groups presented in the SoBRA

Report. The results are included as Appendix E.

Groundwater Contamination Test Results (March 2025)			
Determinand	SoBRA GAC _{gwvap} (µg/l)	Laboratory Analysis Range (µg/l)	Was the GAC Exceeded?
ORGANIC AND INORGANIC			
Methyl tert-butyl ether (MTBE)	7,800,000	<1.00	No
PETROLEUM HYDROCARBONS			
Aliphatic >C5 - C6	190,000	<10	No
Aliphatic >C6 - C8	150,000	<10 – 17	No
Aliphatic >C8 - C10	5,700	<10 – 170	Yes
Aliphatic >C10 - C12	3,600	<10 – 697	No
Aromatic >C5 - C7	20,000,000	<10	No
Aromatic >C7 - C8	21,000,000	<10	No
Aromatic >C8 - C10	190,000	<10 – 116	No
Aromatic >C10 - C12	660,000	<10 – 465	No
Aromatic >C12 - C16	3,700,000	<10 – 13,300	No
Benzene	20,000	<1	No
Toluene	21,000,000	<1	No
Ethylbenzene	960,000	<1	No
m-Xylene	940,000	<1	No
p-Xylene	980,000	<1	No
o-Xylene	1,100,000	<1	No
POLYCYCLIC-AROMATIC HYDROCARBONS			
Acenaphthene	15,000,000	<0.005 – 87.2	No
Acenaphthylene	20,000,000	<0.005 – 1.03	No
Fluorene	18,000,000	<0.005 – 67.1	No
Naphthalene	23,000	<0.1 – 15.4	No

Groundwater Contamination Test Results (July 2025)			
Determinand	SoBRA GAC _{gwvap} (µg/l)	Laboratory Analysis Range (µg/l)	Was the GAC Exceeded?
ORGANIC AND INORGANIC			
Methyl tert-butyl ether (MTBE)	7,800,000	<3.00	No
PETROLEUM HYDROCARBONS			
Aliphatic >C5 - C6	190,000	<1.0	No
Aliphatic >C6 - C8	150,000	<1.0	No
Aliphatic >C8 - C10	5,700	<1.0	No
Aliphatic >C10 - C12	3,600	<10 – 30	No
Aromatic >C5 - C7	20,000,000	<1.0	No
Aromatic >C7 - C8	21,000,000	<1.0	No
Aromatic >C8 - C10	190,000	<1.0	No
Aromatic >C10 - C12	660,000	<10	No
Aromatic >C12 - C16	3,700,000	<10	No
Benzene	20,000	<1 – 1.10	No
Toluene	21,000,000	<1	No
Ethylbenzene	960,000	<1	No
P & m-Xylene	940,000	<1	No
o-Xylene	1,100,000	<1	No
POLYCYCLIC-AROMATIC HYDROCARBONS			
Acenaphthene	15,000,000	<0.001 – 15	No

Groundwater Contamination Test Results (July 2025)			
Determinand	SoBRA GAC _{gwvap} (µg/l)	Laboratory Analysis Range (µg/l)	Was the GAC Exceeded?
Acenaphthylene	20,000,000	<0.001 – 0.008	No
Fluorene	18,000,000	<0.001 – 8.30	No
Naphthalene	23,000	<0.001 – 16	No
HALOGENATED ORGANICS			
Chloroethene (Vinyl Chloride)	63	<3.0 – 8.5	No
1,1-Dichloroethene	16,000	<3.0 – 84.7	No
1,1-Dichloroethane	260,000	<3.0 – 102	No
1,1,1-Trichloroethane	290,000	<3.0 – 56.7	No
cis-1,2-Dichloroethene	13,000	<3.0 – 32.0	No
Tetrachloromethane (Carbon Tetrachloride)	770	<3.0 - 9	No
Dichloroethene	3,300/370,000	<3.0 – 84.7	No
Tetrachloroethene	4,600	<3.0 – 8.0	No
Trichloroethene	530	<3.0 – 51.1	No

Groundwater Contamination Test Results (Nov 2025)			
Determinand	SoBRA GAC _{gwvap} (µg/l)	Laboratory Analysis Range (µg/l)	Was the GAC Exceeded?
ORGANIC AND INORGANIC			
Methyl tert-butyl ether (MTBE)	7,800,000	<1	No
PETROLEUM HYDROCARBONS			
Aliphatic >C5 - C6	190,000	<10	No
Aliphatic >C6 - C8	150,000	<10 - 23	No
Aliphatic >C8 - C10	5,700	<10 - 24	No
Aliphatic >C10 - C12	3,600	<10 –40	No
Aromatic >C5 - C7	20,000,000	<10	No
Aromatic >C7 - C8	21,000,000	<10	No
Aromatic >C8 - C10	190,000	<10 - 16	No
Aromatic >C10 - C12	660,000	<10 - 27	No
Aromatic >C12 - C16	3,700,000	<50 - <200	No
Benzene	20,000	<1	No
Toluene	21,000,000	<1	No
Ethylbenzene	960,000	<1	No
P & m-Xylene	940,000	<1	No
o-Xylene	1,100,000	<1	No
POLYCYCLIC-AROMATIC HYDROCARBONS			
Acenaphthene	15,000,000	<0.05 – 0.648	No
Acenaphthylene	20,000,000	<0.005 – <0.1	No
Fluorene	18,000,000	<0.05 – 0.23	No
Naphthalene	23,000	0.0119 – 0.46	No
HALOGENATED ORGANICS			
Chloroethene (Vinyl Chloride)	63	<1 – 9.8	No
1,1-Dichloroethene	16,000	<1 – 39.6	No
1,1-Dichloroethane	260,000	<1 – 42.7	No
1,1,1-Trichloroethane	290,000	<1 – 21.9	No
cis-1,2-Dichloroethene	13,000	<1 – 16.6	No
Tetrachloroethene	4,600	<1 – 4.59	No
Trichloroethene	530	1 – 48.3	No

The December 2025 obtained from BH101 did not have any contaminants above the limit of detection with respect of determinands that could pose a risk through the vapour pathway.

The assessment of risk to human health from vapours associated with dissolved contaminants in groundwater summarised in the table above indicates that the majority of the determinands are significantly below the GACgwvap adopted.

The assessment of risk to human health from dissolved contamination in groundwater indicates that the concentrations measured, do not represent an unacceptable risk to human health from vapour generation.

Vapour Monitoring of Standpipes Method

During the monitoring of the boreholes installed, an oil-water interface probe and Photoionization Detector (PID) was utilised. The interface probe did not identify any dense or light non-aqueous phase liquids (DNAPL / LNAPL) during any of the monitoring visits. The highest PID reading was 412.6ppm.

Vapour Canister Sampling and Testing Method

During the monitoring regime, VOC sampling through vacuum canisters were undertaken on 1No. occasion from WS1, WS3 and WS5 on the 3rd July 2023. Worst case falling conditions were not captured during the gas canister testing.

The results of the canister testing have identified numerous VOCs within the borehole at the site. A comparison of these against a site-specific vapour assessment criteria has indicated that all VOCs are significantly below the adopted screening value. The response zone of WS1 has targeted the Made Ground so shows a reflection of the onsite and offsite migration of gases affected the site. Both WS3 and WS5's response zones are within the cohesive soils. The results from the testing show that the clay is limiting the migration of gases.

On 26th November 2025, VOC sampling through vacuum canisters was undertaken on 1No. sample obtained from the recently installed BH101. Worst case falling conditions were not captured during the canister testing. The only determinands that were recorded above the limit of detection of the laboratory were TPHs, compared with the assessment criteria derived as part of the previous report none of the determinands were at a level that warranted further concern.

Summary

Three methods of vapour risk assessment have been applied to the site following the multiple phases of site investigation, comprising a review of soil chemistry, vapour monitoring groundwater sampling and vapour canister sampling. No significant risk of vapour intrusion was present based on the information collected.

3. LEVEL 3 CONTROLLED WATERS RISK ASSESSMENT

A Level 2 groundwater risk assessment, has been undertaken and has identified determinands that require further assessment. It is necessary to undertake a level 3 risk assessment, which allows for attenuation before the receptor, to determine the extent of the contaminants within the groundwater at the site.

3.1. Ground Model Overview

Prior to the undertaking of a level 3 groundwater assessment, the detail of the underlying ground model needs to be considered and is summarised in the following paragraph.

The site has been historically part of a gas works (which also extended off-site), first established in 1853 as part of the Emsworth Gas and Coke Company. From the earliest mapping in 1869, a gas holder is recorded adjacent to the south-western corner of the site. By 1897, another gas holder was constructed adjacent to the River Ems ~25m south-east. By 1908, the gas holder adjacent to the south-west was no longer recorded and a new gas holder was constructed ~5m south which was subsequently removed by 1932. By 1979, the remaining gas holder to the south-east was removed and a much larger gas holder (footprint can be seen on current aerial photography) was recorded ~5m south. The current works and builders yard buildings were constructed (also can be seen on recent aerial photography but have been demolished in 2025. It is understood that that the footprint of the former gas holder adjacent to the south-west was remediated between July and November 2025.

The soils comprised a thin horizon of Made Ground up to 1.00m in depth, likely to be deepening around infrastructure (foundations/recently demolished buildings). The Made Ground was overlying predominantly cohesive deposits of the River Terrace and Head Deposits, with isolated pockets of sandy gravels. The River Terrace Deposits/Head Deposits were classified as a Secondary (A) Aquifer. Beneath the superficial deposits were the London Clay Formation which comes in ~4.00m bgl.

Groundwater was considered to be flowing generally to the east/south-east, where the nearest down gradient watercourse was the River Ems, ~50m east of the site. Emsworth Quay leading to the English Channel was located ~635m south of the site and it considered likely the site is under tidal influence. The River Terrace/Head Deposits were noted to be continuous from site to the receptor (River Ems). It is assumed that the migration of contamination will be through the groundwater in any granular horizons.

The use of surrounding ground was noted to largely comprise residential/commercial properties with the exception of Artec Engineering adjacent to the east which is a metal fabricator.

3.2. Environment Agency Remedial Targets Spreadsheet

As part of a Level 3 Risk Assessment, a variety of parameters are defined, estimated or calculated from theory or site data and tested to define the model. The parameters, in tandem with the groundwater analysis are used to develop a groundwater remedial target that should be used if remediation is deemed necessary at the site.

The following sections outline what assumptions have been made for the model, culminating in the final parameter that was input into the model. No sensitivity analysis has been undertaken at this stage.

Hydraulic conductivity: The superficial soils are classified as a Secondary A Aquifer and are anticipated to support baseflow to rivers. For the purpose of this risk assessment, the permeability of 2×10^{-6} m/s (0.1728m/day) has been assumed as it is the most conservative given the predominantly cohesive deposits.

Hydraulic Gradient: Using the topographical maps available for the site and area, the site is recorded to be at an elevation of ~6 - 8m AOD, where the River Ems is located down gradient/at the same level as the north-east of the site at an elevation of ~6m AOD.

It is assumed that the water level remains at a constant depth below ground level for this calculation. With a change in elevation of 2m over a distance of 100m, the hydraulic gradient was calculated to be 0.02.

Aquifer thickness: The aquifer is considered to be confined to the granular deposits encountered at the site. The geological memoir for the area does not indicate a thickness for the River Terrace Deposits/Head Deposits due to the irregularity of the deposits. Based on our site works and nearby BGS boreholes it is considered the likely maximum thickness of the aquifer would be 4m thick.

Width of contaminant source: The source was determined to be spread across the south of the site between WS3 and the southern site boundary, with a width of 30.00m.

Plume thickness: The plume of contamination has been assumed to be the entire saturated aquifer of 2.00m.

Effective porosity: A review of the Lovanh et al, 2000. Guidelines to Determine Site-Specific Parameters for Modelling the Fate and Transport of Monoaromatic Hydrocarbons in Groundwater provides a literature review that coarse gravels range between 10% - 25% and sandy clays of 3 – 20%. As the granular material is more porous and allows for more migration, a value of 25% has been used within the model.

Bulk density: A review of the Lovanh et al, 2000. Guidelines to Determine Site-Specific Parameters for Modelling the Fate and Transport of Monoaromatic Hydrocarbons in Groundwater provides a literature review of geotechnical properties. This indicates that soils of a coarse gravel range between 1.36 and 2.19Mg/m³ and a range of 1 to 2.4 Mg/m³ for clays. An average value of 1.80Mg/m³ was used.

As part of the sensitivity analysis the bulk density of the sand was increased/decreased to the limits identified within the literature, i.e. 1.36 Mg/m³ for the lower limit and 2.4 Mg/m³ for the upper limit. The increase/decrease in bulk density did not show any significant increase/decrease of contaminant concentrations.

Fraction of organic carbon: The FOC is considered to be calculated based on a partition coefficient, equating to 167. The FOC is therefore considered to be the SOM (0.693), taken from the sands during the investigation, divided by the partition coefficient of 167, equating to a FOC of 0.0041497006.

Distance to the compliance point: The most notable down gradient surface water was considered to be the River Ems located 50m east and therefore was considered to be the most suitable compliance point.

Time since pollutant entered groundwater: The time considered has been assumed based on the current understanding of the CSM and that the gas works became disused in 2012 and dismantled around 2016, 9 years ago (~3285 days).

Half-life: There is minimal data for half lives of heavy end hydrocarbons (C16 – C35). Studies suggest that the anaerobic degradation is much slower than aerobic degradation. Given the contaminants are within the saturated soil zones it is likely anaerobic conditions are dominant and therefore any degradation would be slower. However, it should be noted that tidal influences can also affect this. The C12 – 16 range has much faster biodegradation rates.

Outline of Parameters: The following parameters were used for the model and are summarised in the table below.

Model Parameters							
Hydraulic conductivity (m/d)	Hydraulic Gradient	Aquifer Thickness (m)	Width of contaminant source (m)	Plume Thickness (m)	Effective porosity (n)	Bulk Density (g/cm ³)	FOC
5	0.02	2.00	30.00	1.95	25	1.80	0.00414

Based on the groundwater sampling results it suggests that during the initial visit in March 2025 were high in WS3 (blue location in west close to small gas holder to west/south-west) and WS1 (blue location in south-east adjacent to large existing gas holder footprint). It is understood the gas holder to the west/south-west was remediated in July 2025. The location of WS3 (blue) and BH101 are in close proximity to the remediated gas works and it is considered the remediation has been successful at removing the source of contamination affecting this area of the site as BH101 recorded contaminants at the limit of detection of the laboratory or marginally above for the PAHs. However, WS1 (blue) and WS1 (orange) are in close proximity to each other. The contaminants, with a particular focus on heavy end aliphatic hydrocarbons are still high within WS1 (orange). Given the close proximity to the large gas holder adjacent to the south it is considered likely that a plume relating to this gas holder is still present and extends on to our site. Modelling using the Environment Agency Remedial Targets Spreadsheet was considered appropriate for the most recent levels recorded in WS1 for the aliphatic C12 – 35 hydrocarbon bands.

Based on the parameters listed in the section above the following was concluded:

Determinand	Modelled Concentration at Compliance Point (mg/l)	Drinking Water Standards (DWS) target (mg/l)	Does it exceed DWS Target?
Aliphatic C12-16	0.00348	0.3	No
Aliphatic C16-21	0.00684	Not derived – use 0.3	No
Aliphatic C21-35	0.711	Not derived – use 0.3	Yes

It should be noted that there is not an EQS value available for speciated hydrocarbons and therefore the Drinking Water Standards were utilised which are likely overconservative. It should also be noted that no target values were available for C16-35 and so the closest C12-16 was utilised, again likely an overconservative value. The only value that exceeds the DWS target is the Aliphatic C21 – 35, which is only ~2.4 times the target value. Based on the risk assessment it is considered that Aliphatic C21-35 could pose a risk to end users however, as it is not considered that the source is from our site remedial measures are not possible to clean up the aquifer/protect the River Ems. Precautionary measures should be taken with full PPE and good hygiene on site to prevent exposure to contaminants in the groundwater. Given there is not a vapour risk it is not considered any further protection measures would be required on-site, particularly given the commercial end-use.

6.6 Groundwater Summary

The risk assessments undertaken within this section of the report have identified that the contaminants do not represent an unacceptable risk to the surface water receptor of the River Ems as a result of contamination relating to our site.

The risk assessment and risk to the river is largely dictated by the limited permeability of the soils encountered, which will be further restricted by its interbedded nature of clay and sands. This when coupled with the low hydraulic gradient of the area limits the migration of these determinands. A chronological review of the data indicates there is a general decrease in concentrations over the monitoring period for the wider site, which may indicate that the majority of the contamination is isolated within the granular bands of the cohesive deposits and appears to be restricted to the south adjacent to the gas holder off-site.

Whilst no further remediation is required of the groundwater at the site to be protective of the off-site surface water, protection measures through wearing of full PPE and general good hygiene on-site should be practiced.

4. RECOMMENDATIONS AND DEVELOPMENT OF A REMEDIATION STRATEGY

4.1. Recommendations

The risk assessments undertaken within this section of the report have identified that the contaminants do not represent an unacceptable risk to the surface water receptor of the River Ems as a result of contamination relating to our site.

This section outlines the specific remediation options relevant to the groundwater risk assessment. For information on the soils and vapour risks, the report the Remediation Method Statement and Ground-Gas Design Report, produced by Ground and Water Limited (reference: GWPR6668/RMS&GGDR/August 2025) should be consulted.

4.2. Groundwater Remediation Strategy

Prior to any construction on-site, a degree of site preparation is required. This should include the decommissioning of the boreholes, demolition of existing structures, and the removal of below ground infrastructure (tanks, oil-water interceptor, pipes etc.).

4.2.1. Decommissioning of Monitoring Boreholes

The decommissioning of all boreholes must be undertaken in line with the available EA guidance. Boreholes have the potential to provide preferential pathways for contaminants to move into the groundwater and for gases and vapours to migrate vertically to the surface.

There are numerous ways in which a borehole can be decommissioned, typically comprising a backfill to mimic geology or low permeability backfill, such as grout. It is recommended that the latter is undertaken at the site, in line with the following steps:

- Removal of headworks and surrounding soils from the upper portion of standpipe.
- Pumping of water to the surface to remove excess groundwater head.
- Mixing of bentonite grout at the surface.
- Lowering of tremie pipe to the base of the borehole and injection of bentonite grout. *It is important to note that the borehole should be filled from the base in order to displace any water within the well and prevent the bentonite from sitting at the top of the water.*
- Raise tremie pipe as borehole fills.
- Removing top 0.50m of standpipe prior to filling top of borehole with liquid grout.
- Sealing of the top of the borehole with liquid grout, covering an area greater than the diameter of the borehole drilled.

Each decommissioned trial hole location should be documented for inclusion within the verification report. The documentations should include: measurement of groundwater prior to decommissioning; type and quantity of bentonite grout used; Any changes made to the boreholes; any problems encountered during the decommissioning. Before and After photographs must be included within the verification report.

4.3. Duty of Care

Groundworkers must maintain a good standard of personal hygiene including the wearing of overalls, boots, gloves and eye protectors and the use of dust masks during periods of dry weather.

To prevent exposure to airborne dust by both the general public and construction personnel the site should be kept damp during dry weather and at other times when dust would be generated as a result of construction activities.

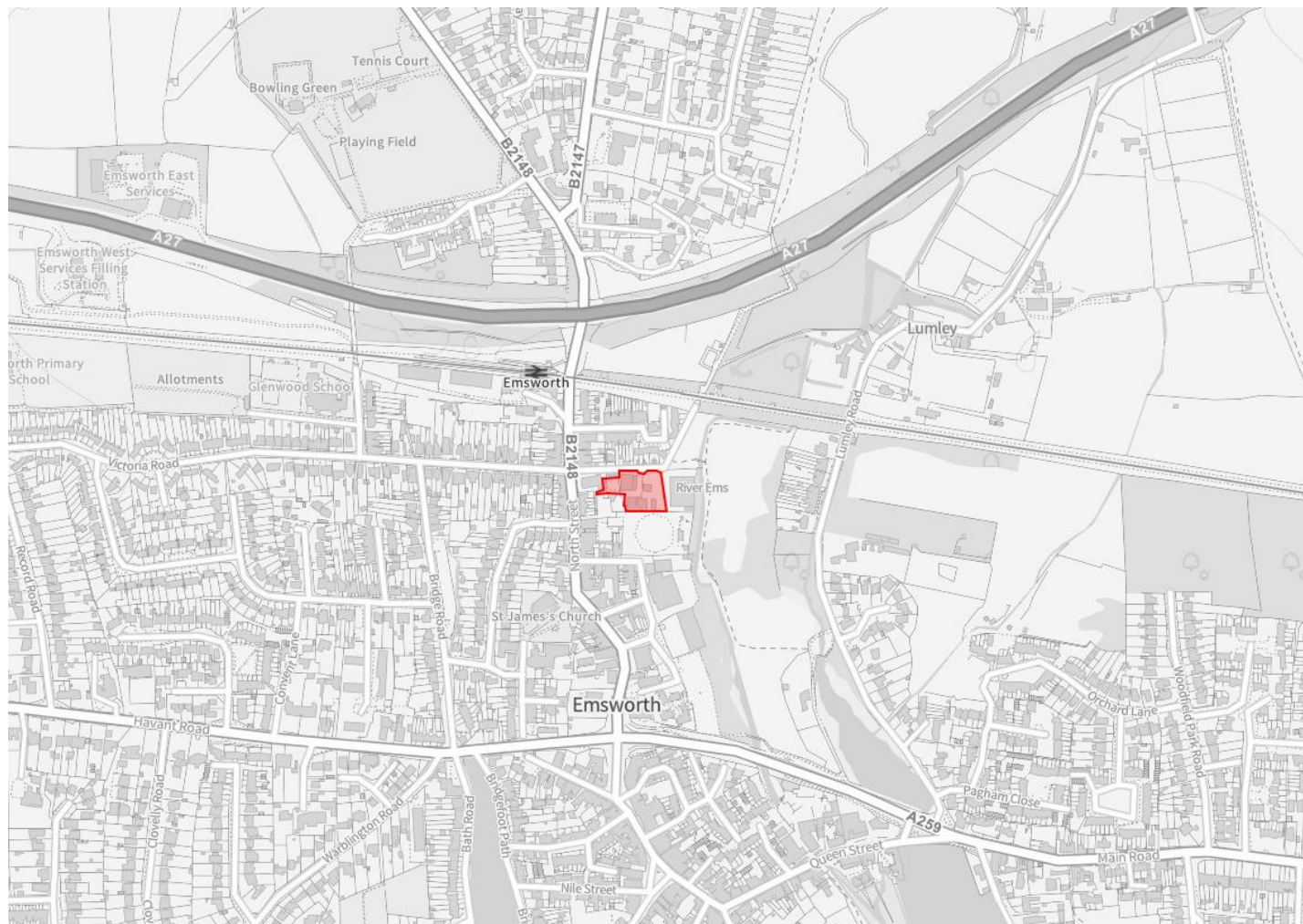
The site should be securely fenced at all times to prevent unauthorised access. Washing facilities should be provided and eating restricted to mess huts.

DRAFT

FIGURES



 Site Location



2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

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Figure 1 – Site Location Plan

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Site Boundary

2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

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Figure 2 – Site Development Area

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NTS

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January 2026

Figure 3 – Aerial Photograph

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* = well installation

1st Phase:

⊕ Windowless
Sampler Boreholes
(June 2023 SI)

2nd Phase:

⊕ Windowless
Sampler Boreholes (Feb
2025)

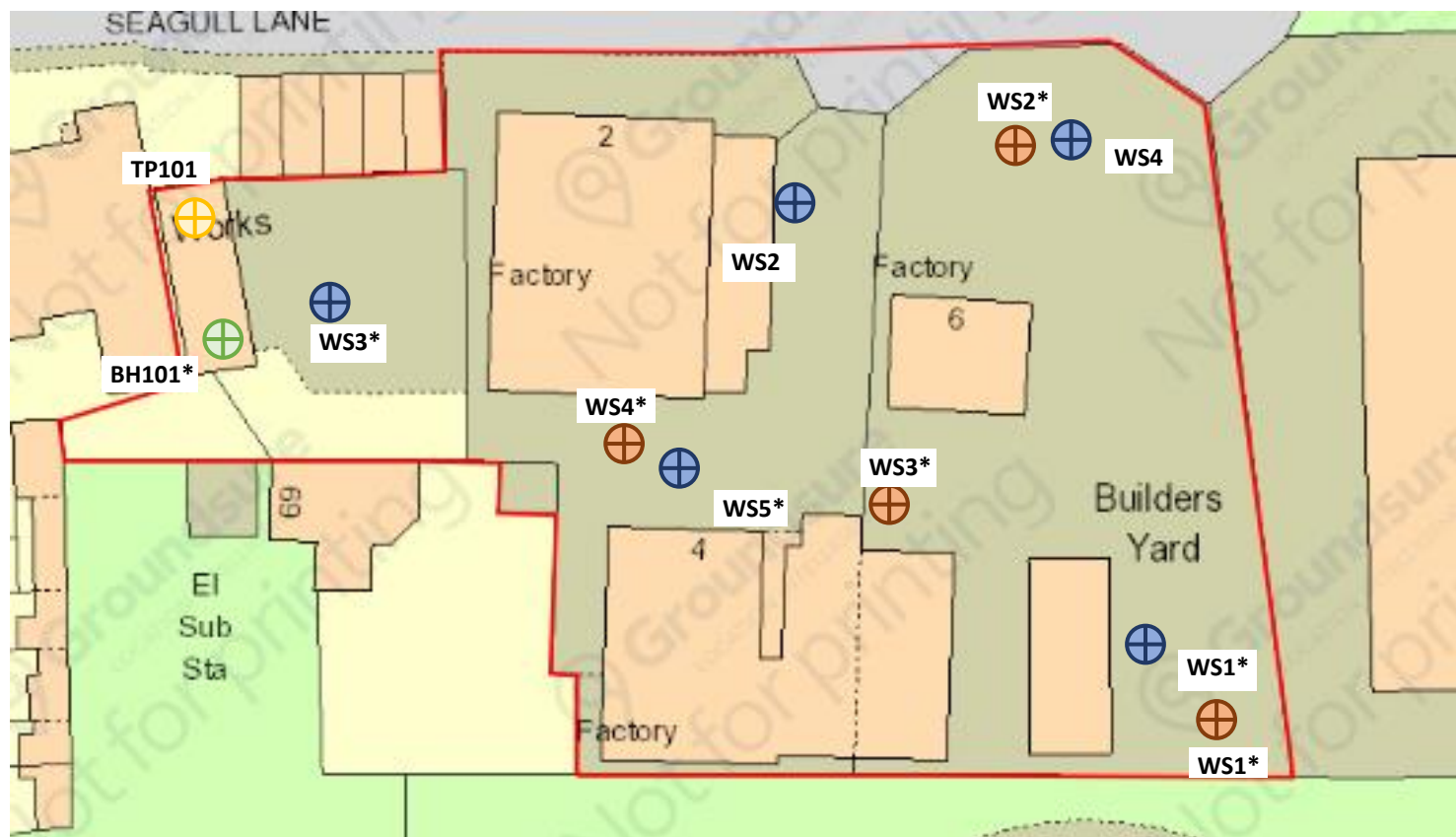
4th Phase:

⊕ Cut Down Cable
Percussion Borehole
with install (Nov 2025)

⊕ Hand dug trial pit
(Nov 2025)

The blue well
installation locations
were destroyed/lost
during the demolition
process on-site.

NTS



2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

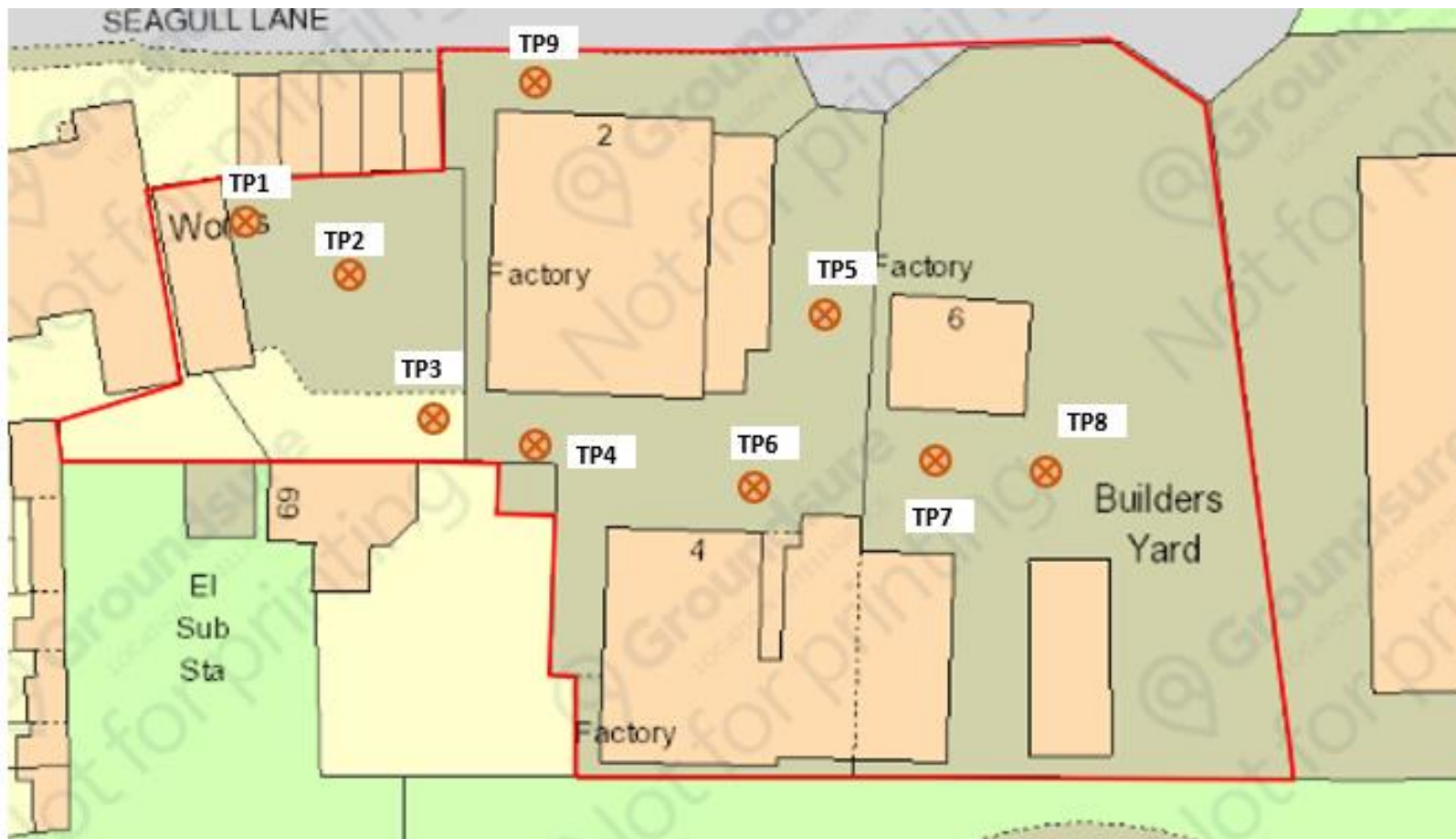
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Figure 4 – Trial Hole Location Plan (Boreholes)

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3rd Phase:
 Machine
 Excavated Trial
 Pits (July 2025)

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Figure 5 – Trial Hole Location Plan (Trial Pits)

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APPENDIX A: Conditions and Limitations

The ground is a product of continuing natural and artificial processes. As a result, the ground will exhibit a variety of characteristics that vary from place to place across a site, and also with time. Whilst a ground investigation will mitigate to a greater or lesser degree against the resulting risk from variation, the risks cannot be eliminated.

The report has been prepared on the basis of information, data and materials which were available at the time of writing. Accordingly, any conclusions, opinions or judgements made in the report should not be regarded as definitive or relied upon to the exclusion of other information, opinions and judgements.

The investigation, interpretations, and recommendations given in this report were prepared for the sole benefit of the client in accordance with their brief; as such these do not necessarily address all aspects of ground behaviour at the site. No liability is accepted for any reliance placed on it by others unless specifically agreed in writing.

Any decisions made by you, or by any organisation, agency or person who has read, received or been provided with information contained in the report ("you" or "the Recipient") are decisions of the Recipient and we will not make, or be deemed to make, any decisions on behalf of any Recipient. We will not be liable for the consequences of any such decisions.

Current regulations and good practice were used in the preparation of this report. An appropriately qualified person must review the recommendations given in this report at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.

Any Recipient must take into account any other factors apart from the Report of which they and their experts and advisers are or should be aware. The information, data, conclusions, opinions and judgements set out in the report may relate to certain contexts and may not be suitable in other contexts. It is your responsibility to ensure that you do not use the information we provide in the wrong context.

This report is based on readily available geological records, the recorded physical investigation, the strata observed in the works, together with the results of completed site and laboratory tests. Whilst skill and care has been taken to interpret these conditions likely between or below investigation points, the possibility of other characteristics not revealed cannot be discounted, for which no liability can be accepted. The impact of our assessment on other aspects of the development required evaluation by other involved parties.

The opinions expressed cannot be absolute due to the limitations of time and resources within the context of the agreed brief and the possibility of unrecorded previous in ground activities. The ground conditions have been sampled or monitored in recorded locations and tests for some of the more common chemicals generally expected. Other concentrations of types of chemicals may exist. It was not part of the scope of this report to comment on environment/contaminated land considerations.

The conclusions and recommendations relate to 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH.

Trial hole is a generic term used to describe a method of direct investigation. The term trial pit, borehole or window sampler borehole implies the specific technique used to produce a trial hole.

The depth to roots and/or of desiccation may vary from that found during the investigation. The client is responsible for establishing the depth to roots and/or of desiccation on a plot-by-plot basis prior to the construction of foundations. Where trees are mentioned in the text this means existing trees, recently removed trees (approximately 15 years to full recovery on cohesive soils) and those planned as part of the site landscaping.

Ownership of copyright of all printed material including reports, laboratory test results, trial pit and borehole log sheets, including drillers log sheets, remain with Ground and Water Limited. Licence is for the sole use of the client and may not be assigned, transferred or given to a third party.

Only our client may rely on this report and should this report or any information contained in it be provided to any third party we accept no responsibility to the third party for the contents of this report save to the extent expressly outlined by us in writing in a reliance letter addressed from us to the third party.

Recipients are not permitted to publish this report outside of their organisation without our express written consent.

APPENDIX B:

Technical Glossary

TECHNICAL GLOSSARY

The list of possible definitions within the report may be seen below. Please note that some definitions may not be relevant to this report.

HYDROGEOLOGY:

A **Principal Aquifer** is a layer of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

Secondary (A) Aquifers consist of deposits with permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as Minor Aquifers.

Secondary (B) Aquifers consist of deposits with predominantly lower permeability layers with may stoke and yield limited amounts of groundwater due to localised features such as fissures, think permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.

Secondary Aquifers (Undifferentiated) are assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both a minor aquifer and non-aquifer in different locations due to the variable characteristics of the rock type.

Unproductive Strata are rock layers with low permeability that have negligible significance for water supply or river base flow. These were formerly classified as non-aquifers.

FLOOD ZONES:

Environment Agency Flood Zone 2, defined as; land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.

Environment Agency Flood Zone 3 shows the extent of a river flood with a 1 in 100 (1%0 or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year.

Environment Agency Flood Zone 3 area that benefits from flood defences, defined as; land and property in this flood zone would have a high probability of flooding without the local flood defences. These protect the area against a river flood with a 1% chance of happening each year, or a flood from the sea with a 0.5% chance of happening each year.

GROUNDWATER SOURCE PROTECTION ZONES (SPZS):

Inner Zone (SPZ1): This zone is 50 day travel time of pollutant to source with a 50 metres default minimum radius.

Outer Zone (SPZ2): This zone is 400 day travel time of pollutant to source. This has a 250 or 500 metres minimum radius around the source depending on the amount of water taken.

Total Catchment (SPZ3): This is the area around a supply source within which all the groundwater ends up at the abstraction point. This is the point from where the water is taken. This could extend some distance from the source point.

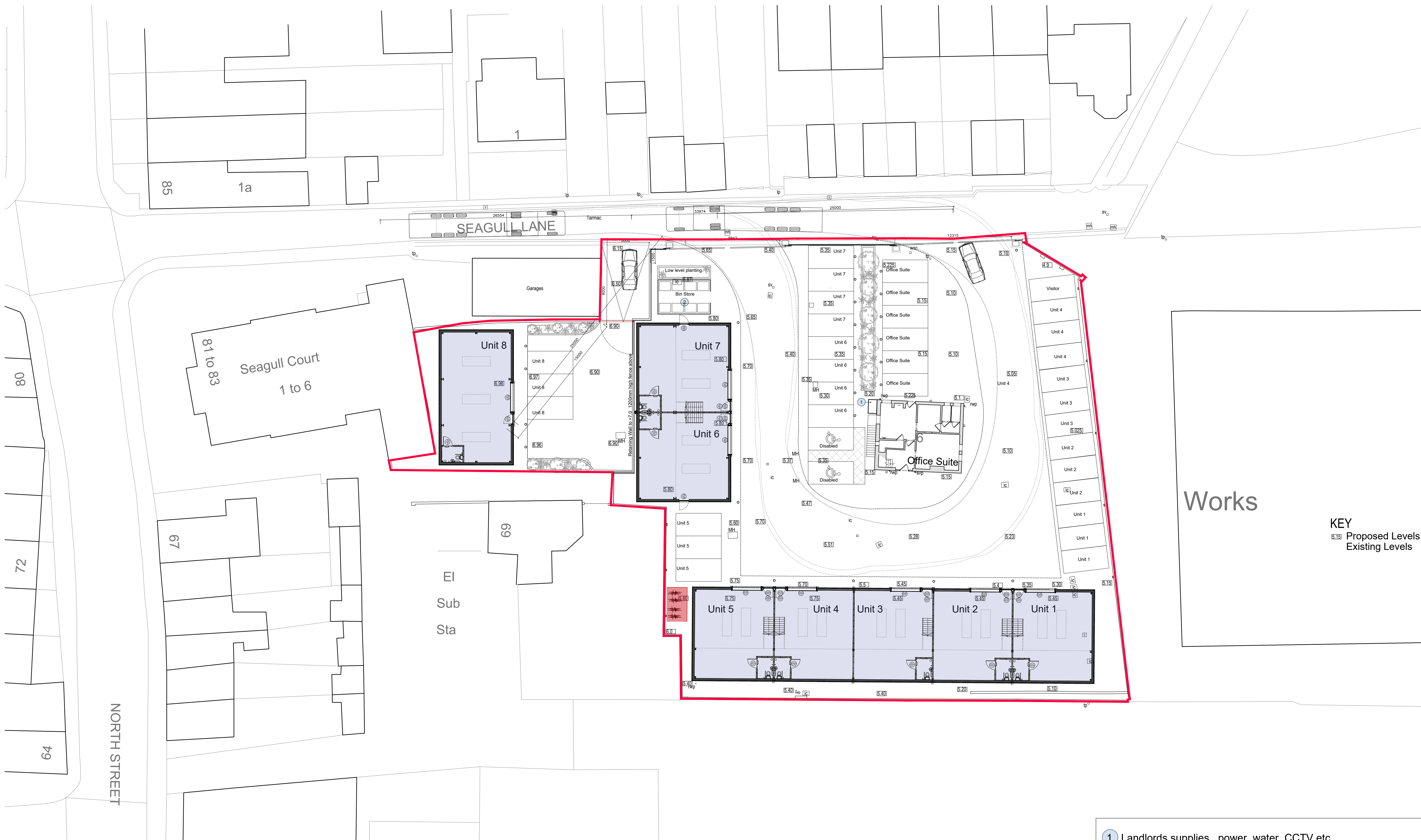
Zone of Special Interest (SPZ4): This zone is where local conditions require additional protection.

IN-SITU STRENGTH GEOTECHNICAL TESTING:

Windowless Sample and/or Cable Percussion and/or Rotary Boreholes provide samples of the ground for assessment but they do not give any engineering data. The standard penetration test (SPT) is an in-situ dynamic penetration test designed to provide information on the geotechnical engineering properties of soil. The test uses a thick-walled sample tube, with an outside diameter of 50mm and an inside diameter of 35mm, and a length of around 650mm. This is driven into the ground at the bottom of a borehole by blows from a slide hammer with a weight of 63.5kg falling through a distance of 760mm. The sample tube is driven 150mm into the ground and then the number of blows needed for the tube to penetrate each 75mm up to a depth of 450mm is recorded. The sum of the number of blows is termed the "standard penetration resistance" or the "N-value".

Dynamic Probing involves the driving of a metal cone into the ground via a series of steel rods. These rods are driven from the surface by a hammer system that lifts and drops a 63.5kg (SHDP) hammer onto the top of the rods through a set height, thus ensuring a consistent energy input. The number of hammer blows that are required to drive the cone down by each 100mm increment are recorded. These blow counts then provide a comparative assessment from which correlations have been published, based on dynamic energy, which permits engineering parameters to be generated. (The Dynamic Probe 'Super Heavy' (SHDP) Tests were conducted in accordance with BS 1377; 1990; Part 9, Clause 3.2).

APPENDIX C: Proposed Development



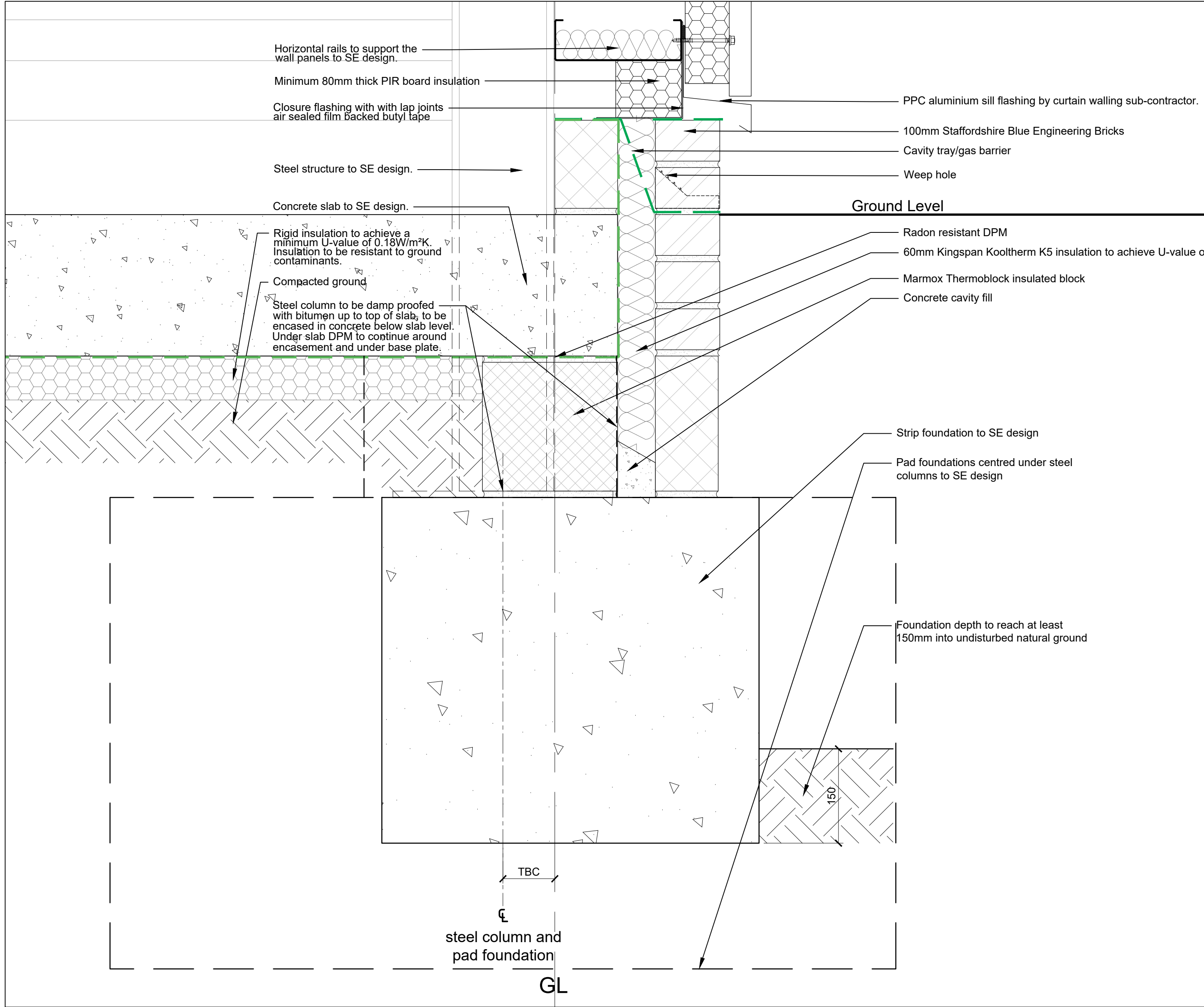
1	Landlords supplies, power, water, CCTV etc.	
2	Central shared bin collection point - 6 no. Euro Bin -	3 general waste 3 recycling

NOTE: The contractor is responsible for checking all site dimensions and levels. These should be checked prior to the ordering of any components and before the commencement of the works. All discrepancies should be brought to the attention of the Contract Administrator

revisions:

e: design@pwp-architects.com
w: www.pwp-architects.com

job: **5807** dwg: **1010** rev: **C**



1. Standard plinth detail Units 1-8.

notes: revisions: A | 14.01.2025 | AG | Detail 1 amended to SE slab edge detail.

revisions:

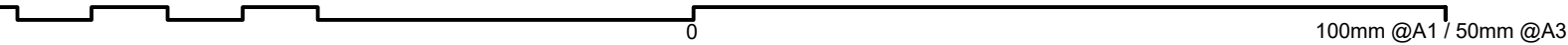
The Alitex Group
Seagull Lane
Emsworth, Hampshire, PO10 7QH
drawing information title Details Sheet 1 - Slab



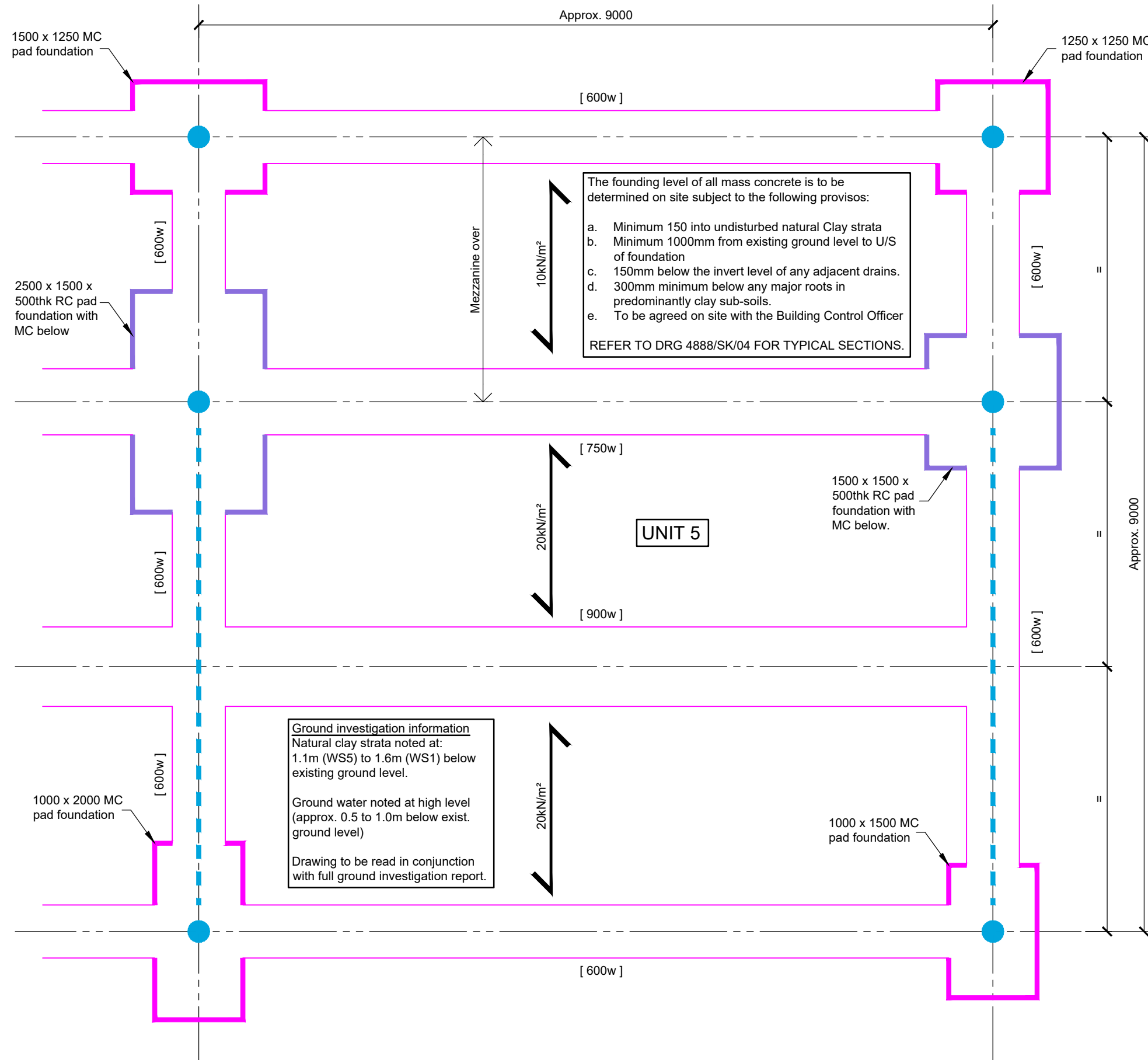
PWP Architects Ltd 61 South Street, Havant, Hampshire PO9 1BZ
t: 02392 482494 f: 02392 481152

status : Information
date : December 24
scale : 1:5 @ A1, 1:10 @ A3
drawn : AG
checked : IV

job: 5807 dwg: 6000 rev: A



NOTE: The contractor is responsible for checking all site dimensions and levels. These should be checked prior to the ordering of any components and before the commencement of the works. All discrepancies should be brought to the attention of the Contract Administrator.



KEY

- [600w] Indicates mass concrete (MC) trench foundations, widths noted thus [600w]. Foundations to be taken min. 150mm into undisturbed natural Clay strata (approx. 1.1 - 1.6m below existing ground level)
- Indicates mass concrete (MC) pad foundations centred under columns. Thickness noted on plan is minimum for pad size, increased to suit minimum 150 into undisturbed natural clay strata (as above).
- Indicates reinforced concrete (RC) pad foundations centred under columns. R.C. installed on min. 50mm mass concrete, increased to suit minimum 150 into undisturbed natural clay strata (as above).
- 20kN/m² Indicates span of minimum 225thk reinforced concrete (RC) slab, spanning between foundations. Designed to cater for imposed loading noted on span marks.
- Indicates assumed column position, to be confirmed by superstructure design Engineer.
- Indicates assumed bracing position, to be confirmed by superstructure design Engineer.

PRELIMINARY ISSUE

P2	01.11.23	Issued for information only	JM
P1	29.09.23	Issued for information only	JM
MK	DATE	REVISION	BY

JOB TITLE		
2-6 Seagull Lane Emsworth, PO10 7QH		
CLIENT		
M&M Hall Family Pension Trust		
SCALE	1:50	DRG. SIZE A3
DATE	Sept 23	CHECKED
ENG / TECH	RC / JM	

DRAWING TITLE	
Unit 5 Scheme foundation layout	

STRUCTURAL AND CIVIL CONSULTING ENGINEERS	
Forder House, High Street, Buriton, Petersfield, Hampshire GU31 5RX	Telephone: 01730 266944 www.andrewsnewby.co.uk
 ANDREWS NEWBY PARTNERSHIP	

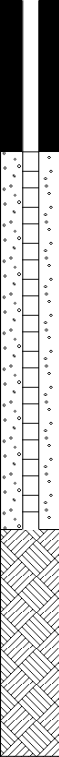
Andrews Newby Partnership is the trading name of Andrews Newby Partnership Limited, registered in England and Wales, Company No 13098041, registered address Forder House, High Street, Buriton. Petersfield. Hampshire. GU31 5RX

DRAWING No.	4888 / SK / 01	REVISION	P2
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APPENDIX D: Trial Hole Logs

Percussion Drilling Log

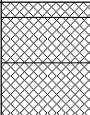
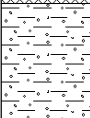
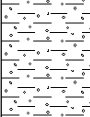
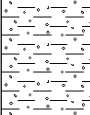
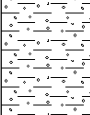
Project Name: 2 - 6 Seagull Lane		Client: Nyetimber Management Ltd		Date: 15/05/2023	
Location: Emsworth PO10 7QH		Contractor: AB SI Limited			
Project No. : GWPR5385		Crew Name:		Drilling Equipment:	
Borehole Number WS1	Hole Type WS	Level	Logged By	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	D		0.15			MADE GROUND: Concrete	
		0.50	D					MADE GROUND: Dark brown black slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse sub-angular to sub-rounded flint (50%), brick (30%) and concrete (20%). Strong hydrocarbon odour.	1
		0.80	D						
		1.00	D						
		1.00	SPT	N=11 (3,3/2,3,3,3)					
		1.50	D		1.60				
		2.00	D					Light brown very sandy gravelly CLAY. Sand is fine to medium. Gravel is fine to coarse sub-angular to sub-rounded flint. (HEAD DEPOSITS).	2
		2.00	SPT	N=12 (2,1/2,3,3,4)					
		2.50	D		2.30			Mottled brown, grey gravelly CLAY. Gravel is fine sub-rounded to sub-angular flint. (HEAD DEPOSITS).	
		3.00	D		3.00			Light brown very sandy GRAVEL. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse flint. (HEAD DEPOSITS).	3
		3.00	SPT	N=9 (2,3/2,2,3,2)					
		3.50	D		3.40			Mottled brown, grey slightly gravelly CLAY with rare fine selenite crystals. Gravel is fine sub-angular to sub-rounded flint. (LONDON CLAY FORMATION).	4
		4.00	D						
		4.00	SPT	N=12 (2,1/2,3,3,4)					
		4.50	D						
		5.00	D		5.00			End of Borehole at 5.000m	5
		5.00	SPT	N=11 (3,3/2,3,3,3)					6
									7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks Groundwater recorded at 0.90m bgl. No roots recorded.										
--	--	--	--	--	--	--	--	--	--	---



Project Name: 2 - 6 Seagull Lane				Client: Nyetimber Management Ltd				Date: 15/05/2023						
Location: Emsworth PO10 7QH				Contractor: AB SI Limited										
Project No. : GWPR5385				Crew Name:				Drilling Equipment:						
Borehole Number WS2		Hole Type WS		Level		Logged By		Scale 1:50		Page Number Sheet 1 of 1				
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description						
		Depth (m)	Type	Results										
		0.20	D	N=15 (2,5/6,4,3,2)	0.10			MADE GROUND: Concrete. MADE GROUND: Brown, orange, gravelly fine to coarse SAND. Gravel is fine to coarse sub-angular to sub-rounded flint (20%), brick (50%) and concrete (30%). MADE GROUND: Dark brown, black, gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint (60%), brick (10%) and concrete (30%). Brown grey slightly gravelly CLAY. Gravel is fine sub-angular to sub-rounded flint. (HEAD DEPOSISTS).		1				
		0.50	D		0.40					2				
		0.80	D		N=11 (1,1/2,3,3,3)					1.00		3		
		1.00	D											
		1.00	SPT											
		1.50	D	N=8 (1,2/2,2,2,2)	5.00			4						
		2.00	D											
		2.00	SPT											
		2.50	D	N=9 (1,3/2,2,3,2)	5.00			5						
		3.00	D											
		3.00	SPT											
		3.50	D	N=10 (2,3/2,2,3,3)	5.00			6						
		4.00	D											
		4.00	SPT											
		5.00	SPT						End of Borehole at 5.000m		7			
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[illegible]

Remarks

Groundwater recorded at 1.23m bgl.
Roots recorded to 3.00m bgl.







Percussion Drilling Log

Project Name: 2 - 6 Seagull Lane		Client: Nyetimber Management Ltd		Date: 15/05/2023	
Location: Emsworth PO10 7QH		Contractor: AB SI Limited			
Project No. : GWPR5385		Crew Name:		Drilling Equipment:	
Borehole Number WS5	Hole Type WS	Level	Logged By	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	D		0.10			MADE GROUND: Concrete	
		0.50	D					MADE GROUND: Dark brown, black, slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse sub-angular flint (70%), brick (10%), concrete (10%) and ash (10%). Strong hydrocarbon odour.	
		0.80	D						
		1.00	D						
		1.00	SPT	N=6 (2,2/2,1,1,2)	1.10			Mottled Brown grey slightly gravelly CLAY. Gravel is fine sub-angular to sub-rounded flint. (HEAD DEPOSITS).	1
		1.50	D						
		2.00	D						
		2.00	SPT	N=10 (1,1/2,2,3,3)					2
		2.50	D		2.50				
		3.00	D					Mottled grey, brown, CLAY with selenite crystals. (LONDON CLAY FORMATION).	
		3.00	SPT	N=9 (1,2/2,2,3,2)					3
		3.50	D						
		4.00	D						
		4.00	SPT	N=7 (1,1/2,1,2,2)					4
		4.50	D						
		5.00	D		5.00				
		5.00	SPT	N=9 (2,2/2,2,3,2)				End of Borehole at 5.000m	5
									6
									7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Groundwater recorded at 1.12m bgl.
Roots recorded to 1.50m bgl.





Trial Pit Log

Project Name: 2-6 Seagull Lane, Emsworth, PO10 7QH		Client: Nyetimber Management Ltd		Date: 16/07/2025	
Location: Emsworth, PO10 7QH		Contractor: Ground and Water Ltd			
Project No. : GWPR6668		Crew Name:		Equipment:	
Location Number TP1	Location Type TP	Level	Logged By LB	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	D		0.20			MADE GROUND: Black slightly clayey, gravely fine SAND. Gravel is fine to medium sub-angular flint (80%) and brick (20%).	1
		0.50	D		0.60			Stiff light brown slightly gravely sandy clay. Gravel is fine to coarse sub-rounded to sub-angular flint. (HEAD DEPOSITS).	
		0.80	D					Stiff light brown sandy clay. Sand was fine to medium. (HEAD DEPOSITS).	
		1.00	D						
		1.50	D		2.00				
		2.00	D					End of Borehole at 2.000m	2
									3
									4
									5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks No groundwater encountered.	
--	--



Date: 16/07/2025

Contractor: Ground and Water Ltd

Equipment:

Page Number
Sheet 1 of 1

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

No groundwater encountered.





Date: 16/07/2025

Contractor: Ground and Water Ltd

Equipment:

Page Number
Sheet 1 of 1

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Groundwater encountered at 1.30m bgl.





Date: 16/07/2025

Contractor: Ground and Water Ltd

Crew Name:

Equipment:

Page Number
Sheet 1 of 1

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

No groundwater encountered.





Trial Pit Log

Project Name: 2-6 Seagull Lane, Emsworth, PO10 7QH		Client: Nyetimber Management Ltd		Date: 16/07/2025	
Location: Emsworth, PO10 7QH		Contractor: Ground and Water Ltd			
Project No. : GWPR6668		Crew Name:		Equipment:	
Location Number TP5	Location Type TP	Level	Logged By LB	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	D		0.10			MADE GROUND: Black sandy GRAVEL of fine to coarse sub-angular flint (60%) and brick (40%). Dark grey and black sandy CLAY. Sand is fine to medium. Strong hydrocarbon odour. (HEAD DEPOSITS).	1
		0.50	D						
		0.80	D						
		1.00	D		1.00				
								End of Borehole at 1.000m	5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks No groundwater encountered.	
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Trial Pit Log

Project Name: 2-6 Seagull Lane, Emsworth, PO10 7QH		Client: Nyetimber Management Ltd		Date: 16/07/2025	
Location: Emsworth, PO10 7QH		Contractor: Ground and Water Ltd			
Project No. : GWPR6668		Crew Name:		Equipment:	
Location Number TP6	Location Type TP	Level	Logged By LB	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	D		0.40			MADE GROUND: Light grey and dark brown slightly clayey GRAVEL of fine to coarse flint (80%) and brick (20%).	1
		0.50	D					Stiff light brown slightly gravelly sandy CLAY. Gravel is fine to medium sub-angular flint and sand is medium. (HEAD DEPOSITS).	
		0.80	D						
		1.00	D						
		1.50	D		2.00				2
		2.00	D					End of Borehole at 2.000m	
									3
									4
									5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks No groundwater encountered.	
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Trial Pit Log

Project Name: 2-6 Seagull Lane, Emsworth, PO10 7QH		Client: Nyetimber Management Ltd		Date: 16/07/2025	
Location: Emsworth, PO10 7QH		Contractor: Ground and Water Ltd			
Project No. : GWPR6668		Crew Name:		Equipment:	
Location Number TP7	Location Type TP	Level	Logged By LB	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	D		0.20			MADE GROUND: Dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular flint (80%) and brick (20%). Strong hydrocarbon odour noted.	
		0.50	D					Dark grey and black slightly gravelly CLAY. Gravel is fine to medium sub-angular flint. (HEAD DEPOSITS).	
		0.80	D						
		1.00	D		1.00				
								End of Borehole at 1.000m	1
									2
									3
									4
									5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks	
Groundwater seepage noted at 1.0m bgl rising to 0.50m bgl after 30 minutes.	



Date: 16/07/2025

Contractor: Ground and Water Ltd

Equipment:

Page Number
Sheet 1 of 1

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Groundwater seepage noted at base of pit (0.50m bgl).





Trial Pit Log

Project Name: 2-6 Seagull Lane, Emsworth, PO10 7QH		Client: Nyetimber Management Ltd		Date: 16/07/2025	
Location: Emsworth, PO10 7QH		Contractor: Ground and Water Ltd			
Project No. : GWPR6668		Crew Name:		Equipment:	
Location Number TP9	Location Type TP	Level	Logged By LB	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	D		0.20			MADE GROUND: Dark brown slightly gravelly CLAY. Gravel is fine to medium sub-angular to sub-rounded flint (70%) and brick (30%).	1
		0.50	D		0.50			Stiff light brown sandy CLAY. Sand is fine. (HEAD DEPOSITS).	
		0.80	D		0.50			Stiff light brown and greenish blue sandy CLAY. Sand is fine. (HEAD DEPOSITS).	
		1.00	D						
		1.50	D						
		2.00	D						
							2		
								3	
								4	
								5	

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

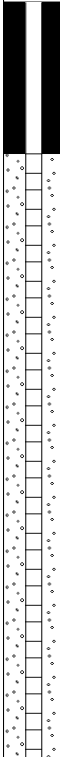
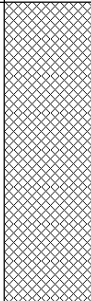
Remarks

No groundwater encountered.



Percussion Drilling Log

Project Name: 2 - 6 Seagull Lane, Emsworth,		Client: The Trustees of the Alitex DBSSAS		Date: 11/11/2025	
Location: Hampshire PO10 7QH		Contractor:			
Project No. : GWPR6838		Crew Name:		Drilling Equipment:	
Borehole Number BH101	Hole Type CP	Level	Logged By SH	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description								
		Depth (m)	Type	Results												
		0.20	D		2.00			REWORKED HEAD DEPOSITS: Soft brown mottled orangish brown slightly Sandy gravelly CLAY. Sand is fine and medium. Gravel is subangular to rounded fine to coarse of flint.	1							
		0.50	D													
		1.00	D													
		1.50	D													
		2.00	D				Stiff fissured brown CLAY. Fissures are sub horizontal to sub vertical smooth and matt. Blueish grey gleying noted on fissure surfaces. (LONDON CLAY FORMATION).	2								
		2.50	D													
		3.00	D					3								
		3.50	D													
		4.00	D					4								
		4.50	D													
		5.00	D					5								
		End of Borehole at 5.000m								6						
										7						
										8						
										9						
										10						
		Hole Diameter						Casing Diameter		Chiselling				Inclination and Orientation		
Depth Base		Diameter	Depth Base					Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

No roots or rootlets noted.
No groundwater strikes encountered.
No visual or olfactory signs of contamination.





Date: 11/11/2025

Contractor:

Equipment:

Page Number
Sheet 1 of 1

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

No roots or rootlets noted.
No groundwater strikes encountered.
No visual or olfactory signs of contamination.



APPENDIX E: Chemical Test Results



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528777

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

Ground and Water Ltd
Head Office
2 The Long Barn
Norton Farm, Selborne Road
Alton
Hampshire
GU34 3NB

Attention: Alex Stratford

CERTIFICATE OF ANALYSIS

Date of report Generation:	26 May 2023
Customer:	Ground and Water Ltd
Sample Delivery Group (SDG):	230519-69
Your Reference:	GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH
Location:	GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH
Report No:	690450
Order Number:	GWPR5385

We received 8 samples on Friday May 19, 2023 and 8 of these samples were scheduled for analysis which was completed on Friday May 26, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

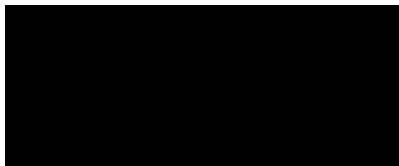
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230519-69 Report Number: 690450 Superseded Report:
Client Ref.: GWPR5385 2-6 Seagull Lane Ems Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28020244	WS1		0.20 - 0.20	12/05/2023
28020259	WS1		1.00 - 1.00	12/05/2023
28020264	WS2		0.80 - 0.80	12/05/2023
28020279	WS2		2.00 - 2.00	12/05/2023
28020281	WS3		0.20 - 0.20	12/05/2023
28020284	WS3		2.50 - 2.50	12/05/2023
28020290	WS4		0.50 - 0.50	12/05/2023
28020296	WS5		0.20 - 0.20	12/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230519-69

Report Number: 690450

Superseded Report:

Client Ref.: GWPR5385 2-6 Seagull Lane Ems

Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
 UNS - Unspecified Solid
 GW - Ground Water
 SW - Surface Water
 LE - Land Leachate
 PL - Prepared Leachate
 PR - Process Water
 SA - Saline Water
 TE - Trade Effluent
 TS - Treated Sewage
 US - Untreated Sewage
 RE - Recreational Water
 DW - Drinking Water Non-regulatory
 UNL - Unspecified Liquid
 SL - Sludge
 G - Gas
 OTH - Other

Results Legend	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	28020296		WS5				0.20 - 0.20		60g VOC (ALE215)		S	
	28020290		WS4				0.50 - 0.50		250g Amber Jar (ALE210) Container		S	
	28020284		WS3				2.50 - 2.50		1kg Cardboard Container		S	
	28020281		WS3				0.20 - 0.20		250g Amber Jar (ALE210) Container		S	
	28020279		WS2				2.00 - 2.00		1kg Cardboard Container		S	
	28020264		WS2				0.80 - 0.80		250g Amber Jar (ALE210) Container		S	
	28020259		WS1				1.00 - 1.00		1kg Cardboard Container		S	
	28020244		WS1				0.20 - 0.20		60g VOC (ALE215)		S	
									250g Amber Jar (ALE210) Container		S	
									1kg Cardboard Container		S	
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2										
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 1										
Anions by Kone (soil)	All	NDPs: 0 Tests: 8										
Anions by Kone (w)	All	NDPs: 0 Tests: 1										
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 5										
Boron Water Soluble	All	NDPs: 0 Tests: 5										
CEN Readings	All	NDPs: 0 Tests: 1										
Coronene	All	NDPs: 0 Tests: 1										
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5										
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1										
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1										
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1										
EPH CWG GC (S)	All	NDPs: 0 Tests: 2										
Fluoride	All	NDPs: 0 Tests: 1										
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2										



CERTIFICATE OF ANALYSIS

Validated

SDG: 230519-69

Report Number: 690450

Superseded Report:

Client Ref.: GWPR5385 2-6 Seagull Lane Ems

Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

Results Legend



Test


No Determination
Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

Customer Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

Hexavalent Chromium (s)

All

NDPs: 0
Tests: 5

X

X

X

X

X

Loss on Ignition in soils

All

NDPs: 0
Tests: 1

X

Magnesium (BRE)

All

NDPs: 0
Tests: 2

X

X

Mercury Dissolved

All

NDPs: 0
Tests: 1

X

Metals in solid samples by OES

All

NDPs: 0
Tests: 5

X

X

X

X

X

NO3, NO2 and TON by KONE (s)

All

NDPs: 0
Tests: 2

X

X

PAH 16 & 17 Calc

All

NDPs: 0
Tests: 1

X

PAH by GCMS

All

NDPs: 0
Tests: 5

X

X

X

X

X

PCBs by GCMS

All

NDPs: 0
Tests: 1

X

pH

All

NDPs: 0
Tests: 8

X

X

X

X

X

X

X

X

pH Value of Filtered Water

All

NDPs: 0
Tests: 1

X

Phenols by HPLC (S)

All

NDPs: 0
Tests: 5

X

X

X

X

X

Phenols by HPLC (W)

All

NDPs: 0
Tests: 1

X

Sample description

All

NDPs: 0
Tests: 8

X

X

X

X

X

X

X

X

Semi Volatile Organic Compounds

All

NDPs: 0
Tests: 2

X

X



SDG: 230519-69	Report Number: 690450	Superseded Report:
Client Ref.: GWPR5385 2-6 Seaquill Lane Ems	Location: GWPR5385 2-6 Seaquill Lane Emsworth PO10 7QH	

15:56:26 26/05/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230519-69 Report Number: 690450 Superseded Report:
Client Ref.: GWPR5385 2-6 Seagull Lane Ems Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28020244	WS1	0.20 - 0.20	Dark Brown	Sandy Clay	Brick	Stones
28020259	WS1	1.00 - 1.00	Dark Brown	Sandy Clay	Stones	None
28020264	WS2	0.80 - 0.80	Dark Brown	Sandy Clay	Stones	None
28020279	WS2	2.00 - 2.00	Light Brown	Silty Clay	None	None
28020281	WS3	0.20 - 0.20	Dark Brown	Sandy Loam	Stones	Vegetation
28020284	WS3	2.50 - 2.50	Light Brown	Silty Clay	None	None
28020290	WS4	0.50 - 0.50	Dark Brown	Sandy Clay Loam	Brick	Stones
28020296	WS5	0.20 - 0.20	Dark Brown	Sandy Clay Loam	Stones	Glass

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

SDG: 230519-69
Client Ref.: GWPR5385 2-6 Seagull Lane EmReport Number: 690450
Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

Superseded Report:

Results Legend			Customer Sample Ref.		WS1	WS1	WS2	WS2	WS3	WS3
# ISO17025 accredited.			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.20 - 0.20	1.00 - 1.00	0.80 - 0.80	2.00 - 2.00	0.20 - 0.20	2.50 - 2.50
M mCERTS accredited.					Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq Aqueous / settled sample.					12/05/2023	12/05/2023	12/05/2023	12/05/2023	12/05/2023	12/05/2023
diss.filt Dissolved / filtered sample.					12:00	12:00	12:00	12:00	12:00	12:00
tot.unfilt Total / unfiltered sample.					19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
* Subcontracted - refer to subcontractor report for accreditation status.					230519-69	230519-69	230519-69	230519-69	230519-69	230519-69
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery					28020244	28020259	28020264	28020279	28020281	28020284
(F) Trigger breach confirmed										
1-4*5@ Sample deviation (see appendix)										
Component	LOD/Units	Method								
Moisture Content Ratio (% of as received sample)	%	PM024			20	20	9.7	18	5.6	19
Loss on ignition	<0.7 %	TM018			9.59					
					M					
Phenol	<0.01 mg/kg	TM062 (S)			<0.01		<0.01		<0.01	
					M		M		M	
Cresols	<0.01 mg/kg	TM062 (S)			<0.01		<0.01		<0.01	
					M		M		M	
Xylenols	<0.015 mg/kg	TM062 (S)			<0.015		<0.015		<0.015	
					M		M		M	
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)			<0.035		<0.035		<0.035	
					M		M		M	
Organic Carbon, Total	<0.2 %	TM132			3.69		0.402		1.12	
					M		M		M	
Sulphur, Total	<0.02 %	TM132				0.0439				<0.02
						#				#
Soil Organic Matter (SOM)	<0.35 %	TM132			6.36		0.693		1.93	
					#		#		#	
pH	1 pH Units	TM133			8.8	8.84	9.14	8.71	11.1	9
					M	M	M	M	M	M
Chromium, Hexavalent	<0.6 mg/kg	TM151			<0.6		<0.6		<0.6	
					M		M		M	
Cyanide, Total	<1 mg/kg	TM153			<1		<1		<1	
					M		M		M	
PCB congener 28	<0.003 mg/kg	TM168			<0.003					
					M					
PCB congener 52	<0.003 mg/kg	TM168			<0.003					
					M					
PCB congener 101	<0.003 mg/kg	TM168			<0.003					
					M					
PCB congener 118	<0.003 mg/kg	TM168			<0.003					
					M					
PCB congener 138	<0.003 mg/kg	TM168			<0.003					
					M					
PCB congener 153	<0.003 mg/kg	TM168			<0.003					
					M					
PCB congener 180	<0.003 mg/kg	TM168			<0.003					
					M					
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168			<0.021					
Arsenic	<0.6 mg/kg	TM181			10.9		7.37		6.56	
					M		M		M	
Cadmium	<0.02 mg/kg	TM181			0.59		0.562		0.198	
					M		M		M	
Chromium	<0.9 mg/kg	TM181			22.6		37		16.1	
					M		M		M	
Copper	<1.4 mg/kg	TM181			31.6		23.4		27	
					M		M		M	
Lead	<0.7 mg/kg	TM181			161		29.2		358	
					M		M		M	
Mercury	<0.1 mg/kg	TM181			<0.1		<0.1		<0.1	
					M		M		M	
Nickel	<0.2 mg/kg	TM181			24.1		40.7		12.2	
					M		M		M	
Selenium	<1 mg/kg	TM181			<1		<1		<1	
					#		#		#	
Vanadium	<0.2 mg/kg	TM181			45.8		53.9		19.4	
					#		#		#	
Zinc	<1.9 mg/kg	TM181			180		93.5		132	
					M		M		M	
ANC @ pH 4	<0.03 mol/kg	TM182			0.08					
ANC @ pH 6	<0.03 mol/kg	TM182			<0.03					
Sulphate, acid soluble (total)	<0.0048 %	TM221				0.074				0.0194
						M				M

SDG: 230519-69

Report Number: 690450

Superseded Report:

Client Ref.: GWPR5385 2-6 Seagull Lane Ems

Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

[illegible]

SDG: 230519-69

Report Number: 690450

Superseded Report:

Client Ref.: GWPR5385 2-6 Seagull Lane Ems

Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 230519-69
Client Ref.: GWPR5385 2-6 Seagull Lane EmsReport Number: 690450
Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.		WS1	WS5			
# ISO17025 accredited.			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.20 - 0.20	0.20 - 0.20			
M mCERTS accredited.					Soil/Solid (S)	Soil/Solid (S)			
aq Aqueous / settled sample.					12/05/2023	12/05/2023			
diss.filt Dissolved / filtered sample.					12:00	12:00			
tot.unfilt Total / unfiltered sample.					19/05/2023	19/05/2023			
* Subcontracted - refer to subcontractor report for accreditation status.					230519-69	230519-69			
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery					28020244	28020296			
(F) Trigger breach confirmed									
1-4*§@ Sample deviation (see appendix)									
Component	LOD/Units	Method							
Phenol	<0.1 mg/kg	TM157			<0.2	<0.1			
Pentachlorophenol	<0.1 mg/kg	TM157			<0.2	<0.1			
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157			<0.2	<0.1			
Nitrobenzene	<0.1 mg/kg	TM157			<0.2	<0.1			
Isophorone	<0.1 mg/kg	TM157			<0.2	<0.1			
Hexachloroethane	<0.1 mg/kg	TM157			<0.2	<0.1			
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157			<0.2	<0.1			
Hexachlorobutadiene	<0.1 mg/kg	TM157			<0.2	<0.1			
Hexachlorobenzene	<0.1 mg/kg	TM157			<0.2	<0.1			
n-Dioctyl phthalate	<0.1 mg/kg	TM157			<0.2	<0.1			
Dimethyl phthalate	<0.1 mg/kg	TM157			<0.2	<0.1			
Diethyl phthalate	<0.1 mg/kg	TM157			<0.2	<0.1			
n-Dibutyl phthalate	<0.1 mg/kg	TM157			<0.2	<0.1			
Dibenzofuran	<0.1 mg/kg	TM157			<0.2	<0.1			
Carbazole	<0.1 mg/kg	TM157			<0.2	<0.1			
Butylbenzyl phthalate	<0.1 mg/kg	TM157			<0.2	<0.1			
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157			<0.2	<0.1			
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157			<0.2	<0.1			
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157			<0.2	<0.1			
Azobenzene	<0.1 mg/kg	TM157			<0.2	<0.1			
4-Nitrophenol	<0.1 mg/kg	TM157			<0.2	<0.1			
4-Nitroaniline	<0.1 mg/kg	TM157			<0.2	<0.1			
4-Methylphenol	<0.1 mg/kg	TM157			<0.2	<0.1			
4-Chlorophenylphenylether	<0.1 mg/kg	TM157			<0.2	<0.1			
4-Chloroaniline	<0.1 mg/kg	TM157			<0.2	<0.1			
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157			<0.2	<0.1			
4-Bromophenylphenylether	<0.1 mg/kg	TM157			<0.2	<0.1			
3-Nitroaniline	<0.1 mg/kg	TM157			<0.2	<0.1			
2-Nitrophenol	<0.1 mg/kg	TM157			<0.2	<0.1			
2-Nitroaniline	<0.1 mg/kg	TM157			<0.2	<0.1			
2-Methylphenol	<0.1 mg/kg	TM157			<0.2	<0.1			
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157			<0.2	<0.1			
2-Chlorophenol	<0.1 mg/kg	TM157			<0.2	<0.1			



CERTIFICATE OF ANALYSIS

Validated

SDG: 230519-69
Client Ref.: GWPR5385 2-6 Seagull Lane EmReport Number: 690450
Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	WS1	WS5			
# ISO17025 accredited.								
M MCERTS accredited.								
aq. Aqueous / settled sample.								
dis.filt. Dissolved / filtered sample.								
tot.unfilt. Total / unfiltered sample.								
* Subcontracted - refer to subcontractor report for accreditation status.								
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F) Trigger breach confirmed								
1-4* Sample deviation (see appendix)								
Component	LOD/Units	Method						
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.2	<0.1			
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.2	<0.1			
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.2	<0.1			
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.2	<0.1			
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.2	<0.1			
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.2	<0.1			
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.2	<0.1			
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.2	<0.1			
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.2	<0.1			
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.2	<0.1			
2-Methylnaphthalene	<0.1 mg/kg	TM157		0.35	<0.1			
Acenaphthylene	<0.1 mg/kg	TM157		<0.2	<0.1			
Acenaphthene	<0.1 mg/kg	TM157		<0.2	<0.1			
Anthracene	<0.1 mg/kg	TM157		<0.2	<0.1			
Benzo(a)anthracene	<0.1 mg/kg	TM157		1	<0.1			
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		0.813	<0.1			
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		0.798	<0.1			
Benzo(a)pyrene	<0.1 mg/kg	TM157		0.712	<0.1			
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		0.294	<0.1			
Chrysene	<0.1 mg/kg	TM157		1.26	0.168			
Fluoranthene	<0.1 mg/kg	TM157		1.95	0.345			
Fluorene	<0.1 mg/kg	TM157		<0.2	<0.1			
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		0.754	<0.1			
Phenanthrene	<0.1 mg/kg	TM157		1.26	0.199			
Pyrene	<0.1 mg/kg	TM157		1.95	0.309			
Naphthalene	<0.1 mg/kg	TM157		<0.2	<0.1			
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.2	<0.1			
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.2	<0.1			



Superseded Report:

Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH



CERTIFICATE OF ANALYSIS

Validated

SDG: 230519-69

Report Number: 690450

Superseded Report:

Client Ref.: GWPR5385 2-6 Seagull Lane Em

Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

VOC MS (S)

Results Legend			Customer Sample Ref.		WS1	WS5			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*5@ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.20 - 0.20 Soil/Solid (S) 12/05/2023 12:00 19/05/2023 230519-69 28020244	0.20 - 0.20 Soil/Solid (S) 12/05/2023 12:00 19/05/2023 230519-69 28020296			
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM116			102	109			
Toluene-d8**	%	TM116			89.7	94.9			
4-Bromofluorobenzene**	%	TM116			70.1	91.5			
Dichlorodifluoromethane	<0.006 mg/kg	TM116			<0.006 #	<0.006 #			
Chloromethane	<0.007 mg/kg	TM116			<0.007 #	<0.007 #			
Vinyl Chloride	<0.006 mg/kg	TM116			<0.006 @ M	<0.006 @ M			
Bromomethane	<0.01 mg/kg	TM116			<0.01 M	<0.01 M			
Chloroethane	<0.01 mg/kg	TM116			<0.01 M	<0.01 M			
Trichlorofluoromethane	<0.006 mg/kg	TM116			<0.006 M	<0.006 M			
1,1-Dichloroethene	<0.01 mg/kg	TM116			<0.01 #	<0.01 #			
Carbon Disulphide	<0.007 mg/kg	TM116			<0.007 M	<0.007 M			
Dichloromethane	<0.01 mg/kg	TM116			<0.01 #	<0.01 #			
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116			<0.01 M	<0.01 M			
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116			<0.01 M	<0.01 M			
1,1-Dichloroethane	<0.008 mg/kg	TM116			<0.008 M	<0.008 M			
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116			<0.006 M	<0.006 M			
2,2-Dichloropropane	<0.01 mg/kg	TM116			<0.01	<0.01			
Bromochloromethane	<0.01 mg/kg	TM116			<0.01 M	<0.01 M			
Chloroform	<0.008 mg/kg	TM116			<0.008 M	<0.008 M			
1,1,1-Trichloroethane	<0.007 mg/kg	TM116			<0.007 M	<0.007 M			
1,1-Dichloropropene	<0.01 mg/kg	TM116			<0.01 M	<0.01 M			
Carbontetrachloride	<0.01 mg/kg	TM116			<0.01 M	<0.01 M			
1,2-Dichloroethane	<0.005 mg/kg	TM116			<0.005 M	<0.005 M			
Benzene	<0.009 mg/kg	TM116			<0.009 M	<0.009 M			
Trichloroethene	<0.009 mg/kg	TM116			<0.009 #	<0.009 #			
1,2-Dichloropropane	<0.01 mg/kg	TM116			<0.01 M	<0.01 M			
Dibromomethane	<0.009 mg/kg	TM116			<0.009 M	<0.009 M			
Bromodichloromethane	<0.007 mg/kg	TM116			<0.007 M	<0.007 M			
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.01 M	<0.01 M			
Toluene	<0.007 mg/kg	TM116			<0.007 M	<0.007 M			
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.01	<0.01			
1,1,2-Trichloroethane	<0.01 mg/kg	TM116			<0.01 M	<0.01 M			
1,3-Dichloropropane	<0.007 mg/kg	TM116			<0.007 M	<0.007 M			



CERTIFICATE OF ANALYSIS

Validated

SDG: 230519-69

Report Number: 690450

Superseded Report:

Client Ref.: GWPR5385 2-6 Seagull Lane Em

Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

VOC MS (S)

Results Legend		Customer Sample Ref.	WS1	WS5				
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
dis.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4#	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Tetrachloroethene	<0.005 mg/kg	TM116	<0.005 M	<0.005 M				
Dibromochloromethane	<0.01 mg/kg	TM116	<0.01 M	<0.01 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.01 M	<0.01 M				
Chlorobenzene	<0.005 mg/kg	TM116	<0.005 M	<0.005 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.01 M	<0.01 M				
Ethylbenzene	<0.004 mg/kg	TM116	<0.004 M	<0.004 M				
p/m-Xylene	<0.01 mg/kg	TM116	<0.01 #	<0.01 #				
o-Xylene	<0.01 mg/kg	TM116	<0.01 M	<0.01 M				
Styrene	<0.01 mg/kg	TM116	<0.01 @ #	<0.01 @ #				
Bromofom	<0.01 mg/kg	TM116	<0.01 M	<0.01 M				
Isopropylbenzene	<0.005 mg/kg	TM116	0.00794 #	<0.005 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.01 #	<0.01 #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.016 M	<0.016 M				
Bromobenzene	<0.01 mg/kg	TM116	<0.01 M	<0.01 M				
Propylbenzene	<0.01 mg/kg	TM116	<0.01 M	<0.01 M				
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.009 M	<0.009 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.008 M	<0.008 M				
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.01 M	<0.01 M				
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.014 #	<0.014 #				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	0.0177 #	<0.009 #				
sec-Butylbenzene	<0.01 mg/kg	TM116	0.0159	<0.01				
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.01	<0.01				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.008 M	<0.008 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.005 M	<0.005 M				
n-Butylbenzene	<0.011 mg/kg	TM116	<0.011	<0.011				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.01 M	<0.01 M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.014 M	<0.014 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.01 #	<0.01 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.02	<0.02				
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.02	<0.02				
Naphthalene	<0.013 mg/kg	TM116	<0.013 M	<0.013 M				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.02 #	<0.02 #				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116	<0.02	<0.02				



CERTIFICATE OF ANALYSIS

Validated

SDG: 230519-69 Report Number: 690450 Superseded Report:
Client Ref.: GWPR5385 2-6 Seagull Lane Ems Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

Asbestos Identification - Solid Samples

Results Legend

ISO17025 accredited.
M mCERTS accredited.
* Subcontracted test.
(F) Trigger breach confirmed
1-5&*%@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS1 0.20 - 0.20 SOLID 12/05/2023 00:00:00 19/05/2023 05:00:00 230519-69 28020244 TM048	26/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS2 0.80 - 0.80 SOLID 12/05/2023 00:00:00 19/05/2023 05:00:00 230519-69 28020264 TM048	25/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS3 0.20 - 0.20 SOLID 12/05/2023 00:00:00 19/05/2023 05:00:00 230519-69 28020281 TM048	25/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS4 0.50 - 0.50 SOLID 12/05/2023 00:00:00 19/05/2023 05:00:00 230519-69 28020290 TM048	26/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS5 0.20 - 0.20 SOLID 12/05/2023 00:00:00 19/05/2023 05:00:00 230519-69 28020296 TM048	26/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 230519-69
Client Ref.: GWPR5385 2-6 Seagull Lane EmsReport Number: 690450
Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference

Mass Sample taken (kg)	0.106
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location

Natural Moisture Content (%)	17.8
Dry Matter Content (%)	84.9

Case

SDG	230519-69
Lab Sample Number(s)	28020244
Sampled Date	12-May-2023
Customer Sample Ref.	WS1
Depth (m)	0.20 - 0.20

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis

Result

Total Organic Carbon (%)	3.69
Loss on Ignition (%)	9.59
Sum of BTEX (mg/kg)	<0.04
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	562
PAH Sum of 17 (mg/kg)	15.3
pH (pH Units)	8.8
ANC to pH 6 (mol/kg)	<0.03
ANC to pH 4 (mol/kg)	0.08

Eluate Analysis

C₂Concⁿ in 10:1 eluate (mg/l)A₂10:1 concⁿ leached (mg/kg)Limit values for compliance leaching test
using BS EN 12457-3 at L/S 10 l/kg

	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.0182	<0.0005	0.182	<0.005	0.5	2	25
Barium	0.0153	<0.0002	0.153	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.0109	<0.0003	0.109	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0142	<0.003	0.142	<0.03	0.5	10	30
Nickel	0.006	<0.0004	0.06	<0.004	0.4	10	40
Lead	0.00423	<0.0002	0.0423	<0.002	0.5	10	50
Antimony	0.0125	<0.001	0.125	<0.01	0.06	0.7	5
Selenium	0.00173	<0.001	0.0173	<0.01	0.1	0.5	7
Zinc	0.00815	<0.001	0.0815	<0.01	4	50	200
Chloride	18.9	<2	189	<20	800	15000	25000
Fluoride	0.687	<0.5	6.87	<5	10	150	500
Sulphate (soluble)	3.4	<2	34	<20	1000	20000	50000
Total Dissolved Solids	141	<10	1410	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	26.9	<3	269	<30	500	800	1000

Leach Test Information

Date Prepared	20-May-2023
pH (pH Units)	8.16
Conductivity (µS/cm)	184
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

26/05/2023 15:56:41

15:56:26 26/05/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230519-69

Report Number: 690450

Superseded Report:

Client Ref.: GWPR5385 2-6 Seagull Lane Ems

Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM222	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM243	Mixed Anions In Soils By Kone
TM248	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM282	Extraction of Magnesium by BRE Method
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230519-69

Report Number: 690450

Superseded Report:

Client Ref.: GWPR5385 2-6 Seagull Lane Ems

Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

Test Completion Dates

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	28020244	28020259	28020264	28020279	28020281	28020284	28020290	28020296
	WS1	WS1	WS2	WS2	WS3	WS3	WS4	WS5
	0.20 - 0.20	1.00 - 1.00	0.80 - 0.80	2.00 - 2.00	0.20 - 0.20	2.50 - 2.50	0.50 - 0.50	0.20 - 0.20
	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract		23-May-2023				23-May-2023		
ANC at pH4 and ANC at pH 6	23-May-2023							
Anions by Kone (soil)	24-May-2023	25-May-2023	24-May-2023	24-May-2023	25-May-2023	25-May-2023	24-May-2023	24-May-2023
Anions by Kone (w)	24-May-2023							
Asbestos ID in Solid Samples	26-May-2023		25-May-2023		25-May-2023		26-May-2023	26-May-2023
Boron Water Soluble	23-May-2023		25-May-2023		25-May-2023		23-May-2023	23-May-2023
CEN 10:1 Leachate (1 Stage)	21-May-2023							
CEN Readings	25-May-2023							
Coronene	26-May-2023							
Cyanide Comp/Free/Total/Thiocyanate	25-May-2023		26-May-2023		24-May-2023		24-May-2023	24-May-2023
Dissolved Metals by ICP-MS	25-May-2023							
Dissolved Organic/Inorganic Carbon	24-May-2023							
EPH by GCxGC-FID	23-May-2023							
EPH CWG GC (S)	23-May-2023							24-May-2023
Fluoride	25-May-2023							
GRO by GC-FID (S)	22-May-2023							22-May-2023
Hexavalent Chromium (s)	25-May-2023		25-May-2023		25-May-2023		25-May-2023	25-May-2023
Loss on Ignition in soils	25-May-2023							
Magnesium (BRE)		24-May-2023				24-May-2023		
Mercury Dissolved	25-May-2023							
Metals in solid samples by OES	24-May-2023		24-May-2023		25-May-2023		24-May-2023	24-May-2023
Moisture at 105C	20-May-2023							
NO3, NO2 and TON by KONE (s)		26-May-2023				26-May-2023		
PAH 16 & 17 Calc	26-May-2023							
PAH by GCMS	25-May-2023		25-May-2023		26-May-2023		26-May-2023	25-May-2023
PCBs by GCMS	26-May-2023							
pH	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023
pH Value of Filtered Water	25-May-2023							
Phenols by HPLC (S)	25-May-2023		25-May-2023		26-May-2023		25-May-2023	25-May-2023
Phenols by HPLC (W)	25-May-2023							
Sample description	19-May-2023	20-May-2023	19-May-2023	20-May-2023	19-May-2023	20-May-2023	19-May-2023	19-May-2023
Semi Volatile Organic Compounds	24-May-2023							24-May-2023
Total Organic Carbon	25-May-2023		26-May-2023		25-May-2023		26-May-2023	26-May-2023
Total Sulphate		24-May-2023				24-May-2023		
Total Sulphur		25-May-2023				25-May-2023		
TPH CWG GC (S)	23-May-2023							24-May-2023
VOC MS (S)	22-May-2023							22-May-2023



CERTIFICATE OF ANALYSIS

SDG: 230519-69
Client Ref: GWPR5385 2-6 Seagull Lane

Report Number: 690450
Location: GWPR5385 2-6 Seagull Lane Emsworth PO10 7QH

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Ground and Water Ltd
Head Office
2 The Long Barn
Norton Farm, Selborne Road
Alton
Hampshire
GU34 3NB

Attention: Alex Stratford

CERTIFICATE OF ANALYSIS

Date of report Generation:	13 July 2023
Customer:	Ground and Water Ltd
Sample Delivery Group (SDG):	230705-89
Your Reference:	GWPR5475 2 - 6 Seagull Lane, Emsworth, PO10 7QH
Location:	2 - 6 Seagull Lane, Emsworth PO10 7QH
Report No:	696276
Order Number:	GWPR5475

We received 3 samples on Wednesday July 05, 2023 and 3 of these samples were scheduled for analysis which was completed on Thursday July 13, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

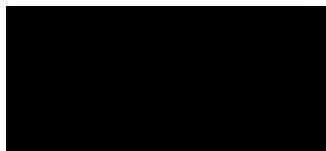
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230705-89

Report Number: 696276

Superseded Report:

Client Ref.: GWPR5475 2 - 6 Seagull Lan

Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28276297	WS1		0.00 - 0.00	03/07/2023
28276301	WS3		0.00 - 0.00	03/07/2023
28276304	WS5		0.00 - 0.00	03/07/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230705-89

Report Number: 696276

Superseded Report:

Client Ref.: GWPR5475 2 - 6 Seagull Lan

Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
 UNS - Unspecified Solid
 GW - Ground Water
 SW - Surface Water
 LE - Land Leachate
 PL - Prepared Leachate
 PR - Process Water
 SA - Saline Water
 TE - Trade Effluent
 TS - Treated Sewage
 US - Untreated Sewage
 RE - Recreational Water
 DW - Drinking Water
 Non-regulatory
 UNL - Unspecified Liquid
 SL - Sludge
 G - Gas
 OTH - Other

Lab Sample No(s)

Customer Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

Bulk Gas

All

NDPs: 0
 Tests: 3

X

X

X

Odourant Gas Analysis (G)

All

NDPs: 0
 Tests: 3

X

X

X

TPH in Gas samples

All

NDPs: 0
 Tests: 3

X

X

X

VOC's

All

NDPs: 0
 Tests: 3

X

X

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230705-89
Client Ref.: GWPR5475 2 - 6 Seagull Lan

Report Number: 696276
Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Superseded Report:

Sample Number 28276297

Sample ID WS1

Depth 0.00 - 0.00

Sampled Date 03/07/2023 00:00

- ISO17025 accredited. M - mCERTS accredited. 1-4*§@ - Sample deviation (see appendix)

Method TM335 Determination of TPH in atmospheric, sub-slab and soil gas samples

Canister No. 92 Sample Volume (ml) 5 Initial pressure (psia) 13.39 Final pressure (psia) 19.04 Dilution 1.4219566841

CAS Number	Compound	LOD	Result	Units	LOD	Result	Units
1634-04-4	MTBE	<42.7	<42.7	ppbv	<154	<154	ug/m ³
71-43-2	Benzene	<37.0	<37.0	ppbv	<118	<118	ug/m ³
108-88-3	Toluene	<42.7	53.8	ppbv	<161	203	ug/m ³
100-41-4	Ethyl Benzene	<42.7	95.0	ppbv	<185	412	ug/m ³
108-38-3 & 106-42-3	m/p-Xylene	<42.7	86.2	ppbv	<185	374	ug/m ³
95-47-6	o-Xylene	<42.7	43.2	ppbv	<185	187	ug/m ³
91-20-3	Naphthalene	<65.4	<65.4	ppbv	<342	<342	ug/m ³
-	TPH (C4-C6)	<284	9810	ppbv	<829	28600	ug/m ³
-	TPH (C6-C8)	<284	9180	ppbv	<1050	33900	ug/m ³
-	TPH (C8-C10)	<390	17100	ppbv	<1840	80700	ug/m ³
-	TPH (C10-C12)	<603	5860	ppbv	<3500	34000	ug/m ³
-	TPH (C4-C12)	<1560	41900	ppbv	<7220	177000	ug/m ³
-	Aliphatic (C4-C6)	<284	9810	ppbv	<829	28600	ug/m ³
-	Aliphatic (C6-C8)	<204	9130	ppbv	<771	33700	ug/m ³
-	Aliphatic (C8-C10)	<106	16300	ppbv	<540	77200	ug/m ³
-	Aliphatic (C10-C12)	<319	5860	ppbv	<1280	34000	ug/m ³
-	Aromatic (EC5-EC7)	<37.0	<37.0	ppbv	<118	<118	ug/m ³
-	Aromatic (EC7-EC8)	<42.7	53.8	ppbv	<161	203	ug/m ³
-	Aromatic (EC8-EC10)	<284	765	ppbv	<1300	3510	ug/m ³
-	Aromatic (EC10-EC12)	<284	<284	ppbv	<2220	<2230	ug/m ³



CERTIFICATE OF ANALYSIS

Validated

SDG: 230705-89
Client Ref.: GWPR5475 2 - 6 Seagull Lan

Report Number: 696276
Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Superseded Report:

Sample Number 28276301

Sample ID WS3

Depth 0.00 - 0.00

Sampled Date 03/07/2023 00:00

- ISO17025 accredited. M - mCERTS accredited. 1-4* - Sample deviation (see appendix)

Method TM335 Determination of TPH in atmospheric, sub-slab and soil gas samples

Canister No. 331 Sample Volume (ml) 160 Initial pressure (psia) 12.54 Final pressure (psia) 19.04 Dilution 1.5183413078

CAS Number	Compound	LOD	Result	Units	LOD	Result	Units
1634-04-4	MTBE	<1.42	<1.42	ppbv	<5.11	<5.12	ug/m ³
71-43-2	Benzene	<1.23	1.76	ppbv	<3.92	5.61	ug/m ³
108-88-3	Toluene	<1.42	1.60	ppbv	<5.34	6.02	ug/m ³
100-41-4	Ethyl Benzene	<1.42	<1.42	ppbv	<6.16	<6.17	ug/m ³
108-38-3 & 106-42-3	m/p-Xylene	<1.42	1.62	ppbv	<6.16	7.02	ug/m ³
95-47-6	o-Xylene	<1.42	<1.42	ppbv	<6.16	<6.17	ug/m ³
91-20-3	Naphthalene	<2.18	<2.18	ppbv	<11.4	<11.4	ug/m ³
-	TPH (C4-C6)	<9.49	354	ppbv	<27.7	1030	ug/m ³
-	TPH (C6-C8)	<9.49	84.6	ppbv	<35.0	312	ug/m ³
-	TPH (C8-C10)	<13.0	47.3	ppbv	<61.5	223	ug/m ³
-	TPH (C10-C12)	<20.1	54.3	ppbv	<117	315	ug/m ³
-	TPH (C4-C12)	<52.1	540	ppbv	<241	1880	ug/m ³
-	Aliphatic (C4-C6)	<9.49	354	ppbv	<27.7	1030	ug/m ³
-	Aliphatic (C6-C8)	<6.84	81.2	ppbv	<25.7	300	ug/m ³
-	Aliphatic (C8-C10)	<3.51	47.3	ppbv	<18.0	223	ug/m ³
-	Aliphatic (C10-C12)	<10.6	54.3	ppbv	<42.7	315	ug/m ³
-	Aromatic (EC5-EC7)	<1.23	1.76	ppbv	<3.92	5.61	ug/m ³
-	Aromatic (EC7-EC8)	<1.42	1.60	ppbv	<5.34	6.02	ug/m ³
-	Aromatic (EC8-EC10)	<9.49	<9.49	ppbv	<43.5	<43.5	ug/m ³
-	Aromatic (EC10-EC12)	<9.49	<9.49	ppbv	<74.3	<74.3	ug/m ³



CERTIFICATE OF ANALYSIS

Validated

SDG: 230705-89
Client Ref.: GWPR5475 2 - 6 Seagull Lan

Report Number: 696276
Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Superseded Report:

Sample Number 28276304

Sample ID WS5

Depth 0.00 - 0.00

Sampled Date 03/07/2023 00:00

- ISO17025 accredited. M - mCERTS accredited. 1-4* - Sample deviation (see appendix)

Method TM335 Determination of TPH in atmospheric, sub-slab and soil gas samples

Canister No. 131 Sample Volume (ml) 160 Initial pressure (psia) 13.18 Final pressure (psia) 19.04 Dilution 1.4446130501

CAS Number	Compound	LOD	Result	Units	LOD	Result	Units
1634-04-4	MTBE	<1.35	<1.35	ppbv	<4.86	<4.87	ug/m ³
71-43-2	Benzene	<1.17	3.11	ppbv	<3.73	9.91	ug/m ³
108-88-3	Toluene	<1.35	4.13	ppbv	<5.08	15.5	ug/m ³
100-41-4	Ethyl Benzene	<1.35	<1.35	ppbv	<5.85	<5.87	ug/m ³
108-38-3 & 106-42-3	m/p-Xylene	<1.35	2.98	ppbv	<5.85	12.9	ug/m ³
95-47-6	o-Xylene	<1.35	1.45	ppbv	<5.85	6.27	ug/m ³
91-20-3	Naphthalene	<2.08	<2.08	ppbv	<10.9	<10.9	ug/m ³
-	TPH (C4-C6)	<9.03	149	ppbv	<26.3	435	ug/m ³
-	TPH (C6-C8)	<9.03	46.7	ppbv	<33.3	172	ug/m ³
-	TPH (C8-C10)	<12.4	116	ppbv	<58.6	549	ug/m ³
-	TPH (C10-C12)	<19.1	75.5	ppbv	<111	438	ug/m ³
-	TPH (C4-C12)	<49.6	387	ppbv	<229	1590	ug/m ³
-	Aliphatic (C4-C6)	<9.03	149	ppbv	<26.3	435	ug/m ³
-	Aliphatic (C6-C8)	<6.51	39.5	ppbv	<24.5	147	ug/m ³
-	Aliphatic (C8-C10)	<3.37	103	ppbv	<17.2	487	ug/m ³
-	Aliphatic (C10-C12)	<10.1	75.5	ppbv	<40.3	438	ug/m ³
-	Aromatic (EC5-EC7)	<1.17	3.11	ppbv	<3.73	9.91	ug/m ³
-	Aromatic (EC7-EC8)	<1.35	4.13	ppbv	<5.08	15.5	ug/m ³
-	Aromatic (EC8-EC10)	<9.03	13.5	ppbv	<41.4	61.8	ug/m ³
-	Aromatic (EC10-EC12)	<9.03	<9.03	ppbv	<70.7	<70.7	ug/m ³



CERTIFICATE OF ANALYSIS

Validated

SDG: 230705-89
Client Ref.: GWPR5475 2 - 6 Seagull Lan

Report Number: 696276
Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Superseded Report:

Sample Number 28276297

Sample ID WS1

Depth 0.00 - 0.00

Sampled Date 03/07/2023 00:00:0

- ISO17025 accredited.

M - mCERTS accredited.

1-4*§@ - Sample deviation (see appendix)

Method TM330

Determination of VOC's in atmospheric, sub-slab and soil gas samples

Canister No. 92

Sample Volume (ml) 5

Dispatch pressure (psia) -0.06 Initial pressure (psia) 13.39 Final pressure (psia) 19.26 Dilution 1.4383868559

CAS Number	Compound	LOD	Result	Units	LOD	Result	Units
71-55-6	1,1,1-Trichloroethane	<43.2	<43.2	# ppbv	<235	<235	# ug/m ³
79-34-5	1,1,2,2-Tetrachloroethane	<43.2	<43.2	3 # ppbv	<297	<297	3 # ug/m ³
79-00-5	1,1,2-Trichloroethane	<43.2	<43.2	# ppbv	<235	<235	# ug/m ³
75-34-3	1,1-Dichloroethane	<43.2	<43.2	# ppbv	<175	<175	# ug/m ³
75-35-4	1,1-Dichloroethene	<43.2	<43.2	# ppbv	<171	<171	# ug/m ³
526-73-8	1,2,3-Trimethylbenzene	<43.2	<43.2	# ppbv	<212	<212	# ug/m ³
120-82-1	1,2,4-Trichlorobenzene	<43.2	<43.2	3 # ppbv	<320	<319	3 # ug/m ³
95-63-6	1,2,4-Trimethylbenzene	<43.2	<43.2	# ppbv	<212	<212	# ug/m ³
106-93-4	1,2-Dibromoethane	<43.2	<43.2	# ppbv	<332	<332	# ug/m ³
95-50-1	1,2-Dichlorobenzene	<43.2	<43.2	3 # ppbv	<260	<259	3 # ug/m ³
107-06-2	1,2-Dichloroethane	<43.2	<43.2	# ppbv	<175	<175	# ug/m ³
78-87-5	1,2-Dichloropropane	<43.2	<43.2	# ppbv	<200	<199	# ug/m ³
76-14-2	1,2-Dichlorotetrafluoroethane	<43.2	<43.2	# ppbv	<302	<302	# ug/m ³
108-67-8	1,3,5-Trimethylbenzene	<43.2	<43.2	# ppbv	<212	<212	# ug/m ³
106-99-0	1,3-Butadiene	<43.2	<43.2	# ppbv	<95.4	<95.3	# ug/m ³
106-46-7	1,4-Dichlorobenzene	<43.2	<43.2	3 # ppbv	<260	<259	3 # ug/m ³
123-91-1	1,4-Dioxane	<43.2	<43.2	ppbv	<155	<155	ug/m ³
71-23-8	1-Propanol	<43.2	<43.2	ppbv	<106	<106	ug/m ³
78-93-3	2-Butanone (MEK)	<43.2	<43.2	# ppbv	<127	<127	# ug/m ³
591-78-6	2-Hexanone	<43.2	<43.2	# ppbv	<177	<176	# ug/m ³
107-87-9	2-Pentanone	<43.2	<43.2	ppbv	<152	<152	ug/m ³
589-38-8	3-Hexanone	<43.2	281	ppbv	<177	1150	ug/m ³
96-22-0	3-Pentanone	<43.2	<43.2	ppbv	<152	<152	ug/m ³
108-10-1	4-Methyl-2-pentanone	<43.2	<43.2	# ppbv	<177	<176	# ug/m ³
67-64-1 & 123-38-6	Acetone + Propanal	<86.3	<86.3	# ppbv	<205	<205	# ug/m ³
75-05-8	Acetonitrile	<43.2	<43.2	ppbv	<72.4	<72.4	ug/m ³
107-02-8	Acrolein	<43.2	<43.2	# ppbv	<98.9	<98.8	# ug/m ³
71-43-2	Benzene	<37.4	<37.4	# ppbv	<119	<119	# ug/m ³
100-44-7	Benzyl Chloride	<43.2	<43.2	3 # ppbv	<224	<224	3 # ug/m ³
75-27-4	Bromodichloromethane	<43.2	<43.2	# ppbv	<290	<289	# ug/m ³
75-25-2	Bromoform	<43.2	<43.2	# ppbv	<447	<447	# ug/m ³
74-83-9	Bromomethane	<43.2	<43.2	3 # ppbv	<168	<168	3 # ug/m ³
123-72-8	Butanal	<43.2	<43.2	ppbv	<127	<127	ug/m ³
75-15-0	Carbon Disulfide	<43.2	375	# ppbv	<134	1170	# ug/m ³
56-23-5	Carbon Tetrachloride	<43.2	<43.2	# ppbv	<272	<272	# ug/m ³
108-90-7	Chlorobenzene	<43.2	<43.2	# ppbv	<200	<199	# ug/m ³
75-00-3	Chloroethane	<43.2	<43.2	# ppbv	<115	<115	# ug/m ³
67-66-3	Chloroform	<43.2	<43.2	# ppbv	<210	<210	# ug/m ³
74-87-3	Chloromethane	<43.2	<43.2	# ppbv	<88.3	<88.2	# ug/m ³
156-59-2	cis-1,2-Dichloroethene	<43.2	<43.2	# ppbv	<171	<171	# ug/m ³
10061-01-5	cis-1,3-Dichloropropene	<43.2	<43.2	# ppbv	<196	<196	# ug/m ³
110-82-7	Cyclohexane	<43.2	382	# ppbv	<148	1310	# ug/m ³
75-71-8	Dichlorodifluoromethane	<43.2	<43.2	# ppbv	<214	<214	# ug/m ³
75-45-6	Difluorochloromethane	<43.2	<43.2	ppbv	<152	<152	ug/m ³
100-41-4	Ethylbenzene	<43.2	113	# ppbv	<187	490	# ug/m ³
87-68-3	Hexachlorobutadiene	<43.2	<43.2	ppbv	<459	<459	ug/m ³



CERTIFICATE OF ANALYSIS

Validated

SDG: 230705-89
Client Ref.: GWPR5475 2 - 6 Seagull Lan

Report Number: 696276
Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Superseded Report:

Sample Number 28276297

Sample ID WS1

Depth 0.00 - 0.00

Sampled Date 03/07/2023 00:00:0

- ISO17025 accredited.

M - mCERTS accredited.

1-4*§@ - Sample deviation (see appendix)

Method TM330

Determination of VOC's in atmospheric, sub-slab and soil gas samples

Canister No. 92

Sample Volume (ml) 5

Dispatch pressure (psia) -0.06 Initial pressure (psia) 13.39 Final pressure (psia) 19.26 Dilution 1.4383868559

CAS Number	Compound	LOD	Result	Units	LOD	Result	Units
66-25-1	Hexanal	<43.2	<43.2	# ppbv	<177	<176	# ug/m ³
110-54-3	Hexane	<43.2	153	# ppbv	<152	538	# ug/m ³
74-88-4	Iodomethane	<43.2	<43.2	ppbv	<251	<251	ug/m ³
115-11-7	Isobutene	<43.2	2340	ppbv	<98.9	5360	ug/m ³
78-79-5	Isoprene	<43.2	<43.2	ppbv	<120	<120	ug/m ³
108-38-3 & 106-42-3	m/p-Xylene	<86.3	110	# ppbv	<374	478	# ug/m ³
78-85-3	Methylacrolein	<43.2	<43.2	ppbv	<124	<124	ug/m ³
75-09-2	Methylene Chloride	<43.2	<43.2	# ppbv	<150	<150	# ug/m ³
1634-04-4	MTBE	<43.2	<43.2	# ppbv	<155	<155	# ug/m ³
91-20-3	Naphthalene	<43.2	<43.2	ppbv	<226	<226	ug/m ³
95-47-6	o-Xylene	<43.2	50.5	# ppbv	<187	219	# ug/m ³
110-62-3	Pentanal	<43.2	<43.2	ppbv	<152	<152	ug/m ³
109-66-0	Pentane	<43.2	369	ppbv	<127	1090	ug/m ³
100-42-5	Styrene	<43.2	727	# ppbv	<184	3090	# ug/m ³
127-18-4	Tetrachloroethene	<43.2	<43.2	# ppbv	<293	<293	# ug/m ³
TIC's		See Attached					
108-88-3	Toluene	<43.2	64.3	# ppbv	<163	242	# ug/m ³
156-60-5	trans-1,2-Dichloroethene	<43.2	<43.2	# ppbv	<171	<171	# ug/m ³
1006-02-6	trans-1,3-Dichloropropene	<43.2	<43.2	# ppbv	<196	<196	# ug/m ³
79-01-6	Trichloroethene	<43.2	<43.2	# ppbv	<231	<231	# ug/m ³
75-69-4	Trichlorofluoromethane	<43.2	<43.2	# ppbv	<242	<242	# ug/m ³
26523-64-8	Trichlorotrifluoroethane	<43.2	<43.2	# ppbv	<330	<330	# ug/m ³
108-05-4	Vinyl Acetate	<43.2	<43.2	# ppbv	<152	<152	# ug/m ³
75-01-4	Vinyl Chloride	<43.2	<43.2	# ppbv	<110	<109	# ug/m ³



CERTIFICATE OF ANALYSIS

Validated

SDG: 230705-89
Client Ref.: GWPR5475 2 - 6 Seagull Lan

Report Number: 696276
Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Superseded Report:

Sample Number 28276301

Sample ID WS3

Depth 0.00 - 0.00

Sampled Date 03/07/2023 00:00:0

- ISO17025 accredited. M - mCERTS accredited. 1-4*§@ - Sample deviation (see appendix)

Method TM330 Determination of VOC's in atmospheric, sub-slab and soil gas samples

Canister No. 331

Sample Volume (ml) 160 Dispatch pressure (psia) -0.10 Initial pressure (psia) 12.54 Final pressure (psia) 18.92 Dilution 1.5087719298

CAS Number	Compound	LOD	Result	Units	LOD	Result	Units
71-55-6	1,1,1-Trichloroethane	<1.41	<1.41	# ppbv	<7.67	<7.69	# ug/m ³
79-34-5	1,1,2,2-Tetrachloroethane	<1.41	<1.41	3 # ppbv	<9.69	<9.72	3 # ug/m ³
79-00-5	1,1,2-Trichloroethane	<1.41	<1.41	# ppbv	<7.67	<7.69	# ug/m ³
75-34-3	1,1-Dichloroethane	<1.41	<1.41	# ppbv	<5.71	<5.73	# ug/m ³
75-35-4	1,1-Dichloroethene	<1.41	<1.41	# ppbv	<5.59	<5.61	# ug/m ³
526-73-8	1,2,3-Trimethylbenzene	<1.41	<1.41	# ppbv	<6.92	<6.94	# ug/m ³
120-82-1	1,2,4-Trichlorobenzene	<1.41	<1.41	3 # ppbv	<10.4	<10.5	3 # ug/m ³
95-63-6	1,2,4-Trimethylbenzene	<1.41	1.50	3 # ppbv	<6.92	7.38	3 # ug/m ³
106-93-4	1,2-Dibromoethane	<1.41	<1.41	# ppbv	<10.8	<10.9	# ug/m ³
95-50-1	1,2-Dichlorobenzene	<1.41	<1.41	3 # ppbv	<8.48	<8.50	3 # ug/m ³
107-06-2	1,2-Dichloroethane	<1.41	<1.41	# ppbv	<5.71	<5.73	# ug/m ³
78-87-5	1,2-Dichloropropane	<1.41	<1.41	# ppbv	<6.52	<6.54	# ug/m ³
76-14-2	1,2-Dichlorotetrafluoroethane	<1.41	<1.41	# ppbv	<9.86	<9.89	# ug/m ³
108-67-8	1,3,5-Trimethylbenzene	<1.41	<1.41	3 # ppbv	<6.92	<6.94	3 # ug/m ³
106-99-0	1,3-Butadiene	<1.41	<1.41	# ppbv	<3.11	<3.12	# ug/m ³
106-46-7	1,4-Dichlorobenzene	<1.41	<1.41	3 # ppbv	<8.48	<8.50	3 # ug/m ³
123-91-1	1,4-Dioxane	<1.41	<1.41	ppbv	<5.07	<5.09	ug/m ³
71-23-8	1-Propanol	<1.41	<1.41	ppbv	<3.46	<3.47	ug/m ³
78-93-3	2-Butanone (MEK)	<1.41	<1.41	# ppbv	<4.15	<4.17	# ug/m ³
591-78-6	2-Hexanone	<1.41	<1.41	# ppbv	<5.77	<5.79	# ug/m ³
107-87-9	2-Pentanone	<1.41	<1.41	ppbv	<4.96	<4.98	ug/m ³
589-38-8	3-Hexanone	<1.41	<1.41	ppbv	<5.77	<5.79	ug/m ³
96-22-0	3-Pentanone	<1.41	<1.41	ppbv	<4.96	<4.98	ug/m ³
108-10-1	4-Methyl-2-pentanone	<1.41	<1.41	# ppbv	<5.77	<5.79	# ug/m ³
67-64-1 & 123-38-6	Acetone + Propanal	<2.83	23.1	# ppbv	<6.71	54.8	# ug/m ³
75-05-8	Acetonitrile	<1.41	<1.41	ppbv	<2.36	<2.37	ug/m ³
107-02-8	Acrolein	<1.41	<1.41	# ppbv	<3.23	<3.24	# ug/m ³
71-43-2	Benzene	<1.23	1.56	# ppbv	<3.92	4.99	# ug/m ³
100-44-7	Benzyl Chloride	<1.41	<1.41	3 # ppbv	<7.32	<7.35	3 # ug/m ³
75-27-4	Bromodichloromethane	<1.41	<1.41	# ppbv	<9.46	<9.49	# ug/m ³
75-25-2	Bromoform	<1.41	<1.41	# ppbv	<14.6	<14.6	# ug/m ³
74-83-9	Bromomethane	<1.41	<1.41	3 # ppbv	<5.48	<5.50	3 # ug/m ³
123-72-8	Butanal	<1.41	<1.41	ppbv	<4.15	<4.17	ug/m ³
75-15-0	Carbon Disulfide	<1.41	82.2	# ppbv	<4.38	256	# ug/m ³
56-23-5	Carbon Tetrachloride	<1.41	<1.41	# ppbv	<8.88	<8.91	# ug/m ³
108-90-7	Chlorobenzene	<1.41	<1.41	3 # ppbv	<6.52	<6.54	3 # ug/m ³
75-00-3	Chloroethane	<1.41	<1.41	# ppbv	<3.75	<3.76	# ug/m ³
67-66-3	Chloroform	<1.41	<1.41	# ppbv	<6.86	<6.88	# ug/m ³
74-87-3	Chloromethane	<1.41	<1.41	# ppbv	<2.88	<2.89	# ug/m ³
156-59-2	cis-1,2-Dichloroethene	<1.41	<1.41	# ppbv	<5.59	<5.61	# ug/m ³
10061-01-5	cis-1,3-Dichloropropene	<1.41	<1.41	# ppbv	<6.40	<6.42	# ug/m ³
110-82-7	Cyclohexane	<1.41	<1.41	# ppbv	<4.84	<4.86	# ug/m ³
75-71-8	Dichlorodifluoromethane	<1.41	<1.41	# ppbv	<6.98	<7.00	# ug/m ³
75-45-6	Difluorochloromethane	<1.41	<1.41	ppbv	<4.96	<4.98	ug/m ³
100-41-4	Ethylbenzene	<1.41	<1.41	3 # ppbv	<6.11	<6.13	3 # ug/m ³
87-68-3	Hexachlorobutadiene	<1.41	<1.41	ppbv	<15.0	<15.0	ug/m ³



CERTIFICATE OF ANALYSIS

Validated

SDG: 230705-89
Client Ref.: GWPR5475 2 - 6 Seagull Lan

Report Number: 696276
Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Superseded Report:

Sample Number 28276301

Sample ID WS3

Depth 0.00 - 0.00

Sampled Date 03/07/2023 00:00:0

- ISO17025 accredited.

M - mCERTS accredited.

1-4*§@ - Sample deviation (see appendix)

Method TM330

Determination of VOC's in atmospheric, sub-slab and soil gas samples

Canister No. 331

Sample Volume (ml) 160

Dispatch pressure (psia) -0.10 Initial pressure (psia) 12.54 Final pressure (psia) 18.92 Dilution 1.5087719298

CAS Number	Compound	LOD	Result	Units	LOD	Result	Units
66-25-1	Hexanal	<1.41	<1.41	# ppbv	<5.77	<5.79	# ug/m ³
110-54-3	Hexane	<1.41	<1.41	# ppbv	<4.96	<4.98	# ug/m ³
74-88-4	Iodomethane	<1.41	<1.41	ppbv	<8.19	<8.21	ug/m ³
115-11-7	Isobutene	<1.41	<1.41	ppbv	<3.23	<3.24	ug/m ³
78-79-5	Isoprene	<1.41	<1.41	ppbv	<3.92	<3.93	ug/m ³
108-38-3 & 106-42-3	m/p-Xylene	<2.83	<2.83	# ppbv	<12.3	<12.3	# ug/m ³
78-85-3	Methylacrolein	<1.41	<1.41	ppbv	<4.04	<4.05	ug/m ³
75-09-2	Methylene Chloride	<1.41	<1.41	# ppbv	<4.90	<4.92	# ug/m ³
1634-04-4	MTBE	<1.41	<1.41	# ppbv	<5.07	<5.09	# ug/m ³
91-20-3	Naphthalene	<1.41	2.43	ppbv	<7.38	12.7	ug/m ³
95-47-6	o-Xylene	<1.41	<1.41	# ppbv	<6.11	<6.13	# ug/m ³
110-62-3	Pentanal	<1.41	<1.41	ppbv	<4.96	<4.98	ug/m ³
109-66-0	Pentane	<1.41	<1.41	ppbv	<4.15	<4.17	ug/m ³
100-42-5	Styrene	<1.41	4.91	3 # ppbv	<6.00	20.9	3 # ug/m ³
127-18-4	Tetrachloroethene	<1.41	<1.41	3 # ppbv	<9.57	<9.60	3 # ug/m ³
TIC's		See Attached					
108-88-3	Toluene	<1.41	1.70	# ppbv	<5.31	6.40	# ug/m ³
156-60-5	trans-1,2-Dichloroethene	<1.41	<1.41	# ppbv	<5.59	<5.61	# ug/m ³
1006-02-6	trans-1,3-Dichloropropene	<1.41	<1.41	# ppbv	<6.40	<6.42	# ug/m ³
79-01-6	Trichloroethene	<1.41	<1.41	# ppbv	<7.55	<7.58	# ug/m ³
75-69-4	Trichlorofluoromethane	<1.41	<1.41	# ppbv	<7.90	<7.93	# ug/m ³
26523-64-8	Trichlorotrifluoroethane	<1.41	<1.41	# ppbv	<10.8	<10.8	# ug/m ³
108-05-4	Vinyl Acetate	<1.41	<1.41	# ppbv	<4.96	<4.98	# ug/m ³
75-01-4	Vinyl Chloride	<1.41	<1.41	# ppbv	<3.58	<3.59	# ug/m ³



CERTIFICATE OF ANALYSIS

Validated

SDG: 230705-89
Client Ref.: GWPR5475 2 - 6 Seagull Lan

Report Number: 696276
Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Superseded Report:

Sample Number 28276304

Sample ID WS5

Depth 0.00 - 0.00

Sampled Date 03/07/2023 00:00:0

- ISO17025 accredited. M - mCERTS accredited. 1-4*§@ - Sample deviation (see appendix)

Method TM330 Determination of VOC's in atmospheric, sub-slab and soil gas samples

Canister No. 131

Sample Volume (ml) 160 Dispatch pressure (psia) -0.09 Initial pressure (psia) 13.18 Final pressure (psia) 19.04 Dilution 1.4446130501

CAS Number	Compound	LOD	Result	Units	LOD	Result	Units
71-55-6	1,1,1-Trichloroethane	<1.35	<1.35	# ppbv	<7.34	<7.37	# ug/m ³
79-34-5	1,1,2,2-Tetrachloroethane	<1.35	<1.35	3 # ppbv	<9.28	<9.31	3 # ug/m ³
79-00-5	1,1,2-Trichloroethane	<1.35	<1.35	# ppbv	<7.34	<7.37	# ug/m ³
75-34-3	1,1-Dichloroethane	<1.35	1.77	# ppbv	<5.47	7.17	# ug/m ³
75-35-4	1,1-Dichloroethene	<1.35	<1.35	# ppbv	<5.36	<5.37	# ug/m ³
526-73-8	1,2,3-Trimethylbenzene	<1.35	<1.35	# ppbv	<6.63	<6.65	# ug/m ³
120-82-1	1,2,4-Trichlorobenzene	<1.35	<1.35	3 # ppbv	<9.99	<10.0	3 # ug/m ³
95-63-6	1,2,4-Trimethylbenzene	<1.35	<1.35	3 # ppbv	<6.63	<6.65	3 # ug/m ³
106-93-4	1,2-Dibromoethane	<1.35	<1.35	# ppbv	<10.4	<10.4	# ug/m ³
95-50-1	1,2-Dichlorobenzene	<1.35	<1.35	3 # ppbv	<8.12	<8.14	3 # ug/m ³
107-06-2	1,2-Dichloroethane	<1.35	<1.35	# ppbv	<5.47	<5.48	# ug/m ³
78-87-5	1,2-Dichloropropane	<1.35	<1.35	# ppbv	<6.24	<6.26	# ug/m ³
76-14-2	1,2-Dichlorotetrafluoroethane	<1.35	<1.35	# ppbv	<9.44	<9.47	# ug/m ³
108-67-8	1,3,5-Trimethylbenzene	<1.35	<1.35	3 # ppbv	<6.63	<6.65	3 # ug/m ³
106-99-0	1,3-Butadiene	<1.35	<1.35	# ppbv	<2.98	<2.99	# ug/m ³
106-46-7	1,4-Dichlorobenzene	<1.35	<1.35	3 # ppbv	<8.12	<8.14	3 # ug/m ³
123-91-1	1,4-Dioxane	<1.35	<1.35	ppbv	<4.86	<4.87	ug/m ³
71-23-8	1-Propanol	<1.35	<1.35	ppbv	<3.31	<3.32	ug/m ³
78-93-3	2-Butanone (MEK)	<1.35	<1.35	# ppbv	<3.98	<3.99	# ug/m ³
591-78-6	2-Hexanone	<1.35	<1.35	# ppbv	<5.52	<5.54	# ug/m ³
107-87-9	2-Pentanone	<1.35	<1.35	ppbv	<4.75	<4.76	ug/m ³
589-38-8	3-Hexanone	<1.35	<1.35	ppbv	<5.52	<5.54	ug/m ³
96-22-0	3-Pentanone	<1.35	<1.35	ppbv	<4.75	<4.76	ug/m ³
108-10-1	4-Methyl-2-pentanone	<1.35	<1.35	# ppbv	<5.52	<5.54	# ug/m ³
67-64-1 & 123-38-6	Acetone + Propanal	<2.71	16.4	# ppbv	<6.43	38.8	# ug/m ³
75-05-8	Acetonitrile	<1.35	<1.35	ppbv	<2.26	<2.27	ug/m ³
107-02-8	Acrolein	<1.35	<1.35	# ppbv	<3.09	<3.10	# ug/m ³
71-43-2	Benzene	<1.17	2.77	# ppbv	<3.73	8.82	# ug/m ³
100-44-7	Benzyl Chloride	<1.35	<1.35	3 # ppbv	<7.01	<7.03	3 # ug/m ³
75-27-4	Bromodichloromethane	<1.35	<1.35	# ppbv	<9.06	<9.08	# ug/m ³
75-25-2	Bromoform	<1.35	<1.35	# ppbv	<14.0	<14.0	# ug/m ³
74-83-9	Bromomethane	<1.35	<1.35	3 # ppbv	<5.25	<5.26	3 # ug/m ³
123-72-8	Butanal	<1.35	<1.35	ppbv	<3.98	<3.99	ug/m ³
75-15-0	Carbon Disulfide	<43.3	106	# ppbv	<135	329	# ug/m ³
56-23-5	Carbon Tetrachloride	<1.35	<1.35	# ppbv	<8.50	<8.53	# ug/m ³
108-90-7	Chlorobenzene	<1.35	<1.35	3 # ppbv	<6.24	<6.26	3 # ug/m ³
75-00-3	Chloroethane	<1.35	<1.35	# ppbv	<3.59	<3.60	# ug/m ³
67-66-3	Chloroform	<1.35	<1.35	# ppbv	<6.57	<6.59	# ug/m ³
74-87-3	Chloromethane	<1.35	<1.35	# ppbv	<2.76	<2.77	# ug/m ³
156-59-2	cis-1,2-Dichloroethene	<1.35	<1.35	# ppbv	<5.36	<5.37	# ug/m ³
10061-01-5	cis-1,3-Dichloropropene	<1.35	<1.35	# ppbv	<6.13	<6.15	# ug/m ³
110-82-7	Cyclohexane	<1.35	<1.35	# ppbv	<4.64	<4.65	# ug/m ³
75-71-8	Dichlorodifluoromethane	<1.35	<1.35	# ppbv	<6.68	<6.70	# ug/m ³
75-45-6	Difluorochloromethane	<1.35	<1.35	ppbv	<4.75	<4.76	ug/m ³
100-41-4	Ethylbenzene	<1.35	<1.35	3 # ppbv	<5.85	<5.87	3 # ug/m ³
87-68-3	Hexachlorobutadiene	<1.35	<1.35	ppbv	<14.4	<14.4	ug/m ³



CERTIFICATE OF ANALYSIS

Validated

SDG: 230705-89
Client Ref.: GWPR5475 2 - 6 Seagull Lan

Report Number: 696276
Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Superseded Report:

Sample Number 28276304

Sample ID WS5

Depth 0.00 - 0.00

Sampled Date 03/07/2023 00:00:0

- ISO17025 accredited. M - mCERTS accredited. 1-4*§@ - Sample deviation (see appendix)

Method TM330 Determination of VOC's in atmospheric, sub-slab and soil gas samples

Canister No. 131

Sample Volume (ml) 160 Dispatch pressure (psia) -0.09 Initial pressure (psia) 13.18 Final pressure (psia) 19.04 Dilution 1.4446130501

CAS Number	Compound	LOD	Result	Units	LOD	Result	Units
66-25-1	Hexanal	<1.35	<1.35	# ppbv	<5.52	<5.54	# ug/m ³
110-54-3	Hexane	<1.35	4.95	# ppbv	<4.75	17.4	# ug/m ³
74-88-4	Iodomethane	<1.35	<1.35	ppbv	<7.84	<7.87	ug/m ³
115-11-7	Isobutene	<1.35	18.0	ppbv	<3.09	41.3	ug/m ³
78-79-5	Isoprene	<1.35	<1.35	ppbv	<3.75	<3.77	ug/m ³
108-38-3 & 106-42-3	m/p-Xylene	<2.71	3.68	# ppbv	<11.7	16.0	# ug/m ³
78-85-3	Methylacrolein	<1.35	<1.35	ppbv	<3.87	<3.88	ug/m ³
75-09-2	Methylene Chloride	<1.35	<1.35	# ppbv	<4.69	<4.71	# ug/m ³
1634-04-4	MTBE	<1.35	<1.35	# ppbv	<4.86	<4.87	# ug/m ³
91-20-3	Naphthalene	<1.35	<1.35	ppbv	<7.07	<7.09	ug/m ³
95-47-6	o-Xylene	<1.35	1.67	# ppbv	<5.85	7.25	# ug/m ³
110-62-3	Pentanal	<1.35	<1.35	ppbv	<4.75	<4.76	ug/m ³
109-66-0	Pentane	<1.35	1.44	ppbv	<3.98	4.23	ug/m ³
100-42-5	Styrene	<1.35	3.70	3 # ppbv	<5.74	15.7	3 # ug/m ³
127-18-4	Tetrachloroethene	<1.35	<1.35	3 # ppbv	<9.17	<9.20	3 # ug/m ³
TIC's		See Attached					
108-88-3	Toluene	<1.35	4.65	# ppbv	<5.08	17.5	# ug/m ³
156-60-5	trans-1,2-Dichloroethene	<1.35	<1.35	# ppbv	<5.36	<5.37	# ug/m ³
1006-02-6	trans-1,3-Dichloropropene	<1.35	<1.35	# ppbv	<6.13	<6.15	# ug/m ³
79-01-6	Trichloroethene	<1.35	1.73	# ppbv	<7.23	9.26	# ug/m ³
75-69-4	Trichlorofluoromethane	<1.35	<1.35	# ppbv	<7.56	<7.59	# ug/m ³
26523-64-8	Trichlorotrifluoroethane	<1.35	<1.35	# ppbv	<10.3	<10.4	# ug/m ³
108-05-4	Vinyl Acetate	<1.35	<1.35	# ppbv	<4.75	<4.76	# ug/m ³
75-01-4	Vinyl Chloride	<1.35	<1.35	# ppbv	<3.42	<3.43	# ug/m ³



CERTIFICATE OF ANALYSIS

Validated

SDG: 230705-89 Report Number: 696276 Superseded Report:
Client Ref.: GWPR5475 2 - 6 Seagull Lan Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Table of Results - Appendix

Method No	Description
TM053	Determination of Bulk Gas Composition
TM335	TPH in atmospheric, sub-slab and soil gas samples
TM216	The Determination of Odourant Compounds in Gases by Gas Chromatography with PFPD Detection
TM330	Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230705-89

Report Number: 696276

Superseded Report:

Client Ref.: GWPR5475 2 - 6 Seagull Lan

Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Test Completion Dates

Lab Sample No(s)	28276297	28276301	28276304
Customer Sample Ref.	WS1	WS3	WS5
AGS Ref.			
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Gas (G)	Gas (G)	Gas (G)
Bulk Gas	13-Jul-2023	13-Jul-2023	13-Jul-2023
Odourant Gas Analysis (G)	13-Jul-2023	13-Jul-2023	13-Jul-2023
TPH in Gas samples	11-Jul-2023	11-Jul-2023	11-Jul-2023
VOC's	11-Jul-2023	11-Jul-2023	11-Jul-2023



VOC TENTATIVELY IDENTIFIED COMPOUNDS REPORT

JOB NUMBER:	230705-89
SAMPLE IDENTITY:	WS1
DATE REPORTED:	10/07/2023
ANALYST:	dj

TENTATIVE COMPOUND IDENTIFICATION		RESULT (ppbv)	RESULT (µg/m3)
1	isobutane	1692	4018
2	ethanol	3345	6302
3	3-methyl-pentane	1262	4446
4	methyl-cyclohexane	2439	9789
5	1,2,4-trimethyl-cyclopentane	1057	4846
6	1,2-dimethyl-cyclohexane	753	3451
7	mixed hydrocarbons	755	
8	2,6-dimethyl-octane	1033	6006
9	4-methyl-decane	437	2793
10	trans-decahydro-naphthalene	314	1773.5

Tentatively Identified Compounds (TICs) are non-target peaks in the VOC air analysis. All non-target peaks detected with a concentration above the LoD of 10ppbv are subjected to a mass spectral library search. Non-target peaks with a **Library Search Confidence of >75%** are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as **“Mixed Hydrocarbons”**. Non-target compounds identified from the scan data are semi-quantified relative to one of the internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as a Tentatively Identified Compound (TIC). TICs are outside the scope of our UKAS accreditation.



VOC TENTATIVELY IDENTIFIED COMPOUNDS REPORT

JOB NUMBER:	230705-89
SAMPLE IDENTITY:	WS3
DATE REPORTED:	10/07/2023
ANALYST:	dj

TENTATIVE COMPOUND IDENTIFICATION		RESULT (ppbv)	RESULT (µg/m3)
1	propane	960	1730
2	isobutane	361	857
3	butane	48	113
4	mixed hydrocarbons	63	
5	1-butanol	12	36
6	1-methoxy-2-propanol	71	263
7	undecane	21	137
8	mixed hydrocarbons	25	
9	dodecane	20	138
10			

Tentatively Identified Compounds (TICs) are non-target peaks in the VOC air analysis. All non-target peaks detected with a concentration above the LoD of 10ppbv are subjected to a mass spectral library search. Non-target peaks with a **Library Search Confidence of >75%** are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as **“Mixed Hydrocarbons”**. Non-target compounds identified from the scan data are semi-quantified relative to one of the internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as a Tentatively Identified Compound (TIC). TICs are outside the scope of our UKAS accreditation.



VOC TENTATIVELY IDENTIFIED COMPOUNDS REPORT

JOB NUMBER:	230705-89
SAMPLE IDENTITY:	WS5
DATE REPORTED:	10/07/2023
ANALYST:	dj

TENTATIVE COMPOUND IDENTIFICATION		RESULT (ppbv)	RESULT (µg/m3)
1	2-methyl-furan	17	58
2	1,2-ethanediol	18	45
3	mixed hydrocarbons	57	
4	trans-decahydro-naphthalene	17	97
5	dodecane	13	94
6			
7			
8			
9			
10			

Tentatively Identified Compounds (TICs) are non-target peaks in the VOC air analysis. All non-target peaks detected with a concentration above the LoD of 10ppbv are subjected to a mass spectral library search. Non-target peaks with a **Library Search Confidence of >75%** are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as **“Mixed Hydrocarbons”**. Non-target compounds identified from the scan data are semi-quantified relative to one of the internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as a Tentatively Identified Compound (TIC). TICs are outside the scope of our UKAS accreditation.



CERTIFICATE OF ANALYSIS

SDG: 230705-89

Report Number: 696276

Superseded Report:

Client Ref: GWPR5475 2 - 6 Seagull

Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Ground and Water Ltd
Head Office
2 The Long Barn
Norton Farm, Selborne Road
Alton
Hampshire
GU34 3NB

Attention: Alex Stratford

CERTIFICATE OF ANALYSIS

Date of report Generation:	21 July 2023
Customer:	Ground and Water Ltd
Sample Delivery Group (SDG):	230718-37
Your Reference:	GWPR5475 2 - 6 Seagull Lane, Emsworth, PO10 7QH
Location:	2 - 6 Seagull Lane, Emsworth PO10 7QH
Report No:	697246
Order Number:	GWPR5475

We received 3 samples on Friday July 14, 2023 and 3 of these samples were scheduled for analysis which was completed on Friday July 21, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

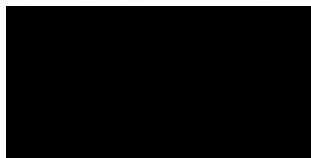
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager



CERTIFICATE OF ANALYSIS

Validated

SDG: 230718-37 Report Number: 697246 Superseded Report:
Client Ref.: GWPR5475 2 - 6 Seagull Lan Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28344040	WS1		0.00 - 0.00	13/07/2023
28344048	WS3		0.00 - 0.00	13/07/2023
28344055	WS5		0.00 - 0.00	13/07/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230718-37

Report Number: 697246

Superseded Report:

Client Ref.: GWPR5475 2 - 6 Seagull Lan

Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

28344055
28344048
28344040

Customer
Sample Reference

WS5
WS3
WS1

AGS Reference

Depth (m)

0.00 - 0.00
0.00 - 0.00
0.00 - 0.00

Container

Vial (ALE297)
Vial (ALE297)
Vial (ALE297)

Sample Type

GW
GW
GW

Determination of Dissolved Gases

All

NDPs: 0
Tests: 3

X X X

SDG: 230718-37

Report Number: 697246

Superseded Report:

Client Ref.: GWPR5475 2 - 6 Seagull Lan

Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 230718-37 Report Number: 697246 Superseded Report:
Client Ref.: GWPR5475 2 - 6 Seagull Lan Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Table of Results - Appendix

Method No	Description
TM223	Determination of Dissolved C1-7 Hydrocarbon gases in waters

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230718-37

Report Number: 697246

Superseded Report:

Client Ref.: GWPR5475 2 - 6 Seagull Lan

Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Test Completion Dates

Lab Sample No(s)	28344040	28344048	28344055
Customer Sample Ref.	WS1	WS3	WS5
AGS Ref.			
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water
Determination of Dissolved Gases	21-Jul-2023	21-Jul-2023	21-Jul-2023



CERTIFICATE OF ANALYSIS

SDG: 230718-37

Report Number: 697246

Superseded Report:

Client Ref: GWPR5475 2 - 6 Seagull

Location: 2 - 6 Seagull Lane, Emsworth PO10 7QH

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Units 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Ground and Water Ltd
Head Office
2 The Long Barn
Norton Farm, Selborne Road
Alton
Hampshire
GU34 3NB

Attention: Robert Terrell

CERTIFICATE OF ANALYSIS

Date of report Generation:	28 March 2025
Customer:	Ground and Water Ltd
Sample Delivery Group (SDG):	250307-62
Your Reference:	GWPR6407
Location:	2 - 6 Seagull Lane, Emsworth, Hampshire PO1
Report No:	760489
Order Number:	GWPR6407

We received 3 samples on Friday March 07, 2025 and 3 of these samples were scheduled for analysis which was completed on Friday March 21, 2025. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Justin Keeton

Business Unit Leader - Land



1291



CERTIFICATE OF ANALYSIS

Validated

SDG: 250307-62
Client Ref.: GWPR6407

Report Number: 760489

Superseded Report:
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
31177934	WS1		0.00 - 0.00	05/03/2025
31177942	WS2		0.00 - 0.00	05/03/2025
31177950	WS3		0.00 - 0.00	05/03/2025

Only received samples which have had analysis scheduled will be shown on the following pages.

SDG: 250307-62
Client Ref.: GWPR6407

Report Number: 760489

Superseded Report:

Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7OH

[illegible]

SDG: 250307-62
Client Ref.: GWPR6407

Report Number: 760489

Superseded Report:

Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

[illegible]

SDG: 250307-62
Client Ref.: GWPR6407

Report Number: 760489

Superseded Report:

Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7OH

PAH Spec MS - Aqueous (W)

[illegible]

SDG: 250307-62
Client Ref.: GWPR6407

TPH CWG (W)

[illegible]



Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7OH



CERTIFICATE OF ANALYSIS

Validated

SDG: 250307-62
Client Ref.: GWPR6407

Report Number: 760489

Superseded Report:
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

Table of Results - Appendix

Method No	Description
TM152	Analysis of Aqueous Samples by ICP-MS
TM208	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM241	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	Determination of GRO by Headspace in waters
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM178	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM439	Determination of Extractable Petroleum Hydrocarbons (EPH) CWG banding by GC-FID on liquids

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 250307-62
Client Ref.: GWPR6407

Report Number: 760489

Superseded Report:
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

Test Completion Dates

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.

Depth

Type

31177934	31177942	31177950
WS1	WS2	WS3
0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Ground Water	Ground Water	Ground Water
Anions by Kone (w)	10-Mar-2025	10-Mar-2025
Cyanide Comp/Free/Total/Thiocyanate	11-Mar-2025	11-Mar-2025
EPH and CWG by FID	12-Mar-2025	12-Mar-2025
GRO by GC-FID (W)	10-Mar-2025	10-Mar-2025
Hexavalent Chromium (w)	11-Mar-2025	11-Mar-2025
Mercury Unfiltered	20-Mar-2025	20-Mar-2025
PAH Spec MS - Aqueous (W)	14-Mar-2025	12-Mar-2025
pH Value	12-Mar-2025	12-Mar-2025
Phenols by HPLC (W)	11-Mar-2025	11-Mar-2025
Total Metals by ICP-MS	20-Mar-2025	21-Mar-2025
TPH CWG (W)	12-Mar-2025	12-Mar-2025
VOC MS (W)	10-Mar-2025	10-Mar-2025



CERTIFICATE OF ANALYSIS

Validated

SDG: 250307-62
Client Ref.: GWPR6407

Report Number: 760489
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

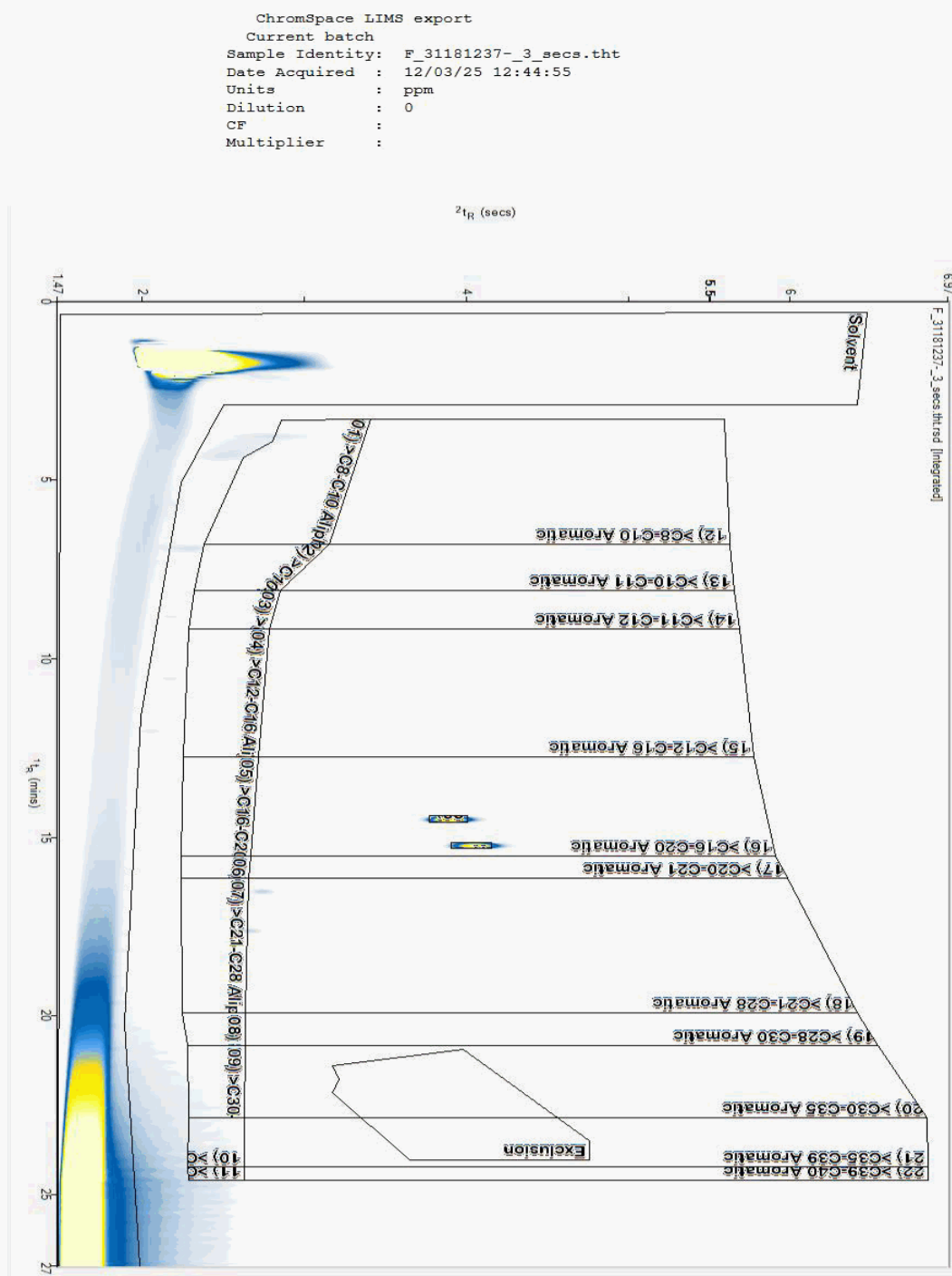
Superseded Report:

Chromatogram

Analysis: EPH and CWG by FID

Sample No : 31181237
Sample ID : WS2

Depth : 0.00 - 0.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 250307-62
Client Ref.: GWPR6407

Report Number: 760489
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

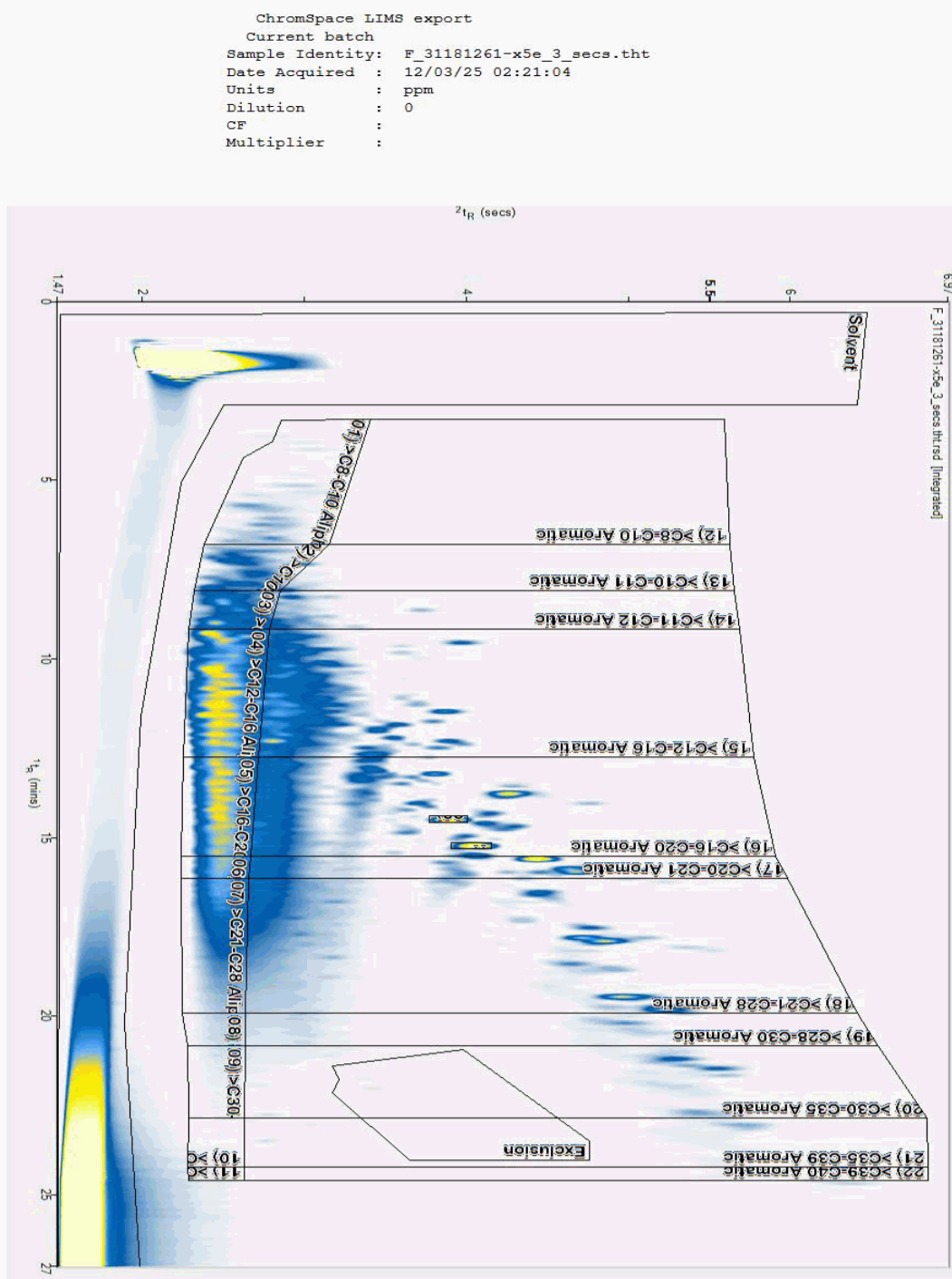
Superseded Report:

Chromatogram

Analysis: EPH and CWG by FID

Sample No : 31181261
Sample ID : WS3

Depth : 0.00 - 0.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 250307-62
Client Ref.: GWPR6407

Report Number: 760489
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

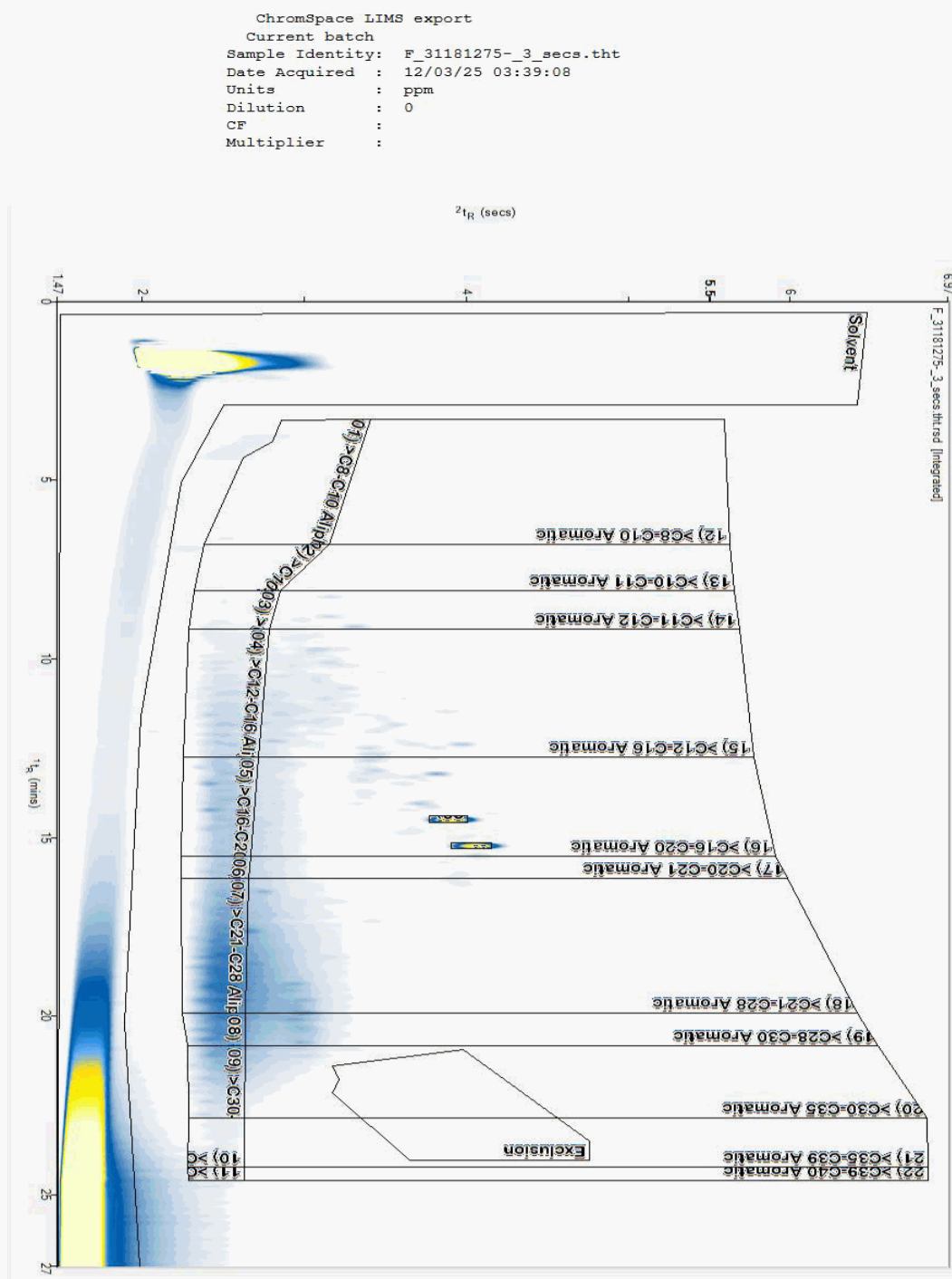
Superseded Report:

Chromatogram

Analysis: EPH and CWG by FID

Sample No : 31181275
Sample ID : WS1

Depth : 0.00 - 0.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 250307-62
Client Ref.: GWPR6407

Report Number: 760489
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

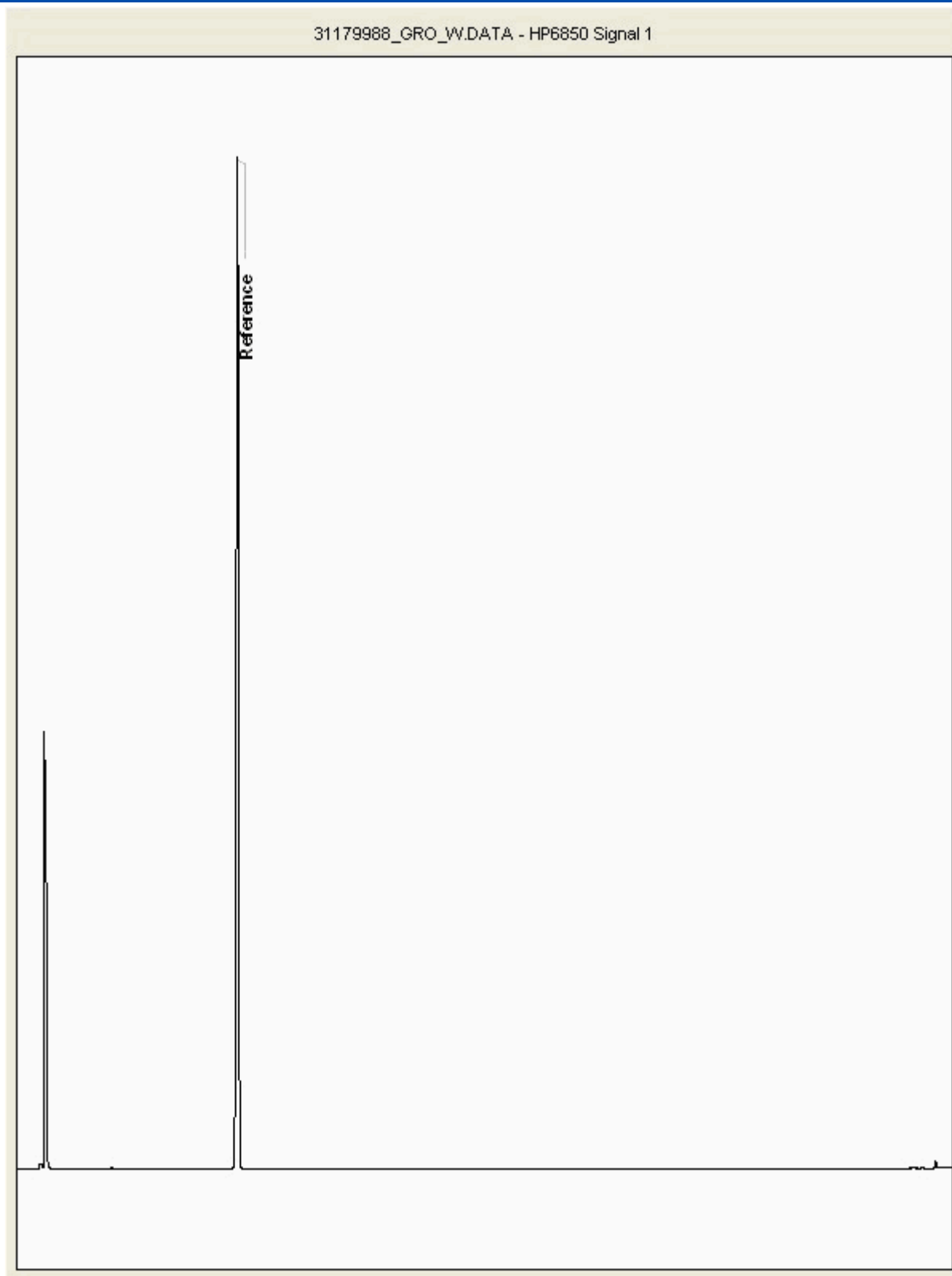
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 31179988
Sample ID : WS2

Depth : 0.00 - 0.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 250307-62
Client Ref.: GWPR6407

Report Number: 760489

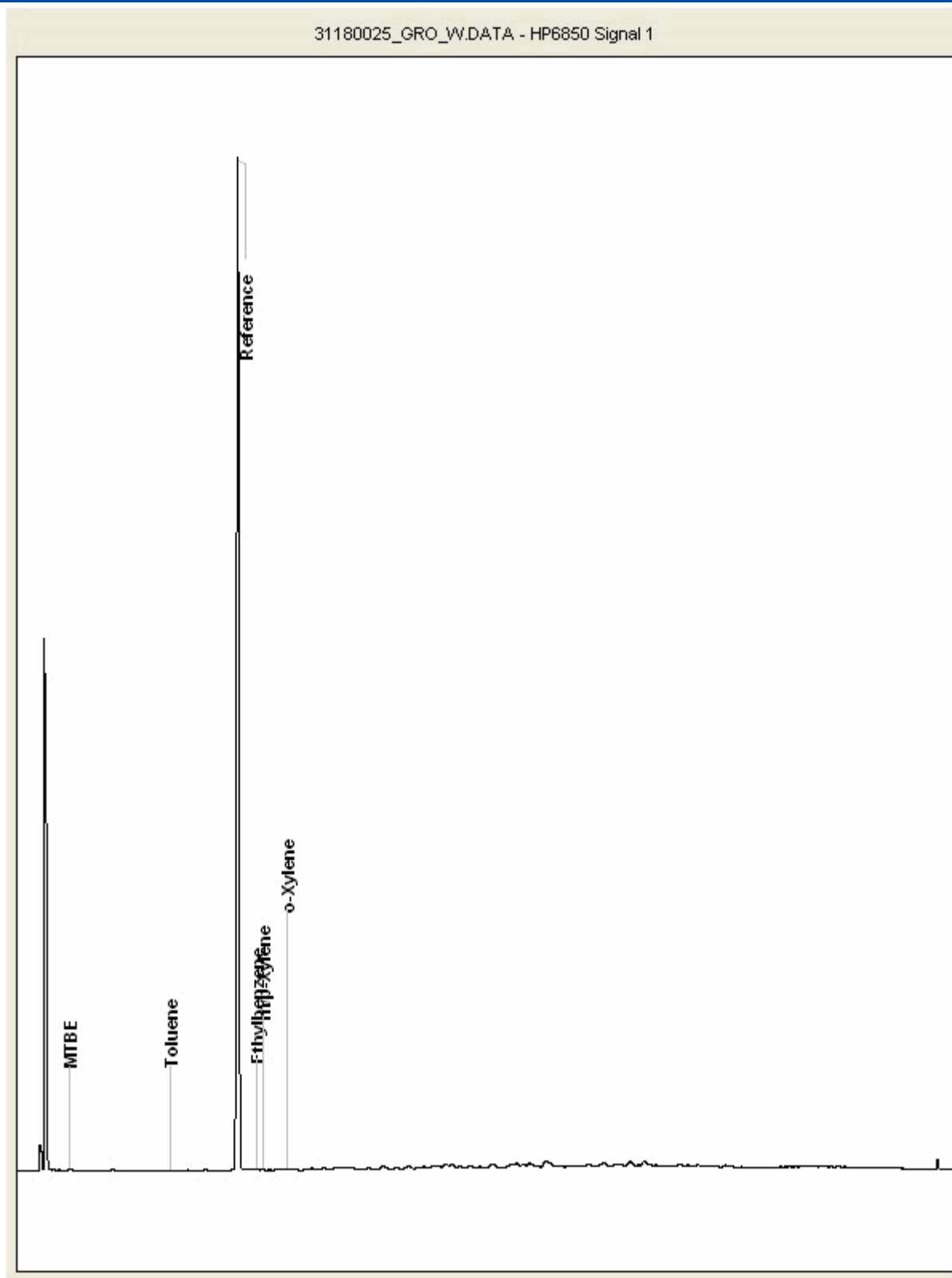
Superseded Report:
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 31180025
Sample ID : WS3

Depth : 0.00 - 0.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 250307-62
Client Ref.: GWPR6407

Report Number: 760489
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

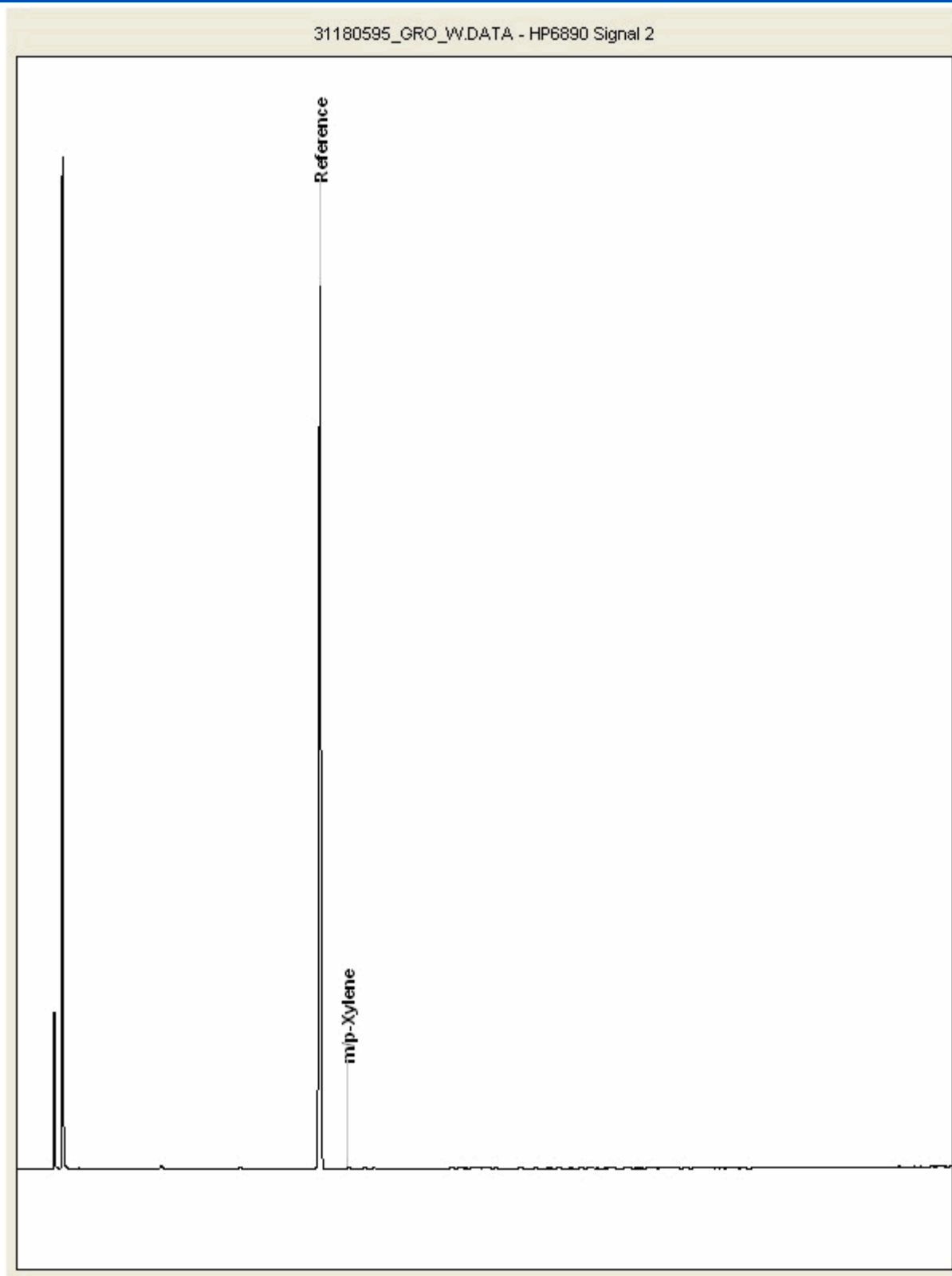
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 31180595
Sample ID : WS1

Depth : 0.00 - 0.00





CERTIFICATE OF ANALYSIS

SDG: 250307-62
Client Ref: GWPR6407

Report Number: 760489

Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur - e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

If during the search of the two 'pinch' samples by PLM only 1 or 2 fibres or fibre bundles are seen and identified as asbestos, the term 'trace asbestos identified' is reported.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Potentially respirable fibres are identified by using a Phase Contrast Microscope.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

21. 6:2 FTAB

Recovery of 6:2 FTAB in the quality control samples has been observed to be <50% of the target value. Please note the 6:2 FTAB result is supplied as indicative only.

Ground and Water Ltd
2 The Long Barn
Norton Farm
Selbourne Road
Alton
Hampshire
GU34 3NB

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

e: libby.bennett@groundandwater.co.uk

t: 01923 225404
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e: reception@i2analytical.com

Analytical Report Number : 25-036678

Replaces Analytical Report Number: 25-036678, issue no. 1
Client references/information amended.
Sample ID's amended as per client's request.

Project / Site name:	Seagull Lane	Samples received on:	10/07/2025
Your job number:	GWPR6668	Samples instructed on/ Analysis started on:	11/07/2025
Your order number:	GWPR6668	Analysis completed by:	16/07/2025
Report Issue Number:	2	Report issued on:	04/08/2025
Samples Analysed:	4 water samples		

Signed:

Adan Cazas Garcia
Key Account Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

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

Analytical Report Number: 25-036678
Project / Site name: Seagull Lane

Your Order No: GWPR6668

Lab Sample Number				610743	610744	610745	610746
Sample Reference				WS3	WS4	WS1	WS2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				Other water	Other water	Other water	Other water
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/07/2025	10/07/2025	10/07/2025	10/07/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Test Limit of detection	Test Accreditation Status				

General Inorganics

pH (L099)	pH Units	N/A	NONE	7.3	7.6	7.1	7
Total Cyanide	µg/l	10	NONE	40	-	68	70
Total Cyanide (Low Level 1 µg/l)	µg/l	1	NONE	-	1.4	-	-
Sulphate as SO ₄	mg/l	0.045	NONE	491	2100	621	631

Total Phenols

Total Phenols (monohydric)	µg/l	10	NONE	< 10	-	< 10	< 10
Total Phenols (Monohydric) Low Level	µg/l	1	NONE	-	< 1.0	-	-

Speciated PAHs

Naphthalene	µg/l	0.01	NONE	< 0.01	16	0.27	0.5
Acenaphthylene	µg/l	0.01	NONE	< 0.01	< 0.01	0.08	< 0.01
Acenaphthene	µg/l	0.01	NONE	< 0.01	15	1.1	1.2
Fluorene	µg/l	0.01	NONE	< 0.01	8.3	1.1	< 0.01
Phenanthrene	µg/l	0.01	NONE	< 0.01	16	0.43	< 0.01
Anthracene	µg/l	0.01	NONE	< 0.01	5.3	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	NONE	< 0.01	9.4	0.48	0.75
Pyrene	µg/l	0.01	NONE	< 0.01	6.8	0.85	0.92
Benzo(a)anthracene	µg/l	0.01	NONE	< 0.01	1.6	< 0.01	< 0.01
Chrysene	µg/l	0.01	NONE	< 0.01	1.3	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.16	NONE	< 0.16	80.3	4.3	3.39
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Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	0.15	NONE	1.45	4.08	17.9	13.4
Cadmium (dissolved)	µg/l	0.02	NONE	0.06	< 0.02	< 0.02	< 0.02
Chromium (dissolved)	µg/l	0.2	NONE	0.7	0.8	0.4	0.3
Copper (dissolved)	µg/l	0.5	NONE	16	1.4	1.1	3.1
Lead (dissolved)	µg/l	0.2	NONE	0.3	0.3	0.5	0.2
Mercury (dissolved)	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	NONE	13	29	16	16
Selenium (dissolved)	µg/l	0.6	NONE	9.1	0.8	1	0.9
Vanadium (dissolved)	µg/l	0.2	NONE	0.9	0.6	1.3	0.7
Zinc (dissolved)	µg/l	0.5	NONE	8.4	2.9	4.1	2.5

Boron (dissolved)	µg/l	10	NONE	470	1100	380	380
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 25-036678

Project / Site name: Seagull Lane

Your Order No: GWPR6668

Lab Sample Number				610743	610744	610745	610746
Sample Reference				WS3	WS4	WS1	WS2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				Other water	Other water	Other water	Other water
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/07/2025	10/07/2025	10/07/2025	10/07/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Test Limit of detection	Test Accreditation Status				

Petroleum Hydrocarbons

TPH - Aliphatic >EC5 - EC6 _{HS_1D_AL}	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
TPH - Aliphatic >EC6 - EC8 _{HS_1D_AL}	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
TPH - Aliphatic >EC8 - EC10 _{HS_1D_AL}	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
TPH - Aliphatic >EC10 - EC12 _{EH_1D_AL_MS}	µg/l	10	NONE	< 10	< 10	24	30
TPH - Aliphatic >EC12 - EC16 _{EH_1D_AL_MS}	µg/l	10	NONE	< 10	< 10	330	340
TPH - Aliphatic >EC16 - EC21 _{EH_1D_AL_MS}	µg/l	10	NONE	< 10	< 10	400	430
TPH - Aliphatic >EC21 - EC35 _{EH_1D_AL_MS}	µg/l	10	NONE	< 10	< 10	430	400
TPH - Aliphatic >EC5 - EC35 _{HS+EH_1D_AL_MS}	µg/l	10	NONE	< 10	< 10	1200	1200
TPH - Aliphatic >EC35 - EC40 _{EH_1D_AL_MS}	µg/l	10	NONE	< 10	< 10	100	100
TPH - Aliphatic >EC5 - EC40 _{HS+EH_1D_AL_MS}	µg/l	10	NONE	< 10	< 10	1300	1300

TPH - Aromatic >EC5 - EC7 _{HS_1D_AR}	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
TPH - Aromatic >EC7 - EC8 _{HS_1D_AR}	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
TPH - Aromatic >EC8 - EC10 _{HS_1D_AR}	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
TPH - Aromatic >EC10 - EC12 _{EH_1D_AR_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH - Aromatic >EC12 - EC16 _{EH_1D_AR_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH - Aromatic >EC16 - EC21 _{EH_1D_AR_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH - Aromatic >EC21 - EC35 _{EH_1D_AR_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH - Aromatic >EC5 - EC35 _{HS+EH_1D_AR_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH - Aromatic >EC35 - EC40 _{EH_1D_AR_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH - Aromatic >EC5 - EC40 _{HS+EH_1D_AR_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10

TPH Total (>EC5 - EC40) _{HS+EH_1D_TOTAL_MS}	µg/l	10	NONE	< 10	< 10	1300	1300
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VOCs

Chloromethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Chloroethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Bromomethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Vinyl Chloride	µg/l	3	NONE	8.5	< 3.0	< 3.0	< 3.0
Trichlorofluoromethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
1,1-Dichloroethene	µg/l	3	NONE	84.7	< 3.0	< 3.0	< 3.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Trans 1,2-dichloroethylene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
1,1-Dichloroethane	µg/l	3	NONE	102	4.5	< 3.0	< 3.0
2,2-Dichloropropane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Chloroform	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
1,1,1-Trichloroethane	µg/l	3	NONE	56.7	< 3.0	< 3.0	< 3.0
1,2-Dichloroethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
1,1-Dichloropropene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Cis-1,2-dichloroethene	µg/l	3	NONE	32	< 3.0	< 3.0	< 3.0
Benzene	µg/l	1	NONE	1.1	< 1.0	< 1.0	< 1.0
Carbontetrachloride	µg/l	3	NONE	9	< 3.0	< 3.0	< 3.0
1,2-Dichloropropane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Trichloroethene	µg/l	3	NONE	51.1	< 3.0	< 3.0	< 3.0
Dibromomethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Bromodichloromethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Cis-1,3-dichloropropene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0

Analytical Report Number: 25-036678
Project / Site name: Seagull Lane

Your Order No: GWPR6668

Lab Sample Number				610743	610744	610745	610746
Sample Reference				WS3	WS4	WS1	WS2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				Other water	Other water	Other water	Other water
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/07/2025	10/07/2025	10/07/2025	10/07/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Test Limit of detection	Test Accreditation Status				
Trans-1,3-dichloropropene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Toluene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
1,3-Dichloropropane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Dibromochloromethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Tetrachloroethene	µg/l	3	NONE	8	< 3.0	< 3.0	< 3.0
1,2-Dibromoethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Chlorobenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
1,1,1,2-Tetrachloroethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Ethylbenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Bromoform	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
o-xylene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
1,1,2,2-Tetrachloroethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Bromobenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
n-Propylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
2-Chlorotoluene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
4-Chlorotoluene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
1,3,5-Trimethylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
tert-Butylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
1,2,4-Trimethylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
sec-Butylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
1,3-Dichlorobenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
p-Isopropyltoluene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
1,4-Dichlorobenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
1,2-Dichlorobenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Butylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
1,2-Dibromo-3-chloropropane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
1,2,4-Trichlorobenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
Hexachlorobutadiene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
1,2,3-Trichlorobenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0

Analytical Report Number: 25-036678
Project / Site name: Seagull Lane

Your Order No: GWPR6668

Lab Sample Number				610743	610744	610745	610746
Sample Reference				WS3	WS4	WS1	WS2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				Other water	Other water	Other water	Other water
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/07/2025	10/07/2025	10/07/2025	10/07/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Test Limit of detection	Test Accreditation Status				

SVOCs

Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	0.45	0.37
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	1.2	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	0.24	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	12	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	0.18	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Carbazole	µg/l	0.05	NONE	< 0.05	23	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
3+4-Methylphenol	µg/l	0.1	NONE	< 0.10	< 0.10	0.45	0.37

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

Analytical Report Number : 25-036678

Project / Site name: Seagull Lane

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
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited matrices: SW, PW, GW, except B - SW,GW, Hg - SW,PW, Al - SW,PW	In-house method based on USEPA Method 6020 & 200.8 for the determination of trace elements in water by ICP-MS	L012B	W	NONE
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited matrices: SW, PW, GW, FSE, LL; PrW, DI PrW (Al, Cu, Fe,Zn)	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	NONE
Total Petroleum Hydrocarbons with carbon banding in water by GC-MS	Determination of total petroleum hydrocarbons in water by GC-MS with carbon banding aliphatic and aromatic	In-house method	L070B	W	NONE
Total Petroleum Hydrocarbons with carbon banding in water by GC-MS/HS-GC-MS	Determination of total petroleum hydrocarbons in water by GC-MS/HS-GC-MS with carbon banding aliphatic and aromatic (Summed Bands)	Calculation	L070B/L088-PL	W	NONE
BTEX and/or Volatile Organic Compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW, PW, GW	In-house method based on USEPA 8260	L073B	W	NONE
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5-diphenylcarbazide, followed by colorimetry. Accredited matrices: SW, PW, GW, FSE, LL	In-house method by continuous flow analyser	L080-PL	W	NONE
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	NONE
Total cyanide in water	Determination of total cyanide in water by distillation followed by colorimetry. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	NONE
Total Petroleum Hydrocarbons in water by HS-GC/MS	Determination of total petroleum hydrocarbons in water by headspace HS-GC/MS . Accredited matrices: SW, PW, GW	In-house method	L088-PL	W	NONE
pH of water at 20°C (automated)	Determination of pH of water by electrochemical measurement. Accredited matrices: SW, PW, GW, FSE, LL	In-house method	L099-PL	W	NONE
Speciated PAHs and/or Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds (including PAHs) in water by extraction in dichloromethane followed by GC-MS. Accredited matrices (PAHs): SW, PW, GW	In-house method based on USEPA 8270	L102B	W	NONE
Phenols in water by GC-MS	Determination of phenols in water by GC-MS	In-house method	L102B	W	NONE
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited matrices: SW, PW, GW, PrW, DI PrW, FSE, LL	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	NONE

Analytical Report Number : 25-036678
Project / Site name: Seagull Lane

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
Monohydric phenols (low level) in water	Determination of phenols in water by continuous flow analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	NONE
Total cyanide (low level) in water	Determination of total cyanide in water by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	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.

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

Sample Deviation Report



Analytical Report Number : 25-036678

Project / Site name: Seagull Lane

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/Insufficient material provided c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS1	N/A	None Supplied	610745	b	None Supplied	None Supplied	None Supplied
WS2	N/A	None Supplied	610746	b	None Supplied	None Supplied	None Supplied
WS3	N/A	None Supplied	610743	b	None Supplied	None Supplied	None Supplied
WS4	N/A	None Supplied	610744	b	None Supplied	None Supplied	None Supplied



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email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Ground and Water Ltd
Head Office
2 The Long Barn
Norton Farm, Selborne Road
Alton
Hampshire
GU34 3NB

Attention: Libby Bennett

CERTIFICATE OF ANALYSIS

Date of report Generation:	24 July 2025
Customer:	Ground and Water Ltd
Sample Delivery Group (SDG):	250718-28
Your Reference:	GWPR6668
Location:	Seagull Lane
Report No:	772218
Order Number:	GWPR6668

We received 5 samples on Thursday July 17, 2025 and 5 of these samples were scheduled for analysis which was completed on Thursday July 24, 2025. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Justin Keeton

Business Unit Leader - Land



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CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
31843853	TP1		0.20	16/07/2025
31843845	TP2		0.20	16/07/2025
31843841	TP3		0.20	16/07/2025
31843857	TP6		0.20	16/07/2025
31843849	TP7		0.20	16/07/2025

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

Superseded Report:

Results Legend X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	31843849	TP7		0.20	60g VOC (ALE215)	S
	31843857	TP6		0.20	250g Amber jar (ALE210)	S
	31843841	TP3		0.20	1kg TUB with Handle	S
	31843845	TP2		0.20	250g Amber jar (ALE210)	S
					60g VOC (ALE215)	S
	31843853	TP1		0.20	1kg TUB with Handle	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 5				
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 5				
Boron Water Soluble	All	NDPs: 0 Tests: 5				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5				
EPH CWG GC (S)	All	NDPs: 0 Tests: 3				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3				
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 5				
Metals in solid samples by OES	All	NDPs: 0 Tests: 5				
PAH by GCMS	All	NDPs: 0 Tests: 5				
pH	All	NDPs: 0 Tests: 5				
Phenols by HPLC (S)	All	NDPs: 0 Tests: 5				
Sample description	All	NDPs: 0 Tests: 5				
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2				
Total Organic Carbon	All	NDPs: 0 Tests: 5				
TPH CWG GC (S)	All	NDPs: 0 Tests: 3				

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

Superseded Report:

Results Legend					
X	Test				
N	No Determination Possible				
Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other					
Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
31843857	TP6		0.20	250g Amber jar (ALE210) 1kg TUB with Handle 250g Amber jar (ALE210)	S
31843841	TP3		0.20	1kg TUB with Handle 250g Amber jar (ALE210)	S
31843845	TP2		0.20	1kg TUB with Handle 60g VOC (ALE215)	S
31843853	TP1		0.20	250g Amber jar (ALE210) 1kg TUB with Handle 60g VOC (ALE215)	S
				1kg TUB with Handle	S
VOC MS (S)	All	NDPs: 0 Tests: 3			



CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
------------------	----------	-------------	-----------------	---------------	-------------	---------------	------------	--------------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
31843853	TP1	0.20	Dark Brown	Sandy Clay Loam	Stones	Vegetation
31843845	TP2	0.20	Dark Brown	Sandy Clay Loam	Stones	Concrete/Aggregate
31843841	TP3	0.20	Dark Brown	Sandy Loam	Stones	None
31843857	TP6	0.20	Dark Brown	Clay	Stones	None
31843849	TP7	0.20	Dark Brown	Silty Clay	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

Superseded Report:

[illegible]

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

Superseded Report:

PAH by GCMS

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668Report Number: 772218
Location: Seagull Lane

Superseded Report:

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	TP1	TP7			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.20	0.20			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		16/07/2025	16/07/2025			
diss.filt	Dissolved / filtered sample.		00:00	00:00			
tot.unfilt	Total / unfiltered sample.		17/07/2025	17/07/2025			
*	Subcontracted - refer to subcontractor report for accreditation status.		250718-28	250718-28			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		31843853	31843849			
***	6:2 FTAB (see appendix)						
1-4-5@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
Phenol	<0.1 mg/kg	TM157	<0.2	<0.5			
Pentachlorophenol	<0.1 mg/kg	TM157	<0.2	<0.5			
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.2	<0.5			
Nitrobenzene	<0.1 mg/kg	TM157	<0.2	<0.5			
Isophorone	<0.1 mg/kg	TM157	<0.2	<0.5			
Hexachloroethane	<0.1 mg/kg	TM157	<0.2	<0.5			
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.2	<0.5			
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.2	<0.5			
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.2	<0.5			
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.2	<0.5			
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.2	<0.5			
Diethyl phthalate	<0.1 mg/kg	TM157	<0.2	<0.5			
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.2	<0.5			
Dibenzofuran	<0.1 mg/kg	TM157	<0.2	<0.5			
Carbazole	<0.1 mg/kg	TM157	<0.2	<0.5			
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.2	<0.5			
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.2	<0.5			
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.2	<0.5			
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.2	<0.5			
Azobenzene	<0.1 mg/kg	TM157	<0.2	<0.5			
4-Nitrophenol	<0.1 mg/kg	TM157	<0.2	<0.5			
4-Nitroaniline	<0.1 mg/kg	TM157	<0.2	<0.5			
4-Methylphenol	<0.1 mg/kg	TM157	<0.2	<0.5			
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.2	<0.5			
4-Chloroaniline	<0.1 mg/kg	TM157	<0.2	<0.5			
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.2	<0.5			
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.2	<0.5			
3-Nitroaniline	<0.1 mg/kg	TM157	<0.2	<0.5			
2-Nitrophenol	<0.1 mg/kg	TM157	<0.2	<0.5			
2-Nitroaniline	<0.1 mg/kg	TM157	<0.2	<0.5			
2-Methylphenol	<0.1 mg/kg	TM157	<0.2	<0.5			
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.2	<0.5			



CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

Superseded Report:

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	TP1	TP7			
# ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.20	0.20			
M mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)			
aq Aqueous / settled sample.			16/07/2025	16/07/2025			
dis.filt Dissolved / filtered sample.			00:00	00:00			
tot.unfilt Total / unfiltered sample.			17/07/2025	17/07/2025			
Subcontracted - refer to subcontractor report for accreditation status.			250718-28	250718-28			
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			31843853	31843849			
*** 6:2 FTAB (see appendix)							
1-4*6@ Sample deviation (see appendix)							
Component	LOD/Units	Method					
2-Chlorophenol	<0.1 mg/kg	TM157	<0.2	<0.5			
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.2	<0.5			
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.2	<0.5			
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.2	<0.5			
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.2	<0.5			
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.2	<0.5			
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.2	<0.5			
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.2	<0.5			
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.2	<0.5			
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.2	<0.5			
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.2	<0.5			
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.2	<0.5			
Acenaphthylene	<0.1 mg/kg	TM157	<0.2	<0.5			
Acenaphthene	<0.1 mg/kg	TM157	<0.2	<0.5			
Anthracene	<0.1 mg/kg	TM157	<0.2	<0.5			
Benzo(a)anthracene	<0.1 mg/kg	TM157	0.274	<0.5			
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.2	<0.5			
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	0.269	<0.5			
Benzo(a)pyrene	<0.1 mg/kg	TM157	0.246	<0.5			
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.2	<0.5			
Chrysene	<0.1 mg/kg	TM157	0.303	<0.5			
Fluoranthene	<0.1 mg/kg	TM157	0.284	<0.5			
Fluorene	<0.1 mg/kg	TM157	<0.2	<0.5			
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.2	<0.5			
Phenanthrene	<0.1 mg/kg	TM157	<0.2	0.741			
Pyrene	<0.1 mg/kg	TM157	0.292	<0.5			
Naphthalene	<0.1 mg/kg	TM157	<0.2	<0.5			
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.2	<0.5			
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.2	<0.5			

SDG: 250718-28
Client Ref.: GWPR6668

TPH CWG (S)

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668Report Number: 772218
Location: Seagull Lane

Superseded Report:

VOC MS (S)

Results Legend		Customer Sample Ref.	TP1	TP2	TP7			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.20	0.20	0.20			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		16/07/2025	16/07/2025	16/07/2025			
diss.filt	Dissolved / filtered sample.		00:00	00:00	00:00			
tot.unfilt	Total / unfiltered sample.		17/07/2025	17/07/2025	17/07/2025			
*	Subcontracted - refer to subcontractor report for accreditation status.		250718-28	250718-28	250718-28			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		31843853	31843845	31843849			
***	6:2 FTAB (see appendix)							
1-4&6@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Dibromofluoromethane**	%	TM116	104	103	107			
Toluene-d8**	%	TM116	100	99.8	96.5			
4-Bromofluorobenzene**	%	TM116	94.1	94.5	88			
Dichlorodifluoromethane	<0.0005 mg/kg	TM116	<0.01		<0.01			
Chloromethane	<0.002 mg/kg	TM116	<0.04		<0.04			
Vinyl Chloride	<0.0005 mg/kg	TM116	<0.01		<0.01			
Bromomethane	<0.001 mg/kg	TM116	<0.02		<0.02			
Chloroethane	<0.001 mg/kg	TM116	<0.02		<0.02			
Trichlorofluoromethane	<0.0005 mg/kg	TM116	<0.01		<0.01			
1,1-Dichloroethene	<0.0005 mg/kg	TM116	<0.01		<0.01			
Carbon Disulphide	<0.001 mg/kg	TM116	<0.02		0.0273			
Dichloromethane	<0.005 mg/kg	TM116	<0.1		<0.1			
Methyl Tertiary Butyl Ether	<0.0005 mg/kg	TM116	<0.01	<0.01	<0.01			
trans-1,2-Dichloroethene	<0.001 mg/kg	TM116	<0.02		<0.02			
1,1-Dichloroethane	<0.0005 mg/kg	TM116	<0.01		<0.01			
cis-1,2-Dichloroethene	<0.0005 mg/kg	TM116	<0.01		<0.01			
2,2-Dichloropropane	<0.001 mg/kg	TM116	<0.02		<0.02			
Bromochloromethane	<0.002 mg/kg	TM116	<0.04		<0.04			
Chloroform	<0.003 mg/kg	TM116	<0.06		<0.06			
1,1,1-Trichloroethane	<0.0005 mg/kg	TM116	<0.01		<0.01			
1,1-Dichloropropene	<0.0005 mg/kg	TM116	<0.01		<0.01			
Carbontetrachloride	<0.0005 mg/kg	TM116	<0.01		<0.01			
1,2-Dichloroethane	<0.001 mg/kg	TM116	<0.02		<0.02			
Benzene	<0.001 mg/kg	TM116	<0.02	<0.02	<0.02			
Trichloroethene	<0.001 mg/kg	TM116	<0.02		<0.02			
1,2-Dichloropropane	<0.0005 mg/kg	TM116	<0.01		<0.01			
Dibromomethane	<0.001 mg/kg	TM116	<0.02		<0.02			
Bromodichloromethane	<0.002 mg/kg	TM116	<0.04		<0.04			
cis-1,3-Dichloropropene	<0.0005 mg/kg	TM116	<0.01		<0.01			
Toluene	<0.001 mg/kg	TM116	<0.02	<0.02	<0.02			
trans-1,3-Dichloropropene	<0.001 mg/kg	TM116	<0.02		<0.02			
1,1,2-Trichloroethane	<0.001 mg/kg	TM116	<0.02		<0.02			



CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668Report Number: 772218
Location: Seagull Lane

Superseded Report:

VOC MS (S)

Results Legend		Customer Sample Ref.	TP1	TP2	TP7			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.20 Soil/Solid (S) 16/07/2025 00:00 17/07/2025 250718-28 31843853	0.20 Soil/Solid (S) 16/07/2025 00:00 17/07/2025 250718-28 31843845	0.20 Soil/Solid (S) 16/07/2025 00:00 17/07/2025 250718-28 31843849			
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
dis.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
***	6:2 FTAB (see appendix)							
1-4*6@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
1,3-Dichloropropane	<0.001 mg/kg	TM116	<0.02 M		<0.02 M			
Tetrachloroethene	<0.002 mg/kg	TM116	<0.04 M		<0.04 M			
Dibromochloromethane	<0.002 mg/kg	TM116	<0.04 M		<0.04 M			
1,2-Dibromoethane	<0.001 mg/kg	TM116	<0.02 M		<0.02 M			
Chlorobenzene	<0.002 mg/kg	TM116	<0.04 M		<0.04 M			
1,1,1,2-Tetrachloroethane	<0.001 mg/kg	TM116	<0.02 M		<0.02 M			
Ethylbenzene	<0.001 mg/kg	TM116	<0.02 M	<0.02 M	<0.02 M			
p/m-Xylene	<0.002 mg/kg	TM116	<0.04 #	<0.04 #	<0.04 #			
o-Xylene	<0.002 mg/kg	TM116	<0.04 M	<0.04 M	<0.04 M			
Styrene	<0.002 mg/kg	TM116	<0.04 #		<0.04 #			
Bromoform	<0.002 mg/kg	TM116	<0.12 M		<0.12 M			
Isopropylbenzene	<0.002 mg/kg	TM116	<0.04 #		<0.04 #			
1,1,2,2-Tetrachloroethane	<0.002 mg/kg	TM116	<0.04 #		<0.04 #			
1,2,3-Trichloropropane	<0.002 mg/kg	TM116	<0.04 M		<0.04 M			
Bromobenzene	<0.002 mg/kg	TM116	<0.04 M		<0.04 M			
Propylbenzene	<0.002 mg/kg	TM116	<0.04 M		<0.04 M			
2-Chlorotoluene	<0.003 mg/kg	TM116	<0.06 M		<0.06 M			
1,3,5-Trimethylbenzene	<0.002 mg/kg	TM116	<0.04 M		<0.04 M			
4-Chlorotoluene	<0.003 mg/kg	TM116	<0.06 M		<0.06 M			
tert-Butylbenzene	<0.002 mg/kg	TM116	<0.04 #		<0.04 #			
1,2,4-Trimethylbenzene	<0.003 mg/kg	TM116	0.0961 #		<0.06 #			
sec-Butylbenzene	<0.001 mg/kg	TM116	<0.02		<0.02			
4-Isopropyltoluene	<0.002 mg/kg	TM116	<0.04		<0.04			
1,3-Dichlorobenzene	<0.005 mg/kg	TM116	<0.1 M		<0.1 M			
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.1 M		<0.1 M			
n-Butylbenzene	<0.003 mg/kg	TM116	<0.06		<0.06			
1,2-Dichlorobenzene	<0.005 mg/kg	TM116	<0.1 M		<0.1 M			
1,2-Dibromo-3-chloropropane	<0.002 mg/kg	TM116	<0.04		<0.04			
Tert-amyl methyl ether	<0.001 mg/kg	TM116	<0.02 #		<0.02 #			
1,2,4-Trichlorobenzene	<0.007 mg/kg	TM116	<0.14		<0.14			
Hexachlorobutadiene	<0.004 mg/kg	TM116	<0.08		<0.08			
Naphthalene	<0.008 mg/kg	TM116	<0.16 M		<0.16 M			

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

Superseded Report:

VOC MS (S)

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

Superseded Report:

Asbestos Identification - Solid Samples

Results Legend		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
#	ISO17025 accredited.										
M	mCERTS accredited.										
*	Subcontracted test.										
1-5&\$@ Sample deviation (see appendix)											
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP1 0.20 SOLID 16/07/2025 00:00:00 17/07/2025 09:00:00 250718-28 31843853 TM048	22/07/2025	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP2 0.20 SOLID 16/07/2025 00:00:00 17/07/2025 09:00:00 250718-28 31843845 TM048	21/07/25	Danielle Duncan	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP3 0.20 SOLID 16/07/2025 00:00:00 17/07/2025 09:00:00 250718-28 31843841 TM048	22/07/2025	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP6 0.20 SOLID 16/07/2025 00:00:00 17/07/2025 09:00:00 250718-28 31843857 TM048	21/07/25	Danielle Duncan	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP7 0.20 SOLID 16/07/2025 00:00:00 17/07/2025 09:00:00 250718-28 31843849 TM048	22/07/2025	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

Superseded Report:

Table of Results - Appendix

Method No	Description
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM218	The determination of PAH in soil samples by GC-MS
TM222	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
PM024	Soil preparation including homogenisation, moisture, screens of soils for Asbestos Containing Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM243	Mixed Anions In Soils By Kone

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

Superseded Report:

Test Completion Dates

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	31843853	31843845	31843841	31843857	31843849
	TP1	TP2	TP3	TP6	TP7
	0.20	0.20	0.20	0.20	0.20
	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	22-Jul-2025	22-Jul-2025	22-Jul-2025	22-Jul-2025	22-Jul-2025
Asbestos ID in Solid Samples	22-Jul-2025	21-Jul-2025	22-Jul-2025	21-Jul-2025	22-Jul-2025
Boron Water Soluble	22-Jul-2025	22-Jul-2025	22-Jul-2025	22-Jul-2025	22-Jul-2025
Cyanide Comp/Free/Total/Thiocyanate	24-Jul-2025	24-Jul-2025	24-Jul-2025	24-Jul-2025	24-Jul-2025
EPH CWG GC (S)	22-Jul-2025	22-Jul-2025			22-Jul-2025
GRO by GC-FID (S)	22-Jul-2025	22-Jul-2025			22-Jul-2025
Hexavalent Chromium (s)	21-Jul-2025	21-Jul-2025	21-Jul-2025	21-Jul-2025	21-Jul-2025
Metals in solid samples by OES	22-Jul-2025	22-Jul-2025	22-Jul-2025	22-Jul-2025	22-Jul-2025
PAH by GCMS	23-Jul-2025	23-Jul-2025	23-Jul-2025	23-Jul-2025	23-Jul-2025
pH	21-Jul-2025	21-Jul-2025	21-Jul-2025	21-Jul-2025	21-Jul-2025
Phenols by HPLC (S)	24-Jul-2025	24-Jul-2025	24-Jul-2025	24-Jul-2025	24-Jul-2025
Sample description	18-Jul-2025	18-Jul-2025	18-Jul-2025	18-Jul-2025	18-Jul-2025
Semi Volatile Organic Compounds	24-Jul-2025				24-Jul-2025
Total Organic Carbon	23-Jul-2025	23-Jul-2025	22-Jul-2025	23-Jul-2025	22-Jul-2025
TPH CWG GC (S)	22-Jul-2025	22-Jul-2025			22-Jul-2025
VOC MS (S)	23-Jul-2025	23-Jul-2025			23-Jul-2025



CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

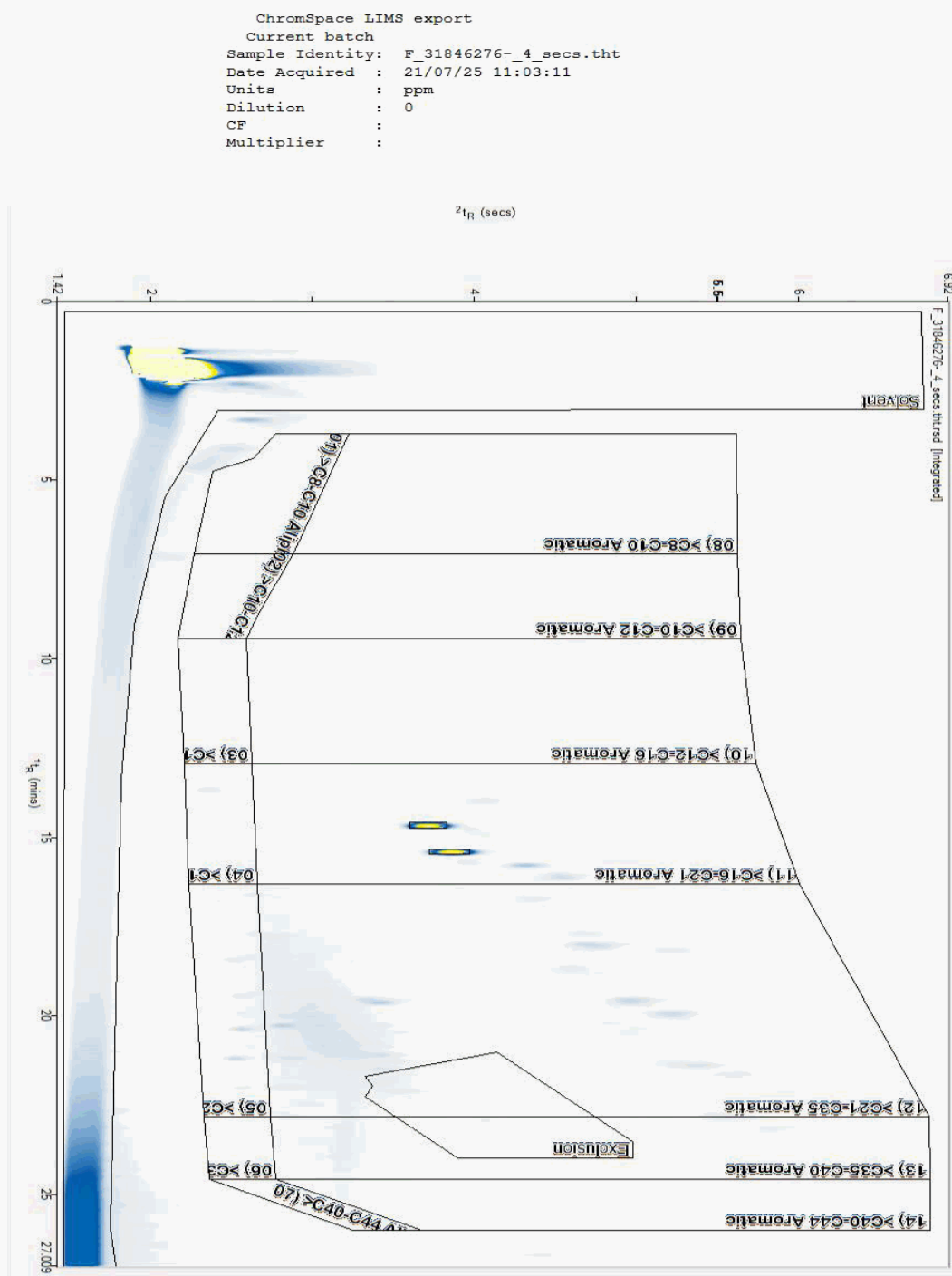
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 31846276
Sample ID : TP2

Depth : 0.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

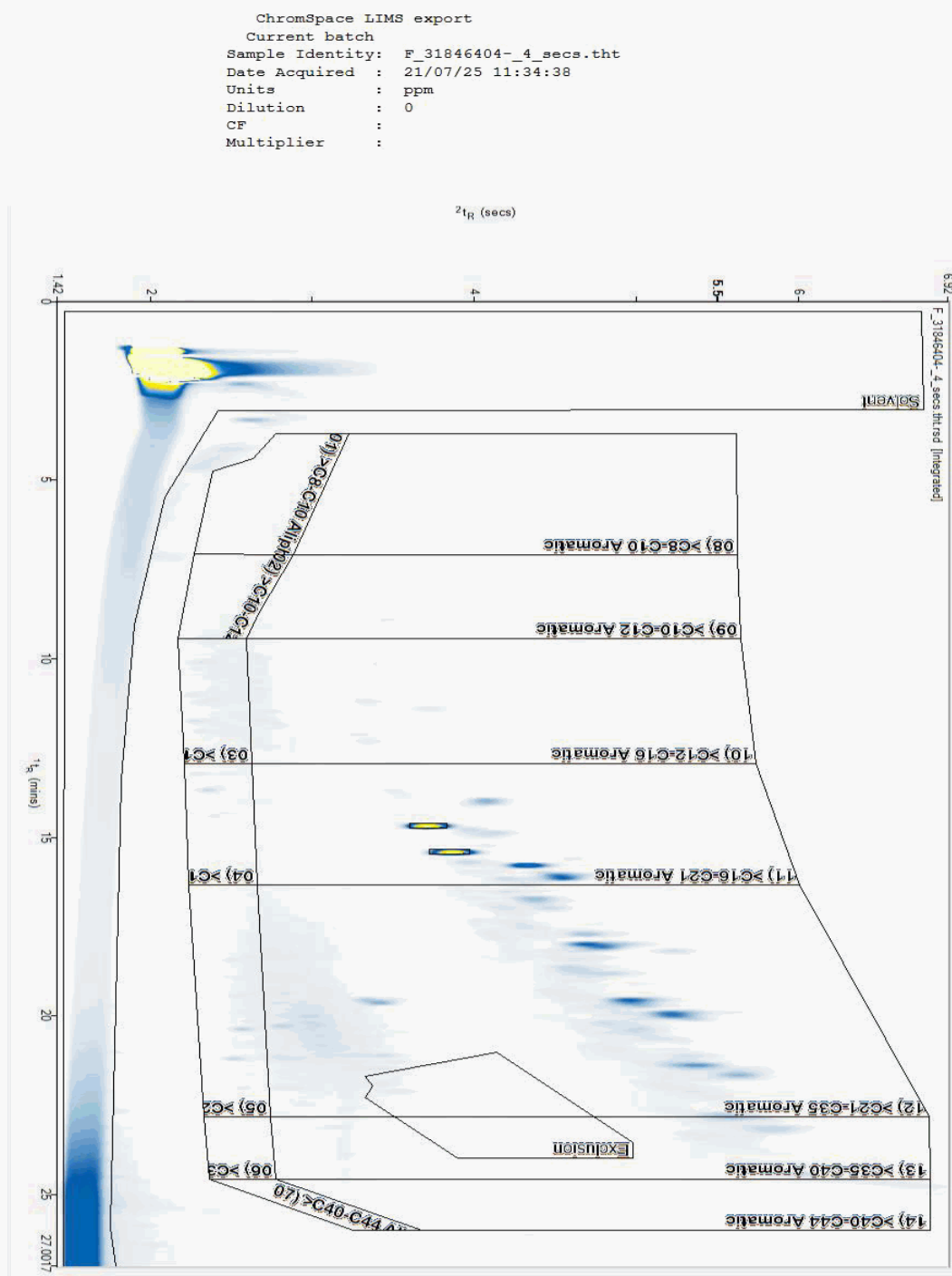
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 31846404
Sample ID : TP1

Depth : 0.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

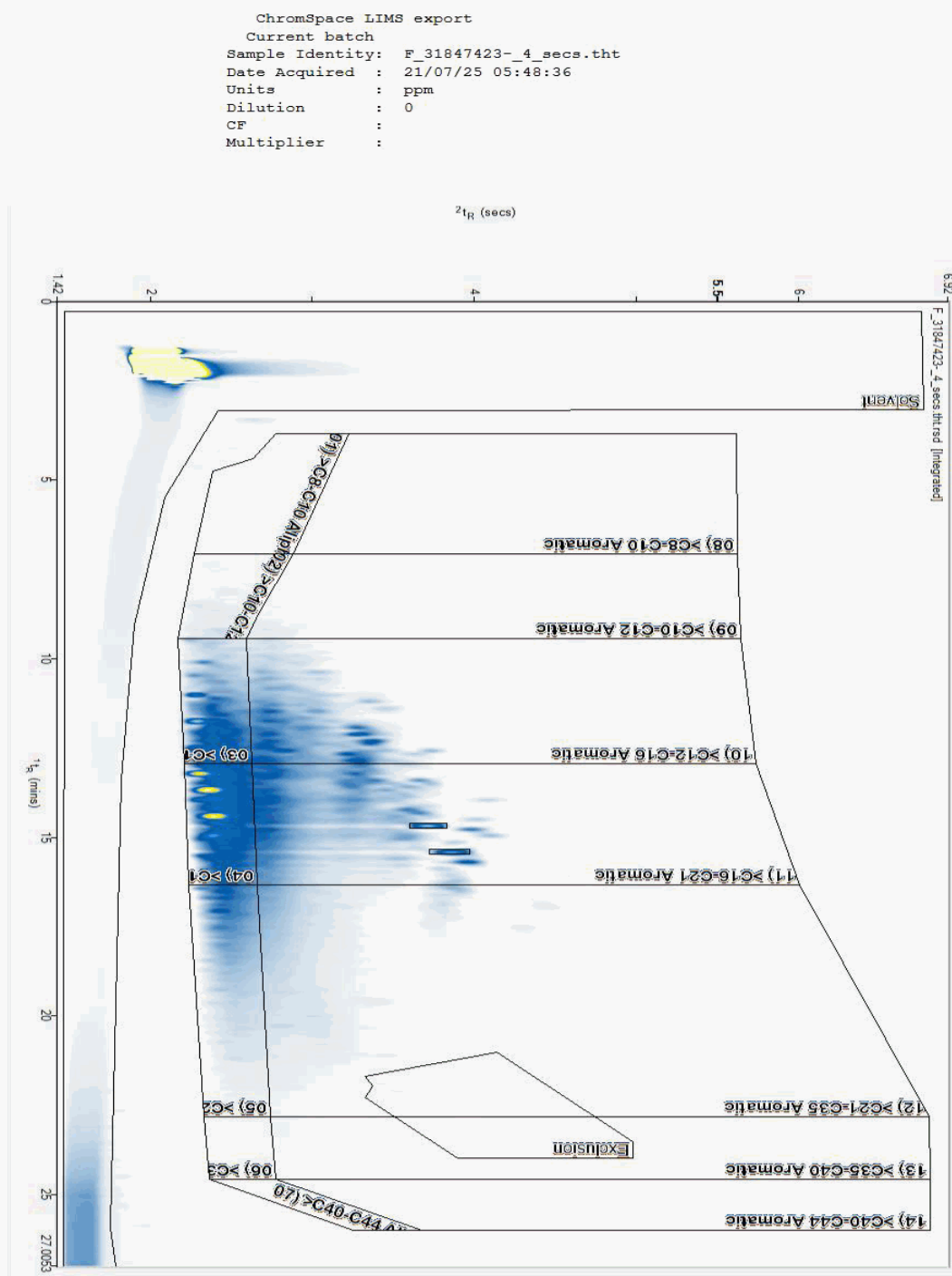
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 31847423
Sample ID : TP7

Depth : 0.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

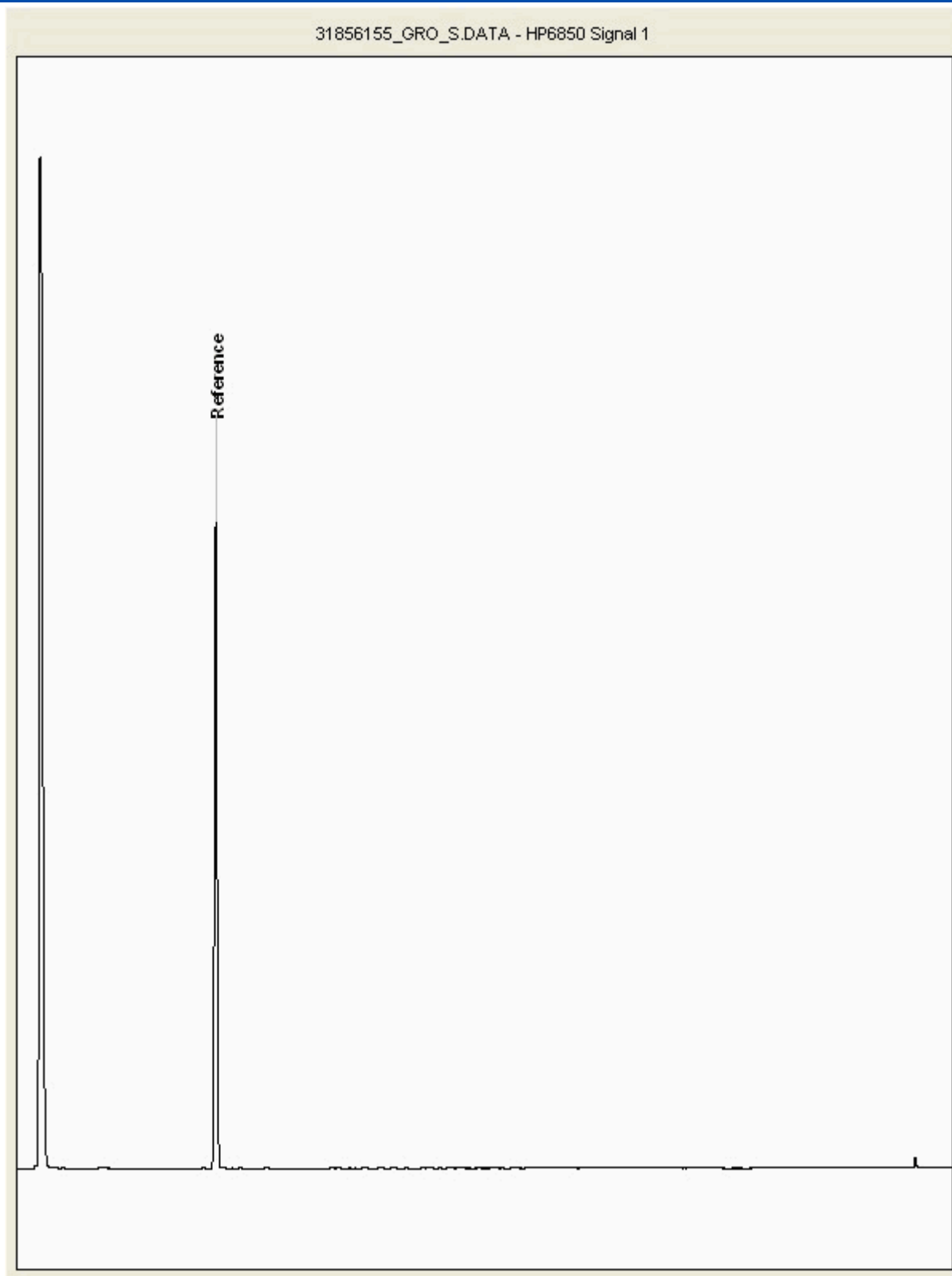
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 31856155
Sample ID : TP1

Depth : 0.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

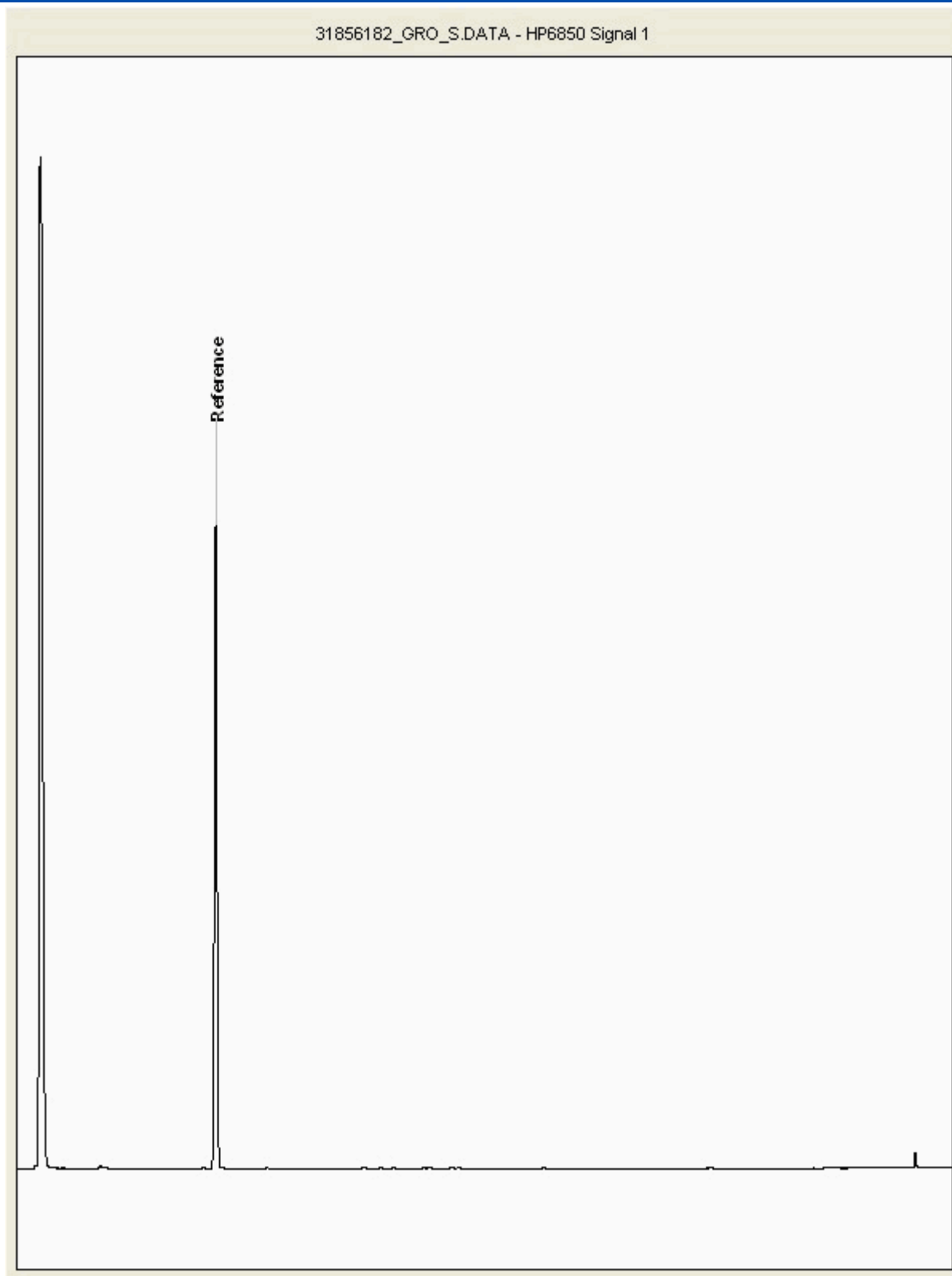
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 31856182
Sample ID : TP2

Depth : 0.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 250718-28
Client Ref.: GWPR6668

Report Number: 772218
Location: Seagull Lane

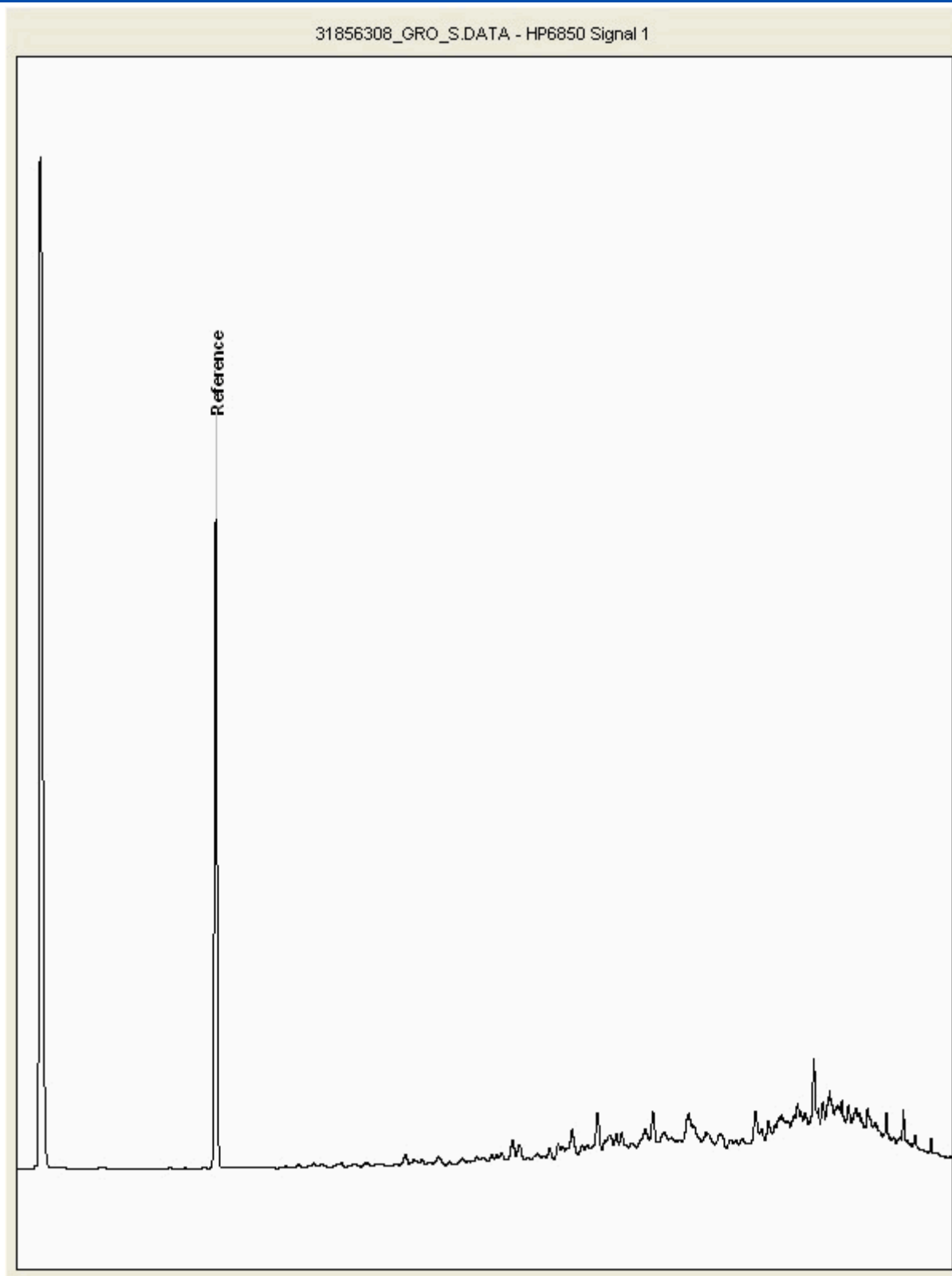
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 31856308
Sample ID : TP7

Depth : 0.20





CERTIFICATE OF ANALYSIS

SDG: 250718-28
Client Ref: GWPR6668

Report Number: 772218
Location: Seagull Lane

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur - e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

If during the search of the two 'pinch' samples by PLM only 1 or 2 fibres or fibre bundles are seen and identified as asbestos, the term 'trace asbestos identified' is reported.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Potentially respirable fibres are identified by using a Phase Contrast Microscope.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

21. 6:2 FTAB

Recovery of 6:2 FTAB in the quality control samples has been observed to be <50% of the target value. Please note the 6:2 FTAB result is supplied as indicative only.



Units 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Ground and Water Ltd
Head Office
2 The Long Barn
Norton Farm, Selborne Road
Alton
Hampshire
GU34 3NB

Attention: Libby Bennett

CERTIFICATE OF ANALYSIS

Date of report Generation:	21 August 2025
Customer:	Ground and Water Ltd
Sample Delivery Group (SDG):	250814-25
Your Reference:	GWPR6668
Location:	Seagull Lane, Emsworth, PO10 7QH
Report No:	774828
Order Number:	GWPR6668

We received 3 samples on Thursday August 14, 2025 and 3 of these samples were scheduled for analysis which was completed on Thursday August 21, 2025. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Justin Keeton
Business Unit Leader - Land



1291



CERTIFICATE OF ANALYSIS

Validated

SDG: 250814-25
Client Ref.: GWPR6668

Report Number: 774828
Location: Seagull Lane, Emsworth, PO10 7QH

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
31986905	TP2		0.20	13/08/2025
31986909	TP5		0.20	13/08/2025
31986913	TP7		0.20	13/08/2025

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 250814-25
Client Ref.: GWPR6668

Report Number: 774828
Location: Seagull Lane, Emsworth, PO10 7QH

Superseded Report:

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

Customer Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

			31986905	31986909	31986913
			TP2	TP5	TP7
			0.20	0.20	0.20
			250g Amber Jar (ALE210) 1kg TUB with Handle	250g Amber Jar (ALE210) 1kg TUB with Handle	250g Amber Jar (ALE210) 1kg TUB with Handle
			S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 3	X	X	X
Anions by Kone (w)	All	NDPs: 0 Tests: 3	X	X	X
CEN Readings	All	NDPs: 0 Tests: 3	X	X	X
Coronene	All	NDPs: 0 Tests: 3	X	X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3	X	X	X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 3	X	X	X
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3	X	X	X
Fluoride	All	NDPs: 0 Tests: 3	X	X	X
Loss on Ignition in soils	All	NDPs: 0 Tests: 3	X	X	X
Mercury Dissolved	All	NDPs: 0 Tests: 3	X	X	X
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 3	X	X	X
PAH by GCMS	All	NDPs: 0 Tests: 3	X	X	X
PCBs by GCMS	All	NDPs: 0 Tests: 3	X	X	X
pH	All	NDPs: 0 Tests: 3	X	X	X
pH Value of Filtered Water	All	NDPs: 0 Tests: 3	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 250814-25
Client Ref.: GWPR6668

Report Number: 774828
Location: Seagull Lane, Emsworth, PO10 7QH

Superseded Report:

Results Legend X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	31986905	31986909	31986913
	Customer Sample Reference	TP2	TP5	TP7
	AGS Reference			
	Depth (m)	0.20	0.20	0.20
	Container	1kg TUB with Handle 250g Amber Jar (ALE210) 60g VOC (ALE215)	1kg TUB with Handle 250g Amber Jar (ALE210) 60g VOC (ALE215)	1kg TUB with Handle 250g Amber Jar (ALE210) 60g VOC (ALE215)
	Sample Type	S	S	S
		S	S	S
Phenols by HPLC (W)	All	NDPs: 0 Tests: 3	X	X
Sample description	All	NDPs: 0 Tests: 3	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 3	X	X
VOC MS (S)	All	NDPs: 0 Tests: 3	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 250814-25
Client Ref.: GWPR6668

Report Number: 774828
Location: Seagull Lane, Emsworth, PO10 7QH

Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
31986905	TP2	0.20	Dark Brown	Sandy Loam	Stones	None
31986909	TP5	0.20	Dark Brown	Sandy Loam	Stones	None
31986913	TP7	0.20	Dark Brown	Sandy Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

SDG: 250814-25
Client Ref.: GWPR6668

Report Number: 774828

Superseded Report:

Location: Seagull Lane, Emsworth, PO10 7OH

[illegible]

SDG: 250814-25
Client Ref.: GWPR6668

Report Number: 774828

Superseded Report:

Location: Seagull Lane, Emsworth, PO10 7OH

VOC MS (S)

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 250814-25
Client Ref.: GWPR6668Report Number: 774828
Location: Seagull Lane, Emsworth, PO10 7QH

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference

Mass Sample taken (kg) 0.098

Mass of dry sample (kg) 0.090

Particle Size <4mm >95%

Site Location

Seagull Lane, Emsworth, PO10

Natural Moisture Content (%) 12.3

Dry Matter Content (%) 89

Case

SDG 250814-25

Lab Sample Number(s) 31986905

Sampled Date 13-Aug-2025

Customer Sample Ref. TP2

Depth (m) 0.20

Landfill Waste Acceptance
Criteria Limits

Solid Waste Analysis

Result

Total Organic Carbon (%) 1.32

Loss on Ignition (%) 9.74

Sum of BTEX (mg/kg) <0.009

Sum of 7 PCBs (mg/kg) <0.021

Mineral Oil (mg/kg) (EH_2D_AL) <5

PAH Sum of 17 (mg/kg) <10

pH (pH Units) 8.54

ANC to pH 6 (mol/kg) <0.03

ANC to pH 4 (mol/kg) 0.184

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Eluate Analysis

C₂Concⁿ in 10:1 eluate (mg/l)A₂10:1 concⁿ leached (mg/kg)Limit values for compliance leaching test
using BS EN 12457-3 at L/S 10 l/kg

	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.0165	<0.0005	0.165	<0.005	0.5	2	25
Barium	0.00391	<0.0002	0.0391	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00639	<0.001	0.0639	<0.01	0.5	10	70
Copper	0.00671	<0.0003	0.0671	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00576	<0.0004	0.0576	<0.004	0.4	10	40
Lead	0.000328	<0.0002	0.00328	<0.002	0.5	10	50
Antimony	0.00318	<0.001	0.0318	<0.01	0.06	0.7	5
Selenium	0.00166	<0.001	0.0166	<0.01	0.1	0.5	7
Zinc	0.00106	<0.001	0.0106	<0.01	4	50	200
Chloride	2.5	<2	25	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	29.2	<2	292	<20	1000	20000	50000
Total Dissolved Solids	121	<10	1210	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6.94	<3	69.4	<30	500	800	1000

Leach Test Information

Date Prepared 15-Aug-2025
pH (pH Units) 8.69
Conductivity (µS/cm) 158
Volume Leachant (Litres) 0.889

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C). Prepared leachates do not hold ISO17025 accreditation.

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

21/08/2025 14:42:17



CERTIFICATE OF ANALYSIS

Validated

SDG: 250814-25
Client Ref.: GWPR6668Report Number: 774828
Location: Seagull Lane, Emsworth, PO10 7QH

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference

Mass Sample taken (kg) 0.112

Mass of dry sample (kg) 0.090

Particle Size <4mm >95%

Site Location

Seagull Lane, Emsworth, PO10

Natural Moisture Content (%) 25.3

Dry Matter Content (%) 79.8

Case

SDG 250814-25

Lab Sample Number(s) 31986909

Sampled Date 13-Aug-2025

Customer Sample Ref. TP5

Depth (m) 0.20

Landfill Waste Acceptance
Criteria Limits

Solid Waste Analysis

Result

Total Organic Carbon (%)	3.62
Loss on Ignition (%)	9.14
Sum of BTEX (mg/kg)	<0.07
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	43.9
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.3
ANC to pH 6 (mol/kg)	0.141
ANC to pH 4 (mol/kg)	0.62

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Eluate Analysis

C₂Concⁿ in 10:1 eluate (mg/l)A₂10:1 concⁿ leached (mg/kg)Limit values for compliance leaching test
using BS EN 12457-3 at L/S 10 l/kg

	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.0112	<0.0005	0.112	<0.005	0.5	2	25
Barium	0.0153	<0.0002	0.153	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00659	<0.0003	0.0659	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0394	<0.003	0.394	<0.03	0.5	10	30
Nickel	0.00455	<0.0004	0.0455	<0.004	0.4	10	40
Lead	0.000637	<0.0002	0.00637	<0.002	0.5	10	50
Antimony	0.00769	<0.001	0.0769	<0.01	0.06	0.7	5
Selenium	0.00135	<0.001	0.0135	<0.01	0.1	0.5	7
Zinc	0.00388	<0.001	0.0388	<0.01	4	50	200
Chloride	4.5	<2	45	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	192	<2	1920	<20	1000	20000	50000
Total Dissolved Solids	386	<10	3860	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	12.5	<3	125	<30	500	800	1000

Leach Test Information

Date Prepared	15-Aug-2025
pH (pH Units)	8.25
Conductivity (µS/cm)	503
Volume Leachant (Litres)	0.878

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C). Prepared leachates do not hold ISO17025 accreditation.

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

21/08/2025 14:42:17



CERTIFICATE OF ANALYSIS

Validated

SDG: 250814-25
Client Ref.: GWPR6668Report Number: 774828
Location: Seagull Lane, Emsworth, PO10 7QH

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference

Mass Sample taken (kg) 0.119

Mass of dry sample (kg) 0.090

Particle Size <4mm >95%

Site Location

Seagull Lane, Emsworth, PO10

Natural Moisture Content (%) 30.4

Dry Matter Content (%) 76.7

Case

SDG 250814-25

Lab Sample Number(s) 31986913

Sampled Date 13-Aug-2025

Customer Sample Ref. TP7

Depth (m) 0.20

Landfill Waste Acceptance
Criteria Limits

Solid Waste Analysis

Result

Total Organic Carbon (%) 2.89

Loss on Ignition (%) 15

Sum of BTEX (mg/kg) <0.007

Sum of 7 PCBs (mg/kg) <0.021

Mineral Oil (mg/kg) (EH_2D_AL) 34.4

PAH Sum of 17 (mg/kg) <10

pH (pH Units) 6.3

ANC to pH 6 (mol/kg) <0.03

ANC to pH 4 (mol/kg) 0.0838

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Eluate Analysis

C₂Concⁿ in 10:1 eluate (mg/l)A₂10:1 concⁿ leached (mg/kg)Limit values for compliance leaching test
using BS EN 12457-3 at L/S 10 l/kg

	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00313	<0.0005	0.0313	<0.005	0.5	2	25
Barium	0.00773	<0.0002	0.0773	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00155	<0.001	0.0155	<0.01	0.5	10	70
Copper	0.0133	<0.0003	0.133	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00699	<0.003	0.0699	<0.03	0.5	10	30
Nickel	0.00526	<0.0004	0.0526	<0.004	0.4	10	40
Lead	0.0012	<0.0002	0.012	<0.002	0.5	10	50
Antimony	0.00162	<0.001	0.0162	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00993	<0.001	0.0993	<0.01	4	50	200
Chloride	2.5	<2	25	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	32	<2	320	<20	1000	20000	50000
Total Dissolved Solids	105	<10	1050	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	23.9	<3	239	<30	500	800	1000

Leach Test Information

Date Prepared 15-Aug-2025
pH (pH Units) 7.46
Conductivity (µS/cm) 136
Volume Leachant (Litres) 0.873

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C). Prepared leachates do not hold ISO17025 accreditation.

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

21/08/2025 14:42:17



CERTIFICATE OF ANALYSIS

Validated

SDG: 250814-25
Client Ref.: GWPR6668

Report Number: 774828
Location: Seagull Lane, Emsworth, PO10 7QH

Superseded Report:

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture, screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM152	Analysis of Aqueous Samples by ICP-MS
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM410	Determination of Coronene in soils by GCMS
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 250814-25
Client Ref.: GWPR6668

Report Number: 774828
Location: Seagull Lane, Emsworth, PO10 7QH

Superseded Report:

Test Completion Dates

Lab Sample No(s)	31986905	31986909	31986913
Customer Sample Ref.	TP2	TP5	TP7
AGS Ref.			
Depth	0.20	0.20	0.20
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	18-Aug-2025	18-Aug-2025	18-Aug-2025
Anions by Kone (w)	18-Aug-2025	18-Aug-2025	18-Aug-2025
CEN 10:1 Leachate (1 Stage)	15-Aug-2025	15-Aug-2025	15-Aug-2025
CEN Readings	19-Aug-2025	19-Aug-2025	19-Aug-2025
Coronene	19-Aug-2025	19-Aug-2025	19-Aug-2025
Dissolved Metals by ICP-MS	19-Aug-2025	19-Aug-2025	19-Aug-2025
Dissolved Organic/Inorganic Carbon	19-Aug-2025	19-Aug-2025	19-Aug-2025
EPH by GCxGC-FID	18-Aug-2025	18-Aug-2025	18-Aug-2025
Fluoride	18-Aug-2025	19-Aug-2025	19-Aug-2025
Loss on Ignition in soils	18-Aug-2025	18-Aug-2025	18-Aug-2025
Mercury Dissolved	21-Aug-2025	21-Aug-2025	21-Aug-2025
Moisture at 105C	15-Aug-2025	15-Aug-2025	15-Aug-2025
PAH 16 & 17 Calc	19-Aug-2025	19-Aug-2025	19-Aug-2025
PAH by GCMS	18-Aug-2025	18-Aug-2025	18-Aug-2025
PCBs by GCMS	19-Aug-2025	19-Aug-2025	19-Aug-2025
pH	18-Aug-2025	18-Aug-2025	18-Aug-2025
pH Value of Filtered Water	19-Aug-2025	19-Aug-2025	19-Aug-2025
Phenols by HPLC (W)	20-Aug-2025	21-Aug-2025	20-Aug-2025
Sample description	14-Aug-2025	14-Aug-2025	14-Aug-2025
Total Organic Carbon	20-Aug-2025	20-Aug-2025	20-Aug-2025
VOC MS (S)	18-Aug-2025	19-Aug-2025	18-Aug-2025



CERTIFICATE OF ANALYSIS

Validated

SDG: 250814-25
Client Ref.: GWPR6668

Report Number: 774828
Location: Seagull Lane, Emsworth, PO10 7QH

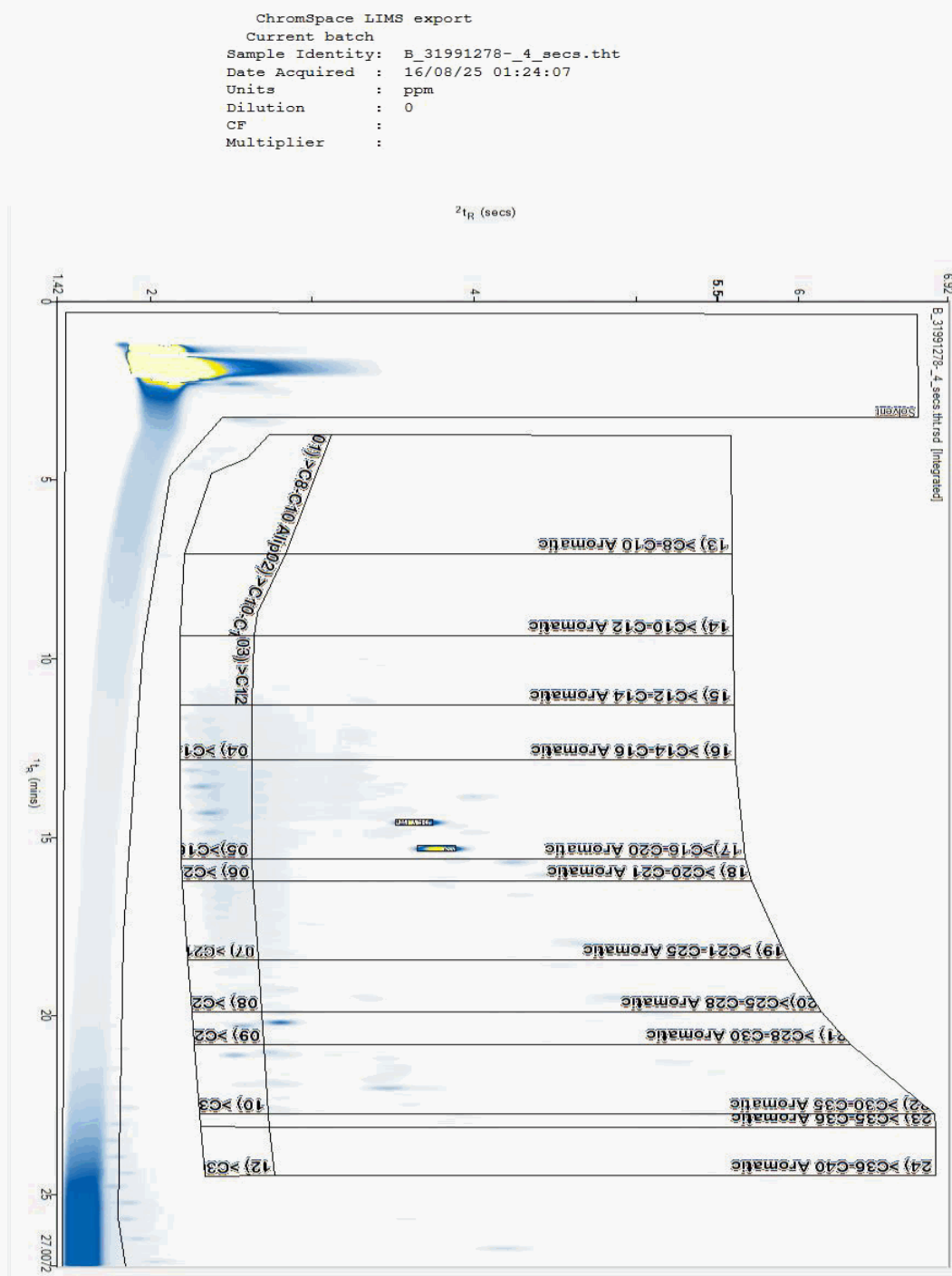
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 31991278
Sample ID : TP7

Depth : 0.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 250814-25
Client Ref.: GWPR6668

Report Number: 774828
Location: Seagull Lane, Emsworth, PO10 7QH

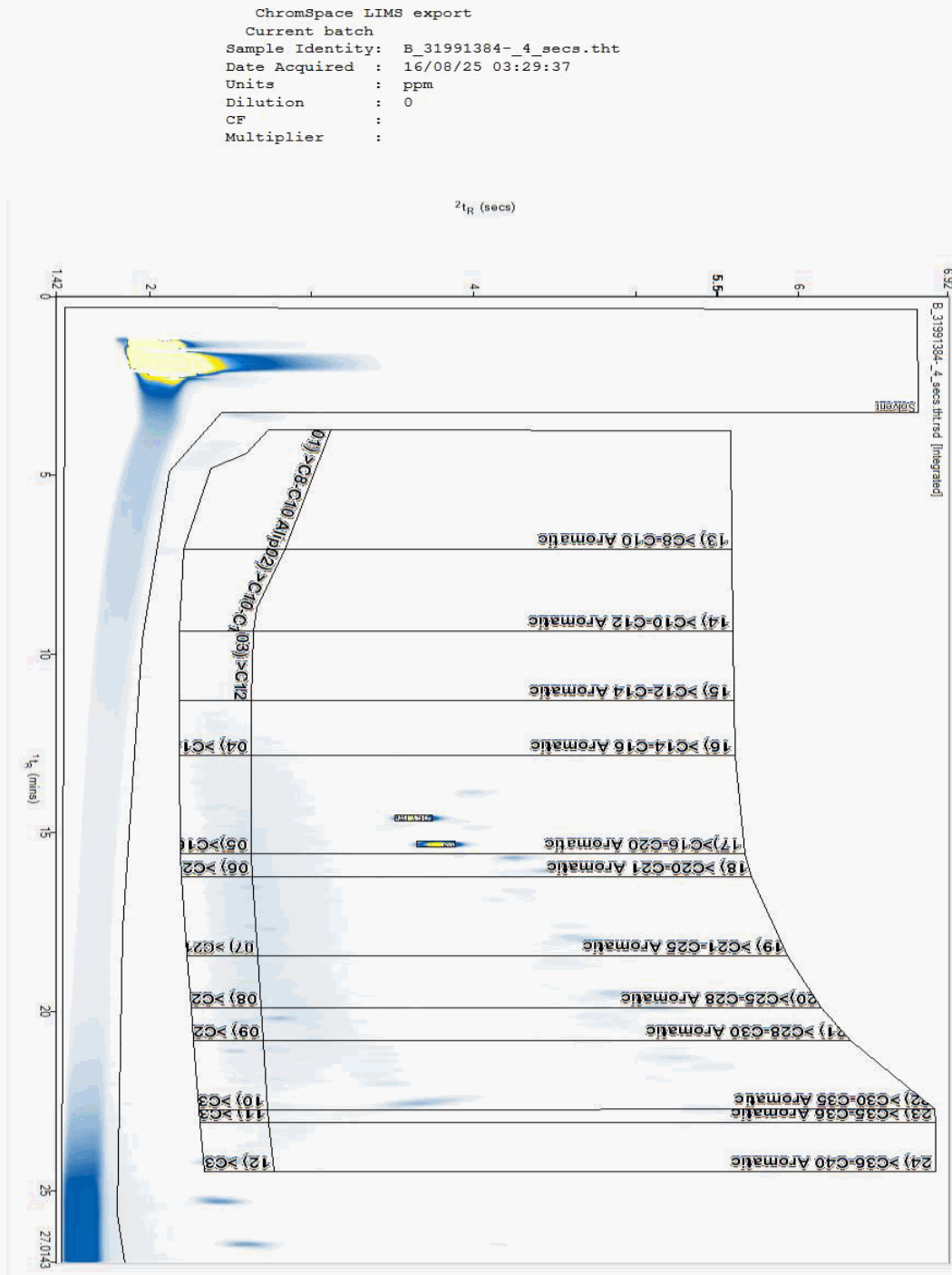
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 31991384
Sample ID : TP5

Depth : 0.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 250814-25
Client Ref.: GWPR6668

Report Number: 774828
Location: Seagull Lane, Emsworth, PO10 7QH

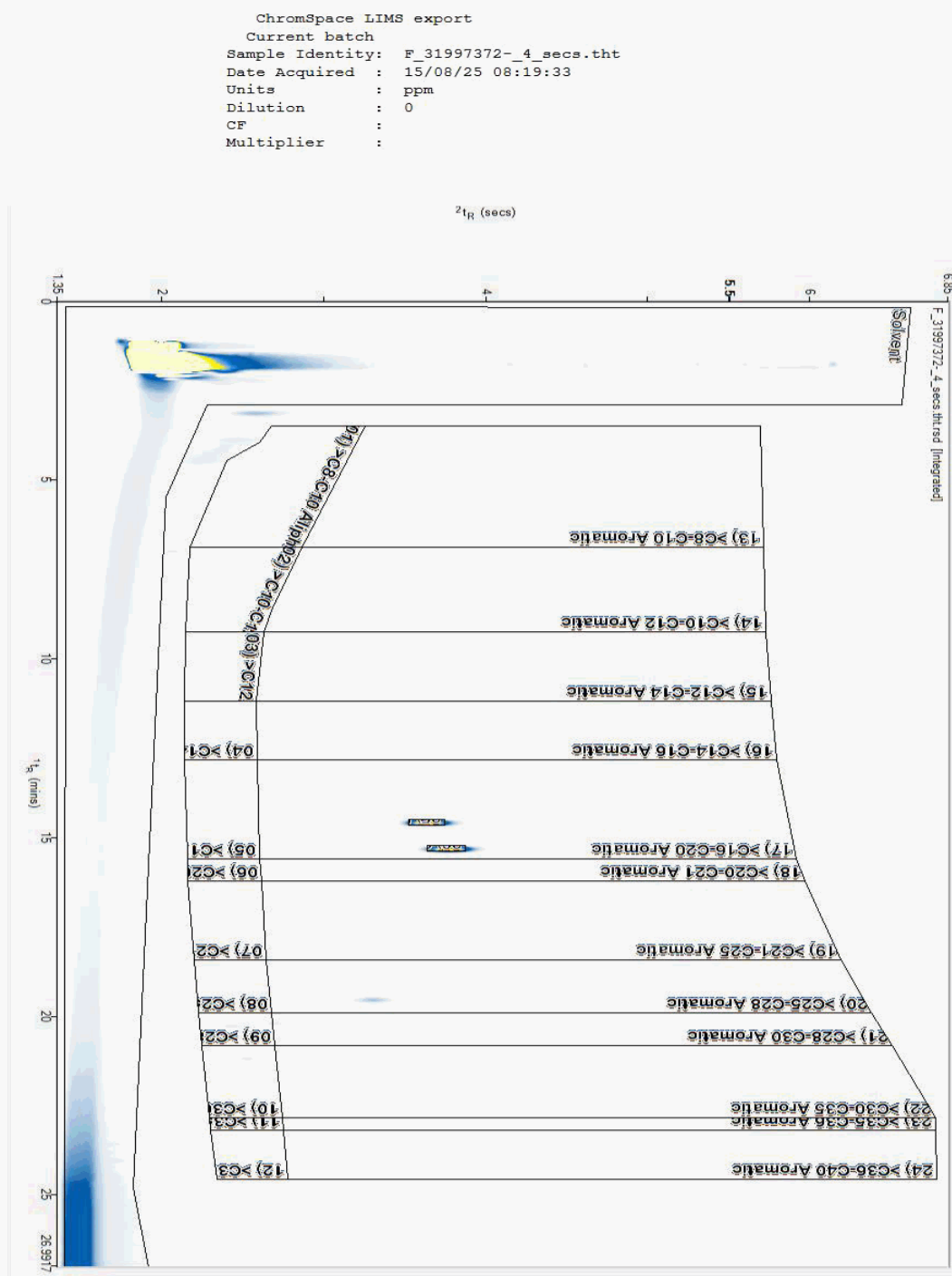
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 31997372
Sample ID : TP2

Depth : 0.20





CERTIFICATE OF ANALYSIS

SDG: 250814-25
Client Ref: GWPR6668

Report Number: 774828
Location: Seagull Lane, Emsworth, PO10 7QH

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur - e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

If during the search of the two 'pinch' samples by PLM only 1 or 2 fibres or fibre bundles are seen and identified as asbestos, the term 'trace asbestos identified' is reported.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Potentially respirable fibres are identified by using a Phase Contrast Microscope.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

21. 6:2 FTAB

Recovery of 6:2 FTAB in the quality control samples has been observed to be <50% of the target value. Please note the 6:2 FTAB result is supplied as indicative only.



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Analytical Report Number : 25-061524

Replaces Analytical Report Number: 25-061524, issue no. 1

Additional analysis undertaken.

Asbestos Quantification added to sample 748132 as per client's request,

Project / Site name: 2 - 6 Seagull Lane Emsworth Hampshire
PO10 7QH

Samples received on: 13/11/2025

Your job number: GWPR6838

**Samples instructed on/
Analysis started on:** 13/11/2025

Your order number: GWPR6838

Analysis completed by: 02/12/2025

Report Issue Number: 2

Report issued on: 02/12/2025

Samples Analysed: 2 soil samples

Signed:

Adan Cazas Garcia
Key Account Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

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



Analytical Report Number: 25-061524
Project / Site name: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH
Your Order No: GWPR6838

Lab Sample Number				748131	748132
Sample Reference				TP101	BH101
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.20-0.40	0.50-1.00
Date Sampled				11/11/2025	11/11/2025
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	20.2	< 0.1
Moisture Content	%	0.01	NONE	19	17
Total mass of sample received	kg	0.1	NONE	0.8	1.1

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Detected
Asbestos Analyst ID	N/A	N/A	N/A	DSO	DSO
Analysis completed	N/A	N/A	N/A	18/11/2025	18/11/2025
Actinolite detected	Type	N/A	ISO 17025	-	Not-detected
Amosite detected	Type	N/A	ISO 17025	-	Not-detected
Anthophyllite detected	Type	N/A	ISO 17025	-	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	-	Detected
Crocidolite detected	Type	N/A	ISO 17025	-	Not-detected
Tremolite detected	Type	N/A	ISO 17025	-	Not-detected

Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-	< 0.001
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Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	Asbestos Cement
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General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.9	7.7
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	320	390
Water Soluble SO ₄ 16hr extraction (2:1)	mg/l	1.25	MCERTS	159	196
Organic Matter (automated)	%	0.1	MCERTS	5	2
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.9	1.2

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0
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Analytical Report Number: 25-061524

Project / Site name: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

Your Order No: GWPR6838

Lab Sample Number				748131	748132
Sample Reference				TP101	BH101
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.20-0.40	0.50-1.00
Date Sampled				11/11/2025	11/11/2025
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	0.38	0.07
Acenaphthylene	mg/kg	0.05	MCERTS	0.24	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.06	0.07
Fluorene	mg/kg	0.05	MCERTS	0.07	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.6	0.58
Anthracene	mg/kg	0.05	MCERTS	0.25	0.17
Fluoranthene	mg/kg	0.05	MCERTS	2.1	1.3
Pyrene	mg/kg	0.05	MCERTS	2	1.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.6	0.95
Chrysene	mg/kg	0.05	MCERTS	2.5	0.96
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	5.5	1.7
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2.6	0.61
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.4	1.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.9	1.1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.98	0.19
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.3	1.2

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	30.4	11.8
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	30	16
Boron (water soluble)	mg/kg	0.2	MCERTS	3.7	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	0.3
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	32	39
Copper (aqua regia extractable)	mg/kg	1	MCERTS	130	89
Lead (aqua regia extractable)	mg/kg	1	MCERTS	830	220
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.2	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	40	37
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	80	54
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	230	130

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_ID_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 _{HS_ID_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 _{HS_ID_AL}	mg/kg	0.01	MCERTS	< 0.010	0.068
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_ID_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_ID_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_ID_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_ID_AL}	mg/kg	8	MCERTS	< 8.0	15
TPHCWG - Aliphatic >EC35 - EC40 _{EH_CU_ID_AL}	mg/kg	10	NONE	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_ID_AL}	mg/kg	10	NONE	-	15
TPHCWG - Aliphatic >EC5 - EC40 _{EH_CU+HS_ID_AL}	mg/kg	10	NONE	< 10	15

TPHCWG - Aromatic >EC5 - EC7 _{HS_ID_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_ID_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_ID_AR}	mg/kg	0.02	MCERTS	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_ID_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_ID_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_ID_AR}	mg/kg	10	MCERTS	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_ID_AR}	mg/kg	10	MCERTS	34	20
TPHCWG - Aromatic >EC35 - EC40 _{EH_CU_ID_AR}	mg/kg	10	NONE	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_ID_AR}	mg/kg	10	NONE	-	20
TPHCWG - Aromatic >EC5 - EC40 _{EH_CU+HS_ID_AR}	mg/kg	10	NONE	34	20

TPH Total >EC5 - EC40 _{EH_CU+HS_ID_TOTAL}	mg/kg	10	NONE	34	35
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VOCs

Chloromethane	µg/kg	5	MCERTS	< 5.0	-
Chloroethane	µg/kg	5	MCERTS	< 5.0	-
Bromomethane	µg/kg	5	MCERTS	< 5.0	-
Vinyl Chloride	µg/kg	5	NONE	< 5.0	-
Trichlorofluoromethane	µg/kg	5	MCERTS	< 5.0	-

Analytical Report Number: 25-061524
Project / Site name: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH
Your Order No: GWPR6838

Lab Sample Number				748131	748132
Sample Reference				TP101	BH101
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.20-0.40	0.50-1.00
Date Sampled				11/11/2025	11/11/2025
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		
1,1-Dichloroethene	µg/kg	5	MCERTS	< 5.0	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	MCERTS	< 5.0	-
Trans 1,2-dichloroethylene	µg/kg	5	MCERTS	< 5.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0
1,1-Dichloroethane	µg/kg	5	MCERTS	< 5.0	-
2,2-Dichloropropane	µg/kg	5	NONE	< 5.0	-
Chloroform	µg/kg	5	MCERTS	< 5.0	-
1,1,1-Trichloroethane	µg/kg	5	MCERTS	< 5.0	-
1,2-Dichloroethane	µg/kg	7	MCERTS	< 7.0	-
1,1-Dichloropropene	µg/kg	5	MCERTS	< 5.0	-
Cis-1,2-dichloroethene	µg/kg	5	MCERTS	< 5.0	-
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Carbontetrachloride	µg/kg	5	MCERTS	< 5.0	-
1,2-Dichloropropane	µg/kg	6	MCERTS	< 6.0	-
Trichloroethene	µg/kg	10	MCERTS	< 10	-
Dibromomethane	µg/kg	5	MCERTS	< 5.0	-
Bromodichloromethane	µg/kg	5	MCERTS	< 5.0	-
Cis-1,3-dichloropropene	µg/kg	5	MCERTS	< 5.0	-
Trans-1,3-dichloropropene	µg/kg	10	MCERTS	< 10	-
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
1,1,2-Trichloroethane	µg/kg	6	MCERTS	< 6.0	-
1,3-Dichloropropane	µg/kg	5	MCERTS	< 5.0	-
Dibromochloromethane	µg/kg	5	MCERTS	< 5.0	-
Tetrachloroethene	µg/kg	5	MCERTS	< 5.0	-
1,2-Dibromoethane	µg/kg	5	MCERTS	< 5.0	-
Chlorobenzene	µg/kg	5	MCERTS	< 5.0	-
1,1,1,2-Tetrachloroethane	µg/kg	5	MCERTS	< 5.0	-
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0
Styrene	µg/kg	5	MCERTS	< 5.0	-
Bromoform	µg/kg	5	MCERTS	< 5.0	-
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
Isopropylbenzene	µg/kg	5	MCERTS	< 5.0	-
1,1,2,2-Tetrachloroethane	µg/kg	5	NONE	< 5.0	-
Bromobenzene	µg/kg	5	MCERTS	< 5.0	-
n-Propylbenzene	µg/kg	5	MCERTS	< 5.0	-
2-Chlorotoluene	µg/kg	5	MCERTS	< 5.0	-
4-Chlorotoluene	µg/kg	5	MCERTS	< 5.0	-
1,3,5-Trimethylbenzene	µg/kg	5	MCERTS	< 5.0	-
tert-Butylbenzene	µg/kg	5	MCERTS	< 5.0	-
1,2,4-Trimethylbenzene	µg/kg	5	MCERTS	< 5.0	-
sec-Butylbenzene	µg/kg	5	MCERTS	< 5.0	-
1,3-Dichlorobenzene	µg/kg	5	MCERTS	< 5.0	-
p-Isopropyltoluene	µg/kg	5	MCERTS	< 5.0	-
1,4-Dichlorobenzene	µg/kg	5	MCERTS	< 5.0	-
1,2-Dichlorobenzene	µg/kg	5	MCERTS	< 5.0	-
Butylbenzene	µg/kg	5	MCERTS	< 5.0	-

Analytical Report Number: 25-061524
Project / Site name: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH
Your Order No: GWPR6838

Lab Sample Number				748131	748132
Sample Reference				TP101	BH101
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.20-0.40	0.50-1.00
Date Sampled				11/11/2025	11/11/2025
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		
1,2-Dibromo-3-chloropropane	µg/kg	8	MCERTS	< 8.0	-
1,2,4-Trichlorobenzene	µg/kg	5	MCERTS	< 5.0	-
Hexachlorobutadiene	µg/kg	5	MCERTS	< 5.0	-
1,2,3-Trichlorobenzene	µg/kg	5	MCERTS	< 5.0	-

SVOCs

Aniline	mg/kg	0.1	NONE	< 0.1	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	-
1,3-Dichlorobenzene	mg/kg	0.2	NONE	< 0.2	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	-
Hexachloroethane	mg/kg	0.05	ISO 17025	< 0.05	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	-
2-Nitrophenol	mg/kg	0.3	NONE	< 0.3	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	< 0.1	-
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	< 0.2	-
2-Methylnaphthalene	mg/kg	0.1	NONE	0.4	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	-
2,6-Dinitrotoluene	mg/kg	0.1	NONE	< 0.1	-
2,4-Dinitrotoluene	mg/kg	0.2	NONE	< 0.2	-
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	< 0.3	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-
4-Nitroaniline	mg/kg	0.2	NONE	< 0.2	-
Azobenzene	mg/kg	0.3	NONE	< 0.3	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.30	-
Carbazole	mg/kg	0.3	MCERTS	< 0.3	-
Dibutyl phthalate	mg/kg	0.2	NONE	< 0.2	-
Anthraquinone	mg/kg	0.3	NONE	< 0.3	-
Butyl benzyl phthalate	mg/kg	0.3	NONE	< 0.3	-

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



Analytical Report Number: 25-061524
Project / Site name: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH
Your Order No: GWPR6838

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
748132	BH101	0.50-1.00	262	Asbestos Cement	Chrysotile	< 0.001	< 0.001	02/12/2025	DSO

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



Analytical Report Number : 25-061524
Project / Site name: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

* 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 *
748131	TP101	None Supplied	0.20-0.40	Brown loam and clay with brick and stones
748132	BH101	None Supplied	0.50-1.00	Brown clay and sand with gravel

Analytical Report Number : 25-061524

Project / Site name: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

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
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	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
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
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
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
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
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



Analytical Report Number : 25-061524
Project / Site name: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

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
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE
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

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



Units 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Ground and Water Ltd
Head Office
2 The Long Barn
Norton Farm, Selborne Road
Alton
Hampshire
GU34 3NB

Attention: Natasha Kearn

CERTIFICATE OF ANALYSIS

Date of report Generation:	20 November 2025
Customer:	Ground and Water Ltd
Sample Delivery Group (SDG):	251112-45
Your Reference:	GWPR6838
Location:	2 - 6 Seagull Lane, Emsworth, Hampshire PO1
Report No:	783646
Order Number:	GWPR6838

We received 3 samples on Wednesday November 12, 2025 and 3 of these samples were scheduled for analysis which was completed on Thursday November 20, 2025. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Justin Keeton

Business Unit Leader - Land



1291



CERTIFICATE OF ANALYSIS

Validated

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646

Superseded Report:
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
32442008	WS1		0.00 - 0.00	11/11/2025
32441986	WS3		0.00 - 0.00	11/11/2025
32441998	WS4		0.00 - 0.00	11/11/2025

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646

Superseded Report:
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

Results Legend



Test


No Determination
Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

Customer
Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

			32442008		32441986		32441998	
			WS1		WS3		WS4	
			0.00 - 0.00		0.00 - 0.00		0.00 - 0.00	
			Vial (ALE297)	Vial (ALE227)	Vial (ALE297)	Vial (ALE227)	Vial (ALE297)	Vial (ALE227)
			NaOH (ALE245)	500ml Plastic (ALE208)	NaOH (ALE245)	500ml Plastic (ALE208)	NaOH (ALE245)	500ml Plastic (ALE208)
			0.5l glass bottle (ALE227)	0.5l glass bottle (ALE227)	0.5l glass bottle (ALE227)	0.5l glass bottle (ALE227)	0.5l glass bottle (ALE227)	0.5l glass bottle (ALE227)
			GW	GW	GW	GW	GW	GW
Anions by Kone (w)	All	NDPs: 0 Tests: 3	X		X		X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X	X		X	
Dissolved Metals by ICP-MS	All	NDPs: 3 Tests: 0		N	N		N	
EPH and CWG by FID	All	NDPs: 0 Tests: 3	X		X		X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 3		X	X		X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 3	X		X		X	
Mercury Dissolved	All	NDPs: 3 Tests: 0		N	N		N	
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 3	X		X		X	
pH Value	All	NDPs: 0 Tests: 3	X		X		X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 3		X	X		X	
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 3	X		X		X	
TPH CWG (W)	All	NDPs: 0 Tests: 3	X		X		X	
VOC MS (W)	All	NDPs: 0 Tests: 3		X	X		X	

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646

Superseded Report:

Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7OH

[illegible]

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646

Superseded Report:

Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7OH

PAH Spec MS - Aqueous (W)

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646

Superseded Report:

Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	WS1	WS3	WS4			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 11/11/2025 00:00 12/11/2025 251112-45 32442008	0.00 - 0.00 Ground Water (GW) 11/11/2025 00:00 12/11/2025 251112-45 32441986	0.00 - 0.00 Ground Water (GW) 11/11/2025 00:00 12/11/2025 251112-45 32441998			
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
***	6:2 FTAB (see appendix)							
1-4+5@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
2-Chlorophenol (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
2-Methylphenol (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
2-Nitroaniline (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
2-Nitrophenol (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
3-Nitroaniline (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
4-Chloroaniline (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
4-Methylphenol (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
4-Nitroaniline (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
4-Nitrophenol (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
Azobenzene (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
Acenaphthylene (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
Acenaphthene (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
Anthracene (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	2.62 #	<20 #	<100 #			
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<1 #	<10 #	<50 #			



CERTIFICATE OF ANALYSIS

Validated

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646

Superseded Report:
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

SVOC MS (W) - Aqueous

Results Legend			Customer Sample Ref.	WS1	WS3	WS4			
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 11/11/2025 00:00 12/11/2025 251112-45 32442008	0.00 - 0.00 Ground Water (GW) 11/11/2025 00:00 12/11/2025 251112-45 32441986	0.00 - 0.00 Ground Water (GW) 11/11/2025 00:00 12/11/2025 251112-45 32441998			
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
***	6:2 FTAB (see appendix)								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Carbazole (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Chrysene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Dibenzofuran (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Diethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Dimethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<5 #	<50 #	<250 #			
Fluoranthene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Fluorene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Hexachlorobenzene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Pentachlorophenol (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Phenol (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Hexachloroethane (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Nitrobenzene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Naphthalene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Isophorone (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Phenanthrene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			
Pyrene (aq)	<1 µg/l	TM176		<1 #	<10 #	<50 #			



CERTIFICATE OF ANALYSIS

Validated

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646

Superseded Report:

Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

VOC MS (W)

Results Legend		Customer Sample Ref.	WS1	WS3	WS4			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
M	mCERTS accredited.		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
aq	Aqueous / settled sample.		11/11/2025	11/11/2025	11/11/2025			
diss.filt	Dissolved / filtered sample.		00:00	00:00	00:00			
tot.unfilt	Total / unfiltered sample.		12/11/2025	12/11/2025	12/11/2025			
*	Subcontracted - refer to subcontractor report for accreditation status.		251112-45	251112-45	251112-45			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		32442008	32441986	32441998			
***	6:2 FTAB (see appendix)							
1-4*5@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Dibromofluoromethane**	%	TM208	112	111	110			
Toluene-d8**	%	TM208	96.1	96.4	97.3			
4-Bromofluorobenzene**	%	TM208	106	105	98.7			
Dichlorodifluoromethane	<1 µg/l	TM208	<1	<1	<1			
Chloromethane	<1 µg/l	TM208	<1 #	<1 #	<1 #			
Vinyl chloride	<1 µg/l	TM208	<1 #	9.8 #	<1 #			
Bromomethane	<1 µg/l	TM208	<1 #	<1 #	<1 #			
Chloroethane	<1 µg/l	TM208	<1 #	<1 #	<1 #			
Trichlorofluoromethane	<1 µg/l	TM208	<1 #	<1 #	<1 #			
1,1-Dichloroethene	<1 µg/l	TM208	<1 #	39.6 #	1.57 #			
Carbon disulphide	<1 µg/l	TM208	<1 #	<1 #	<1 #			
Dichloromethane	<3 µg/l	TM208	<3 #	<3 #	<3 #			
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1 #	<1 #	<1 #			
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1 #	<1 #	<1 #			
1,1-Dichloroethane	<1 µg/l	TM208	<1 #	42.7 #	2.33 #			
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1 #	16.6 #	1.33 #			
2,2-Dichloropropane	<1 µg/l	TM208	<1	<1	<1			
Bromochloromethane	<1 µg/l	TM208	<1 #	<1 #	<1 #			
Chloroform	<1 µg/l	TM208	<1 #	<1 #	<1 #			
1,1,1-Trichloroethane	<1 µg/l	TM208	<1 #	21.9 #	<1 #			
1,1-Dichloropropene	<1 µg/l	TM208	<1 #	<1 #	<1 #			
Carbontetrachloride	<1 µg/l	TM208	<1 #	<1 #	<1 #			
1,2-Dichloroethane	<1 µg/l	TM208	<1 #	<1 #	<1 #			
Benzene	<1 µg/l	TM208	<1 #	<1 #	<1 #			
Trichloroethene	<1 µg/l	TM208	1 #	48.3 #	3.14 #			
1,2-Dichloropropane	<1 µg/l	TM208	<1 #	<1 #	<1 #			
Dibromomethane	<1 µg/l	TM208	<1 #	<1 #	<1 #			
Bromodichloromethane	<1 µg/l	TM208	<1 #	<1 #	<1 #			
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1 #	<1 #	<1 #			
Toluene	<1 µg/l	TM208	<1 #	<1 #	<1 #			
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1 #	<1 #	<1 #			
1,1,2-Trichloroethane	<1 µg/l	TM208	<1 #	<1 #	<1 #			



CERTIFICATE OF ANALYSIS

Validated

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646

Superseded Report:
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

VOC MS (W)

Results Legend			Customer Sample Ref.	WS1	WS3	WS4			
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 11/11/2025 00:00 12/11/2025 251112-45 32442008	0.00 - 0.00 Ground Water (GW) 11/11/2025 00:00 12/11/2025 251112-45 32441986	0.00 - 0.00 Ground Water (GW) 11/11/2025 00:00 12/11/2025 251112-45 32441998			
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
***	6:2 FTAB (see appendix)								
1-4+5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Tetrachloroethene	<1 µg/l	TM208		<1 #	4.59 #	<1 #			
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #			

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646

Superseded Report:

Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7OH

VOC MS (W)

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

Superseded Report:

Notification of NDPs (No determination possible)

Date Received : 12/11/2025 10:55:28

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
32441986	WS3	0.00 - 0.00	Mercury Dissolved	nple contains sediment-unsuitable for filtered anal
32441986	WS3	0.00 - 0.00	Dissolved Metals by ICP-MS	nple contains sediment-unsuitable for filtered anal
32441998	WS4	0.00 - 0.00	Mercury Dissolved	nple contains sediment-unsuitable for filtered anal
32441998	WS4	0.00 - 0.00	Dissolved Metals by ICP-MS	nple contains sediment-unsuitable for filtered anal
32442008	WS1	0.00 - 0.00	Mercury Dissolved	nple contains sediment-unsuitable for filtered anal
32442008	WS1	0.00 - 0.00	Dissolved Metals by ICP-MS	nple contains sediment-unsuitable for filtered anal



CERTIFICATE OF ANALYSIS

Validated

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

Superseded Report:

Table of Results - Appendix

Method No	Description
TM176	Determination of SVOCs in Water by GCMS
TM178	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM439	Determination of Extractable Petroleum Hydrocarbons (EPH) CWG banding by GC-FID on liquids
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	Determination of GRO by Headspace in waters
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

Superseded Report:

Test Completion Dates

Lab Sample No(s)	32442008	32441986	32441998
Customer Sample Ref.	WS1	WS3	WS4
AGS Ref.			
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water
Anions by Kone (w)	15-Nov-2025	15-Nov-2025	17-Nov-2025
Cyanide Comp/Free/Total/Thiocyanate	14-Nov-2025	14-Nov-2025	14-Nov-2025
EPH and CWG by FID	17-Nov-2025	17-Nov-2025	14-Nov-2025
GRO by GC-FID (W)	13-Nov-2025	13-Nov-2025	13-Nov-2025
Hexavalent Chromium (w)	19-Nov-2025	19-Nov-2025	19-Nov-2025
PAH Spec MS - Aqueous (W)	14-Nov-2025	14-Nov-2025	14-Nov-2025
pH Value	14-Nov-2025	14-Nov-2025	14-Nov-2025
Phenols by HPLC (W)	14-Nov-2025	14-Nov-2025	14-Nov-2025
SVOC MS (W) - Aqueous	20-Nov-2025	18-Nov-2025	18-Nov-2025
TPH CWG (W)	17-Nov-2025	17-Nov-2025	14-Nov-2025
VOC MS (W)	12-Nov-2025	12-Nov-2025	12-Nov-2025



CERTIFICATE OF ANALYSIS

Validated

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

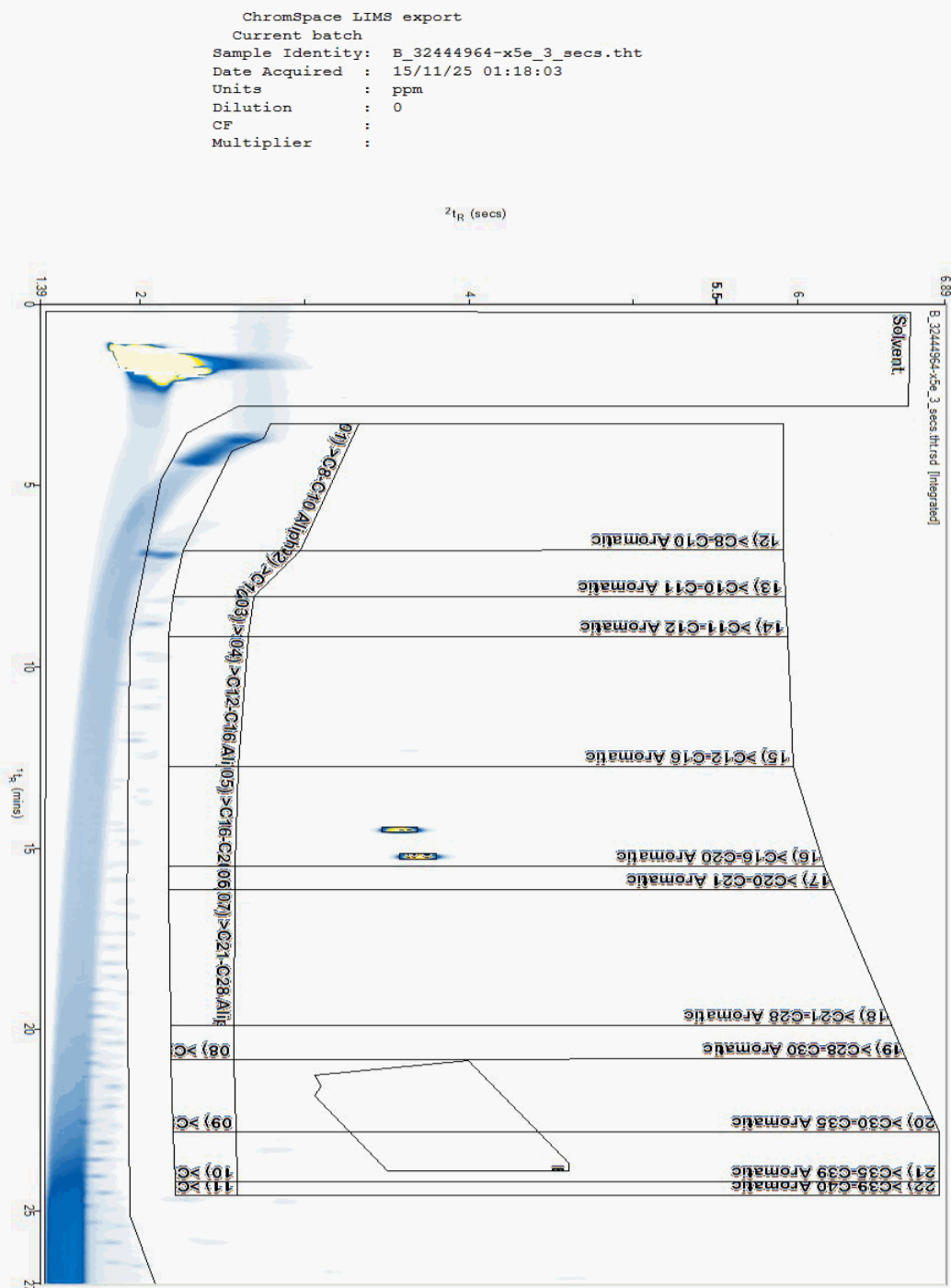
Superseded Report:

Chromatogram

Analysis: EPH and CWG by FID

Sample No : 32444964
Sample ID : WS3

Depth : 0.00 - 0.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

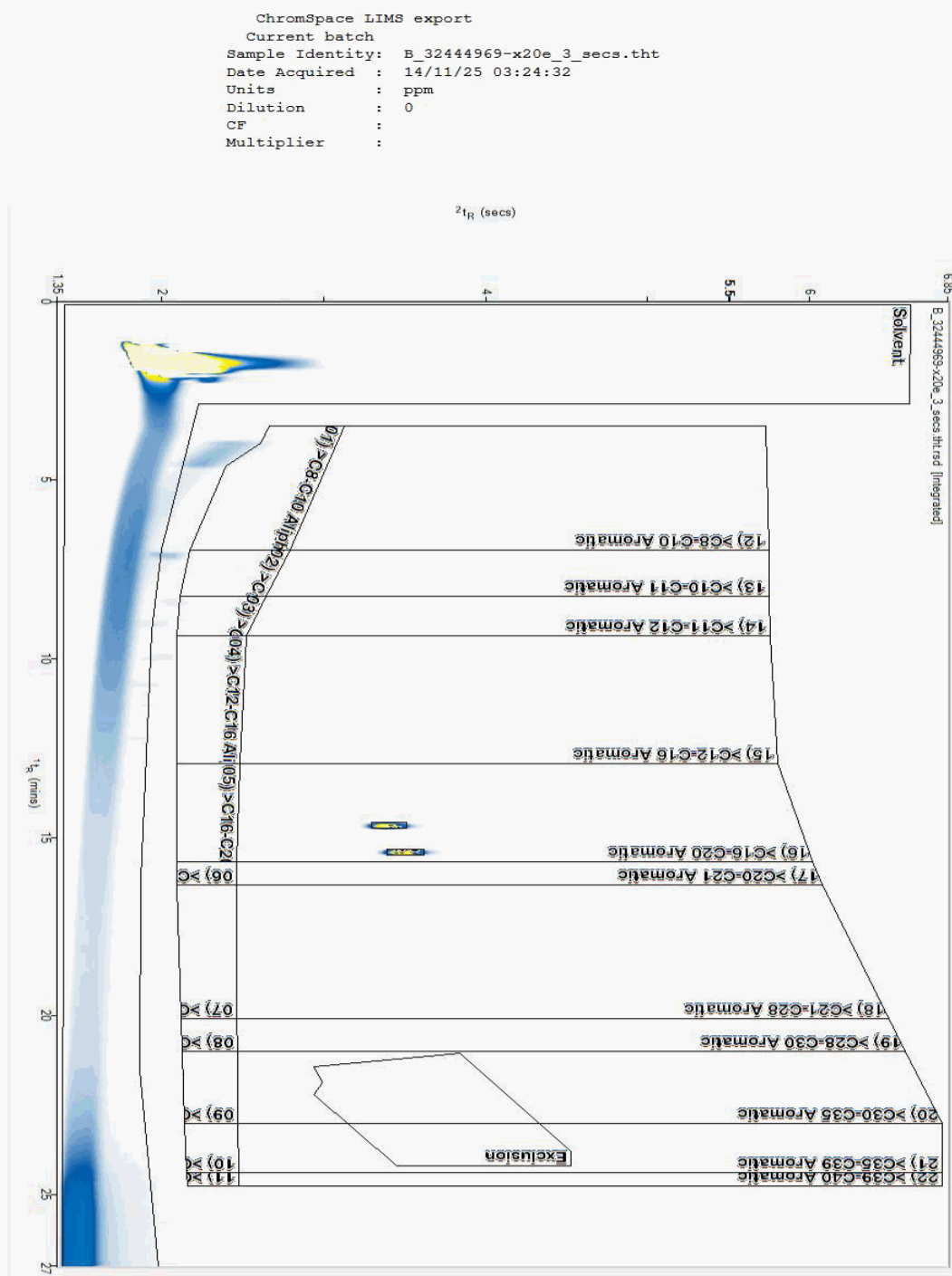
Superseded Report:

Chromatogram

Analysis: EPH and CWG by FID

Sample No : 32444969
Sample ID : WS4

Depth : 0.00 - 0.00



SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646

Superseded Report:

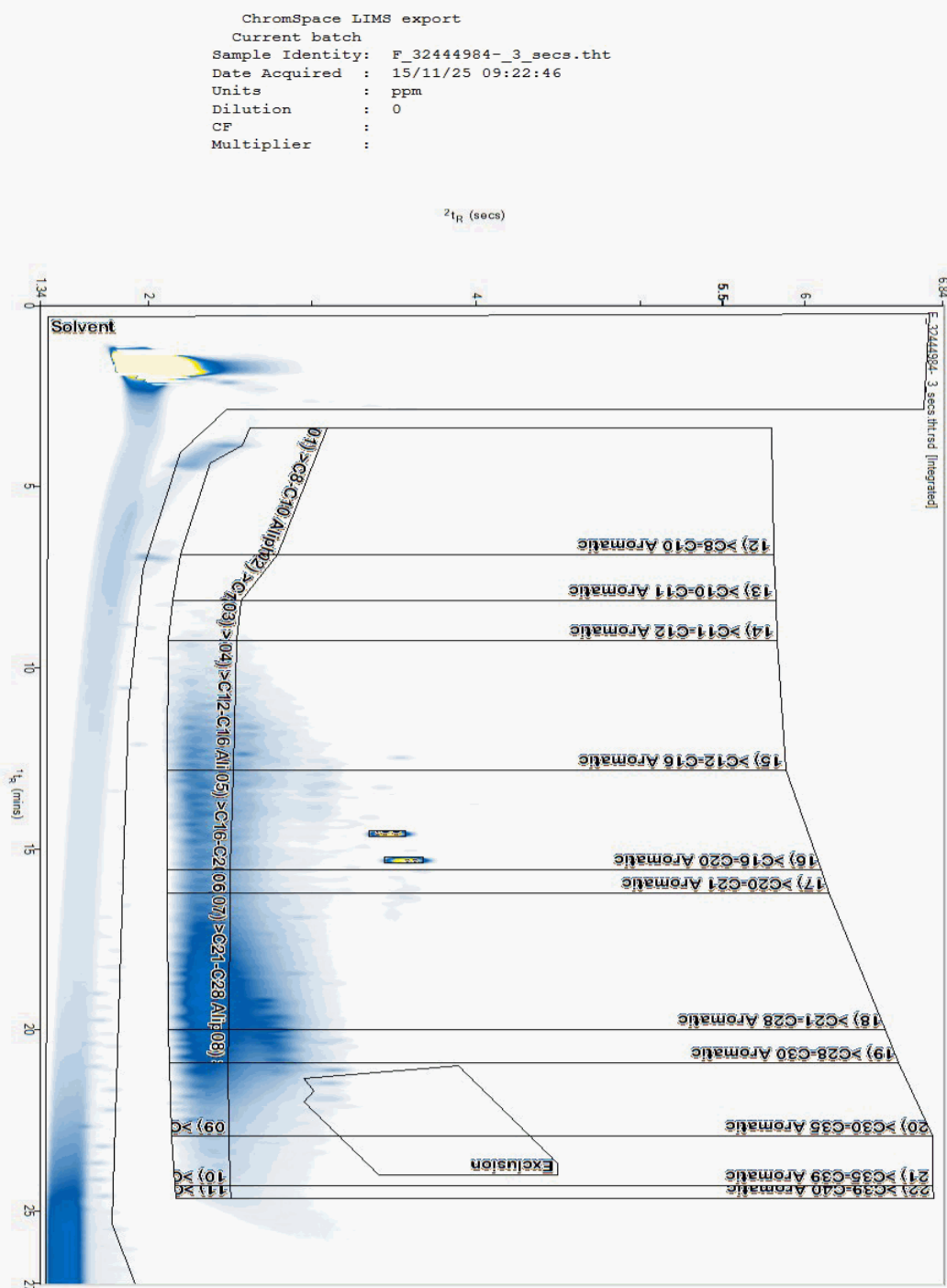
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

Chromatogram

Analysis: EPH and CWG by FID

Sample No : 32444984
Sample ID : WS1

Depth : 0.00 - 0.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

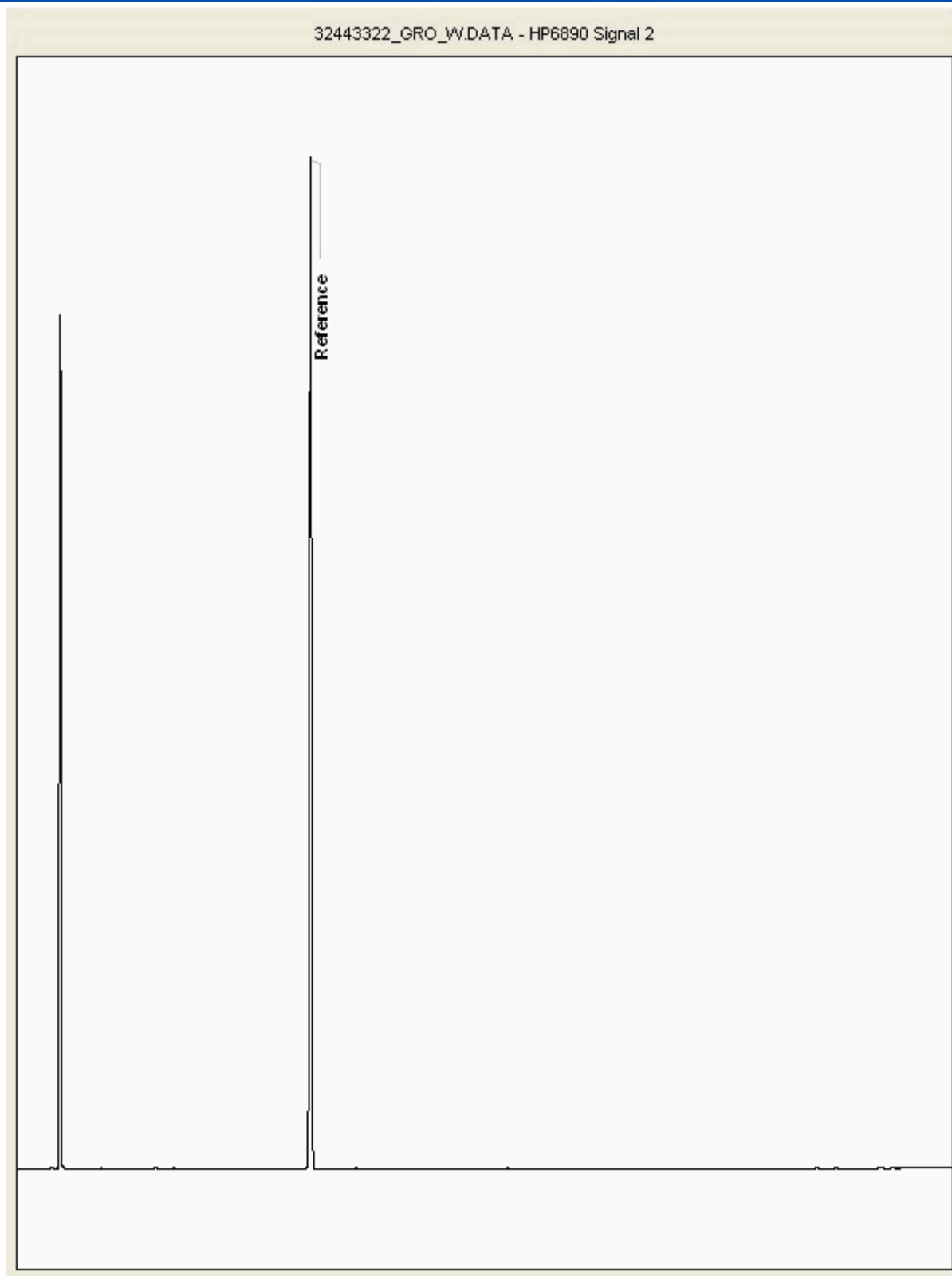
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 32443322
Sample ID : WS4

Depth : 0.00 - 0.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

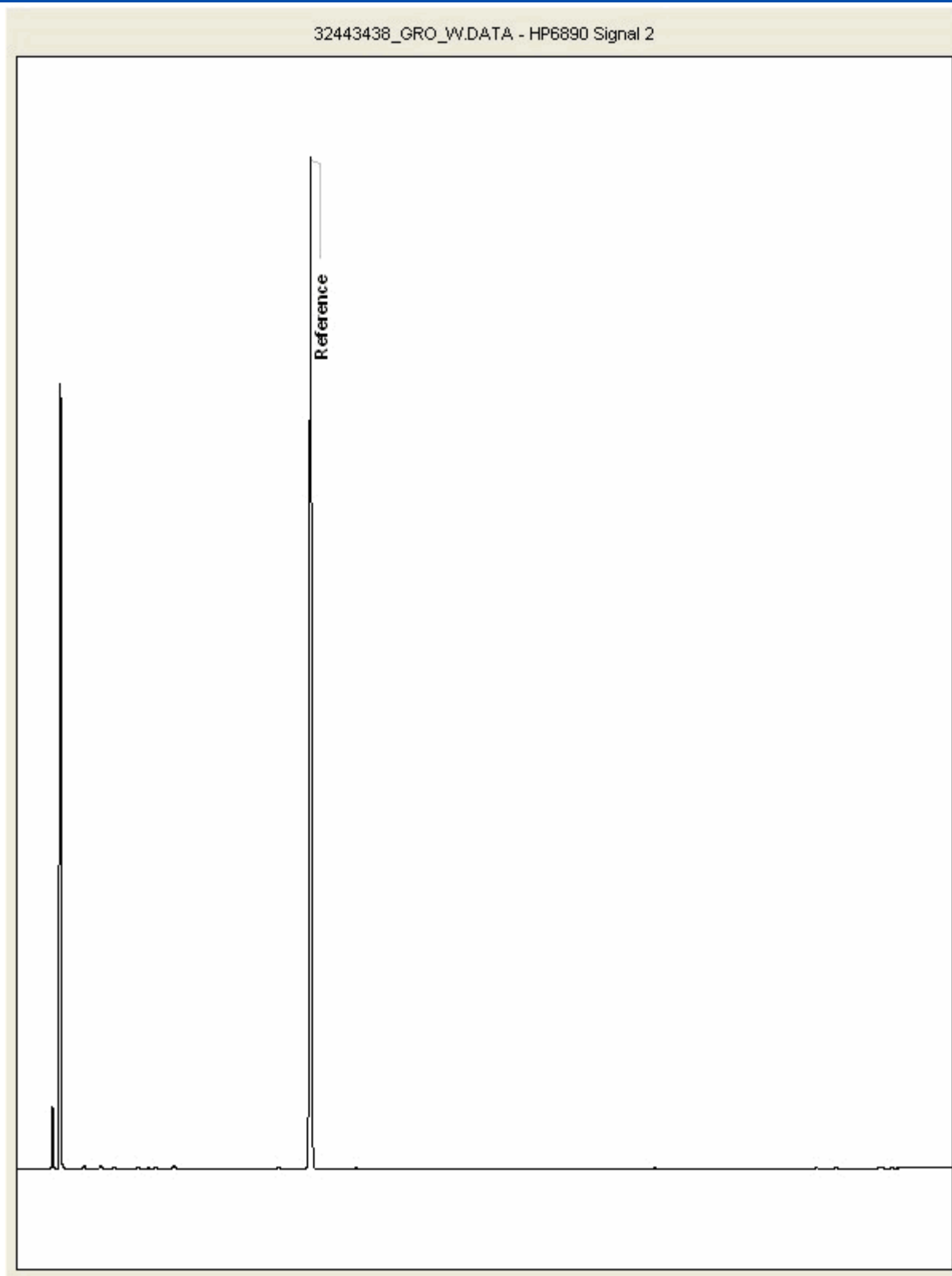
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 32443438
Sample ID : WS3

Depth : 0.00 - 0.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 251112-45
Client Ref.: GWPR6838

Report Number: 783646
Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

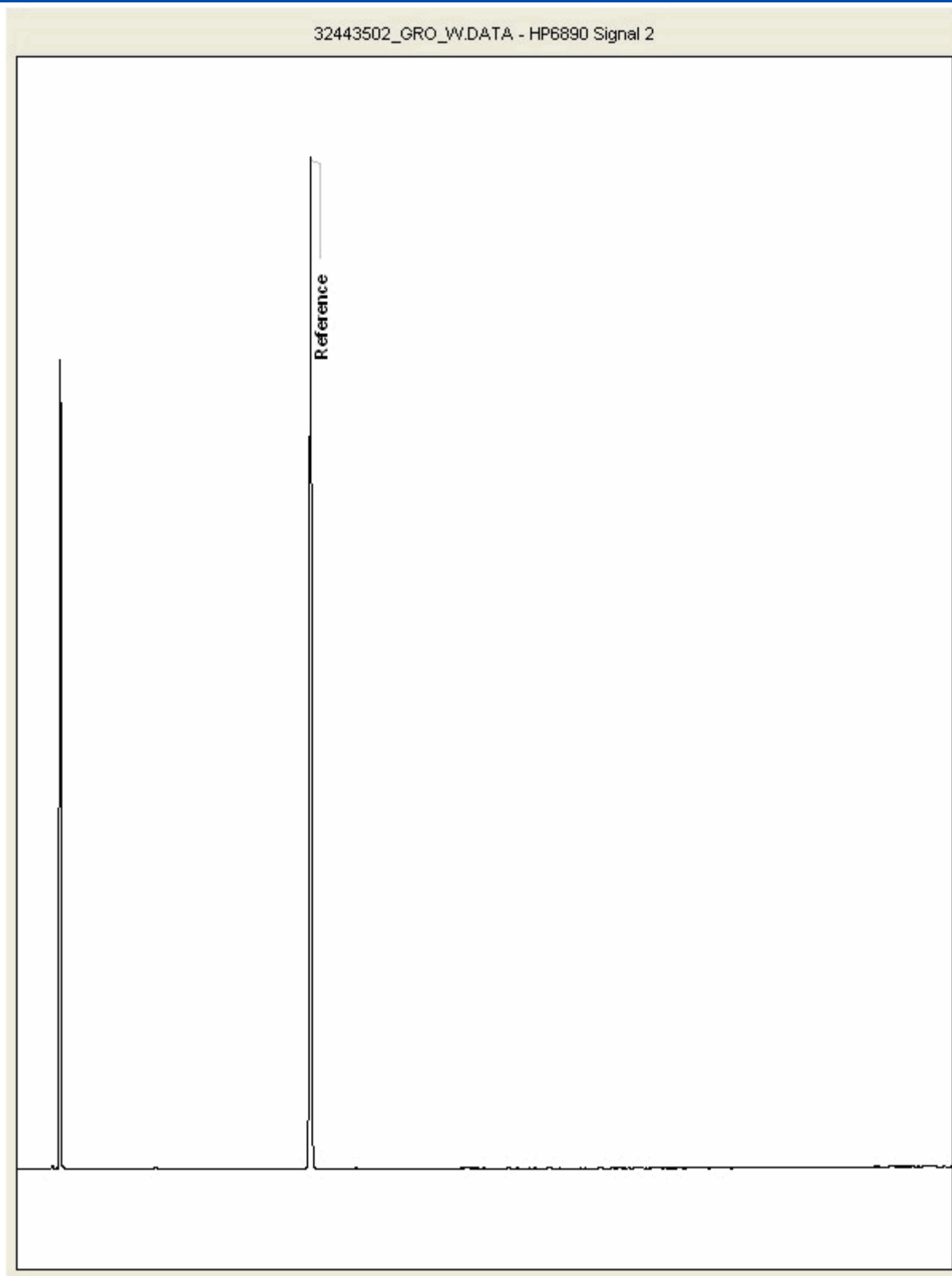
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 32443502
Sample ID : WS1

Depth : 0.00 - 0.00





CERTIFICATE OF ANALYSIS

SDG: 251112-45
Client Ref: GWPR6838

Report Number: 783646

Location: 2 - 6 Seagull Lane, Emsworth, Hampshire PO10 7QH

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur - e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

If during the search of the two 'pinch' samples by PLM only 1 or 2 fibres or fibre bundles are seen and identified as asbestos, the term 'trace asbestos identified' is reported.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Potentially respirable fibres are identified by using a Phase Contrast Microscope.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

21. 6:2 FTAB

Recovery of 6:2 FTAB in the quality control samples has been observed to be <50% of the target value. Please note the 6:2 FTAB result is supplied as indicative only.



Units 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Ground and Water Ltd
Head Office
2 The Long Barn
Norton Farm, Selborne Road
Alton
Hampshire
GU34 3NB

Attention: Natasha Kearn

CERTIFICATE OF ANALYSIS

Date of report Generation:	15 December 2025
Customer:	Ground and Water Ltd
Sample Delivery Group (SDG):	251205-70
Your Reference:	GWPR6838
Location:	2 - 6 Seagull Lane Emsworth Hampshire PO1
Report No:	785900
Order Number:	GWPR6838

We received 1 sample on Friday December 05, 2025 and 1 of these samples were scheduled for analysis which was completed on Monday December 15, 2025. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

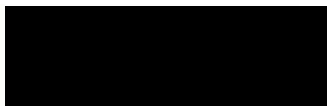
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Justin Keeton

Business Unit Leader - Land



1291



CERTIFICATE OF ANALYSIS

Validated

SDG: 251205-70
Client Ref.: GWPR6838

Report Number: 785900

Superseded Report:
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
32567722	BH101		0.00 - 0.00	03/12/2025

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 251205-70
Client Ref.: GWPR6838

Report Number: 785900

Superseded Report:
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

Results Legend



Test



No Determination
Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

32567722

Customer
Sample Reference

BH101

AGS Reference

Depth (m)

0.00 - 0.00

Container

Vial (ALE297)
NaOH (ALE245)
500ml Plastic
(ALE208)
0.5l glass
bottle (ALE227)

Sample Type

GW GW GW GW

Anions by Kone (w)

All

NDPs: 0
Tests: 1

X

Cyanide
Comp/Free/Total/Thiocyanate

All

NDPs: 0
Tests: 1

X

EPH and CWG by FID

All

NDPs: 0
Tests: 1

X

GRO by GC-FID (W)

All

NDPs: 0
Tests: 1

X

Hexavalent Chromium (w)

All

NDPs: 0
Tests: 1

X

PAH Spec MS - Aqueous (W)

All

NDPs: 0
Tests: 1

X

pH Value

All

NDPs: 0
Tests: 1

X

Phenols by HPLC (W)

All

NDPs: 0
Tests: 1

X

SVOC MS (W) - Aqueous

All

NDPs: 0
Tests: 1

X

TPH CWG (W)

All

NDPs: 0
Tests: 1

X

VOC MS (W)

All

NDPs: 0
Tests: 1

X

SDG: 251205-70
Client Ref.: GWPR6838

Report Number: 785900

Superseded Report:

Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

[illegible]

SDG: 251205-70
Client Ref.: GWPR6838

Report Number: 785900

Superseded Report:

Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7OH

PAH Spec MS - Aqueous (W)

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 251205-70
Client Ref.: GWPR6838

Report Number: 785900

Superseded Report:
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	BH101				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 03/12/2025 00:00 05/12/2025 251205-70 32567722				
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
***	6:2 FTAB (see appendix)						
1-4*5@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<20 #				
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<20 #				
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<20 #				
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<20 #				
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<20 #				
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<20 #				
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<20 #				
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<20 #				
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<20 #				
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<20 #				
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<20 #				
2-Chlorophenol (aq)	<1 µg/l	TM176	<20 #				
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<20 #				
2-Methylphenol (aq)	<1 µg/l	TM176	<20 #				
2-Nitroaniline (aq)	<1 µg/l	TM176	<20 #				
2-Nitrophenol (aq)	<1 µg/l	TM176	<20 #				
3-Nitroaniline (aq)	<1 µg/l	TM176	<20 #				
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<20 #				
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<20 #				
4-Chloroaniline (aq)	<1 µg/l	TM176	<20 #				
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<20 #				
4-Methylphenol (aq)	<1 µg/l	TM176	<20 #				
4-Nitroaniline (aq)	<1 µg/l	TM176	<20 #				
4-Nitrophenol (aq)	<1 µg/l	TM176	<20 #				
Azobenzene (aq)	<1 µg/l	TM176	<20 #				
Acenaphthylene (aq)	<1 µg/l	TM176	<20 #				
Acenaphthene (aq)	<1 µg/l	TM176	<20 #				
Anthracene (aq)	<1 µg/l	TM176	<20 #				
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<20 #				
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<20 #				
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<40 #				
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<20 #				



CERTIFICATE OF ANALYSIS

Validated

SDG: 251205-70
Client Ref.: GWPR6838

Report Number: 785900

Superseded Report:
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	BH101				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 03/12/2025 00:00 05/12/2025 251205-70 32567722				
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
dis.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
***	6:2 FTAB (see appendix)						
1-4+5@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<20 #				
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<20 #				
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<20 #				
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<20 #				
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<20 #				
Carbazole (aq)	<1 µg/l	TM176	<20 #				
Chrysene (aq)	<1 µg/l	TM176	<20 #				
Dibenzofuran (aq)	<1 µg/l	TM176	<20 #				
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<20 #				
Diethyl phthalate (aq)	<1 µg/l	TM176	<20 #				
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<20 #				
Dimethyl phthalate (aq)	<1 µg/l	TM176	<20 #				
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<100 #				
Fluoranthene (aq)	<1 µg/l	TM176	<20 #				
Fluorene (aq)	<1 µg/l	TM176	<20 #				
Hexachlorobenzene (aq)	<1 µg/l	TM176	<20 #				
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<20 #				
Pentachlorophenol (aq)	<1 µg/l	TM176	<20				
Phenol (aq)	<1 µg/l	TM176	<20				
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<20 #				
Hexachloroethane (aq)	<1 µg/l	TM176	<20 #				
Nitrobenzene (aq)	<1 µg/l	TM176	<20 #				
Naphthalene (aq)	<1 µg/l	TM176	<20 #				
Isophorone (aq)	<1 µg/l	TM176	<20 #				
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<20				
Phenanthrene (aq)	<1 µg/l	TM176	<20 #				
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<20 #				
Pyrene (aq)	<1 µg/l	TM176	<20 #				

SDG: 251205-70
Client Ref.: GWPR6838

TPH CWG (W)

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 251205-70
Client Ref.: GWPR6838

Report Number: 785900

Superseded Report:
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

VOC MS (W)

Results Legend		Customer Sample Ref.	BH101				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 03/12/2025 00:00 05/12/2025 251205-70 32567722				
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
***	6:2 FTAB (see appendix)						
1-4*5@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM208	111				
Toluene-d8**	%	TM208	99.1				
4-Bromofluorobenzene**	%	TM208	96				
Dichlorodifluoromethane	<1 µg/l	TM208	<1				
Chloromethane	<1 µg/l	TM208	<1	#			
Vinyl chloride	<1 µg/l	TM208	<1	#			
Bromomethane	<1 µg/l	TM208	<1	#			
Chloroethane	<1 µg/l	TM208	<1	#			
Trichlorofluoromethane	<1 µg/l	TM208	<1	#			
1,1-Dichloroethene	<1 µg/l	TM208	<1	#			
Carbon disulphide	<1 µg/l	TM208	<1	#			
Dichloromethane	<3 µg/l	TM208	<3	#			
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1	#			
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1	#			
1,1-Dichloroethane	<1 µg/l	TM208	<1	#			
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1	#			
2,2-Dichloropropane	<1 µg/l	TM208	<1				
Bromochloromethane	<1 µg/l	TM208	<1	#			
Chloroform	<1 µg/l	TM208	<1	#			
1,1,1-Trichloroethane	<1 µg/l	TM208	<1	#			
1,1-Dichloropropene	<1 µg/l	TM208	<1	#			
Carbontetrachloride	<1 µg/l	TM208	<1	#			
1,2-Dichloroethane	<1 µg/l	TM208	<1	#			
Benzene	<1 µg/l	TM208	<1	#			
Trichloroethene	<1 µg/l	TM208	<1	#			
1,2-Dichloropropane	<1 µg/l	TM208	<1	#			
Dibromomethane	<1 µg/l	TM208	<1	#			
Bromodichloromethane	<1 µg/l	TM208	<1	#			
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1	#			
Toluene	<1 µg/l	TM208	<1	#			
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1	#			
1,1,2-Trichloroethane	<1 µg/l	TM208	<1	#			



CERTIFICATE OF ANALYSIS

Validated

SDG: 251205-70
Client Ref.: GWPR6838

Report Number: 785900

Superseded Report:
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

VOC MS (W)

Results Legend		Customer Sample Ref.	BH101				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 03/12/2025 00:00 05/12/2025 251205-70 32567722				
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
dis.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
***	6:2 FTAB (see appendix)						
1-4*6@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
1,3-Dichloropropane	<1 µg/l	TM208	<1 #				
Tetrachloroethene	<1 µg/l	TM208	<1 #				
Dibromochloromethane	<1 µg/l	TM208	<1 #				
1,2-Dibromoethane	<1 µg/l	TM208	<1 #				
Chlorobenzene	<1 µg/l	TM208	<1 #				
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1 #				
Ethylbenzene	<1 µg/l	TM208	<1 #				
m,p-Xylene	<1 µg/l	TM208	<1 #				
o-Xylene	<1 µg/l	TM208	<1 #				
Styrene	<1 µg/l	TM208	<1 #				
Bromoform	<1 µg/l	TM208	<1 #				
Isopropylbenzene	<1 µg/l	TM208	<1 #				
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1 #				
1,2,3-Trichloropropane	<1 µg/l	TM208	<1 #				
Bromobenzene	<1 µg/l	TM208	<1 #				
Propylbenzene	<1 µg/l	TM208	<1 #				
2-Chlorotoluene	<1 µg/l	TM208	<1 #				
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1 #				
4-Chlorotoluene	<1 µg/l	TM208	<1 #				
tert-Butylbenzene	<1 µg/l	TM208	<1 #				
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1 #				
sec-Butylbenzene	<1 µg/l	TM208	<1 #				
4-iso-Propyltoluene	<1 µg/l	TM208	<1 #				
1,3-Dichlorobenzene	<1 µg/l	TM208	<1 #				
1,4-Dichlorobenzene	<1 µg/l	TM208	<1 #				
n-Butylbenzene	<1 µg/l	TM208	<1 #				
1,2-Dichlorobenzene	<1 µg/l	TM208	<1 #				
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1				
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1 #				
Hexachlorobutadiene	<1 µg/l	TM208	<1 #				
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #				
Naphthalene	<1 µg/l	TM208	<1 #				



Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7OH



CERTIFICATE OF ANALYSIS

Validated

SDG: 251205-70
Client Ref.: GWPR6838

Report Number: 785900
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

Superseded Report:

Table of Results - Appendix

Method No	Description
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	Determination of GRO by Headspace in waters
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM176	Determination of SVOCs in Water by GCMS
TM178	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM439	Determination of Extractable Petroleum Hydrocarbons (EPH) CWG banding by GC-FID on liquids

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 251205-70
Client Ref.: GWPR6838

Report Number: 785900

Superseded Report:
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

Test Completion Dates

Lab Sample No(s) 32567722
Customer Sample Ref. BH101
AGS Ref.
Depth 0.00 - 0.00
Type Ground Water

Anions by Kone (w)	09-Dec-2025
Cyanide Comp/Free/Total/Thiocyanate	12-Dec-2025
EPH and CWG by FID	11-Dec-2025
GRO by GC-FID (W)	10-Dec-2025
Hexavalent Chromium (w)	12-Dec-2025
PAH Spec MS - Aqueous (W)	12-Dec-2025
pH Value	10-Dec-2025
Phenols by HPLC (W)	10-Dec-2025
SVOC MS (W) - Aqueous	15-Dec-2025
TPH CWG (W)	11-Dec-2025
VOC MS (W)	10-Dec-2025



CERTIFICATE OF ANALYSIS

Validated

SDG: 251205-70
Client Ref.: GWPR6838

Report Number: 785900
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

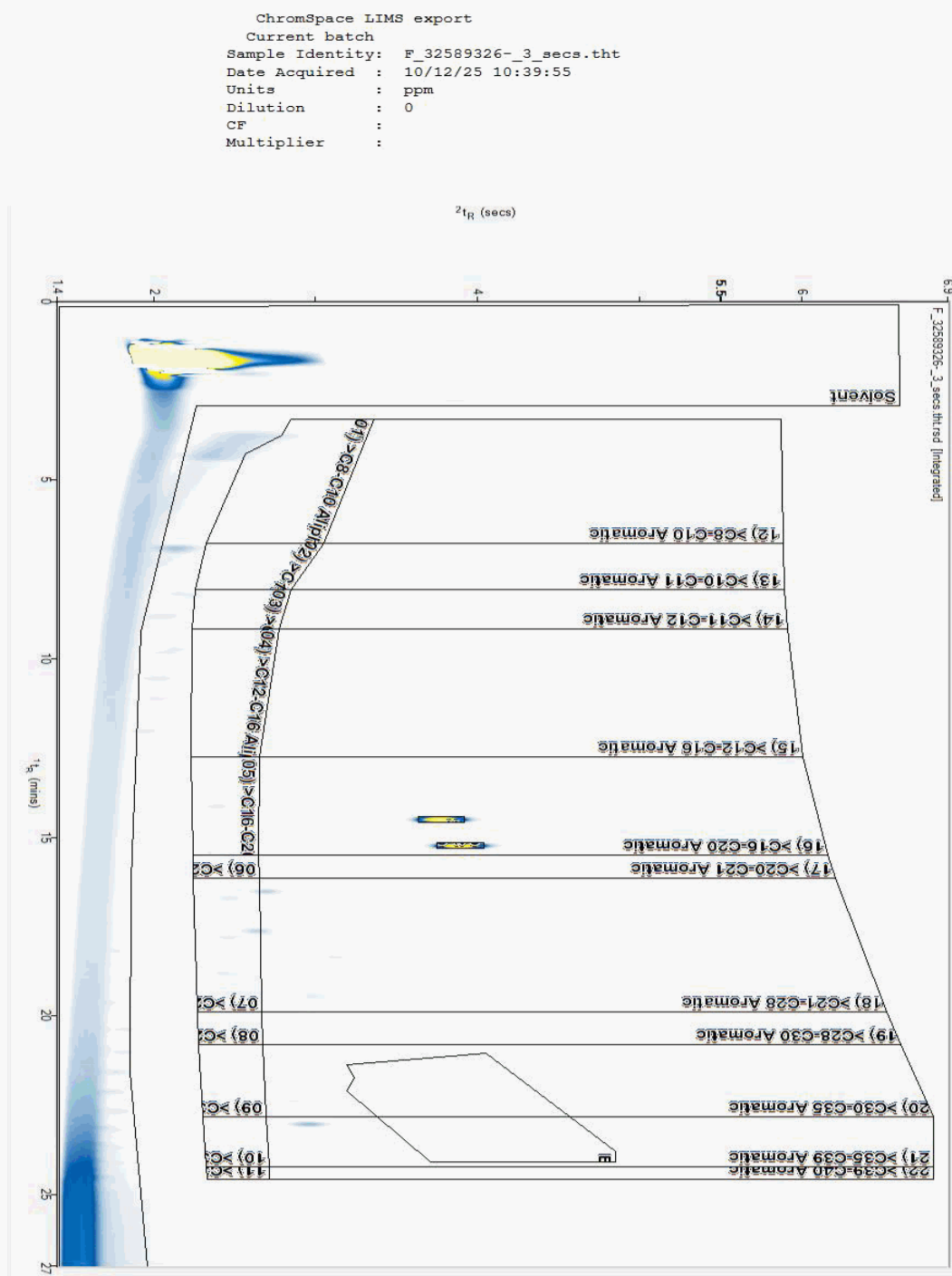
Superseded Report:

Chromatogram

Analysis: EPH and CWG by FID

Sample No : 32589326
Sample ID : BH101

Depth : 0.00 - 0.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 251205-70
Client Ref.: GWPR6838

Report Number: 785900
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

Superseded Report:

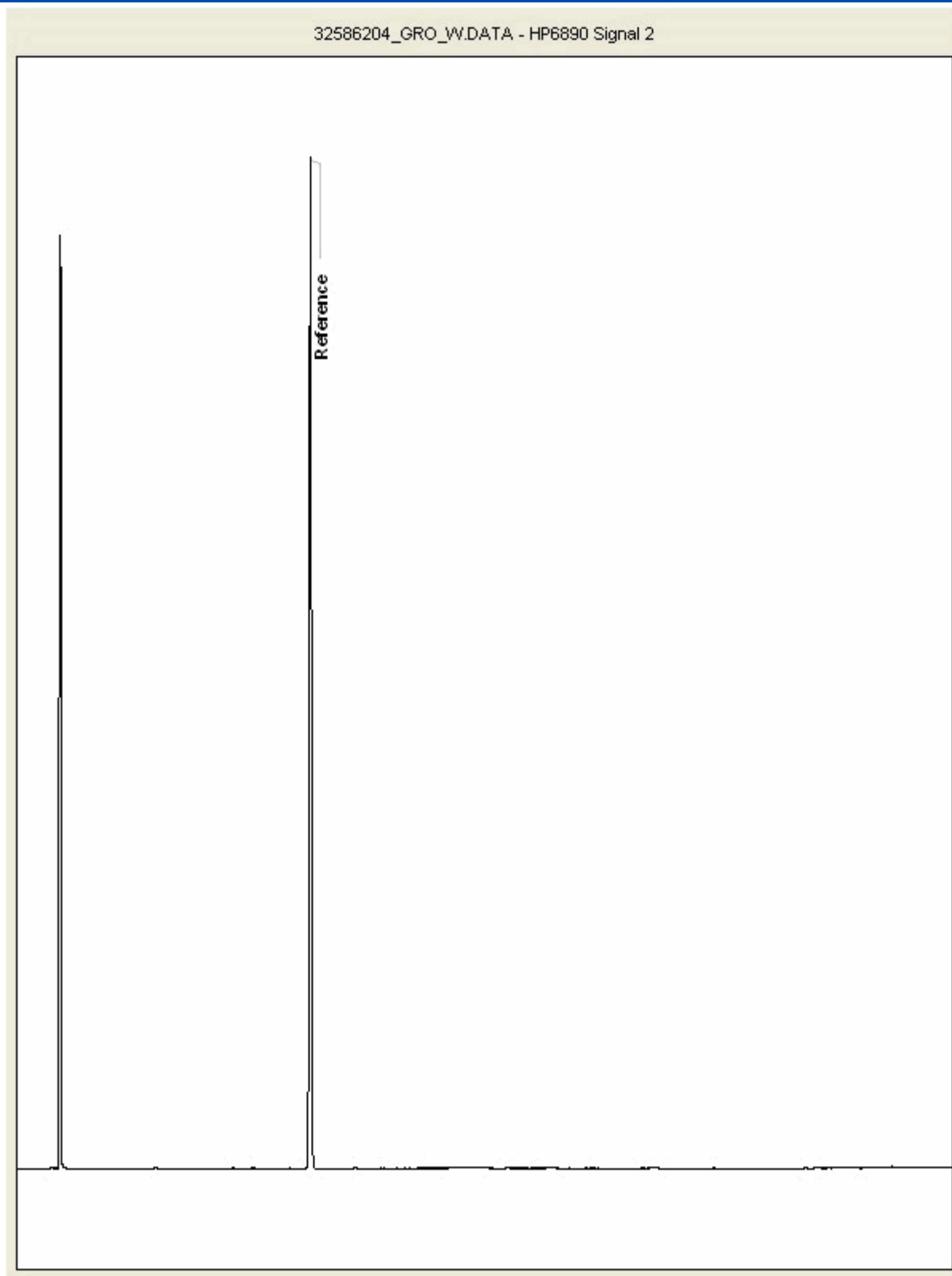
Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 32586204
Sample ID : BH101

Depth : 0.00 - 0.00

32586204_GRO_W.DATA - HP6890 Signal 2





CERTIFICATE OF ANALYSIS

SDG: 251205-70
Client Ref: GWPR6838

Report Number: 785900

Superseded Report:
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur - e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

If during the search of the two 'pinch' samples by PLM only 1 or 2 fibres or fibre bundles are seen and identified as asbestos, the term 'trace asbestos identified' is reported.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Potentially respirable fibres are identified by using a Phase Contrast Microscope.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

21. 6:2 FTAB

Recovery of 6:2 FTAB in the quality control samples has been observed to be <50% of the target value. Please note the 6:2 FTAB result is supplied as indicative only.



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Ground and Water Ltd
Head Office
2 The Long Barn
Norton Farm, Selborne Road
Alton
Hampshire
GU34 3NB

Attention: Natasha Kearn

PRELIMINARY/INTERIM REPORT

Date of report Generation:	18 December 2025
Customer:	Ground and Water Ltd
Sample Delivery Group (SDG):	251127-52
Your Reference:	GWPR6838
Location:	2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH
Report No:	786516
Order Number:	GWPR6838

We received 1 sample on Thursday November 27, 2025 and 1 of these samples were scheduled for analysis which was completed on Monday December 08, 2025. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

This is a preliminary report which has not had final authorisation

Approved By:





PRELIMINARY/INTERIM REPORT

Preliminary

SDG: 251127-52
Client Ref.: GWPR6838

Report Number: 786516
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
32523193	BH101		0.00 - 0.00	26/11/2025

Only received samples which have had analysis scheduled will be shown on the following pages.



PRELIMINARY/INTERIM REPORT

Preliminary

SDG: 251127-52
Client Ref.: GWPR6838

Report Number: 786516
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

Superseded Report:

Results Legend

- X** Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

32523193

Customer
Sample Reference

BH101

AGS Reference

Depth (m)

0.00 - 0.00

Container

Gas Canister

Sample Type

G

Bulk Gas	All	NDPs: 0 Tests: 1	X
TPH in Gas samples	All	NDPs: 0 Tests: 1	X
VOC's	All	NDPs: 0 Tests: 1	X

SDG: 251127-52

Report Number: 786516

Superseded Report:

Client Ref.: GWPR6838

Location: 2 - 6 Seaquill Lane Emsworth Hampshire PO10 7QH

Bulk Gas

[illegible]



PRELIMINARY/INTERIM REPORT

Preliminary

SDG: 251127-52
Client Ref.: GWPR6838

Report Number: 786516
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

Superseded Report:

Sample Number 32523193

Sample ID BH101

Depth 0.00 - 0.00

Sampled Date 26/11/2025 00:00:00

- ISO17025 accredited. M - mCERTS accredited. 1-4*§@ - Sample deviation (see appendix)

Method TM335 Determination of TPH in atmospheric, sub-slab and soil gas samples

Canister No. 33 Sample Volume (ml) 100 Initial pressure (psia) 15.72 Final pressure (psia) 18.86 Dilution 1.1997455471

CAS Number	Compound	LOD	Result	Units	LOD	Result	Units
1634-04-4	MTBE	<1.80	<1.80	ppbv	<6.48	<6.48	ug/m ³
71-43-2	Benzene	<1.56	<1.56	ppbv	<4.98	<4.98	ug/m ³
108-88-3	Toluene	<1.80	<1.80	ppbv	<6.77	<6.77	ug/m ³
100-41-4	Ethyl Benzene	<1.80	<1.80	ppbv	<7.80	<7.80	ug/m ³
108-38-3 & 106-42-3	m/p-Xylene	<1.80	<1.80	ppbv	<7.80	<7.80	ug/m ³
95-47-6	o-Xylene	<1.80	<1.80	ppbv	<7.80	<7.80	ug/m ³
91-20-3	Naphthalene	<2.76	<2.76	ppbv	<14.4	<14.4	ug/m ³
-	TPH (C4-C6)	<12.0	47.6	ppbv	<35.0	139	ug/m ³
-	TPH (C6-C8)	<12.0	15.6	ppbv	<44.3	57.7	ug/m ³
-	TPH (C8-C10)	<16.4	22.7	ppbv	<77.5	107	ug/m ³
-	TPH (C10-C12)	<25.4	<25.4	ppbv	<147	<147	ug/m ³
-	TPH (C4-C12)	<65.8	85.9	ppbv	<304	<304	ug/m ³
-	Aliphatic (C4-C6)	<12.0	47.6	ppbv	<35.0	139	ug/m ³
-	Aliphatic (C6-C8)	<8.64	15.6	ppbv	<32.6	57.7	ug/m ³
-	Aliphatic (C8-C10)	<4.40	22.7	ppbv	<22.5	107	ug/m ³
-	Aliphatic (C10-C12)	<13.4	<13.4	ppbv	<53.0	<53.0	ug/m ³
-	Aromatic (EC5-EC7)	<1.56	<1.56	ppbv	<4.98	<4.98	ug/m ³
-	Aromatic (EC7-EC8)	<1.80	<1.80	ppbv	<6.77	<6.77	ug/m ³
-	Aromatic (EC8-EC10)	<12.0	<12.0	ppbv	<55.0	<55.0	ug/m ³
-	Aromatic (EC10-EC12)	<12.0	<12.0	ppbv	<94.0	<94.0	ug/m ³



PRELIMINARY/INTERIM REPORT

Preliminary

SDG: 251127-52
Client Ref.: GWPR6838

Report Number: 786516
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

Superseded Report:

Sample Number 32523193

Sample ID BH101

Depth

0.00 - 0.00

Sampled Date 26/11/2025 00:00:00

- ISO17025 accredited.

M - mCERTS accredited.

1-4*§@ - Sample deviation (see appendix)

Method TM330

Determination of VOC's in atmospheric, sub-slab and soil gas samples

Canister No. 33

Sample Volume (ml) 100 Dispatch pressure (psia) -0.18 Initial pressure (psia) 15.72 Final pressure (psia) 18.86 Dilution 1.1997455471

CAS Number	Compound	LOD	Result	Units	LOD	Result	Units
71-55-6	1,1,1-Trichloroethane	<1.80	<1.80	# ppbv	<9.79	<9.79	#
79-34-5	1,1,2,2-Tetrachloroethane	<1.80	<1.80	# ppbv	<12.4	<12.4	#
79-00-5	1,1,2-Trichloroethane	<1.80	<1.80	# ppbv	<9.79	<9.79	#
75-34-3	1,1-Dichloroethane	<1.80	<1.80	# ppbv	<7.29	<7.29	#
75-35-4	1,1-Dichloroethene	<1.80	<1.80	# ppbv	<7.14	<7.14	#
120-82-1	1,2,4-Trichlorobenzene	<1.80	<1.80	# ppbv	<13.3	<13.3	#
95-63-6	1,2,4-Trimethylbenzene	<1.80	<1.80	# ppbv	<8.83	<8.83	#
106-93-4	1,2-Dibromoethane	<1.80	<1.80	# ppbv	<13.8	<13.8	#
95-50-1	1,2-Dichlorobenzene	<1.80	<1.80	# ppbv	<10.8	<10.8	#
107-06-2	1,2-Dichloroethane	<1.80	<1.80	# ppbv	<7.29	<7.29	#
78-87-5	1,2-Dichloropropane	<1.80	<1.80	# ppbv	<8.32	<8.32	#
76-14-2	1,2-Dichlorotetrafluoroethane	<1.80	<1.80	# ppbv	<12.6	<12.6	#
108-67-8	1,3,5-Trimethylbenzene	<1.80	<1.80	# ppbv	<8.83	<8.83	#
106-99-0	1,3-Butadiene	<1.80	<1.80	# ppbv	<3.98	<3.97	#
541-73-1	1,3-Dichlorobenzene	<1.80	<1.80	ppbv	<10.8	<10.8	
106-46-7	1,4-Dichlorobenzene	<1.80	<1.80	# ppbv	<10.8	<10.8	#
123-91-1	1,4-Dioxane	<1.80	<1.80	ppbv	<6.48	<6.48	
78-93-3	2-Butanone (MEK)	<1.80	<1.80	# ppbv	<5.30	<5.30	#
591-78-6	2-Hexanone	<1.80	<1.80	# ppbv	<7.36	<7.36	#
67-63-0	2-Propanol	<1.80	<1.80	ppbv	<4.42	<4.42	
622-96-8	4-Ethyltoluene	<1.80	<1.800	ppbv	<8.83	<8.83	
108-10-1	4-Methyl-2-pentanone	<1.80	<1.80	# ppbv	<7.36	<7.36	#
67-64-1	Acetone	<1.80	<1.80	ppbv	<4.27	<4.27	
107-02-8	Acrolein	<1.80	<1.80	# ppbv	<4.12	<4.12	#
71-43-2	Benzene	<1.56	<1.56	# ppbv	<4.98	<4.98	#
100-44-7	Benzyl Chloride	<1.80	<1.80	# ppbv	<9.35	<9.35	#
75-27-4	Bromodichloromethane	<1.80	<1.80	# ppbv	<12.1	<12.1	#
75-25-2	Bromoform	<1.80	<1.80	# ppbv	<18.6	<18.6	#
74-83-9	Bromomethane	<1.80	<1.80	# ppbv	<6.99	<6.99	#
75-15-0	Carbon Disulfide	<1.80	<1.80	# ppbv	<5.60	<5.59	#
56-23-5	Carbon Tetrachloride	<1.80	<1.80	# ppbv	<11.3	<11.3	#
108-90-7	Chlorobenzene	<1.80	<1.80	# ppbv	<8.32	<8.32	#
75-00-3	Chloroethane	<1.80	<1.80	# ppbv	<4.79	<4.78	#
67-66-3	Chloroform	<1.80	<1.80	# ppbv	<8.76	<8.76	#
74-87-3	Chloromethane	<1.80	<1.80	# ppbv	<3.68	<3.68	#
156-59-2	cis-1,2-Dichloroethene	<1.80	<1.80	# ppbv	<7.14	<7.14	#
10061-01-5	cis-1,3-Dichloropropene	<1.80	<1.80	# ppbv	<8.17	<8.17	#
110-82-7	Cyclohexane	<1.80	<1.80	# ppbv	<6.18	<6.18	#
124-48-1	Dibromochloromethane	<1.80	<1.80	ppbv	<15.3	<15.3	
75-71-8	Dichlorodifluoromethane	<1.80	<1.80	# ppbv	<8.91	<8.91	#
141-78-6	Ethyl Acetate	<1.80	<1.80	ppbv	<6.48	<6.48	
100-41-4	Ethylbenzene	<1.80	<1.80	# ppbv	<7.80	<7.80	#
142-82-5	Heptane	<1.80	<1.80	ppbv	<7.36	<7.36	
87-68-3	Hexachlorobutadiene	<1.80	<1.80	ppbv	<19.1	<19.1	
110-54-3	Hexane	<1.80	<1.80	# ppbv	<6.33	<6.33	#
108-38-3 & 106-42-3	m/p-Xylene	<3.60	<3.60	# ppbv	<15.6	<15.6	#



PRELIMINARY/INTERIM REPORT

Preliminary

SDG: 251127-52
Client Ref.: GWPR6838

Report Number: 786516
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

Superseded Report:

Sample Number 32523193

Sample ID BH101

Depth 0.00 - 0.00

Sampled Date 26/11/2025 00:00:00

- ISO17025 accredited. M - mCERTS accredited. 1-4*§@ - Sample deviation (see appendix)

Method TM330 Determination of VOC's in atmospheric, sub-slab and soil gas samples

Canister No. 33

Sample Volume (ml) 100 Dispatch pressure (psia) -0.18 Initial pressure (psia) 15.72 Final pressure (psia) 18.86 Dilution 1.1997455471

CAS Number	Compound	LOD	Result	Units	LOD	Result	Units
80-62-6	Methyl Methacrylate	<1.80	<1.80	ppbv	<7.36	<7.36	
75-09-2	Methylene Chloride	<1.80	<1.80	# ppbv	<6.26	<6.26	#
1634-04-4	MTBE	<1.80	<1.80	# ppbv	<6.48	<6.48	#
91-20-3	Naphthalene	<1.80	<1.80	ppbv	<9.42	<9.42	
95-47-6	o-Xylene	<1.80	<1.80	# ppbv	<7.80	<7.80	#
115-07-01	Propylene	<1.80	<1.80	ppbv	<3.09	<3.09	
100-42-5	Styrene	<1.80	<1.80	# ppbv	<7.66	<7.65	#
127-18-4	Tetrachloroethene	<1.80	<1.80	# ppbv	<12.2	<12.2	#
109-99-9	Tetrahydrofuran	<1.80	<1.80	ppbv	<5.30	<5.30	
TIC's					See Attached		
108-88-3	Toluene	<1.80	<1.80	# ppbv	<6.77	<6.77	#
156-60-5	trans-1,2-Dichloroethene	<1.80	<1.80	# ppbv	<7.14	<7.14	#
1006-02-6	trans-1,3-Dichloropropene	<1.80	<1.80	# ppbv	<8.17	<8.17	#
79-01-6	Trichloroethene	<1.80	<1.80	# ppbv	<9.64	<9.64	#
75-69-4	Trichlorofluoromethane	<1.80	<1.80	# ppbv	<10.1	<10.1	#
26523-64-8	Trichlorotrifluoroethane	<1.80	<1.80	# ppbv	<13.8	<13.8	#
108-05-4	Vinyl Acetate	<1.80	<1.80	# ppbv	<6.33	<6.33	#
75-01-4	Vinyl Chloride	<1.80	<1.80	# ppbv	<4.56	<4.56	#



PRELIMINARY/INTERIM REPORT

Preliminary

SDG: 251127-52
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Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

Superseded Report:

Table of Results - Appendix

Method No	Description
TM053	Determination of Bulk Gas Composition
TM330	Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)
TM335	TPH in atmospheric, sub-slab and soil gas samples

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



PRELIMINARY/INTERIM REPORT

Preliminary

SDG: 251127-52 Report Number: 786516 Superseded Report:
Client Ref.: GWPR6838 Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

Test Completion Dates

Lab Sample No(s)	32523193
Customer Sample Ref.	BH101
AGS Ref.	
Depth	0.00 - 0.00
Type	Gas (G)
TPH in Gas samples	08-Dec-2025
VOC's	05-Dec-2025



VOC TENTATIVELY IDENTIFIED COMPOUNDS REPORT

JOB NUMBER:	251127-52
SAMPLE IDENTITY:	BH101
DATE REPORTED:	05/12/2025
ANALYST:	dj

TENTATIVE COMPOUND IDENTIFICATION		RESULT (ppbv)	RESULT (µg/m3)
1	propane	12	21
2	Mixed Hydrocarbons	18	
3	butane	17	41
4	Mixed Hydrocarbons	10	
5			
6			
7			
8			
9			
10			

Tentatively Identified Compounds (TICs) are non-target peaks in the VOC air analysis. All non-target peaks detected with a concentration above the LoD of 10ppbv are subjected to a mass spectral library search. Non-target peaks with a **Library Search Confidence of >75%** are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as **“Mixed Hydrocarbons”**. Non-target compounds identified from the scan data are semi-quantified relative to one of the internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as a Tentatively Identified Compound (TIC). TICs are outside the scope of our UKAS accreditation.



PRELIMINARY/INTERIM REPORT

SDG: 251127-52
Client Ref: GWPR6838

Report Number: 786516

Superseded Report:
Location: 2 - 6 Seagull Lane Emsworth Hampshire PO10 7QH

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur - e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

If during the search of the two 'pinch' samples by PLM only 1 or 2 fibres or fibre bundles are seen and identified as asbestos, the term 'trace asbestos identified' is reported.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Potentially respirable fibres are identified by using a Phase Contrast Microscope.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

21. 6:2 FTAB

Recovery of 6:2 FTAB in the quality control samples has been observed to be <50% of the target value. Please note the 6:2 FTAB result is supplied as indicative only.

APPENDIX F: Assessment Criteria

DRAFT

Ground and Water Limited

Soil Guideline Values and Generic Assessment Criteria

The Contaminated Land Regime reflects the UK Government's stated objectives of achieving sustainable development through the 'suitable for use approach'. At preliminary risk assessment stage, risks are evaluated qualitatively. As the site investigation progresses to a generic or detailed quantitative risk assessment, data is collected and assessment criteria are utilised to evaluate whether the contaminants represent an unacceptable risk to the identified receptors.

1. Contaminated Land Exposure Assessment Model (CLEA)

Current United Kingdom risk assessment practice is based on the Contaminated Land Exposure Assessment Model (CLEA).

The CLEA Guidance comprises the following documents:

- 1) EA Science Report SC050021/SR2: Human health toxicological assessment of contaminants in soil.
- 2) EA Science Report SC050021/SR3: Updated technical background to the CLEA model.
- 3) EA CLEA Bulletin (2009).
- 4) CLEA software version 1.07 (2015)
- 5) Toxicological reports and SGV technical notes.

The CLEA guidance and tools:

- Do not cover other types of risk to humans, such as fire, suffocation or explosion, or short-term and acute exposures;
- Do not cover risks to the environment, such as groundwater, ecosystems or buildings;
- Do not provide a definitive test for telling when human health risks are significant; and
- Are not a legal requirement in assessing land contamination risks. They are not part of the legal regime for Part 2A of the Environmental Protection Act 1990.

The CLEA guidance derives soil concentrations of contaminants above which (in the opinion of the EA) there may be a concern that warrants further investigation. It does not provide a definitive test for establishing that the risk is significant.

1.1. Land-use Scenarios

The CLEA model uses a range of standard land-use scenarios to develop conceptual exposure models outlined in the following sections.

1.1.1. Residential (with home grown produce) (RwHP)

Generic scenario assumes a typical two-storey house built on a ground bearing slab with a private garden having a lawn, flowerbeds and a small fruit and vegetable patch.

- Critical receptor is a young female child (zero to six years old)
- Exposure duration is six years.
- Exposure pathways include direct soil and indoor dust ingestion, consumption of homegrown produce and any adhering soil, skin contact with soils and indoor dust and inhalation of indoor and outdoor dust and vapours.
- Building type is a two-storey small-terraced house.

A sub-set of this land-use is residential apartments with communal landscaped gardens where the consumption of home grown vegetables will not occur. (Residential without homegrown produce (RwoHP)).

1.1.2. Allotments

Provision of open space (about 250sq.m) commonly made available to tenants by the local authority to grow fruit and vegetable for their own consumption. Typically, there are a number of plots to a site which may have a total area of up to 1 hectare. The tenants are assumed to be adults and that young children make occasional accompanied visits.

Although some allotment holders may choose to keep animals including rabbits, hens, and ducks, potential exposure to contaminated meat and eggs is not considered.

- Critical receptor is a young female child (zero to six years old)
- Exposure duration is six years.
- Exposure pathways include direct soil ingestion, consumption of homegrown produce and any adhering soil, skin contact with soils and inhalation of outdoor dust and vapours.
- There is no building.

1.1.3. Commercial/Industrial

The generic scenario assumes a typical commercial or light industrial property comprising a three-storey building at which employees spend most time indoors and are involved in office-based or relatively light physical work.

- Critical receptor is a working female adult (aged 16 to 65 years old).
- Exposure duration is a working lifetime of 49 years.
- Exposure pathways include direct soil and indoor dust ingestion, skin contact with soils and dusts and inhalation of dust and vapours.
- Building type is a three-storey office (pre 1970).

2. LQM/CIEH Suitable 4 Use Levels (S4UL)

For derivation of these S4UL reference must be made to:

Nathanial, P., McCaffrey, C., Gillet, A., Ogden, R., Nathanial, J., *The LQM/CIEH S4UL's for Human Health Risk Assessment*. Land Quality Press. 2015

2.1. S4UL Background

The Land Quality Management/Chartered Institute of Environmental Health (LQM/CIEH) S4UL for a given land use is the concentration of the contaminant in soil at which the predicted daily exposure,

as calculated by the CLEA software, equals the Health Criteria Value. The S4ULs have been derived for substances based on various generic land use and soil organic matter contents.

The final output for each contaminant represents a synthesis of new toxicological (and fate and transport) reviews published since the preparation of the 2nd edition LQM/CIEH GAC's (Nathanial et al., 2009).

In the derivation of LQM/CIEH S4UL's the principles of 'minimal' or 'tolerable' risk enshrined in SR2, which has not been withdrawn, has been maintained.

2.2. S4UL Land-use

S4UL's have been derived for the basic CLEA land-uses, as described in section 1.2, and for two new land uses:

- Public Open Spaces near Residential Housing (POSresi).
- Public Park (POSpark).

2.2.1. Public Open Spaces near Residential Housing (POSresi)

Includes the predominantly grassed areas adjacent to high density housing, the central green area on many 1930's – 1970's housing estates, and smaller areas commonly incorporated in newer developments as informal grassed areas or more formal landscaped areas with a mixture of open space and covered soils with planting. It is assumed that the close proximity to the place of residence will allow tracking back of soil to occur.

2.2.2. Public Park (POSpark)

An area of open space, usually owned and maintained by the local authority, provided for recreational uses including family visits and picnics, children's play area, informal sporting activities (not a dedicated sports pitch), and dog walking. It is assumed that tracking back of soils into places of residence will be negligible.

The following LQM/CIEH S4ULs (Copyright Land Quality Management Limited) have been reproduced with permission, to the publication number S4UL3072.

3. Category 4 Screening Levels (C4SLs)

In the case of Lead, no SGV or GAC has been published to date. This is likely to be due to the toxicity review that is currently being undertaken by the Environment Agency. In the absence of updated toxicity information the SGV derived using CLEA 1.07 methodology and related toxicity will be used.

The overall objective of the C4SLs research project was to assist the provision of technical guidance in support of Defra's revised Statutory Guidance (SG) for Part 2A of the Environmental Protection Act 1990 (Part 2A) (Defra, 2012a). Specifically, the project aimed to deliver:

- A methodology for deriving C4SLs for four generic land-uses comprising residential, commercial, allotments and public open space; and
- A demonstration of the methodology, via the derivation of C4SLs for six substances – arsenic, benzene, benzo(a)pyrene, cadmium, chromium (VI) and lead.

To help achieve a more targeted approach to identifying and managing contaminated land in relation to the risk (or possibility) of harm to human health, the revised SG presented a new four category

system for considering land under Part 2A, ranging from Category 4, where there is no risk that land poses a significant possibility of significant harm (SPOSH), or the level of risk is low, to Category 1, where the risk that land poses a significant possibility of significant harm (SPOSH) is unacceptably high. More specific guidance on what type of land should be considered as Category 4 (Human Health) is provided in Paragraphs 4.21 and 4.22 of the revised SG, as follows:

“4.21 The local authority should consider that the following types of land should be placed into Category 4: Human Health:

(a) Land where no relevant contaminant linkage has been established.

(b) Land where there are only normal levels of contaminants in soil, as explained in Section 3 of this Guidance.

(c) Land that has been excluded from the need for further inspection and assessment because contaminant levels do not exceed relevant generic assessment criteria in accordance with Section 3 of this Guidance, or relevant technical tools or advice that may be developed in accordance with paragraph 3.30 of this Guidance.

(d) Land where estimated levels of exposure to contaminants in soil are likely to form only a small proportion of what a receptor might be exposed to anyway through other sources of environmental exposure (e.g. in relation to average estimated national levels of exposure to substances commonly found in the environment, to which receptors are likely to be exposed in the normal course of their lives).

4.22 The local authority may consider that land other than the types described in paragraph 4.21 should be placed into Category 4: Human Health if following a detailed quantitative risk assessment it is satisfied that the level of risk posed is sufficiently low.”

The C4SLs are intended as “relevant technical tools” (in relation to Paragraph 4.21(c)) to help local authorities and others when deciding to stop further assessment of a site, on the grounds that it falls within Category 4 (Human Health).

The Impact Assessment (IA), which accompanied the revised SG (Defra, 2012b) provides further information on the nature and potential role of the C4SLs. Paragraph 47(h) of the IA states that:

“The new statutory guidance will bring about a situation where the current SGVs/GACs are replaced with more pragmatic (but still strongly precautionary) Category 4 screening levels (C4SLs) which will provide a higher simple test for deciding that land is suitable for use and definitely not contaminated land.”

A key distinction between the Soil Guideline Values (SGVs) and the C4SLs is the level of risk that they describe. As described by the Environment Agency (2009a):

“SGVs are guidelines on the level of long-term human exposure to individual chemicals in soil that, unless stated otherwise, are tolerable or pose a minimal risk to human health.”

The implication of Paragraph 47(h) of the IA is that minimal risk is well within Category 4 and that the C4SLs should describe a higher level of risk which, whilst not minimal, can still be considered low enough to allow a judgement to be made that land containing substances at, or below, the C4SLs would typically fall within Category 4. This reflects Paragraph 4.20 of the revised SG, which states:

“4.20 The local authority should not assume that land poses a significant possibility of significant harm if it considers that there is no risk or that the level of risk posed is low. For the purposes of this Guidance, such land is referred to as a “Category 4: Human Health” case. The authority may decide that the land is a Category 4: Human Health case as soon as it considers it has evidence to this effect, and this may happen at any stage during risk assessment including the early stages.”

C4SLs, therefore, should not be viewed as “SPOSH levels” and they should not be used as a legal trigger for the determination of land under Part 2A.

The generic screening values referred to before usually take the form of risk-based Soil Guideline Values (SGVs) or other Generic Assessment Criteria (GACs) that are most typically derived using the Environment Agency’s Contaminated Land Exposure Assessment (CLEA) model, as described in the Environment Agency’s SR2, SR3 and SR7 reports (EA, 2009b & c; EA, 2008). It is anticipated that C4SLs will be used in a similar manner; as generic screening criteria that can be used within a GQRA, albeit describing a higher level of risk than the SGVs.

The suggested approach to the development of C4SLs consists of the retention and use of the CLEA framework, modified according to considerations of the underlying science within the context of Defra’s policy objectives relating to the revised SG. Within this context, it is suggested that the development of C4SLs may be achieved in one of three ways, namely:

- By modifying the toxicological parameters used within CLEA (while maintaining current exposure parameters);
- By modifying the exposure parameters embedded within CLEA (while maintaining current toxicological “minimal risk” interpretations); and
- By modifying both toxicological and exposure parameters.

There is also a suggested check on “other considerations” (e.g., background levels, epidemiological data, sources of uncertainty) within the approach, applicable to all three options.

It is suggested that a new term is defined for the toxicological guidance values associated with the derivation of C4SLs – a Low Level of Toxicological Concern (LLTC). A LLTC should represent an intake of low concern that remains suitably protective of health, and definitely does not approach an intake level that could be defined as SPOSH.

4. CL:AIRE Generic Assessment Criteria (GAC)

For derivation of the CL:AIRE Generic Assessment Criteria (GAC) reference should be made to the following report:

CL:AIRE, *The Soil Generic Assessment Criteria for Human Health Risk Assessment. Contaminated Land: Applications in the Real Environment*. 2009.

Within this report, Contaminated Land: Applications in Real Environments (CL:AIRE) provided Generic Assessment Criteria (GAC) in accordance with the CLEA software and the principles outlined previously for a further 35 contaminants sometimes encountered on land affected by contamination.

5. SoBRA Acute GAC

The Society of Brownfield Risk Assessment (SoBRA) identified that most human health risk assessments focus on the chronic risks arising from long-term exposure to specific substances. As chronic risks often occur at lower doses than acute risks, they are often the key drivers, however, in some instances the acute dose may also be an important consideration within risk assessments.

The methodology for deriving the acute GAC were related to two distinct receptor groups:

- Members of the public, where the 'critical' receptor for this group will typically be a female child, which is consistent with CLEA residential and Public Open Space/allotments land-uses;
- Workers involved with excavations. The critical receptor for this group is assumed to be a female working adult, without the use of PPE.

The acute GACs relate to short term exposure of high concentrations of a substance that lead to acute effects. They are not considered to be average exposures across a specific / defined area. As a result, the GACs should be normally be compared with the maximum likely concentration that the individual may be exposed to, and not the average concentration within a specific area.

The SoBRA acute GAC will primarily be used for contaminants that do not currently have any GAC, most notably Cyanide.

6. Detailed Quantitative Risk Assessments (DQRA)

Where the adoption of a GAC is not appropriate, for instance when the intended land-use is at variance the CLEA standard land-uses, then a DQRA may be undertaken to develop site specific values for relevant soil contaminants.

- | |
|---|
| <ul style="list-style-type: none">▪ Establishing the plausibility that generic exposure pathways exist in practice by measurement and observation.▪ Developing more accurate parameters using site data. |
|---|

7. Phytotoxicity

CLEA guidance only addresses human health toxicity; assessment of plant toxicity (phytotoxicity) is based on threshold trigger values obtained from the following source:

- BS3882:2015 – *Specification for Topsoil*

The trigger values are relevant only to those contaminants, where present in excess, have the potential to inhibit plant growth, or kill plants (Cu, Ni and Zn). The criteria have been based on a wide range of planting that are common within a multi-purpose topsoil.

8. Statistical Tests

DEFRA R&D Publication CLR 7 (DOE 1994) addressed the statistical treatment of test results and their comparison to Soil Guideline Values.

Consideration must be given to the appropriate area of land to be considered termed the critical averaging area.

For a communal open space or commercial land-use, the critical averaging area will depend on the proposed layout. For a residential use with private gardens the averaging area is the individual plot.

It may be appropriate to compare the upper 95th percentile concentration with the Soil Guideline Value, subject to applying a statistical test to establish that the range of concentrations are reasonably consistent and belonging to the same underlying distribution of data.

CL:AIRE published guidance in 2020, *Guidance in comparing soil contamination data with a critical concentration*, superseding the CL:AIRE/CIEH 2008 report of the same name. The guidance provides ways to assist land contamination stakeholders to apply statistical methods to their data to enable decisions under the legislative framework; either planning system or Part 2A of the Environmental Protection Act 1990.

The use of the statistical tests should only be applied if the following statements are valid for the datasets:

- Averaging areas, as well as the smallest area of concern have been identified on the basis of the CSM, including the desk study and/or the site walkover;
- The sample locations were chosen using a simple random, stratified random or stratified systematic (square, herringbone or triangular grid) sampling pattern, rather than being targeted to locations suspected of being contaminated;
- The sample locations are relatively evenly spread across the area and are not clustered, to avoid giving undue weight to some parts of the site over others in the calculated statistics;
- The analyses do not suggest a hotspot or outlier of contamination that should be treated as a separate zone. This has been established by a histogram and/or a names statistical test;
- The sample locations are all taken from one population (i.e. the same material);
- Where an averaging zone encompasses several averaging areas, analyses do not show a spatial trend or other spatial pattern across that zone; and
- The number of samples has been shown to be sufficient for a statistical analysis.

Any included statistical spreadsheet is based on an in-house method of statistical analysis, in line with those outlined within the CL:AIRE guidance (2020).

Treatment of Hot-Spots

- A statistical test is applied to establish whether the data is a part of a single set, or whether data outliers are present.
- Provided that the data is based on random sampling and no distinct contamination source was present at the sampling location, the hot-spot(s) may be excluded and the mean of the remaining data assessed.

9. Ground and Water Limited Soil Assessment Criteria

The Soil Assessment Criteria used in the preparation of the Generic Quantitative Risk Assessment are tabulated in the following pages, where the source of each has been outlined in the previous sections.

9.1. Inorganics

SoBRA – Acute Generic Assessment Criteria						
Determinand	RwHP (mg/kg)	RwoHP (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)	POSresi (mg/kg)	POSpark (mg/kg)
Cyanide	24	24	24	1400	24	24

9.2. Metals

C4SL Low Level of Toxicological Concern						
Determinand	RwHP (mg/kg)	RwoHP (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)	POSresi (mg/kg)	POSpark (mg/kg)
Lead	< 200	< 310	< 80	< 2300	< 630	< 1300

LQM/CIEH Suitable 4 Use Levels – Metals and Semi-metals						
Determinand	RwHP (mg/kg)	RwoHP (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)	POSresi (mg/kg)	POSpark (mg/kg)
Arsenic	37	40	43	640	79	170
Beryllium	1.7	1.7	35	12	2.2	63
Boron	290	11000	45	240000	21000	46000
Cadmium	11	85	1.9	190	120	532
Chromium (III)	910	910	18000	8600	1500	33000
Chromium (VI)	6	6	1.8	33	7.7	220
Copper	2400	7100	520	68000	12000	44000
Elemental Mercury	1.2	1.2	21	58	16	30
Inorganic Mercury	40	56	19	1100	120	240
Methylmercury	11	15	6	320	40	68
Nickel	130	180	53	980	230	800
Selenium	250	430	88	12000	1100	1800
Vanadium	410	1200	91	9000	2000	5000
Zinc	3700	40000	620	730000	81000	170000

Phytotoxicity (Harmful to Plants) Threshold Trigger Values			
Determinand	Soil pH < 6.0 (mg/kg)	Soil pH 6.0 – 7.0 (mg/kg)	Soil pH > 7.0 (mg/kg)
Copper	100	135	200
Nickel	60	75	110
Zinc	200	200	300
Notes: BS3882:2015 – <i>Specification for Topsoil</i> . Based on a wide range of common plants that will be exposed to multi-purpose topsoil. Toxicity of contaminant may also be impacted by pH of soils. Site observation of plant vitality may give additional guidance.			

CL:AIRE Soil Generic Assessment Criteria				
Determinand	Residential (mg/kg)	Residential without plant uptake (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)
Antimony	ND	550	ND	7500
Barium	ND	1300	ND	22000
Molybdenum	ND	670	ND	17000
ND – Not derived				

9.3. Total Petroleum Hydrocarbons (TPHs)

9.3.1. BTEX Compounds

LQM/CIEH Suitable 4 Use Levels – BTEX Compounds							
Determinand	Soil Organic Matter	RwHP (mg/kg)	RwoHP (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)	POSresi (mg/kg)	POSpark (mg/kg)
Benzene	1.0% SOM	0.087	0.38	0.017	27	72	90
	2.5% SOM	0.170	0.70	0.034	47	72	100
	6.0% SOM	0.370	1.40	0.075	90	73	110
Toluene	1.0% SOM	130	880	22	56000	56000	87000
	2.5% SOM	290	1900	51	110000	56000	95000
	6.0% SOM	660	3900	120	180000	56000	100000
Ethylbenzene	1.0% SOM	47	83	16	5700	24000	17000
	2.5% SOM	110	190	39	13000	24000	22000
	6.0% SOM	260	440	91	27000	25000	27000
o-Xylene	1.0% SOM	60	88	28	6600	41000	17000
	2.5% SOM	140	210	67	15000	42000	24000
	6.0% SOM	330	480	160	33000	43000	33000
m-Xylene	1.0% SOM	59	82	31	6200	41000	17000
	2.5% SOM	140	190	74	14000	42000	24000
	6.0% SOM	320	450	170	31000	43000	33000
p-Xylene	1.0% SOM	56	79	29	5900	41000	17000
	2.5% SOM	130	180	69	14000	42000	23000
	6.0% SOM	310	430	160	30000	43000	31000

SOM = Soil Organic Matter Content (%)

9.3.2. Total Petroleum Hydrocarbons – Aliphatic

LQM/CIEH Suitable 4 Use Levels For TPH							
Aliphatic		RwHP (mg/kg)	RwoHP (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)	POSresi (mg/kg)	POSpark (mg/kg)
EC 5-6	1.0% SOM	42	42	730	3,200 (304) sol	570,000 (304) sol	95,000 (304) sol
	2.5% SOM	78	78	1,700	5,900 (558) sol	590,000	130,000 (558) sol
	6.0% SOM	160	160	3,900	12,000 (1150) sol	600,000 (1150) sol	180,000 (1150) sol
EC >6-8	1.0% SOM	100	100	2,300	7,800 (144) sol	600,000	150,000 (144) sol
	2.5% SOM	230	230	5,600	17,000 (322) sol	610,000	220,000 (322) sol
	6.0% SOM	530	530	13,000	40,000 (736) sol	620,000	320,000 (736) sol
EC >8-10	1.0% SOM	27	27	320	2,000 (78) sol	13,000	14,000 (78) sol
	2.5% SOM	65	65	770	4,800 (118) vap	13,000	18,000 (118) vap
	6.0% SOM	150	150	1,700	11,000 (451) vap	13,000	21,000 (451) vap
EC >10-12	1.0% SOM	130 (48) vap	130 (48) vap	2,200	9,700 (48) sol	13,000	21,000 (48) sol
	2.5% SOM	330 (118) vap	330 (118) vap	4,400	23,000 (118) vap	13,000	23,000 (118) vap
	6.0% SOM	760 (283) vap	760 (283) vap	7,300	47,000 (283) vap	13,000	24,000 (283) vap
EC >12-16	1.0% SOM	1,100 (24) sol	1,100 (24) sol	11,000	59,000 (24) sol	13,000	25,000 (24) sol
	2.5% SOM	2,400 (59) sol	2,400 (59) sol	13,000	82,000 (59) sol	13,000	25,000 (59) sol
	6.0% SOM	4,300 (142) sol	4,400 (142) sol	13,000	90,000 (142) sol	13,000	26,000 (142) sol
EC >16-35	1.0% SOM	65,000 (8.48) sol	65,000 (8.48) sol	260,000	1,600,000	250,000	450,000
	2.5% SOM	92,000 (21) sol	92,000 (21) sol	270,000	1,700,000	250,000	480,000
	6.0% SOM	110,000	110,000	270,000	1,800,000	250,000	490,000
EC >35-44	1.0% SOM	65,000 (8.48) sol	65,000 (8.48) sol	260,000	1,600,000	250,000	450,000
	2.5% SOM	92,000 (21) sol	92,000 (21) sol	270,000	1,700,000	250,000	480,000
	6.0% SOM	110,000	110,000	270,000	1,800,000	250,000	490,000

SOM = Soil Organic Matter Content (%)

vap – GAC presented exceeds the vapour saturation limit, which is presented in brackets.

sol – GAC presented exceeds the soil saturation limit, which is presented in brackets.

9.3.3. Total Petroleum Hydrocarbons – Aromatic

LQM/CIEH Suitable 4 Use Levels For TPH							
Aromatic		RwHP (mg/kg)	RwoHP (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)	POSresi (mg/kg)	POSpark (mg/kg)
EC 5-7 (Benzene)	1.0% SOM	70	370	13	26,000 (1220) ^{sol}	56,000	76,000 (1220) ^{sol}
	2.5% SOM	140	690	27	46,000 (2260) ^{sol}	56,000	84,000 (2260) ^{sol}
	6.0% SOM	300	1,400	57	86,000 (4710) ^{sol}	56,000	92,000 (4710) ^{sol}
EC >7-8 (Toluene)	1.0% SOM	130	860	22	56,000 (869) ^{vap}	56,000	87,000 (869) ^{sol}
	2.5% SOM	290	1,800	51	110,000 (1920) ^{sol}	56,000	95,000 (1920) ^{sol}
	6.0% SOM	660	3,900	120	180,000 (4360) ^{vap}	56,000	100,000 (4360) ^{vap}
EC >8-10	1.0% SOM	34	47	8.6	3,500 (613) ^{vap}	5,000	7,200 (613) ^{vap}
	2.5% SOM	83	110	21	8,100 (1500) ^{vap}	5,000	8,500 (1500) ^{vap}
	6.0% SOM	190	270	51	17,000 (3850) ^{vap}	5,000	9,300 (3580) ^{vap}
EC >10-12	1.0% SOM	74	250	13	16,000 (364) ^{sol}	5,000	9,200 (364) ^{sol}
	2.5% SOM	180	590	31	28,000 (899) ^{sol}	5,000	9,700 (889) ^{sol}
	6.0% SOM	380	1,200	74	34,000 (2150) ^{sol}	5,000	10,000
EC >12-16	1.0% SOM	140	1,800	23	36,000 (169) ^{sol}	5,100	10,000
	2.5% SOM	330	2,300 (419) ^{sol}	57	37,000	5,100	10,000
	6.0% SOM	660	2,500	130	38,000	5,000	10,000
EC >16-21	1.0% SOM	260	1,900	46	28,000	3,800	7,600
	2.5% SOM	540	1,900	110	28,000	3,800	7,700
	6.0% SOM	930	1,900	260	28,000	3,800	7,800
EC >21-35	1.0% SOM	1,100	1,900	370	28,000	3,800	7,800
	2.5% SOM	1,500	1,900	820	28,000	3,800	7,800
	6.0% SOM	1,700	1,900	1,600	28,000	3,800	7,900
EC >35-44	1.0% SOM	1,100	1,900	370	28,000	3,800	7,800
	2.5% SOM	1,500	1,900	820	28,000	3,800	7,800
	6.0% SOM	1,700	1,900	1,600	28,000	3,800	7,900
EC >44-70	1.0% SOM	1,600	1,900	1,200	28,000	3,800	7,800
	2.5% SOM	1,800	1,900	2,100	28,000	3,800	7,800
	6.0% SOM	1,900	1,900	3,000	28,000	3,800	7,900
SOM = Soil Organic Matter Content (%)							
^{vap} – GAC presented exceeds the vapour saturation limit, which is presented in brackets.							
^{sol} – GAC presented exceeds the soil saturation limit, which is presented in brackets.							

9.4. Polycyclic Aromatic Hydrocarbons (PAHs)

LQM/CIEH Suitable 4 Use Levels For Polycyclic Aromatic Hydrocarbons (PAHs)							
Determinands		RwHP (mg/kg)	RwoHP (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)	POSresi (mg/kg)	POSpark (mg/kg)
Acenaphthene	1.0% SOM	210	3,000 (57.0) ^{sol}	34	84,000(57.0) ^{sol}	15,000	29,000
	2.5% SOM	510	4,700(141) ^{sol}	85	97,000(141) ^{sol}	15,000	30,000
	6.0% SOM	1100	6,000(336) ^{sol}	200	100,000	15,000	30,000
Acenaphthylene	1.0% SOM	170	2,900(86.1) ^{sol}	28	83,000(86.1) ^{sol}	15,000	29,000
	2.5% SOM	420	4,600(212) ^{sol}	69	97,000(212) ^{sol}	15,000	30,000
	6.0% SOM	920	6,000(506) ^{sol}	160	100,000	15,000	30,000
Anthracene	1.0% SOM	2,400	31,000(1.17) ^{vap}	380	520,000	74,000	150,000
	2.5% SOM	5,400	35,000	950	540,000	74,000	150,000
	6.0% SOM	11,000	37,000	2,200	540,000	74,000	150,000
Benzo(a)anthracene	1.0% SOM	7.20	11	2.90	170	29	49
	2.5% SOM	11	14	6.50	170	29	56
	6.0% SOM	13	15	13	180	29	62
Benzo(a)pyrene	1.0% SOM	2.20	3.20	0.97	35	5.70	11
	2.5% SOM	2.70	3.20	2.00	35	5.70	12
	6.0% SOM	3.00	3.20	3.50	36	5.70	13
Benzo(b)flouranthene	1.0% SOM	2.60	3.90	0.99	44	7.10	13
	2.5% SOM	3.30	4.00	2.10	44	7.20	15
	6.0% SOM	3.70	4.00	3.90	45	7.20	16
Benzo(ghi)perylene	1.0% SOM	320	360	290	3,900	640	1,400
	2.5% SOM	340	360	470	4,000	640	1,500
	6.0% SOM	350	360	640	4,000	640	1,600
Benzo(k)flouranthene	1.0% SOM	77	110	37	1,200	190	370
	2.5% SOM	93	110	75	1,200	190	410
	6.0% SOM	100	110	130	1,200	190	440
Chrysene	1.0% SOM	15	30	4.10	350	57	93
	2.5% SOM	22	31	9.40	350	57	110
	6.0% SOM	27	32	19	350	57	120
Dibenzo(ah)anthracene	1.0% SOM	0.24	0.31	0.14	3.50	0.57	1.10
	2.5% SOM	0.28	0.32	0.27	3.50	0.57	1.30
	6.0% SOM	0.30	0.32	0.43	3.60	0.58	1.40
Flouranthene	1.0% SOM	280	1,500	52	23,000	3,100	6,300
	2.5% SOM	560	1,600	130	23,000	3,100	6,300
	6.0% SOM	890	1,600	290	23,000	3,100	6,300
Flourene	1.0% SOM	170	2,800 (30.9) ^{sol}	27	63,000(30.9) ^{sol}	9,900	20,000
	2.5% SOM	400	3,800(76.5) ^{sol}	67	68,000	9,900	20,000
	6.0% SOM	860	4,500(183) ^{sol}	160	71,000	9,900	20,000
Indeno(123-cd)pyrene	1.0% SOM	27	45	9.50	500	82	150
	2.5% SOM	36	46	21	510	82	170
	6.0% SOM	41	46	39	510	82	180
Napthalene	1.0% SOM	15	36	65	1,600	11,000	800
	2.5% SOM	36	36	130	3,700	15,000	1,200
	6.0% SOM	85	85	200	8,400	17,000	1,900
Phenanthrene	1.0% SOM	95	1,300(183) ^{sol}	15	22,000	3,100	6,200
	2.5% SOM	220	1,500	38	22,000	3,100	6,200
	6.0% SOM	440	1,500	90	23,000	3,100	6,300
Pyrene	1.0% SOM	620	3,700	110	54,000	7,400	15,000
	2.5% SOM	1200	3,800	270	54,000	7,400	15,000
	6.0% SOM	2000	3,800	620	54,000	7,400	15,000
Coal Tar (Benzo(a)pyrene used as marker compound)	1.0% SOM	0.79	1.2	0.32	15	2.20	4.40
	2.5% SOM	0.98	1.2	0.67	15	2.20	4.70
	6.0% SOM	1.10	1.2	1.20	15	2.20	4.80
SOM = Soil Organic Matter Content (%)							
^{vap} – GAC presented exceeds the vapour saturation limit, which is presented in brackets.							
^{sol} – GAC presented exceeds the soil saturation limit, which is presented in brackets.							

9.5. Volatile and Semi-volatile Organic Compounds

LQM CIEH General Assessment Criteria: Volatile and Semi-Volatile Organic Compounds							
Determinands		RwHP (mg/kg)	RwoHP (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)	POSresi (mg/kg)	POSpark (mg/kg)
<i>Chloroalkanes & alkenes</i>							
1,2 Dichloroethane	1.0% SOM	0.0071	0.0092	0.0046	0.67	29	21
	2.5% SOM	0.011	0.013	0.0083	0.97	29	24
	6.0% SOM	0.019	0.023	0.016	1.70	29	28
1,1,2,2 Tetrachloroethane	1.0% SOM	1.60	3.90	0.41	270	1,400	1,800
	2.5% SOM	3.40	8.00	0.89	550	1,400	2,100
	6.0% SOM	7.50	17	2.00	1,100	1,400	2,300
1,1,1,2 Tetrachloroethane	1.0% SOM	1.20	1.50	0.79	110	1,400	1,500
	2.5% SOM	2.80	3.50	1.90	250	1,400	1,800
	6.0% SOM	6.40	8.20	4.40	560	1,400	2,100
Tetrachloroethene	1.0% SOM	0.18	0.18	0.65	19	1,400	810 ^{sol} (424)
	2.5% SOM	0.39	0.40	1.50	42	1,400	1,100 ^{sol} (951)
	6.0% SOM	0.90	0.92	3.60	95	1,400	1,500
1,1,1 Trichloroethane	1.0% SOM	8.80	9.00	48	660	140,000	57,000 ^{vap} (1425)
	2.5% SOM	18	18	110	1,300	140,000	76,000 ^{vap} (2915)
	6.0% SOM	39	40	240	3,000	140,000	100,000 ^{vap} (6392)
Tetrachloromethene	1.0% SOM	0.026	0.026	0.45	2.90	890	190
	2.5% SOM	0.056	0.056	1.00	6.30	920	270
	6.0% SOM	0.130	0.130	2.40	14	950	400
Trichloroethene	1.0% SOM	0.016	0.017	0.041	1.20	120	70
	2.5% SOM	0.034	0.036	0.091	2.60	120	91
	6.0% SOM	0.075	0.080	0.210	5.70	120	120
Trichloromethane	1.0% SOM	0.91	1.20	0.42	99	2,500	2,600
	2.5% SOM	1.70	2.10	0.83	170	2,500	2,800
	6.0% SOM	3.40	4.20	1.70	350	2,500	3,100
Vinyl Chloride	1.0% SOM	0.00064	0.00077	0.00055	0.059	3.50	4.80
	2.5% SOM	0.00087	0.00100	0.00100	0.077	3.50	5.00
	6.0% SOM	0.00014	0.00150	0.00180	0.120	3.50	5.40
<i>Explosives</i>							
2,4,6 Trinitrotoluene	1.0% SOM	1.60	65	0.24	1,000	130	260
	2.5% SOM	3.70	66	0.58	1,000	130	270
	6.0% SOM	8.10	66	1.40	1,000	130	270
RDX (Hexogen/Cyclonite/1,3,5-trinitro-1,3,5-triazacyclohexane)	1.0% SOM	120	13,000	17	210,000	26,000	49,000(18.7) ^{sol}
	2.5% SOM	250	13,000	38	210,000	26,000	51,000
	6.0% SOM	540	13,000	85	210,000	27,000	53,000
HMX (Octogen/1,3,5,7-tetrenitro-1,3,5,7-tetrazacyclo-octane)	1.0% SOM	5.70	67,00	0.86	110,000	13,000	23,000(0.35) ^{vap}
	2.5% SOM	13	67,00	1.90	110,000	13,000	23,000(0.39) ^{vap}
	6.0% SOM	26	67,00	3.90	110,000	13,000	24,000(0.48) ^{vap}
Atrazine	1.0% SOM	3.30	610	0.50	9,300	1,200	2,300
	2.5% SOM	7.60	620	1.20	9,400	1,200	2,400
	6.0% SOM	17.40	620	2.70	9,400	1,200	2,400

^{vap} – GAC presented exceeds the vapour saturation limit, which is presented in brackets.
^{sol} – GAC presented exceeds the soil saturation limit, which is presented in brackets.

VOC and SVOC table continued overleaf

VOC and SVOC table continued from previous page

LQM CIEH General Assessment Criteria: Volatile and Semi-Volatile Organic Compounds							
Determinands		RwHP (mg/kg)	RwoHP (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)	POSresi (mg/kg)	POSpark (mg/kg)
Pesticides							
Aldrin	1.0% SOM	5.70	7.30	3.20	170	18	30
	2.5% SOM	6.60	7.40	6.10	170	18	31
	6.0% SOM	7.10	7.50	9.60	170	18	31
Dieldrin	1.0% SOM	0.97	7.00	0.17	170	18	30
	2.5% SOM	2.00	7.30	0.41	170	18	30
	6.0% SOM	3.50	7.40	0.96	170	18	31
Dichlorvos	1.0% SOM	0.032	6.40	0.0049	140	16	26
	2.5% SOM	0.066	6.50	0.0100	140	16	26
	6.0% SOM	0.140	6.60	0.0220	140	16	27
Alpha - Endosulfan	1.0% SOM	7.40	160(0.003) ^{vap}	1.20	5,600(0.003) ^{vap}	1,200	2,400
	2.5% SOM	18	280(0.007) ^{vap}	2.90	7,400(0.007) ^{vap}	1,200	2,400
	6.0% SOM	41	410(0.016) ^{vap}	6.80	8,400(0.016) ^{vap}	1,200	2,400
Beta - Endosulfan	1.0% SOM	7.00	190(0.00007) ^{vap}	1.10	6,300(0.00007) ^{vap}	1,200	2,400
	2.5% SOM	17	320(0.0002) ^{vap}	2.70	7,800(0.0002) ^{vap}	1,200	2,400
	6.0% SOM	39	440(0.0004) ^{vap}	6.40	8700	1,200	2,500
Alpha - Hexachlorocyclohexanes	1.0% SOM	0.23	6.90	0.035	170	24	47
	2.5% SOM	0.55	9.20	0.087	180	24	48
	6.0% SOM	1.20	11	0.210	180	24	48
Beta - Hexachlorocyclohexanes	1.0% SOM	0.085	3.70	0.013	65	8.10	15
	2.5% SOM	0.200	3.80	0.032	65	8.10	15
	6.0% SOM	0.460	3.80	0.077	65	8.10	16
Gamma - Hexachlorocyclohexanes	1.0% SOM	0.06	2.90	0.0092	67	8.2	14
	2.5% SOM	0.14	3.30	0.0230	69	8.2	15
	6.0% SOM	0.33	3.50	0.0540	70	8.2	15
Chlorobenzenes							
Chlorobenzene	1.0% SOM	0.46	0.46	5.90	56	11,000	1,300(675) ^{sol}
	2.5% SOM	1.00	1.00	14	130	13,000	2,000(1520) ^{sol}
	6.0% SOM	2.40	2.40	32	290	14,000	2,900
1,2-Dichlorobenzene	1.0% SOM	23	24	94	2,000 (571) ^{sol}	90,000	24,000(571) ^{sol}
	2.5% SOM	55	57	230	4,800 (1370) ^{sol}	95,000	36,000(1370) ^{sol}
	6.0% SOM	130	130	540	11,000 (3240) ^{sol}	98,000	51,000(3240) ^{sol}
1,3-Dichlorobenzene	1.0% SOM	0.40	0.44	0.25	30	300	390
	2.5% SOM	1.00	1.10	0.60	73	300	440
	6.0% SOM	2.30	2.50	1.50	170	300	470
1,4-Dichlorobenzene	1.0% SOM	61	61	15	4,400 (224) ^{vap}	17,000 ^g	36,000 (224) ^{vap}
	2.5% SOM	150	150	37	10,000 (540) ^{vap}	17,000 ^g	36,000 (540) ^{vap}
	6.0% SOM	350	350	88 ^g	25,000 (1280) ^{vap}	17,000 ^g	36,000 (1280) ^{vap}
1,2,3,-Trichlorobenzene	1.0% SOM	1.50	1.50	4.70	102	1,800	770(134) ^{vap}
	2.5% SOM	3.60	3.70	12	250	1,800	1,100(330) ^{vap}
	6.0% SOM	8.60	8.80	28	590	1,800	1,600(789) ^{vap}
1,2,4,-Trichlorobenzene	1.0% SOM	2.60	2.60	55	220	15,000	1,700(318) ^{vap}
	2.5% SOM	6.40	6.40	140	530	17,000	2,600(786) ^{vap}
	6.0% SOM	15	15	320	1,300	19,000	4,000(1880) ^{vap}
1,3,5,-Trichlorobenzene	1.0% SOM	0.33	0.33	4.70	23	1,700	380(36.7) ^{vap}
	2.5% SOM	0.81	0.81	12	55	1,700	590(90.8) ^{vap}
	6.0% SOM	1.90	1.90	140	130	1,800	860(217) ^{vap}
^{vap} – GAC presented exceeds the vapour saturation limit, which is presented in brackets.							
^{sol} – GAC presented exceeds the soil saturation limit, which is presented in brackets.							

VOC and SVOC table continued overleaf

VOC and SVOC table continued from previous page

LQM CIEH General Assessment Criteria: Volatile and Semi-Volatile Organic Compounds							
Determinands		RwHP (mg/kg)	RwoHP (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)	POSresi (mg/kg)	POSpark (mg/kg)
Chlorobenzenes (cont.)							
1,2,3,4,- Tetrachlorobenzene	1.0% SOM	15	24	4.40	1,700(122) ^{vap}	830	1,500(122) ^{vap}
	2.5% SOM	36	56	11	3,080(304) ^{vap}	830	1,600
	6.0% SOM	78	120	26	4,400(728) ^{vap}	830	1,600
1,2,3,5,- Tetrachlorobenzene	1.0% SOM	0.66	0.75	0.38	49(39.4) ^{vap}	78	110(39) ^{vap}
	2.5% SOM	1.60	1.90	0.90	120(98.1) ^{vap}	79	120
	6.0% SOM	3.70	4.30	2.20	240(235) ^{vap}	79	130
1,2,4, 5,- Tetrachlorobenzene	1.0% SOM	0.33	0.73	0.06	42(19.7) ^{sol}	13	25
	2.5% SOM	0.77	1.70	0.16	72(49.1) ^{sol}	13	26
	6.0% SOM	1.60	3.50	0.37	96	13	26
Pentachlorobenzene	1.0% SOM	5.80	19	1.20	640(43.0) ^{sol}	100	190
	2.5% SOM	12	30	3.10	770(107) ^{sol}	100	190
	6.0% SOM	22	38	7.00	830	100	190
Hexachlorobenzene	1.0% SOM	1.80(0.20) ^{vap}	4.10 (0.20) ^{vap}	0.47	110(0.20) ^{vap}	16	30
	2.5% SOM	3.30(0.50) ^{vap}	5.70 (0.50) ^{vap}	1.10	120	16	30
	6.0% SOM	4.90	6.70 (1.2) ^{vap}	2.50	120	16	30
Phenols & Chlorophenols							
BTEX	1.0% SOM	280	750	66	760 ^{dir} (31,000)	760 ^{dir} (11,000)	760 ^{dir} (8,600)
	2.5% SOM	550	1,300	140	1,500 ^{dir} (35,000)	1,500 ^{dir} (11,000)	1,500 ^{dir} (9,700)
	6.0% SOM	1100	2,300	280	3,200 ^{dir} (37,000)	3,200 ^{dir} (11,000)	3,200 ^{dir} (11,000)
	6.0% SOM	1100	2,300	280	3,200 ^{dir} (37,000)	3,200 ^{dir} (11,000)	3,200 ^{dir} (11,000)
Chlorophenols (4 Congeners)	1.0% SOM	0.87	94	0.13	3,500	620	1,100
	2.5% SOM	2.00	150	0.30	4,000	620	1,100
	6.0% SOM	4.50	210	0.70	4,300	620	1,100
Pentachlorophenols	1.0% SOM	0.22	27(16.4) ^{vap}	0.03	400	60	110
	2.5% SOM	0.52	29	0.08	400	60	120
	6.0% SOM	1.20	31	0.19	400	60	120
Others							
Carbon Disulphide	1.0% SOM	0.14	0.14	4.80	11	11,000	1,300
	2.5% SOM	0.29	0.29	10	22	11,000	1,900
	6.0% SOM	0.62	0.62	23	47	12,000	2,700
Hexachloro-1,3- Butadiene	1.0% SOM	0.29	0.32	0.25	31	25	48
	2.5% SOM	0.70	0.78	0.61	68	25	50
	6.0% SOM	1.60	1.80	1.40	120	25	51
^{vap} – GAC presented exceeds the vapour saturation limit, which is presented in brackets.							
^{sol} – GAC presented exceeds the soil saturation limit, which is presented in brackets.							

VOC and SVOC table continued overleaf

VOC and SVOC table continued from previous page

CL:AIRE General Assessment Criteria: Volatile and Semi-Volatile Organic Compounds					
Determinands		RwHP (mg/kg)	RwoHP (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)
1,1,2 Trichloroethane	1.0% SOM	0.60	0.88	0.28	94
	2.5% SOM	1.20	1.8	0.61	190
	6.0% SOM	2.70	3.9	1.40	400
1,1-Dichloroethane	1.0% SOM	2.40	2.50	9.20	280
	2.5% SOM	3.90	4.10	17	450
	6.0% SOM	7.40	7.70	35	850
1,1-Dichloroethene	1.0% SOM	0.23	0.23	2.80	26
	2.5% SOM	0.40	0.41	5.60	46
	6.0% SOM	0.82	0.82	12	92
1,2,4-Trimethylbenzene	1.0% SOM	0.35	0.41	0.38	42
	2.5% SOM	0.85	0.99	0.93	99
	6.0% SOM	2.00	2.30	2.20	220
1,2-Dichloropropane	1.0% SOM	0.024	0.024	0.62	3.3
	2.5% SOM	0.042	0.042	1.20	5.9
	6.0% SOM	0.084	0.085	2.60	12
2,4-Dimethylphenol	1.0% SOM	19	210	3.10	16000*
	2.5% SOM	43	410	7.20	24000*
	6.0% SOM	97	730	17	30000*
2,4-Dinitrotoluene	1.0% SOM	1.50	170*	0.22	3700*
	2.5% SOM	3.20	170	0.49	3700*
	6.0% SOM	7.20	170	1.10	3800*
2,6-Dinitrotoluene	1.0% SOM	0.78	78	0.12	1900*
	2.5% SOM	1.70	84	0.27	1900*
	6.0% SOM	3.90	87	0.61	1900*
2-Chloronaphthalene	1.0% SOM	3.70	3.80	40	390*
	2.5% SOM	9.20	9.30	98	960*
	6.0% SOM	22	22	230	2200*
Biphenyl	1.0% SOM	66*	220*	14	18000*
	2.5% SOM	160	500*	35	33000*
	6.0% SOM	360	980*	83	48000*
Bis (2-ethylhexyl) phthalate	1.0% SOM	280*	2700*	47*	85000*
	2.5% SOM	610*	2800*	120*	86000*
	6.0% SOM	1100*	2800*	280*	86000*
Bromobenzene	1.0% SOM	0.87	0.91	3.2	97
	2.5% SOM	2.0	2.1	7.6	220
	6.0% SOM	4.7	4.9	18	520
Bromodichloromethane	1.0% SOM	0.016	0.019	0.016	2.1
	2.5% SOM	0.030	0.034	0.032	3.7
	6.0% SOM	0.061	0.070	0.068	7.6
Bromoform	1.0% SOM	2.8	5.2	0.95	760
	2.5% SOM	5.9	11	2.1	1500
	6.0% SOM	13	23	4.6	3100
Butyl benzyl phthalate	1.0% SOM	1400*	42000*	220*	940000*
	2.5% SOM	3300*	44000*	550*	940000*
	6.0% SOM	7200*	44000*	1300*	950000*

*soil concentration above saturation limit

VOC and SVOC table continued from previous page

CL:AIRE General Assessment Criteria: Volatile and Semi-Volatile Organic Compounds					
Determinands		RwHP (mg/kg)	RwoHP (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)
Chloroethane	1.0% SOM	8.3	8.4	110	960
	2.5% SOM	11	11	200	1300
	6.0% SOM	18	18	380	2100
Chloromethane	1.0% SOM	0.0083	0.0085	0.066	1.0
	2.5% SOM	0.0098	0.0099	0.13	1.2
	6.0% SOM	0.013	0.013	0.23	1.6
<i>Cis</i> 1,2 Dichloroethene	1.0% SOM	0.11	0.12	0.26	14
	2.5% SOM	0.19	0.20	0.50	24
	6.0% SOM	0.37	0.39	1.0	47
Dichloromethane	1.0% SOM	0.58	2.10	0.10	270
	2.5% SOM	0.98	2.80	0.19	360
	6.0% SOM	1.70	4.50	0.34	560
Diethyl Phthalate	1.0% SOM	120*	1800*	19*	150000*
	2.5% SOM	260*	3500*	41*	220000*
	6.0% SOM	570*	6300*	94*	290000*
Di- <i>n</i> -butyl phthalate	1.0% SOM	13*	450*	2.00	15000*
	2.5% SOM	31*	450*	5.00	15000*
	6.0% SOM	67*	450*	12	15000*
Di- <i>n</i> -octyl phthalate	1.0% SOM	2300*	3400*	940*	89000*
	2.5% SOM	2800*	3400*	2100*	89000*
	6.0% SOM	3100*	3400*	3900*	89000*
Hexachloroethane	1.0% SOM	0.20	0.22	0.27	22*
	2.5% SOM	0.48	0.54	0.67	53*
	6.0% SOM	1.10	1.30	1.60	120*
Isopropylbenzene	1.0% SOM	11	12	32	1400*
	2.5% SOM	27	28	79	3300*
	6.0% SOM	64	67	190	7700*
Methyl <i>tert</i> -butyl ether (MTBE)	1.0% SOM	49	73	23	7900
	2.5% SOM	84	120	44	13000
	6.0% SOM	160	220	90	24000
Propylbenzene	1.0% SOM	34	40	34	4100*
	2.5% SOM	82	97	83	9700*
	6.0% SOM	190	230	200	21000*
Styrene	1.0% SOM	8.10	35	1.60	3300*
	2.5% SOM	19	78	3.70	6500*
	6.0% SOM	43	170	8.70	11000*
Total Cresols (2-, 3-, and 4-methylphenol)	1.0% SOM	80	3700	12	160000
	2.5% SOM	180	5400	27	180000*
	6.0% SOM	400	6900	63	180000*
<i>Trans</i> 1,2 Dichloroethene	1.0% SOM	0.19	0.19	0.93	22
	2.5% SOM	0.34	0.35	1.90	40
	6.0% SOM	0.70	0.71	0.24	81
Tributyl tin oxide	1.0% SOM	0.25	1.40	0.042	130*
	2.5% SOM	0.59	3.10	0.100	180*
	6.0% SOM	1.30	5.70	0.240	200*

*soil concentration above saturation limit

C4SL Low Level of Toxicological Concern							
Determinands		RwHP (mg/kg)	RwoHP (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)	POSresi (mg/kg)	POSpark (mg/kg)
1,2-Dichloroethane (Ethylene Dichloride)	1.0% SOM	0.11	0.16	0.054	12	300	300
	2.5% SOM	0.18	0.24	0.10	17	310	330
	6.0% SOM	0.31	0.41	0.19	29	310	380
Cis-1,2-Dichloroethene	1.0% SOM	0.46	0.50	0.89	38	3,800	2,000
	2.5% SOM	0.78	0.84	1.7	64	3,800	2,400
	6.0% SOM	1.5	1.6	3.6	120	3,900	3,100
Tetrachloroethene (PCE)	1.0% SOM	0.31	0.32	2	24	3,200	1,400
	2.5% SOM	0.70	0.71	4.8	55	3,300	1,900
	6.0% SOM	1.60	1.60	11	130	3,400	2,500
Trans-1,2-Dichloroethene	1.0% SOM	0.90	0.93	3.70	69	13,000	5,600
	2.5% SOM	1.60	1.70	7.50	120	13,000	7,000
	6.0% SOM	3.30	3.40	16	260	13,000	9,100
Trichloroethene (TCE)	1.0% SOM	0.0093	0.0097	0.032	0.73	76	41
	2.5% SOM	0.020	0.020	0.072	1.5	78	54
	6.0% SOM	0.043	0.045	0.16	3.4	79	69
Vinyl Chloride (Chloroethene)	1.0% SOM	0.0064	0.015	0.0017	1.1	7.8	18
	2.5% SOM	0.010	0.019	0.0031	1.4	7.8	19
	6.0% SOM	0.017	0.029	0.0058	2.2	7.8	19

9.6. Per- and Polyfluoroalkyl Substances (PFAS)

Interim C4SLs for PFOA, PFNA, PFHxS and PFOS						
Determinand	RwHP (mg/kg)	RwoHP (mg/kg)	Allotment (mg/kg)	Commercial (mg/kg)	POSresi (mg/kg)	POSpark (mg/kg)
PFOA	0.076	0.041	0.0014	0.60	0.079	0.17
PFOS	0.013	0.041	0.0027	0.60	0.079	0.17
PFHxS	0.0081	0.041	0.0015	0.60	0.079	0.17
PFNA	0.0073	0.041	0.0013	0.60	0.079	0.17

9.7. Asbestos

No asbestos or asbestos containing materials (ACM's) are considered acceptable on-site from a human health perspective. Therefore the GAC for asbestos & ACM's within any imported material should be none detected (ND).

Ground and Water Limited

Waters Guideline Values and Generic Assessment Criteria

Land contamination can harm a number of receptors, most notably: human health; drinking water; groundwater; surface water; soils; ecosystems; and buildings/structures. The UK Government's stated objectives of LCRM are to enhance the health and wellbeing of all, whilst adding the economic, ecological and amenity value of the area through dealing with land contamination.

The risk assessment is an iterative process. At preliminary risk assessment stage, risks are evaluated qualitatively. As the site investigation progresses to a generic or detailed quantitative risk assessment, data is collected and assessment criteria are utilised to evaluate whether the contaminants represent an unacceptable risk to the identified receptors.

Based on the identified receptor, there are numerous assessment criteria that can be used, which have been outlined in the subsequent sections.

1. Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015

1.1. Background

Within England and Wales, an appropriate agency must classify the ecological and chemical status of a body of surface water. The agency must also classify the chemical and quantitative status of a body of groundwater. The appropriate agency must review and update the classifications at least every 6 years as and when new data is collected through monitoring programmes. In addition to the classification and as part of the WFD, pollution of surface waters must be controlled by limiting the discharge of priority substances and other substances into surface water.

1.2. Surface Water

In order to aid with the classification, a series of environmental quality standards (EQS) for specific pollutants have been generated. The EQS refer to the dissolved fraction of metals within a water sample, therefore the sample collected must pass through a 0.45µm filter at the time of sampling. A number of metals have a bioavailable threshold and therefore a site specific meta bioavailability assessment should be undertaken.

Where the calculated mean value of a measurement is less than the limit of quantification and the limit of quantification is above the EQS, the result must not be used for determining a failed classification.

For the majority of substances, two values will be included for review; AA and MAC. The Annual Average (AA) is the arithmetic mean of the concentrations measured at different times during the year for each representative point within the water body. When using the Max Allowable Concentration (MAC) values, a statistical analysis may be undertaken to ensure an acceptable level of confidence for determining compliance with the MAC.

1.3. Groundwater

The appropriate agency must apply the threshold values for groundwater (in Table 1, Schedule 5) and, if any value is exceeded, undertake an appropriate investigation to determine whether or not the

applicable conditions for good groundwater chemical status are met. The criteria outlined are designed to be averaged across an aquifer rather than a site specific investigations.

2. The Water Supply (Water Quality) Regulations 2016

The water supply regulations apply in relation to the supply of water to premises for domestic purposes (including for cooking, drinking, food preparation and washing) or for food production purposes, both of which include the intended use for human consumption.

The point of compliance for the water supply is principally the consumers' taps, however, where stated the compliance point is the reservoir or treatment works.

3. World Health Organisation, Petroleum Products in Drinking Water, 2008

The World Health Organisation produced a background document for the development of WHO Guidelines for Drinking-water Quality, specifically relating to petroleum products (WHO/SDE/WSH/05.08/123). Petroleum products are used widely in a range of industrial applications, with the largest quantities used for gasoline, diesel and heating oil.

The difference in chemical and physical properties of each hydrocarbon means that they will behave differently within the environment, where their persistence is dictated by their volatilisation, biodegradation and dissolution within water. As a result of these, the heavier hydrocarbons typically have more persistence. Exposure to human health from petroleum hydrocarbons within drinking water can occur from a short to long-term, however the incident that leads to high concentrations within the drinking water will typically occur in the short term.

Petroleum products are a complicated mix of hundreds of compounds and therefore assessment can be difficult. The TPH-CWG method, developed in the USA, groups the TPH into a series of fractions based on the number of carbon atoms, coupled with the overall structure of the compound. This process enables the TPHs to be split into two distinct groups, aliphatics and aromatics.

4. SoBRA GAC_{gwvap}

Prior to the development of the SoBRA GAC_{gwvap}, there were no formally published UK GAC for the assessment of vapour risk arising from volatile contaminants in groundwater in the UK. The SoBRA groundwater vapour GAC (GAC_{gwvap}) is intended as a conservative screening tool that assessors may choose to use to help assess the long-term (chronic) risks to human health from inhalation of vapours arising from groundwater. They are intended for comparison with measured groundwater concentrations and represent the estimated concentration in groundwater below which the long-term risks to human health from vapour migration and inhalation can be considered low/tolerable, i.e. unlikely to be of concern (for the land use scenarios considered). When used as part of a Generic Quantitative Risk Assessment (GQRA) (which includes consideration of uncertainties) comparison of the GAC_{gwvap} with measured concentrations in groundwater can be used to screen out contaminants as being unlikely to represent an unacceptable risk to humans living or working above the groundwater plume.

The GAC have been derived for two land use scenarios for which the vapour intrusion pathway is likely to require assessment: residential and commercial. Generic assumptions have been made for each land use. These include assumptions about the depth to groundwater, soil type in the unsaturated zone, building dimension and foundation type, and receptor behaviour. The parameter values have been chosen to ensure that the GAC are precautionary for the vast majority of commercial and

residential properties in the UK. However, there may be particular situations where the GAC are not protective, for example where non aqueous phase liquid (NAPL) is present or preferential pathways exist.

5. Detailed Quantitative Risk Assessments (DQRA)

Where the adoption of a GAC is not appropriate, for instance when the intended land-use is at variance the CLEA standard land-uses, then a DQRA may be undertaken to develop site specific values for relevant groundwater contaminants. As part of the EA Remedial Targets Methodology (RTM), a level 3 risk assessment will consider the effect of attenuation between the site and a downgradient receptor or compliance point. For a level 4 risk assessment the appropriateness of assessing dilution in a receiving watercourse or a pumping abstraction borehole will need to be considered.

The RTM also recommends that sensitivity/uncertainty analysis is incorporated into each stage of the assessment.

6. Ground and Water Limited Waters Assessment Criteria

The Waters Assessment Criteria used in the preparation of the Generic Quantitative Risk Assessment are tabulated in the following pages, where the source of each has been outlined in the previous sections.

6.1. Inorganics

Specific Pollutants				
Determinand	Long Term Fresh water (µg/l)	Short Term Fresh water (µg/l)	Long Term Salt water (µg/l)	Short Term Salt water (µg/l)
Cyanide	1	5	1	5
Phenol	7.7	46	7.7	46

Drinking Water Standards	
Determinand	Maximum allowable Concentration at compliance point (µg/l)
Cyanide	50
pH	6.5 – 9.5

6.2. Metals

Specific Pollutants				
Determinand	Long Term Fresh water (µg/l)	Short Term Fresh water (µg/l)	Long Term Salt water (µg/l)	Short Term Salt water (µg/l)
Arsenic	50	-	25	-
Chromium (III)	4.7	32	-	-
Chromium (VI)	3.4	-	0.6	32
Copper	1*	-	3.76	34
Iron	1000	-	1000	-
Manganese	123*	-	-	-
Zinc	10.9*	-	6.8	-

*Site specific bioavailability calculation should be undertaken.

EQS for Priority Substances and other substances

Determinand		AA-EQS Inland surface water (µg/l)	MAC-EQS Inland surface water (µg/l)	AA-EQS Other Surface waters (µg/l)	MAC-EQS Other Surface waters (µg/l)
Cadmium	<40mg/l CaCO ₃	<0.08	<0.45	0.2	-
	40 – <50mg/l	0.08	0.45		
	50 – <100mg/l	0.09	0.6		
	100 – <200mg/l	0.15	0.9		
	>200mg/l	0.25	1.5		
Lead		1.2	14	1.3	14
Mercury		-	0.07	-	0.07
Nickel		4	34	8.6	34

Threshold Values for Groundwater			
Determinand	Groundwater Impact on Surface Water (µg/l)	Drinking water Protected Area (µg/l)	General Quality of Groundwater Body (µg/l)
Aluminum	-	150	150
Arsenic	25.8 – 106	7.5	7.5
Boron	-	750	-
Cadmium	0.054 – 0.53	3.75	-
Copper	0.516 – 2.12	1500	1500
Lead	0.619 – 2.54	7.5	7.5
Mercury	0.026 – 0.106	0.75	-
Nickel	2.06 – 8.48	15	15
Selenium	-	7.5	-
Zinc	5.62 – 23.1	-	-

Drinking Water Standards	
Determinand	Maximum allowable Concentration at compliance point (µg/l)
Arsenic	10
Cadmium	5
Chromium	50
Copper	2
Lead	10
Mercury	1
Nickel	20

6.3. Total Petroleum Hydrocarbons (TPHs)

6.3.1. BTEX Compounds

Specific Pollutants				
Determinand	Long Term Fresh water (µg/l)	Short Term Fresh water (µg/l)	Long Term Salt water (µg/l)	Short Term Salt water (µg/l)
Toluene	74	380	74	370

EQS for Priority Substances and other substances				
Determinand	AA-EQS Inland surface water (µg/l)	MAC-EQS Inland surface water (µg/l)	AA-EQS Other Surface waters (µg/l)	MAC-EQS Other Surface waters (µg/l)
Benzene	10	50	8	50

Threshold Values for Groundwater			
Determinand	Groundwater Impact on Surface Water (µg/l)	Drinking water Protected Area (µg/l)	General Quality of Groundwater Body (µg/l)
Benzene	5.16 – 21.2	0.75	0.75
Toluene	38.2 – 157	-	-
Xylene (o+p+m)	15.5 – 63.6	-	-

6.3.2. Total Petroleum Hydrocarbons – Aliphatic

World Health Organisation	
Determinand	Drinking Water Standard (µg/l)
>C5 – C6	15,000
>C6 – C8	
>C8 – C10	
>C10 – C12	300
>C12 – C16	
>C16 – C21	
>C21 – C35	Not Derived
	Not Derived

6.3.3. Total Petroleum Hydrocarbons – Aromatic

World Health Organisation	
Determinand	Drinking Water Standard (µg/l)
>EC5 – EC7	10
>EC7 – EC8	700
>EC8 – EC10	300
>EC10 – EC12	90
>EC12 – EC16	
>EC16 – EC21	
>EC21 – EC35	90

6.4. Polycyclic Aromatic Hydrocarbons (PAHs)

EQS for Priority Substances and other substances				
Determinand	AA-EQS Inland surface water (µg/l)	MAC-EQS Inland surface water (µg/l)	AA-EQS Other Surface waters (µg/l)	MAC-EQS Other Surface waters (µg/l)
Anthracene	0.1	0.1	0.1	0.1
Fluoranthene	0.0063	0.12	0.0063	0.12
Naphthalene	2	130	2	130
Benzo(a)pyrene	0.00017	0.27	0.00017	0.027
Benzo(b)fluoranthene	*	0.017	*	0.017
Benzo(k)fluoranthene	*	0.017	*	0.017
Benzo(ghi)perylene	*	0.0082	*	0.00082
Indeno(123-cd)pyrene	*	-	*	-

*For the group of priority substances of polyaromatic hydrocarbons, the AA-EQS in water refer to the concentration of benzo(a)pyrene. Benzo(a)pyrene can be considered as a marker for the other PAHs, hence only benzo(a)pyrene must be monitored for comparison with the corresponding AA-EQS.

Threshold Values for Groundwater			
Determinand	Groundwater Impact on Surface Water (µg/l)	Drinking water Protected Area (µg/l)	General Quality of Groundwater Body (µg/l)
Anthracene	0.052 – 0.193	-	-
Benzo(a)pyrene	0.000089 – 0.000328	0.0075	-
Benzo(b)fluoranthene	0.016 – 0.058	0.075	-
Fluoranthene	0.0033 – 0.0122	-	0.075
Naphthalene	1.03 – 4.24	-	0.075

Drinking Water Standards	
Determinand	Maximum allowable Concentration at compliance point (µg/l)
Benzo(a)pyrene	0.010
Benzo(b) fluoranthene	0.10
Benzo(k)fluoranthene	
Benzo(ghi)perylene	
Indeno(1,2,3-cd)pyrene	

6.5. Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)

EQS for Priority Substances and other substances				
Determinand	AA-EQS Inland surface water (µg/l)	MAC-EQS Inland surface water (µg/l)	AA-EQS Other Surface waters (µg/l)	MAC-EQS Other Surface waters (µg/l)
Perfluorooctane sulfonic acid (PFOS)	0.00065	36	0.00013	7.2

6.6. Volatile and Semi-volatile Organic Compounds

SoBRA GAC _{gw vap} for Petroleum Hydrocarbons			
Determinand	GAC _{gw vap} (µg/l) ^{1,2}		Aqueous Solubility (µg/l)
	Residential	Commercial	
1,2,4-Trimethylbenzene	24	2,200	559,000
Benzene ³	210	20,000	1,780,000
Ethylbenzene ³	10,000	960,000 (sol)	180,000
Isopropylbenzene	850	86,000 (sol)	56,000
Propylbenzene	2,700	240,000 (sol)	54,100
Styrene	8,800	810,000 (sol)	290,000
Toluene ³	230,000	21,000,000 (sol)	590,000
TPH Aliphatic EC5-EC6 ³	1,900	190,000 (sol)	35,900
TPH Aliphatic >EC6-EC8 ³	1,500	150,000 (sol)	5,370
TPH Aliphatic >EC8-EC10 ³	57	5,700 (sol)	427
TPH Aliphatic >EC10-EC12 ³	37	3,600 (sol)	34
TPH Aromatic >EC5-EC7 ³	210,000	20,000,000 (sol)	1,780,000
TPH Aromatic >EC7-EC8 ³	220,000	21,000,000 (sol)	590,000
TPH Aromatic >EC8-EC10 ³	1,900	190,000 (sol)	64,600
TPH Aromatic >EC10-EC12 ³	6,800	660,000 (sol)	24,500
TPH Aromatic >EC12-EC16 ³	39,000	3,700,000 (sol)	5,750
m-Xylene ^{3,5}	9,500	940,000 (sol)	200,000
o-Xylene ^{3,5}	12,000	1,100,000 (sol)	173,000
p-Xylene ²	9,900	980,000 (sol)	200,000
Notes			

1. GAC in *italics* with (sol) exceed aqueous solubility.
2. GAC rounded to two significant figures.
3. The GAC for these petroleum hydrocarbon contaminants have been calculated using a sub-surface soil to indoor air correction factor of 10 in line with the physical-chemical data sources.
4. The GAC for TPH fractions do not account for genotoxic mutagenic effects. Concentrations of TPH Aromatic >EC5-EC7 should therefore also be compared with the GAC for benzene to ensure that such effects are also assessed.
5. The Health Criteria Value used for each xylene isomer was for total xylene. If site specific additivity assessments are not completed, as a conservative measure the sum of isomer concentrations should be compared to the lowest xylene GAC (as is the case for soil GAC).

SoBRA GAC _{gwvap} for Polycyclic Aromatic Hydrocarbons			
Determinand	GAC _{gwvap} (µg/l) ^{1,2}		Aqueous Solubility (µg/l)
	Residential	Commercial	
Acenaphthene	170,000 (sol)	15,000,000 (sol)	4,110
Acenaphthylene	220,000 (sol)	20,000,000 (sol)	7,950
Fluorene	210,000 (sol)	18,000,000 (sol)	1,860
Naphthalene	220	23,000 (sol)	19,000
Notes			
1. GAC in <i>italics</i> with (sol) exceed aqueous solubility.			
2. GAC rounded to two significant figures.			

SoBRA GAC _{gwvap} for Pesticides			
Determinand	GAC _{gwvap} (µg/l) ^{1,2}		Aqueous Solubility (µg/l)
	Residential	Commercial	
Aldrin	47 (sol)	3,700 (sol)	20
<i>alpha</i>-Endosulfan	7,400 (sol)	590,000 (sol)	530
<i>beta</i>-Endosulfan	7,500 (sol)	600,000 (sol)	280
Notes			
1. GAC in <i>italics</i> with (sol) exceed aqueous solubility.			
2. GAC rounded to two significant figures.			

SoBRA GAC _{gwvap} for Halogenated Organics			
Determinand	GAC _{gwvap} (µg/l) ^{1,2}		Aqueous Solubility (µg/l)
	Residential	Commercial	
1,1,1,2-Tetrachloroethane	240	22,000	1,110,000
1,1,1-Trichloroethane	3,000	290,000	1,300,000
1,1,2,2-Tetrachloroethane	1,600	150,000	2,930,000
1,1,2-Trichloroethane	520	49,000	4,491,000
1,1-Dichloroethane	2,700	260,000	3,666,000
1,1-Dichloroethene	160	16,000	3,100,000
1,2,3,4-Tetrachlorobenzene	240	31,000 (sol)	7,800
1,2,3,5-Tetrachlorobenzene	7.0	600	3,500
1,2,3-Trichlorobenzene	35	3,100	21,000
1,2,4,5-Tetrachlorobenzene	8.1	700 (sol)	600
1,2,4-Trichlorobenzene	68	7,200	41,400
1,2-Dichlorobenzene	2,000	220,000 (sol)	133,000
1,2-Dichloroethane	8.9	850	8,680,000
1,2-Dichloropropane	22	2,600	2,050,000

1,3,5-Trichlorobenzene	7.4	660	6,000
1,3-Dichlorobenzene	31	2,800	103,000
1,4-Dichlorobenzene	5,000	<i>460,000 (sol)</i>	51,200
Bromobenzene	220	20,000	388,040
Bromodichloromethane	17	1,600	3,000,000
Bromoform (Tribromomethane)	3,100	400,000	3,000,000
Chlorobenzene	98	15,000	387,000
Chloroethane	10,000	1,000,000	5,742,000
Chloroethene (Vinyl Chloride)	0.62	63	2,760,000
Chloromethane	14	1,400	5,350,000
cis-1,2-Dichloroethene	130	13,000	7,550,000
Dichloromethane	3,300	370,000	20,080,000
Hexachlorobenzene	<i>16 (sol)</i>	<i>1,400 (sol)</i>	10
Hexachlorobutadiene	1.7	230	4,800
Hexachloroethane	8.5	740	49,900
Pentachlorobenzene	140	<i>12,000 (sol)</i>	500
Tetrachloroethene	34	4,600	225,000
Tetrachloromethane (Carbon Tetrachloride)	5.3	770	846,000
trans-1,2-Dichloroethene	160	16,000	5,250,000
Trichloroethene	5.7	530	1,370,000
Trichloromethane (Chloroform)	790	85,000	8,950,000
Notes 1. GAC in <i>italics</i> with (sol) exceed aqueous solubility. 2. GAC rounded to two significant figures.			

SoBRA GAC_{gwvap} for Others (organic and inorganic)			
Determinand	GAC_{gwvap} (µg/l) ^{1,2}		Aqueous Solubility (µg/l)
	Residential	Commercial	
2-Chloronaphthalene	160	<i>14,000 (sol)</i>	11,700
Biphenyl (Limonene)	<i>15,000 (sol)</i>	<i>1,300,000 (sol)</i>	4,060
Carbon disulphide	56	5,600	2,100,000
Mercury, elemental	1.1	<i>95 (sol)</i>	56
Methyl tertiary butyl ether (MTBE)	83,000	7,800,000	48,000,000
Notes 1. GAC in <i>italics</i> with (sol) exceed aqueous solubility. 2. GAC rounded to two significant figures.			

7. Climate Change

Review of the publication by SoBRA referenced: Guidance on Assessing Risk to Controlled Waters from UK Land Contamination Under Conditions of Future Climate Change, August 2022, addresses the consideration of climate change as part of groundwater risk assessments. Following the development of a preliminary Conceptual Site Model (CSM), climate change should be included by re-evaluating the potential Source-Pathway-Receptor (SPR) linkage assessment to account for the potential effects of climate change based on projections for the region of the site. It is recommended where practicable to use at least two contrasting future climate change scenarios, incorporating information for the periods of 2020s, 2050s and 2080s dependent on the relevant timeframe to the specific assessment. A qualitative assessment of the impact of climate change on the SPRs and resultant impacts on the contaminants linkages within the CSM. Quantitative data can be used to re-address the generic quantitative risk assessment for medium to long term climate change effects. For short-term extreme weather events the of “what if” scenarios should be considered. Consideration also needs to be given to the shortcomings of available simulation models in the UK where they are not equipped to model

temporal changes to parameter values and where mitigation measures may be appropriate to address this.

APPENDIX G: Photoplates

Photograph 1. Stockpile of material excavated from the gas holder



Photograph 2. Location of exposed gas holder adjacent to subject site. View looking east.



Photograph 3. Contents of gas holder.



Photograph 4. Contents of gas holder.



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Appendix G: Neighbouring Site Photos

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