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ENVIRONMENT AND SUSTAINABILITY
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LAND AND PROPERTY
MINING, QUARRYING AND MINERAL ESTATES
WASTE RESOURCE MANAGEMENT

JOHN POINTON & SONS

New Inn, Leek Road, Longsdon

Removal of Petrol Tank and Hydrocarbon Contaminated Soils

August 2015

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JOHN POINTON & SONS

New Inn, Leek Road, Longsdon

Removal of Petrol Tank and Hydrocarbon Contaminated Soils

August 2015

PREPARED BY:

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APPENDICES

1 INTRODUCTION

1.1 This report has been prepared on the instruction of Mr B Williams of John Pointon & Sons Ltd. The report refers to the removal of an underground petrol tank and hydrocarbon contaminated soils from the car park of the former New Inn public house, Leek Road, Longsdon.

1.2 Reference had been made to the following sources of information:

- Wardell Armstrong report no. ST11160-J01 "Former New Inn, Longsdon nr. Leek, Phase 1 and 2 Site Investigation (contamination) Report" dated August 2009;
- Staffordshire County Council Petroleum Officer's report dated 24 June 2009 (appended to Wardell Armstrong report ST11160-J01).

2 BACKGROUND

2.1 The site is located at the junction of Leek Road (A53) and Micklea Lane in Longsdon, Staffordshire Moorlands. The site occupies an area of approximately 40x30m and comprises the disused New Inn buildings in the north and a former car park in the centre and south. The site boundary can be seen in Appendix 1.

2.2 Historical mapping indicates that the site has been occupied by the New Inn buildings since at least 1879. The site has also been used as a petrol filling station. A Staffordshire County Council Petroleum Officer's report identified the presence of a 2250L sub-surface petrol tank, that was installed in 1960 and decommissioned by infilling with gravel in 1978.

2.3 The presence and approximate location of the petrol tank was confirmed in Wardell Armstrong report no. ST11160-J01, via a ground penetrating radar survey. Whilst no evidence of soil contamination was found in the vicinity of the tank during the site investigation that preceded that report, the possible presence of contamination was not discounted and the report recommended that further assessment be undertaken during tank removal.

3 TANK REMOVAL

3.1 The identified location of the fuel tank was established on site and the overlying soils excavated to expose the top of the tank. A Wardell Armstrong Engineer visited the site on 3 June 2015, in order to assess the size, characteristics and condition of the tank. Following this assessment, it was concluded that the tank was contained within a brick structure on a bed of sand. The top of the tank was observed to be open and containing an unknown volume of water.

3.2 Following discussions with specialist tank removal contractor, King Tanktechnic Ltd, a process was agreed for the degassing, excavation and cleaning of the tank. This process was:

a. To uplift any remaining liquid and dispose;

b. Carry out gas tests and cold cut the tank safely sufficiently to allow the vessel to be lifted, so that any remaining detritus can be removed;

c. Remove tank washings, detergents and sludges to a licensed waste disposal site;

d. Removal of the tank from site.

3.3 This work was carried out on 16 June 2015 and a gas safety certificate issued, allowing the tank to be safely disposed of off-site at licenced scrap metal merchant R Bestwick & Sons Ltd of Leek.

3.4 Gravel infill and a quantity of sand forming the tank bed were excavated and stockpiled on site on sheeting (later referred to as Arisings Pile A), geochemical testing. A small pipe which had been disconnected from the tank was also excavated and stockpiled alongside Arisings Pile A.

3.5 Once the tank had been removed from the ground and safely disposed of, soil samples were taken from the sides of the excavation, the tank bedding sand and the pipe bed. These samples were dispatched to ALcontrol Laboratories and analysed for the presence of petroleum hydrocarbons. Table 1, below, summarises the results of this testing. The full set of results is provided at Appendix 2.

Table 1
Soil TPH testing results, sampled 16 June 2015

	Units	Excavation Sides (range)	Tank bed sand	Pipe bed	Assessment Criteria Value	Assessment Criteria Exceedances
Aliphatics >C5-C6	µg/kg	<10 - 11.3	<10	<10	42,000*	0
Aliphatics >C6-C8	µg/kg	<10 – 40.3	19.2	18.1	100,000*	0
Aliphatics >C8-C10	µg/kg	<10 - 56.7	46.3	20.3	27,000*	0
Aliphatics >C10-C12	µg/kg	<10 – 78.1	17	12.4	130,000*	0
Aliphatics >C12-C16	µg/kg	1,490 - 54,000	2980	5,470	1,100,000*	0
Aliphatics >C16-C21	µg/kg	2,250 – 43,400	16,600	22,800	65,000,000*	0
Aliphatics >C21-C35	µg/kg	6,710 – 73,600	109,000	220,000		
Aliphatics >C35-C44	µg/kg	814 – 48,100	50,900	87,600	65,000,000*	0
Aromatics >EC5-EC7	µg/kg	<10	<10	<10	70,000*	0
Aromatics >EC7-EC8	µg/kg	<10	<10	15.8	130,000*	0
Aromatics >EC8-EC10	µg/kg	<10 – 37.8	33.9	28.3	34,000*	0
Aromatics >EC10-EC12	µg/kg	<10-52.9	11.3	<10	74,000*	0
Aromatics >EC12-EC16	µg/kg	<100-9,160	40,400	7,520	140,000*	0
Aromatics >EC16-EC21	µg/kg	2,750 – 177,000	684,000	82,800	260,000*	1
Aromatics >EC21-EC35	µg/kg	11,500 – 715,000	1,580,000	522,000	1,100,000*	1
Aromatics >EC35-EC44	µg/kg	5,090 – 246,000	412,000	235,000	1,100,000*	0
Aromatics >EC40-EC44	µg/kg	2,360 – 92,700	144,000	95,600	n/a	n/a
Benzene	µg/kg	<10	<10	<10	80**	0
Ethylbenzene	µg/kg	<3	<3	3.39	65,000**	0
m,p-Xylene	µg/kg	<6	<6	9.04	42,000**	0
o-Xylene	µg/kg	<3	<3	<3		
Toluene	µg/kg	<2 – 3.04	3.39	15.8	120,000**	0
MTBE	µg/kg	<5	<5	<5	n/a	n/a

* The LQM/CIEH S4UL's for Human Health Risk Assessment, published by Land Quality Press (2014), based upon the assumption of 1% soil organic matter.
** DEFRA/EA Soil Guideline Value (SGV) for residential land use, based upon the assumption of 1% soil organic matter.

3.6 Only one sample exceeded human health assessment criteria. This was a sample taken from the tank bedding sand. It should be noted that the sample was taken from a section of sand showing visual signs of contamination and is considered to represent a worst case scenario for the tank bed.

3.7 As the samples from the excavation sides did not exceed human health risk assessment criteria, it was concluded that no further excavation was required based upon the concentrations of petroleum hydrocarbons contained within the soils. However, the risk of vapour migration from the soils could not be discounted and was to be addressed further.

4 EXCAVATION AND DISPOSAL OF CONTAMINATED SOILS

4.1 A Wardell Armstrong Engineer subsequently returned to site on 16 July 2015 and used a photo ionisation detector (PID) to assess the risk posed by vapour migration from soils in the vicinity of the previously removed fuel tank. Progressive lateral excavation took place until the PID readings reached a minimal level (i.e. close to zero) and the arisings from this process were segregated on sheeting, pending confirmation by laboratory analysis (Arisings Pile B).

4.2 Samples were from taken from soils at the limits of the excavation. Table 2, below, summarises the TPH testing results. The full set of results is presented at Appendix 3.

Table 2
Soil TPH testing results, sampled 16 July 2015

	Units	Arisings Pile A	Arisings Pile B	Limits of Excavation (range)	Assessment Criteria Value	Assessment Criteria Exceedances
Aliphatics >C5-C6	µg/kg	229	<10	<10	42,000*	0
Aliphatics >C6-C8	µg/kg	723	24	<10	100,000*	0
Aliphatics >C8-C10	µg/kg	9,490	43.5	<10	27,000*	0
Aliphatics >C10-C12	µg/kg	5,260	33	<10	130,000*	0
Aliphatics >C12-C16	µg/kg	52,700	5600	<100 - 1150	1,100,000*	0
Aliphatics >C16-C21	µg/kg	81,500	16900	<100-3950	65,000,000*	0
Aliphatics >C21-C35	µg/kg	597,000	23400	5190-19400		
Aliphatics >C35-C44	µg/kg	597,000	<100	<100-2340	65,000,000*	0

Table 2 (continued)
Soil TPH testing results, sampled 16 July 2015

	Units	Tank infill & Tank bed sand	Tank Excavation sides	Excavation Sides (range)	Assessment Criteria Value	Assessment Criteria Exceedances
Aromatics >EC5-EC7	µg/kg	<10	<10	<10	70,000*	0
Aromatics >EC7-EC8	µg/kg	402	<10	<10	130,000*	0
Aromatics >EC8-EC10	µg/kg	15,300	28.5	<10	34,000*	0
Aromatics >EC10-EC12	µg/kg	3,510	22.5	<10-11.5	74,000*	0
Aromatics >EC12-EC16	µg/kg	227,000	2460	<100-3050	140,000*	1
Aromatics >EC16-EC21	µg/kg	778,000	17800	<100-9560	260,000*	1
Aromatics >EC21-EC35	µg/kg	1,890,000	55200	8740-53800	1,100,000*	1
Aromatics >EC35-EC44	µg/kg	944,000	14800	571-17600	1,100,000*	0
Aromatics >EC40-EC44	µg/kg	427,000	5090	<100-7300	n/a	n/a
Benzene	µg/kg	<10	<10	<10	80**	0
Ethylbenzene	µg/kg	214	<3	<3	65,000**	0
m,p-Xylene	µg/kg	5,100	<6	<6	42,000**	0
o-Xylene	µg/kg	3,680	<3	<3		
Toluene	µg/kg	402	<2	<2	120,000**	0
MTBE	µg/kg	<5	<5	<5	n/a	n/a

* The LQM/CIEH S4UL's for Human Health Risk Assessment, published by Land Quality Press (2014), based upon the assumption of 1% soil organic matter.
** DEFRA/EA Soil Guideline Value (SGV) for residential land use, based upon the assumption of 1% soil organic matter.

4.3 As can be seen from Table 2, with the exception of the tank infill gravel and tank bed sand, none of the results exceeded human health criteria assessment values. The material removed from the sides of the tank excavation can be classified as non-hazardous waste and further excavation is not considered necessary.

4.4 Due to the assessment criteria exceedances highlighted in Table 2, Arisings Pile A requires off-site disposal as hazardous waste. A hazardous waste assessment has been carried out, which classifies it as carcinogenic, mutagenic and ecotoxic. The outcome of this assessment can be seen in Appendix 4.

4.5 All excavated materials were stockpiled on plastic sheeting pending removal to a licenced soil treatment facility. Following the removal of waste soils from site, it is considered unlikely that hydrocarbon contaminated soils pose a risk to human health.

5 SUMMARY

5.1 Wardell Armstrong report no. ST11160-J01, dated August 2009, identified the presence of a petrol tank beneath the car park of the former New Inn public house, off Leek Road, Longsdon. Wardell Armstrong were commissioned to oversee the removal of the tank and any associated hydrocarbon soils from site.

5.2 Excavation of the overlying ground allowed for an assessment of the size, condition and setting of the tank. Information gained from this assessment was used to inform a tank removal strategy which was agreed with specialist contractors King Tanktechnic Ltd, who completed the cleaning and removal of the tank on 16 June 2015.

5.3 Following laboratory chemical analyses, the gravel tank infill and a quantity of sand from the tank bedding (Arisings Pile A) were identified as contaminated waste and should be removed from site as hazardous waste.

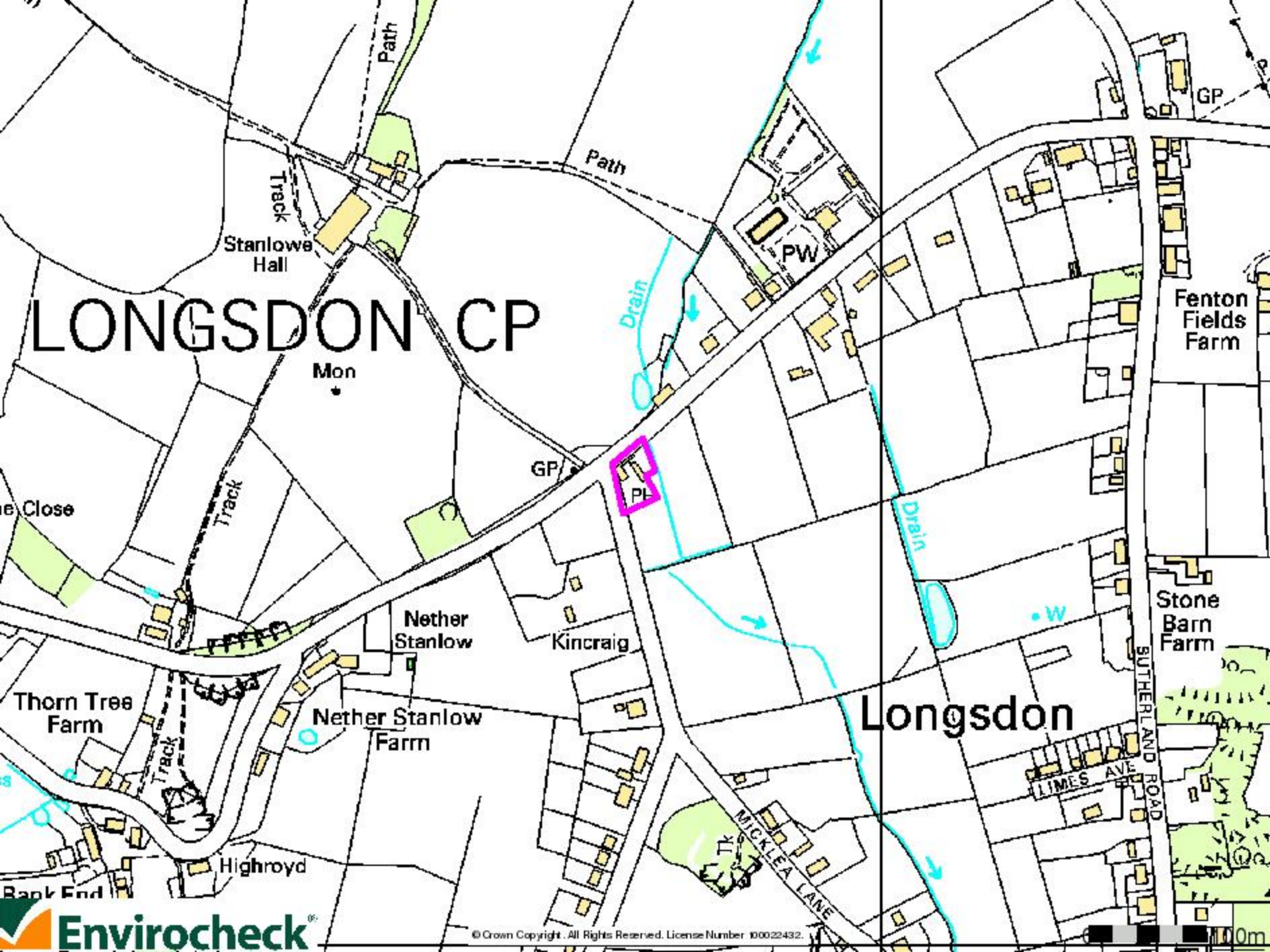
5.4 Chemical testing of samples taken from the sides of the excavation revealed that the soils did not contain petroleum hydrocarbons at concentrations which exceed human health assessment criteria. However, due to the risk of vapour migration, soils surrounding the former tank were screened using a photo ionisation detector (PID). Subsequent laboratory analysis of the PID screened materials identified no human health assessment criteria exceedances and it was concluded that no further excavation was required.

5.5 It is considered that the risks posed to human health by hydrocarbon contaminated soils associated with the former fuel storage tank have been satisfactorily addressed.

APPENDICES

Appendix 1

Site Location Plan



Appendix 2

Laboratory testing results dated 26 June 2015

ALcontrol Laboratories

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

Wardell Armstrong LLP
Sir Henry Doulton House
Forge Lane
Etruria
Stoke on Trent
Staffordshire
ST1 5BD

Attention: Matt Woodcock

CERTIFICATE OF ANALYSIS

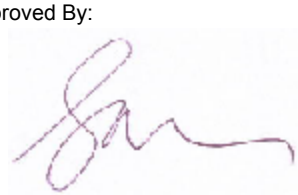
Date:	26 June 2015
Customer:	H_WARDELL_SKT
Sample Delivery Group (SDG):	150617-77
Your Reference:	ST11160
Location:	New Inn, Leek Road, Longsdon
Report No:	318853

We received 6 samples on Wednesday June 17, 2015 and 6 of these samples were scheduled for analysis which was completed on Friday June 26, 2015. 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.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	150617-77	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	318853
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
11548136	ST001		0.50 - 1.00	16/06/2015
11548141	ST002		1.50 - 2.00	16/06/2015
11548145	ST003		1.50 - 2.00	16/06/2015
11548150	ST004		2.00 - 2.50	16/06/2015
11548156	ST005		0.00 - 0.50	16/06/2015
11548161	ST006		0.00 - 0.50	16/06/2015

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

CERTIFICATE OF ANALYSIS

SDG:	150617-77	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	318853
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			11548136	ST001		0.50 - 1.00	250g Amber Jar (AL)
			11548136	ST001		0.50 - 1.00	60g VOC (ALE215)
			11548141	ST002		1.50 - 2.00	250g Amber Jar (AL)
			11548141	ST002		1.50 - 2.00	60g VOC (ALE215)
			11548145	ST003		1.50 - 2.00	250g Amber Jar (AL)
			11548145	ST003		1.50 - 2.00	60g VOC (ALE215)
			11548150	ST004		2.00 - 2.50	250g Amber Jar (AL)
			11548150	ST004		2.00 - 2.50	60g VOC (ALE215)
			11548156	ST005		0.00 - 0.50	250g Amber Jar (AL)
			11548156	ST005		0.00 - 0.50	60g VOC (ALE215)
			11548161	ST006		0.00 - 0.50	250g Amber Jar (AL)
			11548161	ST006		0.00 - 0.50	60g VOC (ALE215)
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 6	X		X		X		X		X	
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 6	X		X		X		X		X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 6		X		X		X		X		X
Sample description	All	NDPs: 0 Tests: 6	X		X		X		X		X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 6	X		X		X		X		X	

CERTIFICATE OF ANALYSIS

SDG:	150617-77	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	318853
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**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	Grain size	Inclusions	Inclusions 2
11548136	ST001	0.50 - 1.00	Black	Loamy Sand	0.1 - 2 mm	Crushed Brick	Vegetation
11548141	ST002	1.50 - 2.00	Beige	Sandy Clay	0.1 - 2 mm	Stones	None
11548145	ST003	1.50 - 2.00	Black	Loamy Sand	0.1 - 2 mm	Stones	None
11548150	ST004	2.00 - 2.50	Red	Sand	0.1 - 2 mm	Stones	None
11548156	ST005	0.00 - 0.50	Black	Sand	0.1 - 2 mm	Stones	None
11548161	ST006	0.00 - 0.50	Black	Loamy Sand	0.1 - 2 mm	Crushed Brick	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 ocurring 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:	150617-77	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	318853
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% 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
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	ST001	ST002	ST003	ST004	ST005	ST006
			Depth (m)	0.50 - 1.00	1.50 - 2.00	1.50 - 2.00	2.00 - 2.50	0.00 - 0.50	0.00 - 0.50
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/06/2015	16/06/2015	16/06/2015	16/06/2015	16/06/2015	16/06/2015
			Sample Time	.	.	.	.	.	.
			Date Received	17/06/2015	17/06/2015	17/06/2015	17/06/2015	17/06/2015	17/06/2015
			SDG Ref	150617-77	150617-77	150617-77	150617-77	150617-77	150617-77
			Lab Sample No.(s)	11548136	11548141	11548145	11548150	11548156	11548161
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		22	31	34	21	12	12

CERTIFICATE OF ANALYSIS

SDG:	150617-77	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	318853
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% 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
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	ST001	ST002	ST003	ST004	ST005	ST006
			Depth (m)	0.50 - 1.00	1.50 - 2.00	1.50 - 2.00	2.00 - 2.50	0.00 - 0.50	0.00 - 0.50
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/06/2015	16/06/2015	16/06/2015	16/06/2015	16/06/2015	16/06/2015
			Sample Time	.	.	.	.	.	.
			Date Received	17/06/2015	17/06/2015	17/06/2015	17/06/2015	17/06/2015	17/06/2015
			SDG Ref	150617-77	150617-77	150617-77	150617-77	150617-77	150617-77
			Lab Sample No.(s)	11548136	11548141	11548145	11548150	11548156	11548161
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		44	113	67	140	32	86
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		<44 M	<44 M	<44 M	280 M	141 M	116 M
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Benzene	<10 µg/kg	TM089		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<2 µg/kg	TM089		2.58 M	<2 M	3.04 M	<2 M	3.39 M	15.8 M
Ethylbenzene	<3 µg/kg	TM089		<3 M	<3 M	<3 M	<3 M	<3 M	3.39 M
m,p-Xylene	<6 µg/kg	TM089		<6 M	<6 M	<6 M	<6 M	<6 M	9.04 M
o-Xylene	<3 µg/kg	TM089		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9	<9	<9	<9	<9	9.04
sum of detected BTEX by GC	<24 µg/kg	TM089		<24	<24	<24	<24	<24	28.2
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	11.3	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	40.3	19.2	18.1
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	11.5	<10	56.7	46.3	20.3
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	<10	<10	78.1	17	12.4
Aliphatics >C12-C16	<100 µg/kg	TM173		1830	1490	1720	54000	2980	5470
Aliphatics >C16-C21	<100 µg/kg	TM173		7340	2950	2250	43400	16600	22800
Aliphatics >C21-C35	<100 µg/kg	TM173		73600	6710	16500	41100	109000	220000
Aliphatics >C35-C44	<100 µg/kg	TM173		48100	814	1510	20100	50900	87600
Total Aliphatics >C12-C44	<100 µg/kg	TM173		131000	12000	21900	159000	180000	336000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	15.8
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	37.8	33.9	28.3
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	<10	<10	52.9	11.3	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		9160	<100	1940	5540	40400	7520
Aromatics >EC16-EC21	<100 µg/kg	TM173		177000	2750	14100	12700	684000	82800
Aromatics >EC21-EC35	<100 µg/kg	TM173		715000	11500	59700	42900	1580000	522000
Aromatics >EC35-EC44	<100 µg/kg	TM173		246000	5090	16100	33500	412000	235000
Aromatics >EC40-EC44	<100 µg/kg	TM173		92700	2360	5580	14900	144000	95600
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		1150000	19300	91900	94600	2710000	847000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		1280000	31300	114000	254000	2890000	1180000

CERTIFICATE OF ANALYSIS

SDG:	150617-77	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	318853
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	150617-77	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	318853
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	11548136	11548141	11548145	11548150	11548156	11548161
Customer Sample Ref.	ST001	ST002	ST003	ST004	ST005	ST006
AGS Ref.						
Depth	0.50 - 1.00	1.50 - 2.00	1.50 - 2.00	2.00 - 2.50	0.00 - 0.50	0.00 - 0.50
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
EPH CWG (Aliphatic) GC (S)	23-Jun-2015	24-Jun-2015	24-Jun-2015	24-Jun-2015	25-Jun-2015	23-Jun-2015
EPH CWG (Aromatic) GC (S)	23-Jun-2015	24-Jun-2015	24-Jun-2015	24-Jun-2015	25-Jun-2015	23-Jun-2015
GRO by GC-FID (S)	25-Jun-2015	25-Jun-2015	25-Jun-2015	26-Jun-2015	25-Jun-2015	25-Jun-2015
Sample description	19-Jun-2015	19-Jun-2015	19-Jun-2015	19-Jun-2015	19-Jun-2015	19-Jun-2015
TPH CWG GC (S)	25-Jun-2015	25-Jun-2015	25-Jun-2015	26-Jun-2015	25-Jun-2015	25-Jun-2015

SDG:	150617-77	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	318853
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) 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. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 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. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. 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.

5. 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.

6. 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 (2005), 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. The quantity of asbestos present is not determined unless specifically requested.

7. 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.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

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

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **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%, they are generally wider for volatiles analysis, 50-150%. 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.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

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

18. 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.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. 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.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. 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.

23. 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.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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.

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.

Appendix 3

Laboratory testing results dated 29 July 2015

ALcontrol Laboratories

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

Wardell Armstrong LLP
Sir Henry Doulton House
Forge Lane
Etruria
Stoke on Trent
Staffordshire
ST1 5BD

Attention: Matt Woodcock

CERTIFICATE OF ANALYSIS

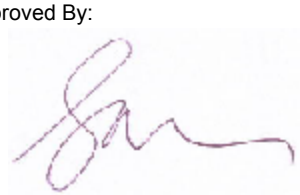
Date:	29 July 2015
Customer:	H_WARDELL_SKT
Sample Delivery Group (SDG):	150718-41
Your Reference:	ST11160
Location:	New Inn, Leek Road, Longsdon
Report No:	323123

We received 6 samples on Saturday July 18, 2015 and 6 of these samples were scheduled for analysis which was completed on Wednesday July 29, 2015. 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.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	150718-41	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	323123
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
11738916	SR001		0.00 - 0.00	16/07/2015
11738920	SR002		0.00 - 0.00	16/07/2015
11738926	SR003		0.00 - 0.00	16/07/2015
11738933	SR004		0.00 - 0.00	16/07/2015
11738939	SR005		0.00 - 0.00	16/07/2015
11738945	SR007		0.00 - 0.00	16/07/2015

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

CERTIFICATE OF ANALYSIS

SDG:	150718-41	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	323123
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

		Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
		11738916	SR001		0.00 - 0.00	250g Amber Jar (AL
		11738916	SR001		0.00 - 0.00	60g VOC (ALE215)
		11738920	SR002		0.00 - 0.00	250g Amber Jar (AL
		11738920	SR002		0.00 - 0.00	60g VOC (ALE215)
		11738926	SR003		0.00 - 0.00	250g Amber Jar (AL
		11738926	SR003		0.00 - 0.00	60g VOC (ALE215)
		11738933	SR004		0.00 - 0.00	250g Amber Jar (AL
		11738933	SR004		0.00 - 0.00	60g VOC (ALE215)
		11738939	SR005		0.00 - 0.00	250g Amber Jar (AL
		11738939	SR005		0.00 - 0.00	60g VOC (ALE215)
		11738945	SR007		0.00 - 0.00	250g Amber Jar (AL
		11738945	SR007		0.00 - 0.00	60g VOC (ALE215)
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2				X X
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 6				X X X X X X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 6				X X X X X X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 6				X X X X X X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2				X X
Metals in solid samples by OES	All	NDPs: 0 Tests: 2				X X
PAH by GCMS	All	NDPs: 0 Tests: 2				X X
Sample description	All	NDPs: 0 Tests: 6				X X X X X X
TPH CWG GC (S)	All	NDPs: 0 Tests: 6				X X X X X X

CERTIFICATE OF ANALYSIS

SDG:	150718-41	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	323123
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**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	Grain size	Inclusions	Inclusions 2
11738916	SR001	0.00 - 0.00	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	Vegetation
11738920	SR002	0.00 - 0.00	Dark Brown	Silty Clay Loam	0.063 - 0.1 mm	Stones	Vegetation
11738926	SR003	0.00 - 0.00	Dark Brown	Silty Clay	0.063 - 0.1 mm	None	None
11738933	SR004	0.00 - 0.00	Dark Brown	Clay Loam	0.063 - 0.1 mm	Stones	None
11738939	SR005	0.00 - 0.00	Dark Brown	Silty Clay	0.063 - 0.1 mm	Stones	None
11738945	SR007	0.00 - 0.00	Light Brown	Silty Clay	0.063 - 0.1 mm	None	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 ocurring 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:	150718-41	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	323123
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% 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
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	SR001	SR002	SR003	SR004	SR005	SR007
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/07/2015	16/07/2015	16/07/2015	16/07/2015	16/07/2015	16/07/2015
			Sample Time	.	.	.	.	.	.
			Date Received	18/07/2015	18/07/2015	18/07/2015	18/07/2015	18/07/2015	18/07/2015
			SDG Ref	150718-41	150718-41	150718-41	150718-41	150718-41	150718-41
			Lab Sample No.(s)	11738916	11738920	11738926	11738933	11738939	11738945
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		8.4	34	29	30	33	28
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #				
Arsenic	<0.6 mg/kg	TM181		5.99 M	26.3 M				
Cadmium	<0.02 mg/kg	TM181		0.711 M	0.372 M				
Chromium	<0.9 mg/kg	TM181		28.6 M	19.2 M				
Copper	<1.4 mg/kg	TM181		16.3 M	44.4 M				
Lead	<0.7 mg/kg	TM181		34 M	176 M				
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M				
Nickel	<0.2 mg/kg	TM181		12.4 M	16.9 M				
Selenium	<1 mg/kg	TM181		<1 #	1.09 #				
Zinc	<1.9 mg/kg	TM181		78.5 M	148 M				

CERTIFICATE OF ANALYSIS

SDG:	150718-41	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	323123
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% 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
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	SR001	SR002				
			Depth (m)	0.00 - 0.00	0.00 - 0.00				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	16/07/2015	16/07/2015				
			Sample Time	.	.				
			Date Received	18/07/2015	18/07/2015				
			SDG Ref	150718-41	150718-41				
			Lab Sample No.(s)	11738916	11738920				
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		100	83.2				
Acenaphthene-d10 % recovery**	%	TM218		93.9	79.3				
Phenanthrene-d10 % recovery**	%	TM218		88.3	75.6				
Chrysene-d12 % recovery**	%	TM218		82.6	75.6				
Perylene-d12 % recovery**	%	TM218		80.9	75.4				
Naphthalene	<9 µg/kg	TM218		20000 M	336 M				
Acenaphthylene	<12 µg/kg	TM218		<120 M	102 M				
Acenaphthene	<8 µg/kg	TM218		48700 M	236 M				
Fluorene	<10 µg/kg	TM218		31500 M	214 M				
Phenanthrene	<15 µg/kg	TM218		273000 M	2350 M				
Anthracene	<16 µg/kg	TM218		39100 M	958 M				
Fluoranthene	<17 µg/kg	TM218		249000 M	10100 M				
Pyrene	<15 µg/kg	TM218		237000 M	8680 M				
Benz(a)anthracene	<14 µg/kg	TM218		94800 M	5380 M				
Chrysene	<10 µg/kg	TM218		104000 M	4890 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218		112000 M	5850 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218		37400 M	1980 M				
Benzo(a)pyrene	<15 µg/kg	TM218		95400 M	4650 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		44900 M	2310 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		13300 M	621 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218		61700 M	2390 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		1460000	51100				

CERTIFICATE OF ANALYSIS

SDG:	150718-41	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	323123
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% 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
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	SR001	SR002	SR003	SR004	SR005	SR007
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/07/2015	16/07/2015	16/07/2015	16/07/2015	16/07/2015	16/07/2015
			Sample Time	.	.	.	.	.	.
			Date Received	18/07/2015	18/07/2015	18/07/2015	18/07/2015	18/07/2015	18/07/2015
			SDG Ref	150718-41	150718-41	150718-41	150718-41	150718-41	150718-41
			Lab Sample No.(s)	11738916	11738920	11738926	11738933	11738939	11738945
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		109	68	87	76	111	69
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		34900 M	159 M	<44 M	<44 M	<44 M	<44 M
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Benzene	<10 µg/kg	TM089		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<2 µg/kg	TM089		402 M	<2 M	<2 M	2.88 M	<2 M	<2 M
Ethylbenzene	<3 µg/kg	TM089		214 M	<3 M	<3 M	<3 M	<3 M	<3 M
m,p-Xylene	<6 µg/kg	TM089		5100 M	<6 M	<6 M	<6 M	<6 M	<6 M
o-Xylene	<3 µg/kg	TM089		3680 M	<3 M	<3 M	<3 M	<3 M	<3 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089		8780	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089		9400	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089		229	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		723	24	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		9490	43.5	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		5260	33	<10	<10	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173		52700	5600	<100	<100	1150	<100
Aliphatics >C16-C21	<100 µg/kg	TM173		81500	16900	<100	520	3950	2050
Aliphatics >C21-C35	<100 µg/kg	TM173		597000	23400	5190	11800	19400	8280
Aliphatics >C35-C44	<100 µg/kg	TM173		597000	<100	309	1130	2340	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173		1330000	45900	5490	13500	26800	10300
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		402	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		15300	28.5	<10	11.5	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		3510	22.5	<10	<10	<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		227000	2460	<100	1880	3050	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173		778000	17800	<100	7460	9560	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173		1890000	55200	14400	53800	38200	8740
Aromatics >EC35-EC44	<100 µg/kg	TM173		944000	14800	4850	17600	11300	571
Aromatics >EC40-EC44	<100 µg/kg	TM173		427000	5090	2220	7300	4920	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		3840000	90300	19300	80700	62200	9310
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		5200000	136000	24800	94200	89000	19600

CERTIFICATE OF ANALYSIS

SDG:	150718-41	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	323123
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

Asbestos Identification - Solid Samples

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	SR001 0.00 - 0.00 SOLID 16/07/2015 00:00:00 23/07/2015 08:31:40 150718-41 11738916 TM048	27/7/15	Kevin Gill	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	SR002 0.00 - 0.00 SOLID 16/07/2015 00:00:00 23/07/2015 08:19:40 150718-41 11738920 TM048	27/7/15	Kevin Gill	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	150718-41	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	323123
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	150718-41	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	323123
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	11738916	11738920	11738926	11738933	11738939	11738945
Customer Sample Ref.	SR001	SR002	SR003	SR004	SR005	SR007
AGS Ref.						
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Asbestos ID in Solid Samples	27-Jul-2015	27-Jul-2015				
EPH CWG (Aliphatic) GC (S)	27-Jul-2015	27-Jul-2015	27-Jul-2015	27-Jul-2015	27-Jul-2015	27-Jul-2015
EPH CWG (Aromatic) GC (S)	27-Jul-2015	27-Jul-2015	27-Jul-2015	27-Jul-2015	27-Jul-2015	27-Jul-2015
GRO by GC-FID (S)	24-Jul-2015	29-Jul-2015	29-Jul-2015	29-Jul-2015	29-Jul-2015	29-Jul-2015
Hexavalent Chromium (s)	29-Jul-2015	29-Jul-2015				
Metals in solid samples by OES	28-Jul-2015	28-Jul-2015				
PAH by GCMS	27-Jul-2015	29-Jul-2015				
Sample description	23-Jul-2015	23-Jul-2015	24-Jul-2015	24-Jul-2015	24-Jul-2015	24-Jul-2015
TPH CWG GC (S)	27-Jul-2015	29-Jul-2015	29-Jul-2015	29-Jul-2015	29-Jul-2015	29-Jul-2015

SDG:	150718-41	**Location:**	New Inn, Leek Road, Longsdon	**Order Number:**	
Job:	H_WARDELL_SKT-154	**Customer:**	Wardell Armstrong LLP	**Report Number:**	323123
Client Reference:	ST11160	**Attention:**	Matt Woodcock	**Superseded Report:**	

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) 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. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 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. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. 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.

5. 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.

6. 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 (2005), 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. The quantity of asbestos present is not determined unless specifically requested.

7. 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.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

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

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **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%, they are generally wider for volatiles analysis, 50-150%. 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.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

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

18. 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.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. 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.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. 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.

23. 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.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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.

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.

Appendix 4
Waste Classification Report

Waste Classification Report

RASMF-9BM5E-Z7P5M

Job name

New Inn

Waste Stream

New Inn

Comments

Project

ST11160

Site

New Inn, Leek Road, Longsdon.

Classified by

Name:
Woodcock, Matthew
Date:
31/07/2015 08:34 UTC
Telephone:
0845 111 7777

Company:
Wardell Armstrong
Sir Henry Doulton House
Forge Lane, Etruria
Stoke on Trent
ST1 5BD

Report

Created by: Woodcock, Matthew
Created date: 31/07/2015 08:34 UTC

Job summary

Classification of sample: SR001

Hazardous Waste
Classified as **17 05 03 ***
in the European Waste Catalogue

Sample details

Sample Name:
SR001
Sample Depth:
0 m
Moisture content: **8.4%**
(dry weight correction)

EWC Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.48%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.48%)

HP 14: Ecotoxic "waste which presents or may present immediate or delayed risks for one or more sectors of the environment"

Risk phrases hit:

R52/53 "Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment"

Because of determinand:

benz[a]anthracene: (conc.: 0.00875%)

Determinands (Moisture content: 8.4%, dry weight correction)

lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 34 mg/kg, converted to compound conc.:47.362 mg/kg or 0.00474%, Note 1 conc.: 0.00314%)
copper sulfate (hydrated): (Cation conc. entered: 16.3 mg/kg, converted to compound conc.:59.081 mg/kg or 0.00591%)
chromium(III) oxide: (Cation conc. entered: 28.6 mg/kg, converted to compound conc.:38.561 mg/kg or 0.00386%)
cadmium sulfate: (Cation conc. entered: 0.711 mg/kg, converted to compound conc.:1.216 mg/kg or 0.000122%)
arsenic trioxide: (Cation conc. entered: 5.99 mg/kg, converted to compound conc.:7.296 mg/kg or 0.00073%)
nickel sulfate: (Cation conc. entered: 12.4 mg/kg, converted to compound conc.:30.161 mg/kg or 0.00302%)
zinc sulphate: (Cation conc. entered: 78.5 mg/kg, converted to compound conc.:178.819 mg/kg or 0.0179%)
TPH (C6 to C40) petroleum group: (Whole conc. entered as: 5200 mg/kg or 0.48%)
ethylbenzene: (Whole conc. entered as: 0.214 mg/kg or 0.0000197%)
toluene: (Whole conc. entered as: 0.402 mg/kg or 0.0000371%)
xylene: (Whole conc. entered as: 8.78 mg/kg or 0.00081%)

anthracene: (Whole conc. entered as: 39.1 mg/kg or 0.00361%)
benz[a]anthracene: (Whole conc. entered as: 94.8 mg/kg or 0.00875%)
acenaphthene: (Whole conc. entered as: 48.7 mg/kg or 0.00449%)
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 95.4 mg/kg or 0.0088%)
benzo[b]fluoranthene: (Whole conc. entered as: 112 mg/kg or 0.0103%)
benzo[ghi]perylene: (Whole conc. entered as: 61.7 mg/kg or 0.00569%)
benzo[k]fluoranthene: (Whole conc. entered as: 37.4 mg/kg or 0.00345%)
dibenz[a,h]anthracene: (Whole conc. entered as: 13.3 mg/kg or 0.00123%)
chrysene: (Whole conc. entered as: 0.0826 mg/kg or 0.00000762%)
fluoranthene: (Whole conc. entered as: 249 mg/kg or 0.023%)
fluorene: (Whole conc. entered as: 31.5 mg/kg or 0.00291%)
naphthalene: (Whole conc. entered as: 20 mg/kg or 0.00185%)
phenanthrene: (Whole conc. entered as: 273 mg/kg or 0.0252%)
pyrene: (Whole conc. entered as: 237 mg/kg or 0.0219%)

Test Settings

HP 3(i) on Flam. Liq. 1; H224, Flam. Liq. 2; H225, Flam. Liq. 3; H226: Force this test to non hazardous because: "not liquid"

Notes utilised in assessment

C14: Step 4
"identify whether any individual ecotoxic substance is given a substance specific concentration limit in Annex VI, Table 3.2 to the CLP,..." , used on:

Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "benz[a]anthracene"

C14: Step 5
"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "fluorene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "lead compounds (with the exception of those listed separately in this Annex)"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "copper sulfate (hydrated)"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "cadmium sulfate"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "nickel sulfate"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "zinc sulphate"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "anthracene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "acenaphthene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "benzo[ghi]perylene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "benzo[k]fluoranthene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "dibenz[a,h]anthracene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "chrysene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "naphthalene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "pyrene"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead compounds (with the exception of those listed separately in this Annex)"
Test: "HP 6 on Acute Tox. 4; H302" for determinand: "lead compounds (with the exception of those listed separately in this Annex)"
Test: "HP 6 on Acute Tox. 4; H332" for determinand: "lead compounds (with the exception of those listed separately in this Annex)"

Test: "HP 7 on Carc. 2; H351" for determinand: "lead compounds (with the exception of those listed separately in this Annex)"
Test: "HP 10 on Repr. 1A; H360, Repr. 1B; H360, Repr. 1B; H360F, Repr. 1A; H360F, Repr. 1A; H360D, Repr. 1B; H360D, Repr. 1B; H360FD, Repr. 1A; H360FD, Repr. 1A; H360Fd, Repr. 1B; H360Fd, Repr. 1B; H360Df, Repr. 1A; H360Df" for determinand: "lead compounds (with the exception of those listed separately in this Annex)"
Test: "HP 10 on Repr. 2; H361, Repr. 2; H361f, Repr. 2; H361d, Repr. 2; H361fd" for determinand: "lead compounds (with the exception of those listed separately in this Annex)"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "lead compounds (with the exception of those listed separately in this Annex)"

Determinand notes

Note 1 , used on:

determinand: "lead compounds (with the exception of those listed separately in this Annex)"

Note A , used on:

determinand: "lead compounds (with the exception of those listed separately in this Annex)"

Note C , used on:

determinand: "xylene"

WM3: Unknown oil , used on:

determinand: "TPH (C6 to C40) petroleum group"

Classification of sample: SR002

Non Hazardous Waste
Classified as **17 05 04**
in the European Waste Catalogue

Sample details

Sample Name:
SR002
Sample Depth:
0 m
Moisture content: **34%**
(dry weight correction)

EWC Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 34%, dry weight correction)

lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 176 mg/kg, converted to compound conc.:198.328 mg/kg or 0.0198%, Note 1 conc.: 0.0131%)
copper sulfate (hydrated): (Cation conc. entered: 44.4 mg/kg, converted to compound conc.:130.187 mg/kg or 0.013%)
chromium(III) oxide: (Cation conc. entered: 19.2 mg/kg, converted to compound conc.:20.942 mg/kg or 0.00209%)
cadmium sulfate: (Cation conc. entered: 0.372 mg/kg, converted to compound conc.:0.515 mg/kg or 0.0000515%)
arsenic trioxide: (Cation conc. entered: 26.3 mg/kg, converted to compound conc.:25.914 mg/kg or 0.00259%)
nickel sulfate: (Cation conc. entered: 16.9 mg/kg, converted to compound conc.:33.254 mg/kg or 0.00333%)
selenium compounds (with the exception of cadmium sulfoselenide and sodium selenite): (Cation conc. entered: 1.09 mg/kg, converted to compound conc.:1.22 mg/kg or 0.000122%)
zinc sulphate: (Cation conc. entered: 148 mg/kg, converted to compound conc.:272.728 mg/kg or 0.0273%)
TPH (C6 to C40) petroleum group: (Whole conc. entered as: 136 mg/kg or 0.0101%)
anthracene: (Whole conc. entered as: 0.958 mg/kg or 0.0000715%)
benz[a]anthracene: (Whole conc. entered as: 5.38 mg/kg or 0.000401%)
acenaphthene: (Whole conc. entered as: 0.236 mg/kg or 0.0000176%)
acenaphthylene: (Whole conc. entered as: 0.102 mg/kg or 0.00000761%)
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 4.65 mg/kg or 0.000347%)
benzo[b]fluoranthene: (Whole conc. entered as: 5.85 mg/kg or 0.000437%)
benzo[ghi]perylene: (Whole conc. entered as: 2.39 mg/kg or 0.000178%)
benzo[k]fluoranthene: (Whole conc. entered as: 1.98 mg/kg or 0.000148%)
dibenz[a,h]anthracene: (Whole conc. entered as: 0.621 mg/kg or 0.0000463%)
chrysene: (Whole conc. entered as: 0.0756 mg/kg or 0.00000564%)
fluoranthene: (Whole conc. entered as: 10.1 mg/kg or 0.000754%)
fluorene: (Whole conc. entered as: 0.214 mg/kg or 0.000016%)
naphthalene: (Whole conc. entered as: 0.336 mg/kg or 0.0000251%)
phenanthrene: (Whole conc. entered as: 2.35 mg/kg or 0.000175%)
pyrene: (Whole conc. entered as: 8.68 mg/kg or 0.000648%)

Test Settings

HP 3(i) on Flam. Liq. 1; H224, Flam. Liq. 2; H225, Flam. Liq. 3; H226: Force this test to non hazardous because: "not liquid"

Notes utilised in assessment

C14: Step 5
"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "fluorene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "lead compounds (with the exception of those listed separately in this Annex)"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "copper sulfate (hydrated)"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "cadmium sulfate"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "nickel sulfate"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "selenium compounds (with the exception of cadmium sulfoselenide and sodium selenite)"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "zinc sulphate"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "anthracene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "benz[a]anthracene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "acenaphthene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "benzo[ghi]perylene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "benzo[k]fluoranthene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "dibenz[a,h]anthracene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "chrysene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "naphthalene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "pyrene"
Test: "HP 14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "TPH (C6 to C40) petroleum group"

Determinand notes

Note 1 , used on:

determinand: "lead compounds (with the exception of those listed separately in this Annex)"

Note A , used on:

determinand: "lead compounds (with the exception of those listed separately in this Annex)"
determinand: "selenium compounds (with the exception of cadmium sulfoselenide and sodium selenite)"

WM3: Unknown oil , used on:

determinand: "TPH (C6 to C40) petroleum group"

Appendix A: Classifier defined and non CLP determinands

chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source: http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en
Data source date: 26/11/2012
Risk Phrases: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53
Hazard Statements: Acute Tox. 4; H302, Acute Tox. 4; H332, Skin Irrit. 2; H315, Eye Irrit. 2; H319, Resp. Sens. 1; H334, Skin Sens. 1; H317, Repr. 1B; H360FD, STOT SE 3; H335, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

TPH (C6 to C40) petroleum group

Comments: Risk phrase data given on page A41
Data source: WM2 3rd edition, 2013
Data source date: 01/08/2013
Risk Phrases: R10, R45, R46, R63, R65, R51/53
Hazard Statements: Flam. Liq. 3; H226, Muta. 1B; H340, Carc. 1B; H350, Repr. 2; H361d, STOT RE 2; H373, Asp. Tox. 1; H304, Aquatic Chronic 2; H411

anthracene (CAS Number: 120-12-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source: http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=101102&HarmOnly=no
Data source date: 08/03/2013
Risk Phrases: N; R50/53, R36, R37, R38, R43
Hazard Statements: Skin Irrit. 2; H315, Eye Irrit. 2; H319, Skin Sens. 1; H317, STOT SE 3; H335, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

acenaphthene (CAS Number: 83-32-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source: http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=133563&HarmOnly=no
Data source date: 16/07/2012
Risk Phrases: N; R50/53, N; R51/53, R36, R37, R38
Hazard Statements: Skin Irrit. 2; H315, Eye Irrit. 2; H319, STOT SE 3; H335, Aquatic Acute 1; H400, Aquatic Chronic 1; H410, Aquatic Chronic 2; H411

benzo[ghi]perylene (CAS Number: 191-24-2)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source: http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=15793&HarmOnly=no
Data source date: 16/07/2012
Risk Phrases: N; R50/53
Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410

fluoranthene (CAS Number: 206-44-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source: http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=56375&HarmOnly=no
Data source date: 16/07/2012
Risk Phrases: N; R50/53, R20, R22, R36
Hazard Statements: Acute Tox. 4; H302, Acute Tox. 4; H332, Eye Irrit. 2; H319, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

fluorene (CAS Number: 86-73-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source: http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=81845&HarmOnly=no
Data source date: 16/07/2012
Risk Phrases: N; R50/53, R53
Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410, Aquatic Chronic 4; H413

phenanthrene (CAS Number: 85-01-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=109754&HarmOnly=no
Data source date: 16/07/2012
Risk Phrases: N; R50/53, R22, R36, R37, R38, R40, R43
Hazard Statements: Acute Tox. 4; H302, Skin Irrit. 2; H315, Eye Irrit. 2; H319, Skin Sens. 1; H317, Carc. 2; H351, STOT SE 3; H335, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

pyrene (CAS Number: 129-00-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=87484&HarmOnly=no
Data source date: 16/07/2012
Risk Phrases: N; R50/53, R23
Hazard Statements: Acute Tox. 3; H331, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

acenaphthylene (CAS Number: 208-96-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=59285&HarmOnly=no
Data source date: 16/07/2012
Risk Phrases: R22, R26, R27, R36, R37, R38
Hazard Statements: Acute Tox. 1; H310, Acute Tox. 1; H330, Acute Tox. 4; H302, Skin Irrit. 2; H315, Eye Irrit. 2; H319, STOT SE 3; H335

Appendix B: Notes

C14: Step 4

from section: WM3: C14 in the document: "WM3 - Waste Classification"

"identify whether any individual ecotoxic substance is given a substance specific concentration limit in Annex VI, Table 3.2 to the CLP,..."

C14: Step 5

from section: WM3: C14 in the document: "WM3 - Waste Classification"

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..."

Note 1

from section: 1.1.3.2, Annex VI in the document: "CLP Regulations"

"The concentration stated or, in the absence of such concentrations, the generic concentrations of this Regulation (Table 3.1) or the generic concentrations of Directive 1999/45/EC (Table 3.2), are the percentages by weight of the metallic element calculated with reference to the total weight of the mixture."

Note A

from section: 1.1.3.1, Annex VI in the document: "CLP Regulations"

"Without prejudice to Article 17(2), the name of the substance must appear on the label in the form of one of the designations given in Part 3. In Part 3, use is sometimes made of a general description such as '... compounds' or '... salts'. In this case, the supplier is required to state on the label the correct name, due account being taken of section 1.1.1.4."

Note C

from section: 1.1.3.1, Annex VI in the document: "CLP Regulations"

"Some organic substances may be marketed either in a specific isomeric form or as a mixture of several isomers. In this case the supplier must state on the label whether the substance is a specific isomer or a mixture of isomers."

WM3: Unknown oil

from section: Chapter 3: 4. Waste oils and other wastes containing or contaminated with oil in the document: "WM3 - Waste Classification"

"If the identity of the oil is unknown, and the petroleum group cannot be established, then the oil contaminating the waste can be classified as non-carcinogenic due to the presence of oil if all three of the following criteria are met:

- the waste contains **benzo[a]pyrene (BaP)** at a concentration of less than 0.01% (1/10,000th) of the TPH concentration (This is the carcinogenic limit specified in table 3.2 of the CLP for BaP)
- this has been determined by an appropriate and representative sampling approach in accordance with the principles set out in Appendix D, and
- the analysis clearly demonstrates, for example by carbon bands or chromatograph, and the laboratory has reasonably concluded that the hydrocarbons present have not arisen from petrol or diesel

"

Appendix C: Version

Classification utilises the following:

- CLP Regulations - Regulation 1272/2008/EC of 16 December 2008
  REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
- 1st ATP - Regulation 790/2009/EC of 10 August 2009
  COMMISSION REGULATION (EC) No 790/2009 of 10 August 2009 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures
- 2nd ATP - Regulation 286/2011/EC of 10 March 2011
  COMMISSION REGULATION (EU) No 286/2011 of 10 March 2011 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures
- 3rd ATP - Regulation 618/2012/EU of 10 July 2012
  COMMISSION REGULATION (EU) No 618/2012 of 10 July 2012 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures
- 4th ATP - Regulation 487/2013/EU of 8 May 2013
  COMMISSION REGULATION (EU) No 487/2013 of 8 May 2013 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures
- Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
  COMMISSION REGULATION (EU) No 758/2013 of 7 August 2013 correcting Annex VI to Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures
- 5th ATP - Regulation 944/2013/EU of 2 October 2013
  COMMISSION REGULATION (EU) No 944/2013 of 2 October 2013 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures
- 6th ATP - Regulation 605/2014/EU of 5 June 2014
  COMMISSION REGULATION (EU) No 605/2014 of 5 June 2014 amending, for the purposes of introducing hazard and precautionary statements in the Croatian language and its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures
- WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
  COMMISSION REGULATION (EU) No 1357/2014 of 18 December 2014 replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives
- Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
  COMMISSION DECISION of 18 December 2014 amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European Parliament and of the Council (2014/955/EU)
- WM3 - Waste Classification - May 2015
  Technical Guidance WM3 - Guidance on the classification and assessment of waste (1st edition 2015)
- POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
  REGULATION (EC) No 850/2004 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC
- 1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
  COMMISSION REGULATION (EU) No 756/2010 of 24 August 2010 amending Regulation (EC) No 850/2004 of the European Parliament and of the Council on persistent organic pollutants as regards Annexes IV and V
- 2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010
  COMMISSION REGULATION (EU) No 757/2010 of 24 August 2010 amending Regulation (EC) No 850/2004 of the European Parliament and of the Council on persistent organic pollutants as regards Annexes I and III

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