



GROUNDTECH
CONSULTING

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ALDI NEATH

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UST REMOVAL SPECIFICATION

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REVISION

CLIENT

ALDI STORES LIMITED

CLIENT CONTACT

-

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Introduction

Groundtech Consulting have been instructed by Craddys on behalf of Aldi Stores Limited to produce a remedial specification detailing the process for removal of the Underground Storage Tanks (USTs) at a site in Neath.

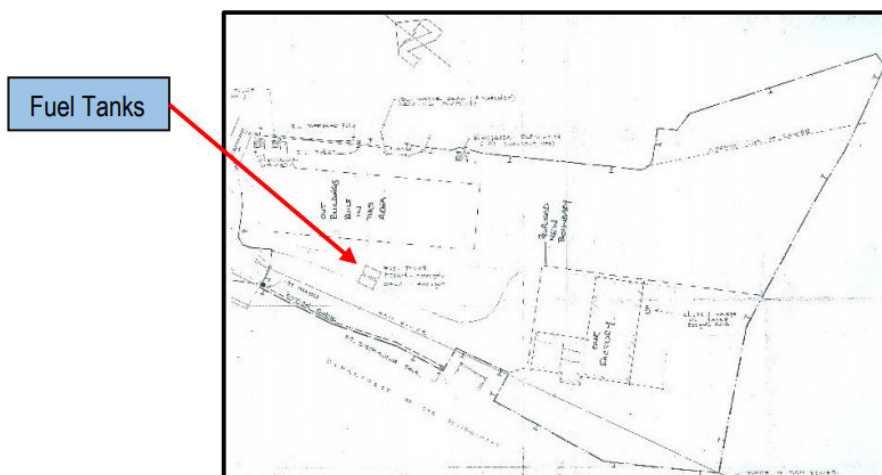
The site spans across two existing commercial premises which are accessed by separate roads that enter the site from the north off Neath Abbey Road. The approximate position of the site is shown on the Project Location Plan 20093 01. Celtic Stone Ltd occupies the south western area of the site which is formed by a tarmac access road and a concrete surfaced yard. A strip of soft landscaping vegetated with trees and bushes is present along the site's western boundary. The north eastern part of the site is formed predominantly by a flat grassed area and degraded tarmac hardsurfacing which surrounds the access road that runs approximately north to south through the site.

It is proposed to construct a new Aldi store in the south east corner of the site with associated car parking and access road to the north and west.

Previous Investigation

Earth Environmental & Geotechnical previously carried out a Geo-Environmental investigation at the site in April 2019 and the relevant information will be summarised in the following section.

Earth Environmental & Geotechnical have identified three Underground Storage Tanks (USTs) used for storing fuel/oil in the central western area of the site as indicated on the plan below:



Eight boreholes (WS6 to WS13) were undertaken in the vicinity of the tanks which were advanced to depths between 0.7m and 2.0m bgl.

Ground Model

Made Ground was encountered in all locations in the vicinity of the USTs from ground level to a maximum depth of 0.8m bgl. Surfacing consisting of asphalt over concrete was encountered in all locations. This was in turn underlain by sand gravel and gravelly sand with fragments of brick.

The natural strata consisted of sandy gravelly cobbly Clay.

Groundwater was not encountered in vicinity of the Underground Storage Tanks.

No olfactory evidence of contamination was identified during the investigation. Visual evidence of contamination was identified in WS9 and WS10 where a small area of black staining was observed.

Laboratory Testing

Sixteen samples from within the vicinity of the USTs were tested for speciated Polycyclic Aromatic Hydrocarbons (PAHs) and Total petroleum Hydrocarbons Criteria Working Group.

No concentrations of the above contaminants were elevated above Tier I assessment values and generally concentrations were recorded at levels below or close to laboratory detection limits.

Objectives

The objective of this document is to present details of the remedial objectives relating to the underground tanks, how the remediation of the tanks will be implemented and to outline how the works will be validated. This document details how the works will be permitted under the current regulatory regime.

The remediation will ensure that upon completion of the commercial development, it can be demonstrated that the ground and groundwater conditions in the vicinity of the USTs are appropriate for its intended use and risks to identified receptors have been reduced to an acceptable level.

Tank Remediation Methodology

The USTs will be remediated by exhuming them and removing them off site.

The rendering permanently safe of underground petroleum storage tanks should only be undertaken by persons and/or companies specialising in the installation, maintenance and/or rendering safe of petroleum storage installations. 'FSPAN744 – Petrol Stations – List of Contractors' lists a number of such specialist contractors.

The contractor carrying out the work to render a tank safe by whichever method should complete two copies of the decommissioning certificate. One copy should be left with the site operator and the other forwarded to the Licensing Authority.

The procedure for decommissioning and removal of the tanks that will be undertaken at the subject site is outlined in the following section.

Removal of Residual Product

If it is necessary to first remove the fuel/oil stored or remaining in the tank, the contractor nominated to perform the uplift operation should comply with the procedures detailed in the Institute of Petroleum publication 'Guidelines for the Uplift of Product from Petrol Filling Stations and Customer Tanks'.

The consent of the local Petroleum Inspector must be obtained before fuel/oil is uplifted from any licensed storage tank.

Inerting – Water Fill Method

Before commencing the excavation and exhumation of the storage tanks the following method of inerting the tank to remove the risk of explosion shall be adopted by the competent persons and/or company(s) carrying out the task:

Following the bottoming of the tank, and in the case of multi-compartment tanks, all compartments and suction pipes should be disconnected and the tank connecting points effectively sealed. The tank should then be filled completely with water with care being taken to ensure that any water or residual product does not overflow from the fill point.

Surplus water or residual product should, if necessary, be removed from the fill pipe to avoid an outflow when the vent pipe is disconnected from the tank. Any surplus water or residual product should be disposed of safely.

Finally, the vent pipe should be disconnected and the tank connection point and fill point effectively sealed.

It should be remembered that when filling the tank with water, flammable vapours will be displaced through the vent pipe outlet.

The effectiveness of the water fill method as an inhibitor is dependent on the tank remaining full of water during the whole of the excavation work. It is therefore important that periodic checks are made to ensure that there is no reduction in the water level during the course of the excavation work.

When the tank is ready for lifting from the excavation the water should be uplifted and conveyed to a site authorised for the handling and disposal of contaminated waste.

Complications may occur with this method if the tank has holes or when the excavation is delayed causing flooding of the excavation. If this occurs, the excavation work should stop, the water pumped out of the tank and an alternative method used instead.

Inerting – Nitrogen Method

If the above method of inerting is unsuccessful then the following alternative method should be utilised.

Nitrogen gas is to be passed continuously into the tank at one point, while the air and petroleum vapour being purged leaves from another opening such as the flame trap outlet.

Nitrogen gas should be introduced directly from an industrial gas supplier's road tank vehicle that is fitted with the necessary reducing valves and measuring equipment.

The tank, and in the case of multi-compartment tanks, all compartments, should be bottomed, and all openings sealed except those required for the inlet of Nitrogen and for the exhaust outlet to atmosphere. (The exhaust outlet should be of sufficient size so as to prevent the build-up of pressure in the tank). The Nitrogen should then be introduced and the mixture leaving the tank should be vented to atmosphere so that the tank remains at atmospheric pressure throughout the entire operation. If approximately five tank volumes of nitrogen are used, the final oxygen level will be approximately 1%.

Following completion of the purging, the openings should be sealed and the tank may then be excavated.

During the excavation and removal all holes found in the tank should be securely plugged with wooden plugs.

If excavation takes place immediately after purging the tank, a small vent should be left in the tank to allow excess pressure to escape.

Exhumation

Upon completion of removal of residual product from the tank and after successful inerting, the tanks will be excavated completely using a mechanical excavator and lifted from the ground.

There is potential for contamination of the surrounding soils to have occurred due to potential leaks from the tanks and as such the following precautions should be observed:

- *Danger notices should be displayed.*
- *No smoking or naked lights should be allowed in the vicinity.*
- *A copious supply of water should be used to lessen the risk from sparking.*

In all the above operations care should be taken to ensure that no petrol or petrol contaminated water is allowed to enter any drainage system or watercourse.

A tank may not be lifted by chains or wire ropes unless they are protected to prevent contact with the tank. Fibre ropes may be preferable for small tanks.

A tank may not be lifted by placing chains or ropes around the manhole neck as it is possible to rip the neck from the tank.

After excavation, the words "PETROL HIGHLY FLAMMABLE" should be painted in clear and conspicuous letters at each end or on opposite sides of the tank.

Fuel lines and pipes should also be excavated and removed upon removal of the tanks.

Transportation Off-Site

The tanks are to be transported offsite for dismantling upon removal. Prior to transportation the following procedures will be undertaken:

- *All pipework connected to the tank should, as far as is reasonably practicable, be removed.*
- *All openings to the tank, including any pipework remaining attached to it should be sealed to prevent the escape of the inerting atmosphere or liquid.*
- *A suitable pressure relief valve should be fitted to the tank and individual compartments in the case of a compartmental tank.*
- *Any holes in the tank caused by corrosion or damage during exhumation should, so far as is reasonably practicable, be sealed to prevent the escape of the inerting atmosphere or liquid.*

The person responsible for the removal of the tank should ensure that the recipient of the tank is made aware of the tank's previous use, the toxic hazard within the tank and the need to take adequate precautions against fires and explosions when dealing with it.

Prior to transportation, the Licensing Authority should ascertain the destination of the tank(s) and should inform the relevant Petroleum Licensing Authority.

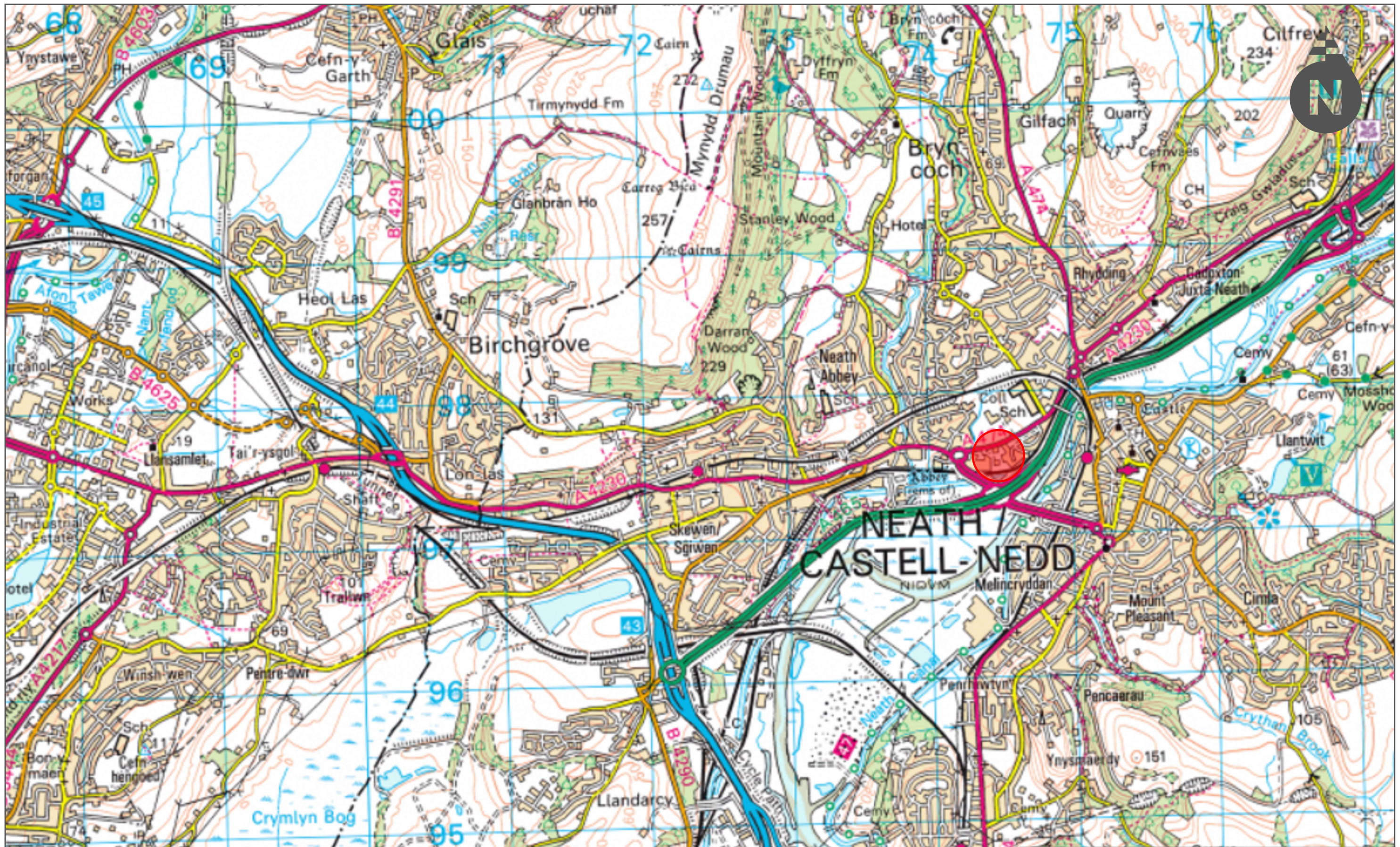
Validation

Upon removal of the tanks, validation of the excavation will be undertaken by the geo-environmental testing of the sides and base of excavations comprising Total Petroleum Hydrocarbons (TPH CWG). Validation sampling is to be undertaken by an experienced geo-environmental engineer on behalf of the enabling works contractor and samples are to be tested in accordance with the Remediation Target Values (RTV) as presented in Appendix 2.

In addition, to the testing required of the base and sides of tank excavations, a watching brief will also be maintained during the decommissioning and removal works for any visual or olfactory evidence of hydrocarbon contamination.

A Final Verification Report will be produced by Groundtech Consulting Limited which will provide a complete record of the remediation activities undertaken. The report will also contain descriptions of the works including photographic evidence and details of any unexpected conditions encountered during the remedial works and how they were dealt with.

Plans



 GROUNDTECH CONSULTING	CLIENT	DATE				Status		Notes  Location of Site
	ALDI STORES LIMITED	APRIL 2020				Preliminary		
	PROJECT TITLE	SCALE				Draft		
	ALDI, NEATH	NTS				Issued	●	
	PLAN TITLE	PLAN NUMBER				For Comment		
	PROJECT LOCATION PLAN	20093 01	Rev.	Details	Date	Approved		

Remedial Target Values

Proposed End Use	Unit	Residential with Plant Uptake			Commercial			Source
SCM	%	1	2.5	6	1	2.5	6	
Arsenic	mg/kg	32	32	32	640	640	640	SGVs
Beryllium	mg/kg	1.7	1.7	1.7	12	12	12	LQM S4ULs
Boron (water soluble)	mg/kg	290	290	290	240000	240000	240000	LQM S4ULs
Cadmium	mg/kg	10	10	10	230	230	230	SGVs
Chromium (Total)	mg/kg	910	910	910	8600	8600	8600	LQM S4ULs
Chromium (VI)	mg/kg	21	21	21	49	49	49	DEFRA C4SLs
Copper	mg/kg	2400	2400	2400	68000	68000	68000	LQM S4ULs
Lead	mg/kg	200	200	200	2300	2300	2300	DEFRA C4SLs
Organic Mercury	mg/kg	1.2	1.2	1.2	26	26	26	LQM S4ULs
Nickel	mg/kg	130	130	130	1800	1800	1800	SGVs
Selenium	mg/kg	350	350	350	13000	13000	13000	SGVs
Vanadium	mg/kg	410	410	410	9000	9000	9000	LQM S4ULs
Zinc	mg/kg	3700	3700	3700	730000	730000	730000	LQM S4ULs
Aliphatic EC 5 - 6	mg/kg	42	78	160	3200 (304) ^{scf}	5900 (558) ^{scf}	12000 (1150) ^{scf}	LQM S4ULs
Aliphatic EC 6 - 8	mg/kg	100	230	530	7800 (144) ^{scf}	17000 (322) ^{scf}	40000 (736) ^{scf}	LQM S4ULs
Aliphatic EC 8 - 10	mg/kg	27	65	150	2000 (78) ^{scf}	4800 (190) ^{scf}	11000 (451) ^{scf}	LQM S4ULs
Aliphatic EC 10 - 12	mg/kg	130 (48) ^{scf}	330 (118) ^{scf}	760 (283) ^{scf}	9700 (48) ^{scf}	23000 (118) ^{scf}	47000 (283) ^{scf}	LQM S4ULs
Aliphatic EC 12 - 16	mg/kg	1100 (24) ^{scf}	2400 (59) ^{scf}	4300 (142) ^{scf}	59000 (24) ^{scf}	82000 (59) ^{scf}	90000 (142) ^{scf}	LQM S4ULs
Aliphatic EC 16 - 35	mg/kg	65000 (8.48) ^{scf}	92000 (21) ^{scf}	110000 ^f	1600000 ^f	1700000 ^f	1800000 ^f	LQM S4ULs
Aliphatic EC 35 - 44	mg/kg	65000 (8.48) ^{scf}	92000 (21) ^{scf}	110000 ^f	1600000 ^f	1700000 ^f	1800000 ^f	LQM S4ULs
Aromatic EC 5 - 7	mg/kg	70	140	300	26000 (1220) ^{scf}	46000 (2260) ^{scf}	86000 (4710) ^{scf}	LQM S4ULs
Aromatic EC 7 - 8	mg/kg	130	290	660	56000 (869) ^{scf}	110000 (1920) ^{scf}	180000 (4360) ^{scf}	LQM S4ULs
Aromatic EC 8 - 10	mg/kg	34	83	190	3500 (613) ^{scf}	8100 (1500) ^{scf}	17000 (3580) ^{scf}	LQM S4ULs
Aromatic EC 10 - 12	mg/kg	74	180	380	16000 (364) ^{scf}	28000 (899) ^{scf}	34000 (2150) ^{scf}	LQM S4ULs
Aromatic EC 12 - 16	mg/kg	140	330	660	36000 (169) ^{scf}	37000	38000	LQM S4ULs
Aromatic EC 16 - 21	mg/kg	260 ^f	540 ^f	930 ^f	28000 ^f	28000 ^f	28000 ^f	LQM S4ULs
Aromatic EC 21 - 35	mg/kg	1100 ^f	1500 ^f	1700 ^f	28000 ^f	28000 ^f	28000 ^f	LQM S4ULs
Aromatic EC 35 - 44	mg/kg	1100 ^f	1500 ^f	1700 ^f	28000 ^f	28000 ^f	28000 ^f	LQM S4ULs
Benzene	mg/kg	0.33	0.33	0.33	95	95	95	SGVs
Toluene	mg/kg	610	610	610	4400	4400	4400	SGVs
Ethyl Benzene	mg/kg	350	350	350	2800	2800	2800	SGVs
Xylene - o	mg/kg	250	250	250	2600	2600	2600	SGVs
Xylene - m	mg/kg	240	240	240	3500	3500	3500	SGVs
Xylene - p	mg/kg	230	230	230	3200	3200	3200	SGVs
MTBE (methyl tert-butyl	mg/kg	49	84	160	7900	13000	24000	CL-AIRE 2010
Acenaphthene	mg/kg	210	510	1100	84000 (57) ^{scf}	97000 (141) ^{scf}	100000	LQM SAULs
Acenaphthylene	mg/kg	170	420	920	83000 (86.1) ^{scf}	97000 (212) ^{scf}	100000	LQM S4ULs
Anthracene	mg/kg	2400	5400	11000	520000	540000	540000	LQM S4ULs
Benzo(a)anthracene	mg/kg	7.2	11	13	170	170	180	LQM S4ULs
Benzo(a)pyrene	mg/kg	2.2	2.7	5*	35	35	77*	DEFRA C4SL*/LQM
Benzo(b)fluoranthene	mg/kg	2.6	3.3	3.7	44	44	45	LQM S4ULs
Benzo(ghi)perylene	mg/kg	320	340	350	3900	4000	4000	LQM S4ULs
Benzo(k)fluoranthene	mg/kg	77	93	100	1200	1200	1200	LQM S4ULs
Chrysene	mg/kg	15	22	27	350	350	350	LQM S4ULs
Dibenz(a,h)anthracene	mg/kg	0.24	0.28	0.3	3.5	3.6	3.6	LQM S4ULs
Fluoranthene	mg/kg	280	560	890	23000	23000	23000	LQM S4ULs
Fluorene	mg/kg	170	400	860	63000 (30.9) ^{scf}	68000	71000	LQM S4ULs
Indeno(123-cd)pyrene	mg/kg	27	36	41	500	510	510	LQM S4ULs
Naphthalene	mg/kg	2.3 ^f	5.6 ^f	13 ^f	190 ^f (76.4) ^{scf}	460 ^f (183) ^{scf}	1100 ^f (432) ^{scf}	LQM S4ULs
Phenanthrene	mg/kg	95	220	440	22000	22000	23000	LQM S4ULs
Pyrene	mg/kg	620	1200	2000	54000	54000	54000	LQM S4ULs

Proposed End Use	Unit	Residential with Plant Uptake			Commercial			Source
		1	2.5	6	1	2.5	6	
SGVs	%							
Phenol	mg/kg	420	420	420	3200	3200	3200	SGVs
Chlorophenols	mg/kg	0.87 *	2	4.5	3500	4000	4300	LQM S4ULs
Pentachlorophenol	mg/kg	0.22	0.52	1.2	400	400	400	LQM S4ULs
Carbon disulphide	mg/kg	0.14	0.29	0.62	11	22	47	LQM S4ULs
Hexachlorobutadiene	mg/kg	0.29	0.7	1.6	31	66	120	LQM S4ULs
1,1,1,2-Tetrachloroethane	mg/kg	1.6	3.4	7.5	270	550	1100	LQM S4ULs
1,1,1-Trichloroethane	mg/kg	8.8	18	39	660	1300	3000	LQM S4ULs
Trichloroethene	mg/kg	0.016	0.034	0.075	1.2	2.6	5.7	LQM S4ULs
Tetrachloromethane	mg/kg	0.026	0.056	0.13	2.9	6.3	14	LQM S4ULs
1,2-Dichloroethane	mg/kg	0.0071	0.011	0.019	0.67	0.97	1.7	LQM S4ULs
Chloroethene (Vinyl)	mg/kg	0.00064	0.00087	0.0014	0.059	0.077	0.12	LQM S4ULs
Trichloromethane	mg/kg	0.91	1.7	3.4	99	170	350	LQM S4ULs
Tetrachloroethene	mg/kg	0.18	0.39	0.9	19	42	95	LQM S4ULs
Hexachlorobenzene	mg/kg	1.8 (0.2) ^{sup}	3.3 (0.5) ^{sup}	4.9	110 (0.2) ^{sup}	120	120	LQM S4ULs
Pentachlorobenzene	mg/kg	5.8	12	22	640 (43) ^{sup}	770 (107) ^{sup}	830	LQM S4ULs
1,2,4,5-Tetrachlorobenzene	mg/kg	0.33	0.77	1.6	42 (19.7) ^{sup}	72 (49.1) ^{sup}	96	LQM S4ULs
1,2,3,5-Tetrachlorobenzene	mg/kg	0.66	1.69	3.7	49 (39.4) ^{sup}	120 (98.1) ^{sup}	240 (235) ^{sup}	LQM S4ULs
1,2,3,4-Tetrachlorobenzene	mg/kg	15	36	78	1700 (122) ^{sup}	3080 (304) ^{sup}	4400 (728) ^{sup}	LQM S4ULs
1,3,5-Trichlorobenzene	mg/kg	0.33	0.81	1.9	23	55	130	LQM S4ULs
1,2,4-Trichlorobenzene	mg/kg	2.6	6.4	15	220	530	1300	LQM S4ULs
1,2,3-Trichlorobenzene	mg/kg	1.5	3.6	8.6	102	250	590	LQM S4ULs
1,4-dichlorobenzene	mg/kg	61 ^f	150 ^f	350 ^f	4400 ^f (224) ^{sup}	10000 ^f (540)	25000 ^f (1280)	LQM S4ULs
1,3-dichlorobenzene	mg/kg	0.4	1	2.3	30	73	170	LQM S4ULs
1,2-Dichlorobenzene	mg/kg	23	55	130	2000 (571) ^{sup}	4800 (1370) ^{sup}	11000 (3240) ^{sup}	LQM S4ULs
Chlorobenzene	mg/kg	0.46	1	2.4	56	130	290	LQM S4ULs
Gamma-	mg/kg	0.06	0.14	0.33	67	69	70	LQM S4ULs
Beta-	mg/kg	0.085	0.2	0.46	65	65	65	LQM S4ULs
Alpaha -	mg/kg	0.23	0.55	1.2	170	180	180	LQM S4ULs
Beta -Endosulfan	mg/kg	7	17	39	6300 (0.0007) ^{sup}	7800 (0.0002) ^{sup}	8700	LQM S4ULs
Alpha-Endosulfan	mg/kg	7.4	18	41	5600 (0.003) ^{sup}	7400 (0.007) ^{sup}	8400 (0.016) ^{sup}	LQM S4ULs
Dichlorvos	mg/kg	0.032	0.066	0.14	140	140	140	LQM S4ULs
Atrazine	mg/kg	3.3	7.6	17.4	9300	9400	9400	LQM S4ULs
Dieldrin	mg/kg	0.97	2	3.5	170	170	170	LQM S4ULs
Aldrin	mg/kg	5.7	6.6	7.1	170	170	170	LQM S4ULs
HMX	mg/kg	5.7	13	26	110000	110000	110000	LQM S4ULs
2,4,6-Trinitrotoulene	mg/kg	1.6	3.7	8.1	1000	1000	1000	LQM S4ULs
RDX	mg/kg	120	250	540	210000	210000	210000	LQM S4ULs

^{sup} S4UL exceeds the solubility saturation limit (which is presented in brackets)^{sup} S4ULs presented exceeds the vapour saturation limit, which is presented in brackets^f For naphthalene, the S4UL is based on a comparison of inhalation exposure with the TD_{0.001} for localised effects^f S4UL based on comparison of inhalation exposure with inhalation TDI for localised effects^{dr} S4ULs based on a threshold protective direct skin contact with phenol (guideline in brackets based on health effects following long term exposure provided for illustration only)

Limitations

Limitations

This contract was completed by Groundtech Consulting on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with due skill and care, taking into consideration the project brief provided, project objectives, agreed scope of works, prevailing site conditions and budget allocation.

Other than that defined in the paragraph above, Groundtech Consulting provides no other accountability or warranty whether express or implied, is made in relation to the services. Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted industry practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of Groundtech Consulting. A third party who relies on this report, does so at their own and sole risk and no liability to such parties is provided by Groundtech Consulting.

It is the understanding of Groundtech Consulting that this report is to be used for the intended purpose as set out in the introduction. The purpose was instrumental in determining the scope and level of the services provided. Should the purpose of the report or the proposed end use of the site change, this report will no longer be directly applicable, and its validity readdressed. No reliance upon the report in the revised situation should be assumed by the client without the permission of Groundtech Consulting.

The report was written in 2021, later changes in legislation, statutory requirements and industry best practices have not been considered and this should be allowed for. Ground conditions can also change and should be investigated if there is any significant delay in acting on the findings of this report. The period of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions in this report should not be relied upon in the future without the written confirmation from Groundtech Consulting that it is safe to do so.

The observations and conclusions outlined in this report are based exclusively on the services that were provided as set out in the agreement between the client and Groundtech Consulting.

Groundtech Consulting are not liable for the existence of any condition, the discovery of which would require additional investigation outside the agreed scope of works or core competency. The services provided are based upon Groundtech Consulting observations of existing physical conditions at the site gained from site reconnaissance together with interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and Groundtech Consulting assume the information to be correct.

No responsibility can be accepted for errors for third party information presented in this report. Groundtech Consulting were not authorised to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the services. Groundtech Consulting are not liable for any inaccurate information, misrepresentation of data or conclusions, which may inform the scope of investigation undertaken by Groundtech Consulting and forms the contract with the client.

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable due to its heterogeneous properties and as investigation exploratory locations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report, particularly between exploratory holes. The extent of the limited area depends on the soil and groundwater conditions, together with other constraints such as the position of any existing structures and underground utilities. Geo-Environmental testing was carried out for a limited number of parameters [as

stipulated in the contract] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

Any site drawings provided in this report are not meant to be an accurate base plan, but are preliminary and used to present the general relative locations of features on, and surrounding, the site.

