Appendix 11.2

SLR Land Quality Assessment 2008

This report has been provided by SLR. This formed part of earlier work on the former power station site. It is included here as provided by SLR.

Waste to Energy Development
Griffiths Road, Lostock Gralam, Northwich CW9 7TD

Phase 2 Land Quality Assessment

April 2008
SLR Ref.: 403.0197.00556

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1.0 INTRODUCTION

SLR Consulting Limited (SLR) was commissioned by Waste Recycling Group Limited (WRG) to undertake a preliminary ground investigation in support of a proposed development of a waste management facility on a site at Brunner Mond, Lostock, Cheshire CW9 7TD.

SLR completed (in draft form) a desk study of the site, report reference, Phase 1 Land Quality Assessment (LQA) Report, dated September 2007 included as Appendix A. This report details a subsequent preliminary Phase 2 intrusive ground investigation to determine potential environmental constraints with respect to the proposed development.

SLR recommended in the previous report that a preliminary intrusive ground investigation is required in order to:

- assess the thickness and coverage of lime waste across the proposed development area;
- determine the level of contamination present at the site as a result of historical site uses;
- assess the presence or otherwise of ground gas and vapours by the installation of monitoring wells across the site; and
- recommend contamination remedial options, if required.

The current proposals for the site include the development of a waste to energy plant and associated storage areas; however SLR understands that the site layout is not yet finalised.

The intrusive investigation was carried out between 17th and 19th December 2007 and comprised the advancement of ten boreholes by a combination of percussive and rotary technique. This report details the findings of the ground investigation and provides conclusions with regards to the environmental aspects of the development.

The methodology for the site investigation is included as Appendix B; borehole logs are included as Appendix C; ground gas monitoring results are provided in Appendix D; chemical test results are in provided in Appendix E, geotechnical test results in Appendix F and the generic risk assessment methodology and are provided in Appendix G.

2.0 SITE SETTING

2.1 Site Location

The site is located approximately 2.5km to the east of Northwich town centre at National Grid Reference 368350 374050 within the Brunner Mond chemical works. A site location plan is shown on Drawing 1.

The site is located at an elevation of approximately 25m above Ordnance Datum (AOD).

2.2 Site Setting

The site is currently occupied by a redundant power station that ceased operating in September 2000. The power station previously provided heat and power to the adjacent works. A second site comprising a coke storage yard located 200m west of the former power station site was also inspected as it may form part of the proposed facility.

The site is bounded to the east by the Trent and Mersey Canal and to the north by the adjoining Brunner Mond chemical works. The works extend approximately 800m to the west with a residential housing estate beyond. Access to the site is from Griffiths Road to the east of the site beyond the canal. Further to the east of the site there is an extensive network of historic, elevated waste lime beds. Griffiths Road Park, an area of public open space and a former lime bed and landfill, lies to the southwest and extends for a distance of approximately 500m in a southerly direction to a residential area at Rundheath. Adjacent to the south west of the site is an ethylene storage compound operated by Huntsman. To the south lies apparently undeveloped agricultural land and the Trent and Mersey Canal.

2.3 Site History

The previous SLR Phase 1 LQA report included a Conceptual Site Model to assess potential pollutant linkages that may be present at the site (the power station and the coke storage area) in relation to the proposed development. Historically, the surrounding area has been used since the late 1800's for the production of bleach and soda ash. The site itself has been used for disposal of lime waste and since the 1950's as a power station. Surrounding land has also been used for lime waste disposal. During the First World War ammonium nitrate production for use in explosives was undertaken at the soda ash works. Railway lines were present close to and within the site boundaries. A chloride plant which used asbestos cells was present on the coke storage area between the 1950's and 1980's. Remnant foundations are likely to present across the site.

2.4 Geology

Reference to the British Geological Survey sheet for the area (BGS Sheet 110, Macclesfield, scale 1:50,000) indicates that the underlying geology comprises surface drift deposits of Boulder Clay overlying solid geology of Mercia Mudstones. Brunner Mond records, inspected by SLR, indicate that the geology at the site comprises up to 3.00m of made ground including lime waste, overlying Boulder Clay and Mercia Mudstones.

2.5 Hydrogeology

The Environment Agency Groundwater Vulnerability Map Sheet 16, West Cheshire, scale 1:100,000, has classified the Mercia Mudstones beneath the site as a non aquifer. Non aquifers are generally regarded as containing insignificant quantities of groundwater.

However, groundwater flow through such rocks, does take place, and needs to be considered in assessing the risk associated with persistent pollutants.

There are no current licensed groundwater abstractions or source protection zones within 1km of the site centre.

2.6 Hydrology

The closest surface water course is the Trent and Mersey Canal which forms the eastern boundary of the site. The Canal is classified as River Ecosystem class 4 (fair quality). The walls of the canal are likely to be constructed of thick, impermeable clay ("puddle clay") and the canal is, therefore, not considered to be in hydraulic continuity with any groundwater beneath the site. Brunner Mond has a discharge consent for an outlet directly into the canal, close to the area occupied by transformers.

Wade Brook flows from east to west 125m north-west of the Power Station site boundary and passes beneath part of the Brunner Mond operational site in a culvert. It is classified as River Quality Grade F (bad). Brunner Mond has an abstraction from Wade Brook for cooling located approximately 300m north of the site.

The proposed development area does not lie within an indicative fluvial floodplain.

Several pollution incidents to Wade Brook over the past decade have been attributed to Brunner Mond including diesel and chemical spills.

2.7 Conceptual Site Model

Potential sources of contamination on site are likely to include:

- lime waste which is highly alkaline and may contain concentrations of ammonium and sulphates; the lime waste may also be a source of hydrogen sulphide gas.
- metals and hydrocarbons associated with boiler ash from the railways;
- hydrocarbons as a result of leaks and spills from historic fuel storage at the site; and,
- oils/PCB from the transformer bays.
- Ground gas is likely to be present as a result of made ground across the site.

Aggressive and unstable ground conditions and historic foundations are likely to be present which could pose a constraint to the proposed development. Asbestos and historic foundations may be present at the coke storage yard associated with its former use as a chloride plant.

Potential receptors to such contamination were identified as the future site occupants, construction workers, the proposed buildings and Wade Brook. Mobile contamination in perched groundwater beneath the site could migrate laterally to Wade Brook, although the adjacent canal would be expected to be protected by a clay lining.

In summary, the CSM has identified the following potential pollutant linkages:

- the build up of ground gas and/or vapours in confined spaces which would impact human health and structures;

- contact between construction materials and aggressive ground conditions;
- the possible movement of contaminants through drainage networks; and
- lateral migration of mobile contamination into Wade Brook.

3.0 SITE INVESTIGATION

3.1 Scope of Work

SLR undertook an intrusive site investigation between 17th and 19th December 2007. The purpose of the investigation was to confirm the underlying ground conditions and to identify the nature and extent of any contamination at the site based upon the conceptual site model, with regard to the proposed industrial development and comprised the following tasks:

- Drilling of ten solid stem rotary boreholes to depths of between 3.50m and 7.00m bgl;
- Collection of representative soil samples from the borehole arisings for chemical testing to ascertain the level of contamination, if any;
- Chemical analysis of eighteen soil samples for a range of determinands;
- Installation of combined gas and groundwater monitoring wells in all ten boreholes;
- Collection of groundwater samples for chemical analysis from five boreholes; and
- Three ground gas and one groundwater monitoring visit following the investigation.

The site investigation methodology is summarised in Appendix B. Boreholes were positioned in order to provide the best possible coverage of the site and to target potential sources of contamination, for example, historic fuel storage areas. However, whilst the majority of the site is not in use the borehole location was constrained as the site is within larger operational larger Brunner Mond facility, the presence of the former power station building and relict structures including the old fuel storage tank bases. A summary of the borehole locations is presented in Table 3-1 below and a borehole location plan is presented in Drawing 2.

3.2 Exploratory Hole Summary

A summary of exploratory borehole locations, the thickness of the made ground and depth are presented in Table 3-1 below.

Table 3-1
Exploratory Borehole Location Summary

Exploratory Hole	Location	Depth (m)	Thickness of Made Ground (m)	Water Observations
BH01	Offices (north)	7.0	6.0	Lime waste saturated 2.0m-6.0m.
BH02	Former diesel tank (north)	7.0	5.2	Lime waste saturated 1.2m-5.2m.
BH03	Water treatment plant (north)	3.5	3.5	Lime waste saturated 0.7m-3.5m.
BH04	Site centre/ chimney	7.0	3.2	Lime waste saturated 1.3m-3.2m.
BH05	Site centre/ Transformers	7.0	4.8	Lime waste saturated 1.1m-4.8m.
BH06	South	7.0	4.8	Lime waste saturated 1.0m-4.8m.
BH07	Diesel tanks (south)	7.0	4.2	Lime waste saturated 1.2m-4.2m.
BH08	South (down gradient)	7.0	1.6	Dry
BH09	Coke storage yard	7.0	2.0	Dry
BH10	Car park	5.4	3.4	Lime waste saturated 3.2m-3.4m.

3.3 Ground Conditions

3.3.1 Soils

All boreholes were logged by an SLR representative to BS 5930[1]. The investigation was carried out in accordance with BS 10175[2]. A copy of the borehole logs is provided in Appendix C.

Concrete hardstanding was encountered in BH2, BH3, BH5 and BH6 up to 0.70m thick and in BH9 (coke storage area) up to 2.0m thick. In BH3 and BH5 the concrete was superseded by a thin surface layer (0.4m and 0.3m) of aggregate and tarmac, respectively.

Two main types of made ground strata were encountered on site during the intrusive investigation.

- Made ground comprising loose black sandy fine to coarse gravel of ash and clinker with rare gravel of red brick was encountered from ground level to depths of between 1.0m and 3.2m bgl. The ash was found in all boreholes except BH3 and BH5 in the east of the site and BH9 in the coke storage yard. The thickness of the deposit varied between 0.4m and 2.9m, with the greatest thickness encountered in BH10 located in the car park.

- Made ground comprised light greyish white silt identified as lime waste. In all instances the lime waste was recovered as a waterlogged sludge. The lime waste was encountered beneath the ash deposits at depths of between 0.7m and 3.2m bgl in all boreholes except BH8 and BH9 in the south of the site and the coke storage yard, respectively, where no lime waste was encountered. A thin layer of lime waste was encountered between ash at the surface and clay beneath in BH10 between 3.2m to 3.4m bgl. The thicknesses of the lime waste varied between 0.2m in BH10 and 4.0m in the north of the site in BH1 and BH2.

Natural deposits were encountered in all boreholes except BH3 which hit an obstruction at 3.5m bgl. In all instances the natural material encountered consisted of soft, brown silty clay with a graded sandy component, becoming firmer with depth in BH4 and BH9. Light grey gravelly clay was encountered in the south of the site in BH8. The clay was proven to extend to a of at least 7.0m bgl across the site.

3.3.2 Groundwater

No distinct groundwater strikes were recorded during drilling. The lime waste was described as a wet sludge which is thought to be as a result of the waste production process, as opposed to contact with any groundwater. SLR understands the lime waste is produced as a sludge which enables it to be pumped to disposal.

3.3.3 Soil Gas and Groundwater Monitoring

Ground gas and groundwater monitoring was undertaken on three occasions one week after borehole installation. The results are summarised in Table 1-2 overleaf and the field results are presented in Appendix D.

[1] BS 5930:1999 – Code of Practice for Site Investigations.
[2] BS 10175:2001 – Investigation of Potentially Contaminated Sites – Code of Practice.

Table 3-2
Soil Gas and Groundwater Monitoring Results

Borehole Number	Date	Methane %v/v	Carbon dioxide %v/v	Oxygen %v/v	Carbon Monoxide ppm	Hydrogen Sulphide ppm	Flow m/s	Atmospheric pressure mb	Water level
BH1	10.01.08	<0.1	<0.1	19.2	134	<1	<0.1	998	1.70
BH1	16.01.08	<0.1	0.3	19.2	4	<1	<0.1	1007	1.95
BH1	24.01.08	<0.1	0.8	18.8	7	<1	<0.1	1021	1.64
BH2	10.01.08	<0.1	<0.1	20.3	2	<1	<0.1	998	1.48
BH2	16.01.08	0.1	<0.1	19.6	4	<1	<0.1	1007	1.19
BH2	24.01.08	0.2	<0.1	20.3	6	<1	<0.1	1021	1.09
BH3	10.01.08	<0.1	<0.1	20.3	14	<1	<0.1	998	1.90
BH3	16.01.08	<0.1	<0.1	20.2	4	<1	<0.1	1007	1.94
BH3	24.01.08	<0.1	<0.1	20.2	9	<1	<0.1	1021	1.94
BH4	10.01.08	0.3	<0.1	16.8	>>>	<1	<0.1	998	0.36
BH4	16.01.08	0.1	<0.1	18.6	870	<1	<0.1	1007	0.26
BH4	24.01.08	0.2	<0.1	18.9	602	<1	<0.1	1021	0.23
BH5	10.01.08	<0.1	<0.1	20.4	6	<1	0.1	998	1.36
BH5	16.01.08	<0.1	<0.1	20.4	4	<1	<0.1	1007	0.97
BH5	24.01.08	0.1	<0.1	20.6	8	<1	<0.1	1021	1.11
BH6	10.01.08	0.2	<0.1	19.6	110	<1	8.1	998	0.70
BH6	16.01.08	0.2	<0.1	19.9	36	<1	3.7	1007	0.58
BH6	24.01.08	0.1	<0.1	19.5	38	<1	<0.1	1021	0.65
BH7	10.01.08	2.6	<0.1	18.8	266	<1	6.1	998	0.58
BH7	16.01.08	0.2	<0.1	20.6	45	<1	<0.1	1007	0.35
BH7	24.01.08	0.1	<0.1	21.1	40	<1	<0.1	1021	0.30
BH8	10.01.08	1.8	<0.1	20.1	20	<1	<0.1	998	0.72
BH8	16.01.08	1.1	<0.1	20.1	2	<1	<0.1	1007	0.72
BH8	24.01.08	0.8	<0.1	20.5	7	<1	<0.1	1021	0.64
BH9	10.01.08	0.1	0.2	14.1	>>>	3	<0.1	998	1.54
BH9	16.01.08	0.1	0.4	18.0	72	<1	3.8	1007	1.90
BH9	24.01.08	waterlogged	-	-	-	-	-	1021	0.22
BH10	10.01.08	17.4	<0.1	16.8	76	<1	>>>	998	0.67
BH10	16.01.08	4.1	<0.1	19.8	62	<1	<0.1	1007	0.73
BH10	24.01.08	2.8	<0.1	19.9	52	<1	<0.1	1021	0.69

>>> off scale

4.0 LABORATORY ANALYSIS RESULTS

Representative soil and groundwater samples from the boreholes were collected and sent to accredited laboratories for chemical testing. The analytical suite tested was relevant to the type of contamination anticipated to be present at the site in accordance with the Conceptual Site Model.

4.1 Chemical Analysis

4.1.1 Soil Analytical Chemistry Results

The results of the chemical testing are summarised in Table 2-1 and the laboratory analytical results are provided in Appendix E. The results of the SVOC and VOC analysis indicate that these determinands were measured below or at the limit of detection in the samples tested; these results are only presented in the Appendix.

Notably, no PCB impacts were recorded in BH5 located close to the transformer stations; and low levels of hydrocarbon impact were recorded in BH7 close to the former above ground oil storage tanks.

Table 4-1
Summary of Soil Analysis (mg/kg)

Determinand	Sample Number/Description																	
	BH1	BH1	BH1	BH2	BH2	BH2	BH4	BH4	BH5	BH5	BH6	BH7	BH7	BH8	BH8	BH9	BH10	BH10
Depth m bgl	0.5-0.7	2.0-6.0	6.0-7.0	1.0	2.0	5.5	0.5	3.0	1.1-3.0	5.0-6.0	1.8	1.0	1.5	1.0	3.0	2.5-3.0	2.5	4.0
Description	Ash	Lime	Clay	Ash	Lime	Clay	Ash	Lime	Lime	Clay	Lime	Ash	Lime	Ash	Lime	Clay	Ash	Lime
Arsenic	10	4	-	4	-	<3	6	12	12	-	-	6	11	14	3	<3	13	4
Cadmium	2.1	1.1	-	<0.3	-	<0.3	<0.3	1.2	1.2	-	-	1.6	1.3	0.3	<0.3	<0.3	0.8	<0.3
Chromium	25	6.1	-	11	-	18	21	12	15	-	-	40	14	22	31	22	33	21
Copper	61	23	-	26	-	11	25	15	17	-	-	80	17	63	28	14	92	16
Lead	19	20	-	35	-	3	12	12	13	-	-	62	23	21	24	4	67	7
Mercury	<0.6	<0.6	-	<0.6	-	<0.6	<0.6	<0.6	<0.6	-	-	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Nickel	45	11	-	21	-	18	23	7.5	8.4	-	-	85	9.0	51	43	21	63	21
Selenium	<3	<3	-	<3	-	<3	<3	<3	<3	-	-	<3	<3	<3	<3	<3	<3	<3
Zinc	26	36	-	34	-	32	40	47	46	-	-	49	54	42	58	47	41	41
TOC (%)	-	4.4	0.8	-	-	-	0.7	0.4	-	-	-	-	-	9.0	2.4	<0.2	-	-
Ammoniacal N (g/l)	-	-	-	-	<15	<15	-	-	<15	-	-	-	<15	-	-	-	-	-
Phenols	-	-	-	<0.15	<0.15	-	<0.15	-	1.4	-	-	<0.15	1.0	-	-	<0.15	-	-
Total Cyanide	<1	<1	-	-	-	-	<1	2	2	-	-	-	-	<1	<1	<1	-	-
pH (units)	8.3	13	-	8.9	-	11	9.6	13	13	-	13	8.8	13	8.3	8.6	11	8.4	8.8
Asbestos	None	-	-	-	-	-	None	-	-	-	-	-	-	None	-	None	-	-
Benzene	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	-	-	-	-	-
Xylene	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	-	-	-	-	-
MTBE	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	-	-	-	-	-
PCB	-	-	-	-	-	-	-	-	<0.02	-	-	-	-	-	-	-	-	-
C5-6 Aliphatics	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	-	-	-	-	-

Determinand	Sample Number/Description																	
C6-8 Aliphatics	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	-	-	-	-	-

	BH1	BH1	BH1	BH2	BH2	BH2	BH4	BH4	BH5	BH5	BH6	BH7	BH7	BH8	BH8	BH9	BH10	BH10
Depth m bgl	0.5-0.7	2.0-6.0	6.0-7.0	1.0	2.0	5.5	0.5	3.0	1.1-3.0	5.0-6.0	1.8	1.0	1.5	1.0	3.0	2.5-3.0	2.5	4.0
Description	Ash	Lime	Clay	Ash	Lime	Clay	Ash	Lime	Lime	Clay	Lime	Ash	Lime	Ash	Lime	Clay	Ash	Lime
C8-10 Aliphatics	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	-	-	-	-	-
C10-12 Aliphatics	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.03	-	-	-	-	-
C12-16 Aliphatics	-	-	-	-	-	-	-	-	-	-	-	4.9	3.5	-	-	-	-	-
C16-21 Aliphatics	-	-	-	-	-	-	-	-	-	-	-	7.5	15	-	-	-	-	-
C21-35 Aliphatics	-	-	-	-	-	-	-	-	-	-	-	23	86	-	-	-	-	-
C8-10 Aromatics	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	-	-		-	-
C10-12 Aromatics	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.05	-	-		-	-
C12-16 Aromatics	-	-	-	-	-	-	-	-	-	-	-	5.7	1.3	-	-		-	-
C16-21 Aromatics	-	-	-	-	-	-	-	-	-	-	-	7.6	6.2	-	-		-	-
C21-35 Aromatics	-	-	-	-	-	-	-	-	-	-	-	14	44	-	-		-	-
EPH (DRO) C10-C40	-	-	-	280	-	-	240	-	220	-	-	-	-	980	-	110	100	-
EPH C10-12	-	-	-	<35	-	-	<35	-	<35	-	-	-	-	<35	-	<35	<35	-
EPH >C12-16	-	-	-	<35	-	-	<35	-	<35	-	-	-	-	<35	-	39	<35	-
EPH >C16-21	-	-	-	<35	-	-	51	-	<35	-	-	-	-	45	-	<35	<35	-
EPH >C21-40	-	-	-	220	-	-	150	-	160	-	-	-	-	900	-	49	58	-
Naphthalene	-	-	-	0.48	0.18	-	-	-	0.25	0.11	-	0.89	0.14	-	-	<0.01	-	-
Benzo(a)pyrene	-	-	-	0.26	2.8	-	-	-	0.37	0.16	-	0.15	0.31	-	-	0.04	-	-

All results in mg/kg unless stated otherwise.
- not tested

4.1.2 Groundwater Laboratory Analytical Results

A total of three groundwater samples were collected from BH2, BH8 and BH9 for laboratory analysis one week after borehole completion in order to allow ground conditions to stabilise. The samples were tested for metals, pH, speciated petroleum hydrocarbons and speciated polycyclic aromatic hydrocarbons compounds. A summary of the analytical results is provided in Table 3-2 in section 5 where the results are assessed with respect to generic assessment criteria. The laboratory analytical certificates are provided in Appendix C.

4.2 Geotechnical Analysis

Comprehensive geotechnical testing was outside the scope of works and will be addressed at a later stage. However, SLR selected a number of samples for BRE analysis suite in order to provide an indication of whether ground conditions were aggressive to concrete.

In total three samples were tested for the BRE suite from varying depths beneath the site.

The analytical results are summarised in Table 2-2 below and the schedule of laboratory results is presented in Appendix F.

Table 4-2
Soil Laboratory Testing - BRE Suite

Determinand	Units	Sample Number/Description		
		BH6	BH9	BH10
Depth m bgl		1.8	2.5-3.0	4.0
Description		Lime waste	Clay	Lime waste
Total Sulphate BRE	%	4.8	0.08	0.33
Ammonium as NH4 in 2:1 Extract BRE	g/l	0.0012	0.0007	0.0010
Chloride 2:1 water/soil extract BRE	g/l	0.32	0.51	3.6
Magnesium 2:1 water/soil extract BRE	g/l	<0.001	0.003	0.009
Nitrate 2:1 water/soil extract BRE	g/l	<0.0006	0.0004	0.0084
Soluble Sulphate 2:1 Extract as SO4 BRE	g/l	0.016	0.092	0.58
Total Sulphur	%	1.3	0.05	0.11

The water soluble sulphate results for these soils fall into Design Sulphate Class DS-2 in Table C1 of BRE Special Digest 1. The pH values range from 8.27 to 12.67 indicating alkaline to highly alkaline soil conditions. Due to the alkali range of pH values and the relatively low levels of soluble nitrate, chloride, magnesium and ammonium, the effects of these substances do not require further assessment. The Aggressive Chemical Environment for Concrete (ACEC) class is AC-1s.

SLR also selected samples for particle size distribution testing to ascertain the potential permeability of the made ground and clay strata at the site in relation to mobile contamination at the site. The results are provided in Appendix F and indicate that the ground conditions at the site are of relatively low permeability.

5.0 GENERIC QUANTITATIVE RISK ASSESSMENT

SLR has compared the chemical test results of the soil samples and the groundwater samples from the investigation to generic assessment criteria (GAC). The GAC have been derived with respect to the proposed industrial development. The purpose of the assessment is to determine whether the identified ground conditions at the site pose a risk to the environment and a constraint to the proposed development

5.1 Human Health Assessment Criteria – Soil

With regard to the assessment of the chemical test results, it should be noted that the generic risk assessment criteria are drawn from several sources of guidance, some statutory and some informal. SLR uses a combination of assessment criteria that are currently available to assist in the screening of soil and groundwater data prior to determining whether further action is required. The following generic assessment criteria have been used:

- Soil Guideline Values – since March 2002, the Department for Environment, Food and Rural Affairs (Defra) and the Environment Agency have been involved in publishing a series of reports that provide a scientifically based framework for the assessment of risks to human health from land contamination;
- LQM/CIEH Generic Assessment Criteria – Land Quality Management and the Chartered Institute of Environmental Health have published GACs derived following CLR technical guidance and using the Environment Agency's CLEA UK model; and
- SLR's own in-house screening criteria derived following CLR technical guidance using CLEA UK.

The Soil Guideline Values (SGV) have been developed to assess whether the soil concentration of a particular contaminant poses a significant risk to human health or the environment. The SGV are a tool that can be used to assess the risks posed to human health from exposure to soil contamination resulting from land use. The values represent 'intervention values', which indicate to an assessor that soil contaminant concentrations above this level could pose an unacceptable risk to the health of site users and that further investigation and/or remediation is required. SGV combine both authoritative science and policy judgements.

With the exception of lead, which uses another model, the SGV have been derived using the Contaminated Land Exposure Assessment (CLEA) model according to three typical land uses:

- Residential (with and without vegetable growing).
- Allotments.
- Commercial / Industrial.

Where applied appropriately, contaminant concentrations exceeding a SGV can suggest the need for either further investigation and/or remediation.

The SGV published to date are shown in Appendix E alongside SLR's own in-house screening criteria derived using CLEA UK and together these form the generic assessment criteria (GAC) adopted by SLR.

5.1.1 Generic Quantitative Risk Assessment

As part of an initial screening exercise, in order to assess the significance of any contamination with respect to the proposed industrial development, all of the soil analytical results for the site were taken together and the mean value test applied for each contaminant to derive an environmental point concentration (EPC) for consideration in a generic risk assessment (GRA). Where there were not sufficient data points to derive a UCL (95th percentile) the maximum concentration recorded was used. EPCs were then compared to generic assessment criteria (GAC) comprised of SGV published by DEFRA and LQM/CIEH which are detailed in Appendix G. In order to be conservative, where appropriate, GAC relating to 1% SOM have been used in the assessment.

For the purposes of this assessment, the soil concentrations have been compared to SGV's for an industrial end use, as shown in Table 3-1 below. Determinands below the level of detection have been excluded from the table.

Table 5-1
Results of Generic Quantitative Risk Assessment – Soil - Direct Contact

Determinand	GAC (mg/kg)	EPC (mg/kg)	EPC Type	No. over GAC	Pass/fail?
Arsenic	500	12	UCL	0	Pass
Cadmium	1400	1.1	UCL	0	Pass
Chromium	5000	26	UCL	0	Pass
Copper	45700	51	UCL	0	Pass
Lead	750	34	UCL	0	Pass
Mercury	480	0.6	UCL	0	Pass
Nickel	5000	44	UCL	0	Pass
Selenium	8000	3.0	UCL	0	Pass
Zinc	188000	47	UCL	0	Pass
Phenol	22000	0.75	UCL	0	Pass
Naphthalene	290	0.6	UCL	0	Pass
Benzo(a)pyrene	30	1.5	UCL	0	Pass
Aliphatics C5-C6	288	0.01	Max	0	Pass
Aliphatics >C6-C8	1020	0.01	Max	0	Pass
Aliphatics >C8-C10	317	0.01	Max	0	Pass
Aliphatics >C10-C12	30400	0.03	Max	0	Pass
Aliphatics >C12-C16	30400	4.9	Max	0	Pass
Aliphatics >C16-C21	627000	15	Max	0	Pass
Aliphatics >C21-C35	627000	86	Max	0	Pass
Aromatics >EC8-EC10	513	0.01	Max	0	Pass
Aromatics >EC10-EC12	2600	0.05	Max	0	Pass
Aromatics >EC12-EC16	12400	5.7	Max	0	Pass
Aromatics >EC16-EC21	9350	7.6	Max	0	Pass
Aromatics >EC21-EC35	9410	44	Max	0	Pass

Table 5-2
Results of Generic Quantitative Risk Assessment – Soil leaching to Groundwater

Determinand	GAC (mg/kg)	EPC (mg/kg)	EPC Type	No. over GAC	Pass/fail?
Arsenic	420	12	UCL	0	Pass
Cadmium	140	1.1	UCL	0	Pass
Chromium	2800	26	UCL	0	Pass
Copper	5600	51	UCL	0	Pass
Lead	7280	34	UCL	0	Pass
Mercury	250	0.6	UCL	0	Pass
Nickel	1120	44	UCL	0	Pass
Selenium	560	3.0	UCL	0	Pass
Zinc	10500	47	UCL	0	Pass
Naphthalene	66.0	0.6	UCL	0	Pass
Benzo(a)pyrene	37	1.5	UCL	0	Pass
Aliphatics C5-C6	45	0.01	Max	0	Pass
Aliphatics >C6-C8	150	0.01	Max	0	Pass
Aliphatics >C8-C10	970	0.01	Max	0	Pass
Aliphatics >C10-C12	7500	0.03	Max	0	Pass
Aliphatics >C12-C16	No risk	4.9	Max	0	Pass
Aliphatics >C16-C21	No risk	15	Max	0	Pass
Aliphatics >C21-C35	No risk	86	Max	0	Pass
Aromatics >EC8-EC10	48	0.01	Max	0	Pass
Aromatics >EC10-EC12	75	0.05	Max	0	Pass
Aromatics >EC12-EC16	150	5.7	Max	0	Pass
Aromatics >EC16-EC21	470	7.6	Max	0	Pass
Aromatics >EC21-EC35	No risk	44	Max	0	Pass

The results of the GRA indicate that:

- the concentrations of the determinands measured in the made ground and clay beneath the site do not pose a constraint with respect to human health in an industrial site setting.

- the concentrations of the determinands measured in the made ground and clay beneath the site do not pose a constraint with respect to contamination of controlled waters in an industrial site setting.

5.2 Groundwater Assessment Criteria

The geological strata beneath the site are classified as a non aquifer, therefore, groundwater is not considered to be a significant receptor to any contamination. However, perched water beneath the site may be in continuity with Wade Brook and act as a pathway for any mobile contamination. The groundwater analytical results have, therefore, been compared to the Environmental Quality Standards (EQS) initially. The screening criteria are drawn from the following list with standards from other sources only being used where EQS are not available:

- UK Drinking Water Standards (UK DWS) – are for the protection for human health and derive from either the Water Supply (Water Quality) Regulations 1989 or 2000.
- EU Drinking Water Standards (EU DWS) – are for the protection of human health and derive from the Council Directive 98/83/EC.
- World Health Organisation Guidelines (WHO Health) protect health and derive from the World Health Organisation Guidelines for Drinking Water Quality, 1984.
- Environmental Quality Standards (EQS) – used in the UK for amongst others, volatile organic compound contamination assessment within surface water. EQS are derived from toxicity data, noting chronic effects after long-term exposure or at sensitive life stages of target aquatic species. The EQS quoted in Table 16 have been taken from listings in "Hydrogeological Risk Assessments for Landfills and the derivation of Groundwater Control and Trigger Levels, Environment Agency 2003".

5.2.1 Generic Quantitative Risk Assessment - Groundwater

The results of the single round of groundwater monitoring and the screening criteria are presented in Table 3-2 below.

Table 5-3
Results of Generic Quantitative Risk Assessment – Groundwater (mg/l)

Determinand	**Sample Reference**			
	EQS/DWS mg/l	BH2	BH8	BH9
Groundwater level m bgl		1.48	0.72	1.54
Strata		Lime waste	Clay	Clay
Arsenic	0.05	0.001	0.001	0.011
Boron	2	<0.01	0.10	0.21
Cadmium	0.005	<0.0004	<0.0004	0.0008
Chromium	0.175	0.011	<0.001	0.022
Copper	0.006	**0.018**	<0.001	**0.019**
Lead	0.125	<0.001	<0.001	<0.001
Mercury	0.001	0.00007	<0.00001	<0.00001
Nickel	0.1	0.011	0.007	0.023
Selenium	0.01	0.002	0.002	0.011
Zinc	0.175	0.014	<0.003	0.005
pH	-	12.68	9.39	7.49
Cyanide	0.05	<0.05	<0.05	<0.05
Ammoniacal-N	0.39	**0.70**	**5.80**	**1.80**
Benzene	0.03	<0.01	<0.01	<0.01
Toluene	0.05	0.02	<0.01	<0.01
Ethylbenzene	0.02	**0.06**	<0.01	<0.01
Xylene	0.03	**0.33**	<0.01	<0.01
MTBE	0.015	<0.01	<0.01	<0.01
Phenol	0.03	**0.05**	**0.06**	<0.01
C5-6 Aliphatics	0.05	<0.01	<0.01	<0.01
C6-8 Aliphatics	0.05	**0.09**	<0.01	<0.01

Determinand		Sample Reference		
	EQS/DWS mg/l	BH2	BH8	BH9
C8-10 Aliphatics	0.05	**1.1**	<0.01	<0.01
C10-12 Aliphatics	0.05	**3.3**	<0.01	<0.01
C12-16 Aliphatics	0.05	**150**	<0.01	<0.01
C16-21 Aliphatics	0.05	**180**	<0.01	<0.01
C21-35 Aliphatics	0.05	**53**	<0.01	<0.01
C8-10 Aromatics	0.05	**2.1**	<0.01	<0.01
C10-12 Aromatics	0.05	**4.9**	<0.01	<0.01
C12-16 Aromatics	0.05	**43**	<0.01	<0.01
C16-21 Aromatics	0.05	**58**	<0.01	<0.01
C21-35 Aromatics	0.05	<0.01	<0.01	<0.01
Naphthalene	0.01	**0.63**	0.0011	<0.0001
PAH (4 combined)	0.0001	**0.026**	**0.0004**	0.0001
PCB	LOD	-	<0.045	<0.045

Numbers in bold exceed the generic assessment criteria
LOD Limit of detection
- not tested

An oily sheen was noted on the sample from BH2 and a slight odour of fuel was detected. The analytical results indicate that groundwater in contact with lime waste in BH2 located close to a former above ground diesel storage tank has been impacted with petroleum hydrocarbons. Concentrations of PAH were elevated in BH2 and BH8.

Concentrations of ammoniacal nitrogen, polycyclic aromatic hydrocarbons, phenol and copper where also elevated above the GAC in the groundwater samples.

Given the industrial site setting and the presence of a non aquifer beneath the site, the significance of the measured groundwater impacts is considered to be low. Although there groundwater concentrations exceed the generic assessment criteria, the impersistance of the groundwater table, typical of low permeability strata, places significant limits on the potential for groundwater beneath the site to impact Wade Brook or the adjacent Canal.

5.3 Assessment Criteria - Ground Gas

In line with Planning Policy Statement 23, *Planning and Pollution Control, 2004,* developers are required to undertake ground gas risk assessments to demonstrate to the local planning authority that their proposed construction is adequately protected against any potential hazards associated with ground gas.

The following qualitative assessment of potentially hazardous soil gases and recommended mitigation measures to protect buildings and their occupants, is based on the guidance provided within CIRIA Report C659, *Assessing risks posed by hazardous ground gases to buildings, 2006;* British Standard BS8485:2007, *Code of Practice for the Characterisation and Remediation from Ground Gas Affected Developments;* and *Reliability and risk in gas protection design, Ground Engineering, Wilson and Card, 1999.* The system proposed by Wilson and Card is a development of the one proposed in the CIRIA publication 149 (1995).

Several organisations publish guidance with respect to ground gases. Many are concerned with the risks to buildings from explosion rather than health risks, but some health-based

standards are available in Waste Management Paper No. 27 by the Department of the Environment. That paper states that a concentration of greater than 1% methane in a confined space is considered hazardous to health as the methane can act as an asphyxiant when oxygen is depleted. The same paper states that carbon dioxide is a hazard to health at 1.5% by volume in air.

The Conceptual Site Model provided in the previous report and summarised in Section 2.7 has identified the likely ground gas sources, pathways and receptors present at the site. The elements within the Conceptual Model have been integrated within the context of Potential Pollutant Linkages in Section 5.7.

5.4 Generic Quantitative Risk Assessment Ground Gas

Based on the above findings the generation potential of the source and the sensitivity of the redevelopment were used to confirm the appropriate frequency and duration of the ground gas monitoring programme[3]. Assuming a Low sensitivity development (i.e. commercial) and a High generation potential source (made ground/ lime waste), a minimum number of twelve readings over a six month period is recommended concurrent with falling atmospheric pressure. For the purposes of this preliminary investigation three readings have been collected over a three week period and further gas monitoring is required in the future. The gas monitoring results are provided in Table 2-1, Section 3.

5.5 Site Characterisation

Tier 1

An infrared gas analyser (Geotechnical Instruments GA2000) was used to monitor the ten ground gas/groundwater monitoring wells installed at the site on 10th January, 16th January and 24TH January 2008. Atmospheric pressure was rising over the monitoring period, therefore, monitoring conditions were not representative of a worst case scenario.

Concentrations of methane were typically below the Waste Management Paper No. 27 trigger levels, except BH10 (in the car park) where concentrations of methane were recorded between 17.4% and 2.8% by volume

Concentrations of carbon dioxide levels were typically below the limit of detection except in BH1 (near the canteen) concentrations of carbon dioxide were measured between less than the limit of detection and 0.8% by volume and 0.2% to 0.4% in BH9 (coke storage area).

Concentrations of oxygen were depleted and recorded below 17% by volume in BH4 (site centre) and BH9 on one monitoring occasion and were concurrent with off the scale reading of carbon monoxide.

Elevated concentrations of carbon monoxide were measured in all boreholes and were consistently significantly elevated in BH4 throughout the monitoring period. Concentrations of hydrogen sulphide were typically below the limit of detection.

Flow rates were typically below the limit of detection in most boreholes throughout the monitoring period. Flow rates were elevated as individual events in BH6 (8.1l/h), BH7 (6.1l/hr) and BH9 (3.8l/hr).

These concentrations require further consideration of the risk from ground gases.

[3] Table 5.5 (Page 79), CIRIA C659 and Table 5.5.3 (Page 82) Contaminated Land Management, 2002.

Tier 2

By considering the Potential Pollutant Linkages between the source, pathway and receptor, a preliminary assessment has been made for each source as to the significance and degree of risk from ground gases. Assuming an onsite source of made ground, the risk within a commercial setting is moderate.[4]

There are currently two main methods by which consultants can determine ground gas regimes; the method selected is dependant on the form of development. Proposals by Wilson and Card (1999) are applicable to "Situation A" sites which include all development and foundation types with the exception of those associated with conventional low-rise housing (three storeys or less).

Using the maximum recorded gas value (17.4% v/v CH_4) and the maximum flow rate (8.1 l/hr) the Gas Screening Value (GSV) has been calculated as:

- 0.174 x 8.1 = 1.41l/hr (GSV)

A Gas Screening Value of 1.41 l/hr confirms a Moderate hazard potential gas regime for the site as defined by BS8485:2007[5].

Based on the system proposed by Wilson and Card, the gas regime has been determined as a Characteristic Situation A. The Characteristic Situation has been used to define the general scope of gas protection measures required as detailed in Section 5.9 below[6].

Having ascertained the characteristic gas situation for the site, appropriate gas protection should be selected for any building that is constructed in the vicinity of the gas source. A guide to the relative performances of the various types of design and systems available are provided in BS8485:2007. Given the combined gas regime and risk factors, a Gas Protection Guidance Value of 3 has been calculated from BS8485:2007 for the required protection[7]. The following gas protection measures have been selected to achieve the required level of gas protection as described in BS8485:2007.

5.6 Protection Measures Required

Guidance given in CIRIA Report C659 (C665) and BS8485:2007 recommends the following measures should be included within a proposed commercial/industrial redevelopment for a Characteristic Situation 3[8]:

- A reinforced concrete cast *in-situ* floor slab (suspended, non-suspended or raft) with at least a 1200g DPM or a beam and block floor or pre-cast concrete slab and minimum of a 2000g DPM/reinforced gas membrane [or] possibly underfloor venting or pressurisation in combination with above;
- All joints and penetrations sealed; and
- Gas protection measures should be designed as prescribed in BRE Report 414.

[4] Tables 8.1-8.3 (Page 103) CIRIA C659.
[5] Table 1 (Page 9), BS8485:2007
[6] Table 8.5 (Page 106), CIRIA C659.
[7] Tables 2/3 (Page 10/12), BS8485:2007)
[8] Table 8.6 (Page 108), CIRIA C659

The recommended protection measures should be suitably designed and installed inline with current best practice to ensure adequate protection and performance. The protection measure may also require independent inspected and validation of the installation.

This assessment is based upon three gas monitoring visits and additional gas monitoring visits over a period of falling atmospheric pressure is recommended.

6.0 CONCLUSIONS AND RECOMMENDATIONS

SLR has undertaken a preliminary environmental investigation and assessment of ground conditions at the former power station plant and coke storage area at the Brunner Mond site, Lostock, Northwich. WRG propose to build a waste to energy facility at the site however SLR understands that the layout of the facility is not yet finalised so conclusions and recommendations reached in this report should be treated as preliminary at this stage and will require revision as final arrangement of facilities as confirmed.

The Conceptual Site Model determined that potential pollutant linkages may be present at the site as a result of historic land uses at the site and in the surrounding area, predominantly soda ash production and disposal of lime waste. Human health, buildings and Wade Brook were identified as potential receptors to adverse ground conditions at the site. Historic foundations and unstable ground conditions (lime waste) could present constraints to the proposed development of the site.

SLR completed an intrusive ground investigation at the site. Ground conditions across the site were typically ash and clinker up to 2.9m thick overlying saturated grey lime waste to a maximum depth of 6.0m bgl. Natural soft sandy clay deposits were encountered beneath the lime waste in most locations.

Chemical testing of soil samples collected from the made ground and the natural clay deposits indicates that the level of contamination is low in relation to the proposed development. The water soluble sulphate results for these soils fall into Design Sulphate Class DS-2 in Table C1 of BRE Special Digest 1.

Groundwater analysis has indicated localised impacts with petroleum hydrocarbons, copper and selenium, PAH and ammoniacal nitrogen near a former diesel storage tank (BH2) and PAH in BH8 in the south of the site. Given the industrial site setting these groundwater impacts were not considered to be significant.

Ground gas monitoring did not indicate significantly elevated concentrations of ground gas across the majority of the site. However, methane concentrations were elevated in BH7 and BH10 in the south western corner and concentrations of carbon monoxide were elevated in BH4 and at elevated levels in all boreholes. Further gas monitoring, particularly over a period of falling atmospheric pressure, is recommended to ensure that appropriate gas protection measures are designed and incorporate a worst case scenario.

Overall, the results of this preliminary investigation indicate that soil and groundwater impacts beneath the site do not pose risk of potential harm to human health or controlled waters in the context of the proposed use. Indeed the levels of contamination encountered within the made ground and lime waste at the site appear to be relatively low for a former industrial site and at this stage would not appear to pose particular constraints upon the proposed development.

However ground gas concentrations are elevated in the south eastern corner of the site and more detailed investigation and assessment of this potential issue will be required as detailed design of the installation proceeds.

In addition, it is envisaged that additional contamination investigations will be required once the detailed design of the waste facility is complete and the current disused infrastructure has been cleared. In particular investigations to evaluate presence of residual hydrocarbon impacts beneath the former oil storage tanks and hydrocarbons and metals beneath the main power station building will be necessary.

7.0 CLOSURE

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected during the desk study, site visits and limited subsurface investigations. The evaluation and conclusions do not preclude the existence of contamination, which could not reasonably have been revealed by the comprehensive desk studies and site visit nor do they preclude variation of conditions between test holes or the existence of other chemical compounds. Hence, this report should be used for information purposes only and should not be construed as a comprehensive characterisation of all site conditions.

The evaluation and conclusions do not preclude conditions or actual costs varying outside of the ranges given. Cost estimates are provided for information for budget estimating purposes only and SLR does not warrant cost estimates provided.

This report is for the exclusive use of Waste Recycling Group Limited. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

Former Power Station Area, Brunner Mond
Lostock, Cheshire

Phase I Land Quality Assessment

Project No: 403.0197.00257

September 2007
SLR Ref: 403.0197.00257

CONTENTS

DRAWINGS

APPENDICES

1.0 INTRODUCTION

1.1 Scope of the Land Quality Assessment

SLR Consulting Ltd (SLR) has been retained by Waste Recycling Group Limited (WRG) to undertake a Phase I Land Quality Assessment (LQA) of potentially contaminated land at a site occupied by a former power station which forms part of the Brunner Mond, Northwich East Site located at Lostock, Cheshire. SLR completed a Phase I report in May 2004, SLR reference 4D/197/257. This report complements the previous report and provides additional information.

The purpose of this LQA is to identify potential environmental risks and liabilities associated with current and historic activity on the site with respect to the proposed development and to determine the scope of any Phase II intrusive investigation required to assess ground conditions at the site.

1.2 Site Location

The site comprises land off Griffiths Road (A530) at Lostock Gralam, 2.5km east of the centre of Northwich. The centre of the site is situated at National Grid Reference SJ 683 740. It is currently occupied by a redundant power station that ceased operating in September 2000 but previously provided heat and power to the adjacent chemicals complex. The land forms the southern part of the Bruner Mond industrial complex which produces soda ash and the area under investigation includes ancillary areas and buildings currently occupied by Brunner Mond. In addition; SLR inspected a second area at the same complex comprising a coke storage yard; located 200m west of the main former power station site.

A site location plan is provided in Drawing 1.

The areas under consideration for the purposes of this assessment include the following:

- former power station;
- water treatment works;
- offices occupied by Brunner Mond;
- electricity transformers;
- historic railway sidings adjacent to the site access road; and,
- coke storage yard.

2.0 DESK STUDY

2.1 Site Description

SLR conducted a site walkover on 19 July 2007 to ascertain the site layout and accessibility in relation to a proposed intrusive ground investigation. Access to the site is via a gatehouse and weighbridge. Parallel to the access road is a former narrow gauge railway line sunk into hardstanding. An overhead pipe bridge crosses the access road prior to the gatehouse

The site is generally level and covered with buildings or hard standing. The main features are two large, brick clad, flat roofed buildings up to 25m high comprising a Boiler House, ash precipitators to the west and a smaller Turbine House with associated electricity substations to the east. An operational water purification plant is situated adjacent to the north and further north is an effluent (hot water) sump which discharges directly into the ground. SLR understands that the main buildings were constructed on substantial concrete foundations and flooring which remains in-situ.

Both buildings were inaccessible for safety reasons at the time of the visit and it is understood that the plant and machinery remain intact within the buildings. The surrounding ground surface is covered with brick rubble created when a former chimney stack adjacent to the building was demolished. Concrete hardstanding is likely to present beneath the surface. A redundant diesel tank within a concrete bund is situated to the rear of the former chimney. There was no evidence of surface spillages. A former chimney was also located to the north west of the Boiler House. The two buildings are separated by a concrete/ tarmacadam surfaced pathway and it is understood that a water pipe is present beneath the path. To the south of the Boiler House is a large concrete pad upon which there were two fuel oil storage tanks which was removed when the power station ceased operating in 2000.

Land to the east of the Turbine House includes derelict stores/workshop building; operational substations/ transformers and a redundant fire control system; including a pump house. Each transformer is situated within an individual brick walled compound. Some surface staining was visible around a few of the transformers but was contained within the individual compounds. Land to the north west is used by Brunner Mond as a laydown area for pipework. An overhead pipe crosses the site between the Boiler House and offices to the north. To the southeast of the Brunner Mond offices is a building which formerly housed an oil store. Land to the south is largely loosely surfaced hardstanding used as a contractor compound.

To the north of the Boiler House are a series of site access roads, a training centre, internal and external stores and workshop areas connected to soda ash kilns.

The coke storage area to the west comprises a concrete hardstanding pad covered with a thin layer of black coke. Several small stockpiles of coke were present. There was evidence of former concrete divisions across the pad which may be related to a former use as a chloride plant. According to site management the coke storage yard has a surface water drain which discharges into Wade Brook.

A site layout plan is provided in Drawing 2. Selected photographs collected during the site walkover are provided in Appendix A.

2.2 Activities on Site and the Surrounding Area

The site is owned by Brunner Mond and comprises a former power station which was decommissioned in 2000, but previously provided heat and power to the Northwich East

chemicals complex which was formerly part of ICI. The complex is now operated by Brunner Mond, Solvay and Ineos Chlor. Heat and power is now supplied externally, however, a series of transformers associated with the former power station remain in-use.

In addition to the redundant power station, the area under investigation includes a series of offices and ancillary buildings and compounds and site access roads which continue to be used by Brunner Mond. The site is also crossed by a series of pipe bridges and culverts carrying live steam, electricity and effluent services.

The site is situated within a predominantly industrial or formerly industrial area. Surrounding premises and land is used primarily for industrial and to a lesser degree recreational purposes.

The site is bounded to the north by Brunner Mond's soda ash process, to the east by the Trent and Mersey Canal, to the south by open space and to the west by a railway line which brings limestone into the main plant and former lime beds. Adjacent to the south west is an ethylene storage compound operated by Huntsman.

Summary details of surrounding land use are presented in Table 2.1. All distances are measured from nearest site boundaries.

Table 2-1
Land Use Summary

DIRECTION	DISTANCE	LAND USE
NORTH	0-150m	Brunner Mond Soda Ash manufacturing plant
	150-300m	Solvay and Ineos Chlor inorganic chemical manufacturing facilities
	300-400m	Railway Lines, Pipelines, derelict land
	400-650m	Residential, Commercial, gardens in Lostock Gralam
	650-675m	Wincham Brook
	675-1000m	Agricultural land and Trent and Mersey Canal
NORTH-EAST	0-75m	Ineos Chlor – Water Purification Plant
	75-100m	Trent and Mersey Canal
	100-200m	Ineos Chlor – Brine Processing Plant
	200-225m	Griffiths Road
	225-950m	Undeveloped agricultural land crossed by Brine Pipelines
	950-1000m	Railway Line and Railway Station.
EAST	0-25m	Trent and Mersey Canal
	25-80m	Open Land – Former Coal storage compound
	80-100m	Griffiths Road
	100-450m	Brunner Mond – Waste Lime Beds
	450-1000m	Agricultural land crossed by Brine Pipelines, farm houses & cottages
SOUTH-EAST	0-25m	Trent and Mersey Canal
	25-65m	Open Land – overgrown and unused.
	65-85m	Griffiths Road
	85-850m	Brunner Mond – Waste Lime Beds
	850-1000m	Agricultural land crossed by Cooke's Lane and A556(T).
SOUTH	0-50m	Trent and Mersey Canal and Site Access road
	50-300m	Agricultural land (?), Canal, Griffiths Road Waste Lime Beds
	30 - 350m	New residential properties
	350-500m	Possible agricultural land, Canal,
	500-1000m	Residential areas of Rundheath

DIRECTION	DISTANCE	LAND USE
SOUTH-WEST	0-175m	Raised, undeveloped open land; former lime beds
	175-625m	Griffiths Park – Public Open Space
	625-1000m	Residential areas of Rundheath Open agricultural land
WEST	0-100m	Huntsman Ethylene compound
	0-250m	Raised, undeveloped overgrown land; former lime bed
	250-350m	Coke storage yard – Second site in this audit.
	250-400m	Rail sidings for Limestone importation
	400-1000m	Undeveloped, open land, Griffiths park to south Wade Brook at 700m
NORTH-WEST	0-125m	Site roads, yards pipebridges and conveyors for Brunner Mond Soda Wade Brook – Culverted beneath the site
	125m	
	100-300m	Solvay Facilities and mothballed Chlorine Plant
	300-450m	Railway Lines, Pipelines, derelict land
	450-600m	Residential, Commercial, gardens in Lostock Gralam
	600-625m	Wincham Brook
	625-1000m	Agricultural land

2.3 Statutory Registers & Database Searches Site History

An Envirocheck database search was obtained from Landmark to establish environmentally relevant features or activities up to 1km from the site. The search interrogates databases to establish the presence of water features, environmental licences, authorisations, waste disposal sites and sites which might be potentially sensitive to pollution or impact from activities within the proposed site. By analysing this information, a view can be taken on the potential for activities or features in the surrounding area affecting the site and the possibility that activities on site might be affecting any sensitive receptors in the surrounding area. Only data available to the database search can be reviewed and thus this does not discount the possibility that there may be an unlicensed activity or other feature, which would not be identified by the database search. The date base records are provided in Appendix B.

The database search revealed the information summarised in Table 2-2.

Table 2-2
Database Records

Register of Information	Distance
Air Pollution Controls and Enforcements	Three within 1km of the site; the nearest 660m NE is for waste oil burners at an engineering works.
Contaminated Land Register Entries & Notices	None within 1km of the site
Discharge Consents	Forty four are recorded within 1km of the site; twenty six of these are revoked. Of the revoked licences the nearest was granted to Associated Octel, 160m east of the site centre for discharge of Process Water (inorganic chemicals) to Wade Brook. The nearest active consent is granted to Brunner Mond for discharge of Process Water 240m NW of the site centre to Wade Brook.
Enforcement and Prohibition Notices	HMIP: 1 August 1994: discharge of heavy fuel oil to Wade Brook (150m N of the site centre)

Integrated Pollution Controls and Integrated Pollution Prevention and Control	Eighteen register entries within 1km; appear to apply to one process by Ineos Chlor 100m NE of site; two processes at Brunner Mond 200m E and 300m NW; and two processes by Solvay Speciality Chemicals 250m N and 320m N of the site.
Pollution Incidents to Controlled Waters	Forty two within 1km of the site. Three within 250m of the site centre to Wade Brook; all Category 3 minor; one in 1998 for oils
Prosecutions Relating to Authorised Processes or Controlled Waters	None recorded within 1km of the site
Red List Discharge Consents	None within 1km of the site
Registered Radioactive Substances	Thirteen within 1km of the site; three within 250m at Ineos Chlor 200m N; Brunner Mond 250m NE and Solvay 250m N.

The statutory registers indicate that there are potentially contaminating uses within the surrounding area. A former landfill/refuse tip is located to the south-west; the boundary of which appears to lie within 250m of the site. Whilst this landfill is now open space, a landfill gas vent is present and thus additional investigations for the potential for landfill gas migration towards the site are advisable and may be required for planning and building design purposes.

Ann HMIP enforcement notice from 1994 relates to a heavy fuel oil spill which may be associated with power station. Brunner Mond has not been able to confirm spillage history for the site.

2.4 Land Use History

The history of the site and surrounding areas has been obtained from a review of historic maps which are reproduced in Appendix C. The details for the site are summarised in Table 2-3, the Power Station and in Table 2-4 the Coke Storage Yard.

Table 2-3
Historic Land Use – Power Station

Date	Land Use	Distance	Direction
1880-82	Enclosed fields	On site	-
	Farm buildings	Boundary	North west
	Canal	Adjacent	East/South east
	Salt Works	1000m	North west
1898-99	Land raise (lime waste)	On site	-
	Lostock Alkali Works and rail lines	Boundary	North
	Gasometer	250m	North west
	Lostock Bleach Works	250m	North west
	Brick Works	150m	South east
1910-11	Tank by rail line	Boundary	East
	Resevoir (Waste Lime)	Boundary	West
	Alkali works expanded southwards	Boundary	North
	Brickworks has been demolished	150m	South east
1938	Waste lime lagoon	Boundary	West
	Residential development	200m	South west
1954	Four structures present on site	On site	-
	Chemical works	Boundary	North

	Reservoir (Waste Lime) No significant changes to the surroundings area apparent	Boundary	West
1964	Two long buildings (Boiler House and Turbine House) present on site. No significant changes to the surroundings area apparent	On site	-
1971	Building in corner of site is removed No changes to surroundings	On site	North east
1976	Tank shown on site	On site	South
1986	Coal stockpile Ethylene compound Car park	Boundary Boundary Boundary	East West South west
1999	No apparent changes to site or surroundings	-	-

Table 2-4 Historic Land Use
Coke Storage Area

Date	Land Use	Distance	Direction
	Enclosed fields	On	-
1880-82	Brick and Tile Works	500m	West
1898-99	Salt Pans and chimney	Boundary	West
	Lostock Bleach Works	100m	North east
1910-11	Rail sidings	On site	-
	Reservoir (Waste Lime)	Boundary	East
1938	No apparent changes to site or surroundings shown	-	-
1954	Rectangular building on site (chlorine plant)	On site	-
	Lime lagoons	Boundary	South
1986	Site buildings cleared	On site	-
	Lagoons filled and raised 5m to site level	Boundary	South
1999	No apparent changes to site or surroundings shown	-	-

The historical map extracts record evidence of a long history of industrial activities on and in the immediate vicinity of both sites. Brunner Mond has confirmed that a waste lime bed was located beneath the current Boiler House as most of the material was excavated when the buildings were constructed in the 1960's. The main land uses which are potentially contaminative on each site can be summarised as follows:

- Power station site: waste lime disposal and power station operations; historic fuel storage (1970's-2000), the former refuse tip to the south west is also a potentially significant off-site source of contamination; and
- Coke stock area: chlorine plant on site, salt pans and chimney on west boundary, waste lime east and the former refuse tip to the south east.

2.5 Supplementary Information

SLR visited the head office of Brunner Mond at Winnington on 25 July 2007 to obtain further information about the site. Brunner Mond is currently applying for a PPC permit and information that is to be provided as part of the PPC submission was reviewed by SLR.

The site has historically and continues to manufacture soda ash (sodium carbonate), by the Solvay process, which is used in a variety of products, most commonly washing powder. Limestone (calcium carbonate) is heated with coke and mixed with salt (sodium chloride) to produce sodium carbonate and calcium chloride. Ammonia is also used in the process. Waste products that were disposed in the lime beds beneath and around the site include calcium sulphate and calcium chloride, metals and ash. The historic chloride plant contained asbestos diaphragm cells which may remain beneath the coke storage yard.

During the First World War buildings were constructed on the site to manufacture ammonium nitrate. Historically the ammonium was produced by the gas works to the north but is currently produced by the coke supplier.

The transformers to the east, between the power station and canal have historically used oil containing polychlorinated bi-phenyls (PCB). By 1994 all PCB containing equipment had been removed.

Between 1984 to 1987 coal was stored in the car park adjacent (west) to the main site access road. This area is currently surfaced with gravel chippings.

2.6 Geology

Reference to the British Geological Survey sheet for the area (BGS Sheet 110, Macclesfield, 1:50,000) indicates that the underlying geology comprises surface drift deposits of Boulder Clay overlying solid geology of Mercia Mudstones. The map records the presence of the King Street Fault running approximately parallel to the western site boundary; saliferous beds of the mudstone lie to the west of the fault.

The geology of the coke storage yard is comprises boulder clay overlying the saliferous beds of the mudstone.

Construction drawings for the foundations of the Lostock Boiler House Extension viewed by SLR during the 2004 site visit indicate that the shallow geology beneath the power station site consisted 0.3m of *Ashes* over 2.0m of *Old Lime Bed* over 0.6m of *original topsoil and organic clay* overlying *Boulder Clay*. (the chimney foundations were constructed in the top of the Boulder Clay). Borehole records from 1970 in the location of the former fuel oil storage tanks indicate the presence of 0.60m of ash, over 0.15m to 2.00m lime waste. Firm clay was encountered between 2.70m to 3.50m below ground level (bgl). Bedrock, described as Marl, is indicated at 10.70m bgl. A borehole in the access road indicates shallow deposits of ash (0.03m) over lime waste (described as very soft) to 0.76m, over ash and cinders to 1.37m bgl. Boulder clay was encountered at 1.83m. A pH of 12 was measured in the lime waste. No borehole records were available for the coke storage yard for SLR to review.

The borehole records indicate that in the vicinity of the Boiler House the made ground is shallow and stiff clay which may be of sufficient load bearing capacity is present between 1.00 and 3.50m bgl.

Groundwater strikes were recorded in one borehole beneath the fuel storage area at depths of 1.37m and 1.45m.beneath the lime waste. Borehole records for other parts of the Brunner Mond site indicate that groundwater was encountered within saturated lime waste, perched above clay.

The British Geological Survey (BGS) records that compressible ground subsidence hazards are moderate to high.

The Coal Authority reports that the site is within an area that may not be affected by coal mining. BGS notes that the risk of shallow mining hazards and natural subsidence hazards are low.

The site is in an area which might be affected by brine subsidence though the BGS record that the Ground Dissolution Hazards are low to moderate

The National Radiological Protection Board (NRPB) reports that less than 1% of homes are above the Action Level for radon gas and that no radon protection measures need to be installed.

2.7 Hydrogeology

The Environment Agency Groundwater Vulnerability Map Sheet 16, West Cheshire, 1:100,000, has classified the Mercia Mudstones beneath the site as a non aquifer. Non aquifers are generally regarded as containing insignificant quantities of groundwater. However, groundwater flow through such rocks, although imperceptible, does take place, and needs to be considered in assessing the risk associated with persistent pollutants.

Any groundwater beneath the site is considered to have been formed via precipitation or direct discharge to ground (hot water sump) and leaching through permeable made ground and will be perched above the underlying natural clay deposits.

There are no licensed groundwater abstractions or source protection zones within 1km of the site centre. One licensed groundwater abstraction is recorded for one location 1.6km from the site.

2.8 Hydrology

The closest surface water course is the Trent and Mersey Canal which forms the eastern boundary of the site. The Canal is classified as River Ecosystem class 4; (fair quality). The walls of the canal are likely to be constructed of thick, impermeable clay (“puddle clay”) and the canal is, therefore, not considered to be in hydraulic continuity with any groundwater. Brunner Mond has a discharge consent for an outlet directly into the canal, close to the area occupied by transformers. Wade Brook flows from east to west 125m north-west of the Power Station site boundary and passes beneath the site in a culvert. It is classified as River Quality Grade F (bad).

There are four licensed surface water abstractions within 1 km of the site centre, the closest of which are shown in Table 2-5. There is one further surface water abstractions within 2 km of the site.

The proposed development area does not lie within a fluvial indicative floodplain.

Table 2-5
Surface Water Abstractions

Operator	Location	Use	Source	Distance and Direction from Centre
Brunner Mond	SJ 684 743	Cooling	Wade Brook at Lostock	290 m N
British Waterways (2 licenses)	SJ 684 744	Not Supplied	Trent and Mersey Canal	400m N
Ineos Chlor Ltd	SJ 677 746	Process Water	Wincham Brook	880m NW

2.9 Ecology

There are no designated ecological receptors within 1km of the site boundary.

2.10 Previous Investigations

The former site owner, ICI, commissioned the drilling of a large number of boreholes across the site. Records of the borehole logs and location plans are kept at the head office. SLR reviewed these records, details of which are supplied in section 2.6 of this report. Reference to three reports by ERM consultants dated 1991, 1994 and 1996 was made in the PPC permit application report. These reports were not available to SLR to review..

3.0 CONCEPTUAL SITE MODEL (CSM)

3.1 Land Quality Assessment

This report section assesses the desk study information in order to identify all the potential contaminants, pathways and receptors that may be relevant to the site. The assessment considers the potential pollutant linkages, their significance and acceptability with respect to the environmental site setting and the proposed development of the site. The land quality assessment is undertaken in accordance with the statutory guidance for Part IIA, DETR Circular 02/2000.

SLR understands that the site is to be developed as a waste treatment facility and considers that this will be an industrial site.

3.2 Potential Sources of Contamination

Given the industrial use of the site and surrounding area for the production of soda ash there is likely to be a significant thickness of made ground across the site that may be contaminated with a range of substances, including metals, inorganics, such as cyanides, petroleum hydrocarbons, alkaline conditions and asbestos. The alkaline conditions would reduce the mobility of many of the metal species. Phenols and ammonia may also be present. The made ground, in particular where lime waste is present, may also be a source of ground gas comprising methane and carbon dioxide. Calcium sulphate in the lime waste may be a source of hydrogen sulphide. Asbestos diaphragm cells may remain in situ beneath the coke storage yard. Solid coal and coke are not considered to be significant sources of contamination until processed.

The power station appears to have burnt a mixture of coal and fuel oil. Oil storage tanks at the site are potential sources of contamination. The main by-products of the power station will be ash. Although the ash will be disposed of off-site, local accumulations may remain adjacent to precipitators and hoppers and in the lime waste. PCB and mineral oils may be present around the transformers and substations to the east of the turbine house. No PCB or oils were reported to have been stored on-site but spills or leaks may have occurred. Lubricants and cleaning chemicals associated with the turbines and boilers appear to have been stored within the building or imported on-site as necessary.

The chemical composition of the identified potential sources of contamination are summarised in the following table.

Table 3-1 Potential Contamination Sources

Contaminant Phase	Elements and Compounds
Solid phase – particles of contaminant	Asbestos, metals, sulphate and chlorides: within the made ground. Ash from the power generation process likely to be present. Metals and metalloid compounds are likely to be present from chemical manufacture.
Sorbed phase – contaminants sorbed onto soil particles	Petroleum hydrocarbons: fuels and lubricants associated with fuel storage and turbine maintenance.
Free phase – contaminants present in soil and /or as non-aqueous phase liquid	Petroleum hydrocarbons: fuels and lubricants associated with fuel storage and turbine maintenance

Contaminant Phase	Elements and Compounds
(NAPL)	
Gas and vapour phase – contaminants present as gas or vapour in the soil	Vapours may be present as a result of fuel/hydrocarbons in the soil and/or groundwater. Ground gas may be present as a result of made ground.
Dissolved phase – contaminants dissolved in groundwater	Perched groundwater beneath the site may have received small quantities of soluble hydrocarbons, in addition to metals leaching from the made ground and from the chemical manufacture by-product storage.

3.3 Pathways

The pathways considered in the Conceptual Site Model (CSM) relate to preferential routes through which potential contaminants could migrate to cause an impact upon identified receptors. The potential pathways are summarised in the following table.

Table 3-2 Pathways

Pathways		Potential Presence (✓ /×)	Notes
Ecological	Ingestion of soil & dust	×	No significant ecological receptors have been identified on site or in the immediate vicinity.
	Ingestion of food	×	
	Ingestion of water	×	
	Dermal Exposure	×	
	Inhalation of dust	×	
	Inhalation of vapour	×	
Property: Flora & Fauna	Root Uptake	×	No significant receptors have been identified on site or in the immediate vicinity.
	Leaf Contact	×	
	Ingestion of soil & dust	×	
	Ingestion of food	×	
	Ingestion of water	×	
	Dermal Exposure	×	
	Inhalation of dust	×	

Pathways		Potential Presence (✓ /×)	Notes
	Inhalation of vapour	×	
Property: Buildings	Contact with materials	✓	Aggressive and unstable ground conditions may be present that could affect foundations in direct contact with the soil. Vapours may be present in made ground and lime waste will be unstable. Plastic pipework may also be affected by contaminants.
	Build-up of vapours	✓	
	Unstable materials	✓	
Controlled Waters: Surface Waters	Surface runoff	✓	The canal adjacent to the east boundary would be impacted by surface run off. Brunner Mond has a consent for process water effluent to be discharged directly into the canal.
	Movement of contaminants via drains,	✓	
	Migration via groundwater	×	The impermeable walls of the canal would prevent migration via groundwater. Wade Brook is more likely to be affected by other processes nearby, than by the power station and coke storage yard. .
Controlled Waters: Groundwater	Leaching from soil	×	Low permeability clay would prevent leaching into the non-aquifer below. However, Brunner Mond discharges hot water directly into the ground, just to the north of the power station.
Human Health	Ingestion, dermal contact, inhalation	✓	Contaminant depth is likely to be shallow. Pathways would exist for future site users, especially during any redevelopment work.

3.4 Receptors

The following table summarises the potential receptors at the site in relation to the proposed development.

Table 3-3 Receptors

Receptor Type	Receptors	Present (✓ /×)	Notes
Humans	Human beings	✓	The humans considered further are the future site occupants, site visitors and ground workers who may be involved in maintenance of underground utilities.
Ecosystems	Any designated ecological system, or living organism forming part of such a system	×	No designated ecosystems have been identified on or in the vicinity of the site.
Property (Flora and Fauna)	Crops, including timber	×	There are no eligible plants or animals in the vicinity of the site.
	Produce grow domestically, or on allotments for consumption	×	
	Livestock	×	
	Other owned or domesticated animals	×	
	Wild animals which are the subject of shooting or fishing rights	×	
Property (Buildings)	A 'building' means any structure or erection, and any part of a building including any part below ground level, but does not include plant or machinery comprised in a building.	✓	Aggressive and unstable ground conditions and historic foundations may impact the proposed development and suitable precautions will be incorporated into the proposed development.
Controlled Waters	Territorial waters	×	Brunner Mond has consent to discharge directly into Wade Brook and the adjacent canal.
	Coastal waters	×	
	Inland freshwaters	✓	
	Lakes	×	
	Groundwater	×	Groundwater within the non-aquifer beneath the site is not considered to be a significant potential receptor.

4.0 CONCLUSIONS AND RECOMMENDATIONS

SLR has undertaken a Land Quality Assessment of the former power station and coke storage yard at the soda ash works operated by Brunner Mond at Lostock, Northwich. The purpose of the assessment was to identify potential constraints and liabilities with respect to the proposed industrial development of the site as a waste management facility.

Historical mapping indicates that the only use of the site prior to the power station development was as a lime bed, most of which was excavated and removed when the power station was built in the 1960's. Brunner Mond plans indicate that geology at the site comprises up to 3.00m of made ground including the lime waste, overlying Boulder Clay and Mercia Mudstones. It is considered likely that there may be pockets of lime waste, to the north of the power station that may be considerably deeper. The natural strata beneath the site is classified as a non-aquifer, thus groundwater contamination is considered to be of low risk.

The main potential sources of contamination on site are leaks and spills from historic fuel storage at the site and oils/PCB from the transformer bays. The presence of hydrocarbon contamination in permeable near surface soils could pose risks to construction workers and surface water systems during redevelopment, and site occupants following development; and might require remediation in advance of development. Aggressive and unstable ground conditions and historic foundations are likely to be present which could impact the proposed development. Asbestos and other wastes may be present at the coke storage yard.

SLR recommends that a preliminary intrusive ground investigation be undertaken in order to characterise the ground conditions beneath the site. The installation of boreholes will be required in order to assess the presence of ground gas and/ or vapours. The results of the ground investigation will be assessed in order to determine whether mitigation measures will need to be incorporated into the proposed development. Once the power station has been demolished it will be necessary to undertake further ground investigation to provide greater site coverage and to obtain geotechnical information.

5.0 CLOSURE

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

The evaluation and conclusions do not preclude the existence of contamination, which could not reasonably have been revealed by the desk study assessment. Hence, this report should be used for information purposes only and should not be construed as a comprehensive characterisation of all site conditions.

This report is for the exclusive use of Waste Recycling Group Ltd and their exclusive agents. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

Plate 1 Site Entrance

Plate 2 Boiler House and plant

Plate 3 Hoppers and empty gas oil (diesel) tank

Plate 4 Transformer adjacent to Boiler House

Plate 5 Location of former fuel oil storage tank

Plate 6 Direct discharge to ground

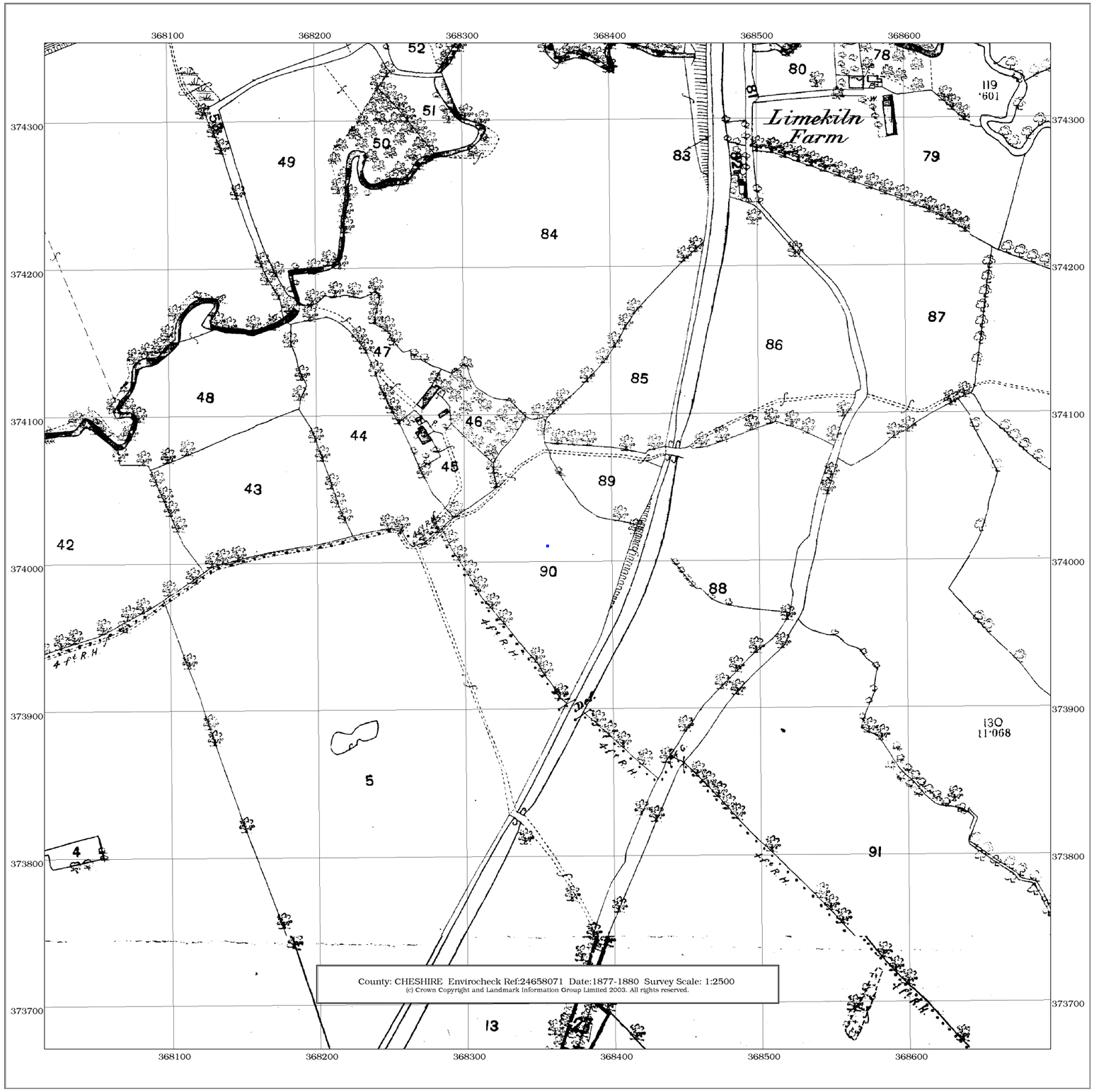
Plate 7 Transformer compounds

Plate 8 Transformer oil spillage

Plate 9 Coke Storage Yard

Plate 10 Former railway adjacent to car par

County : CHESHIRE



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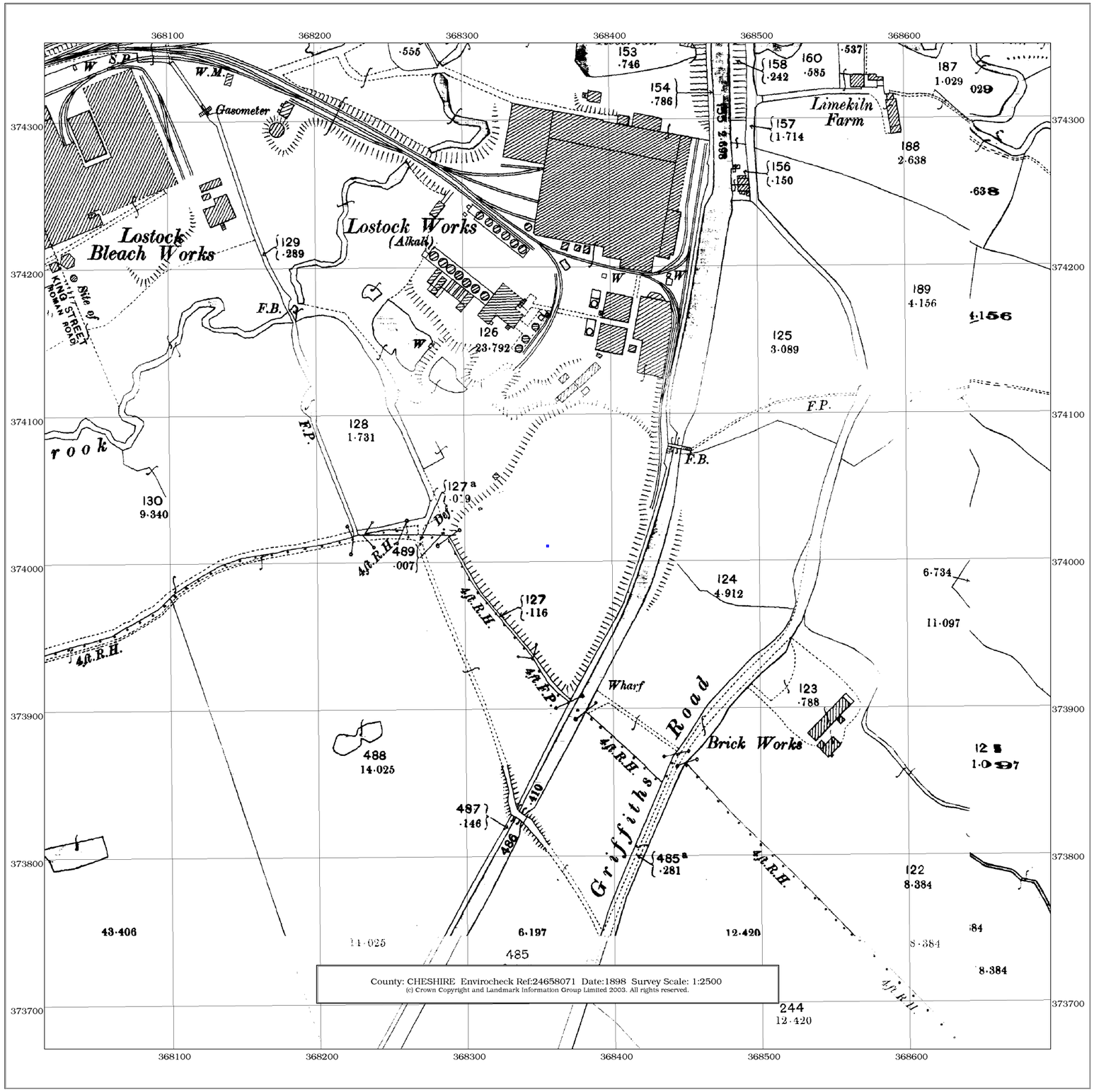

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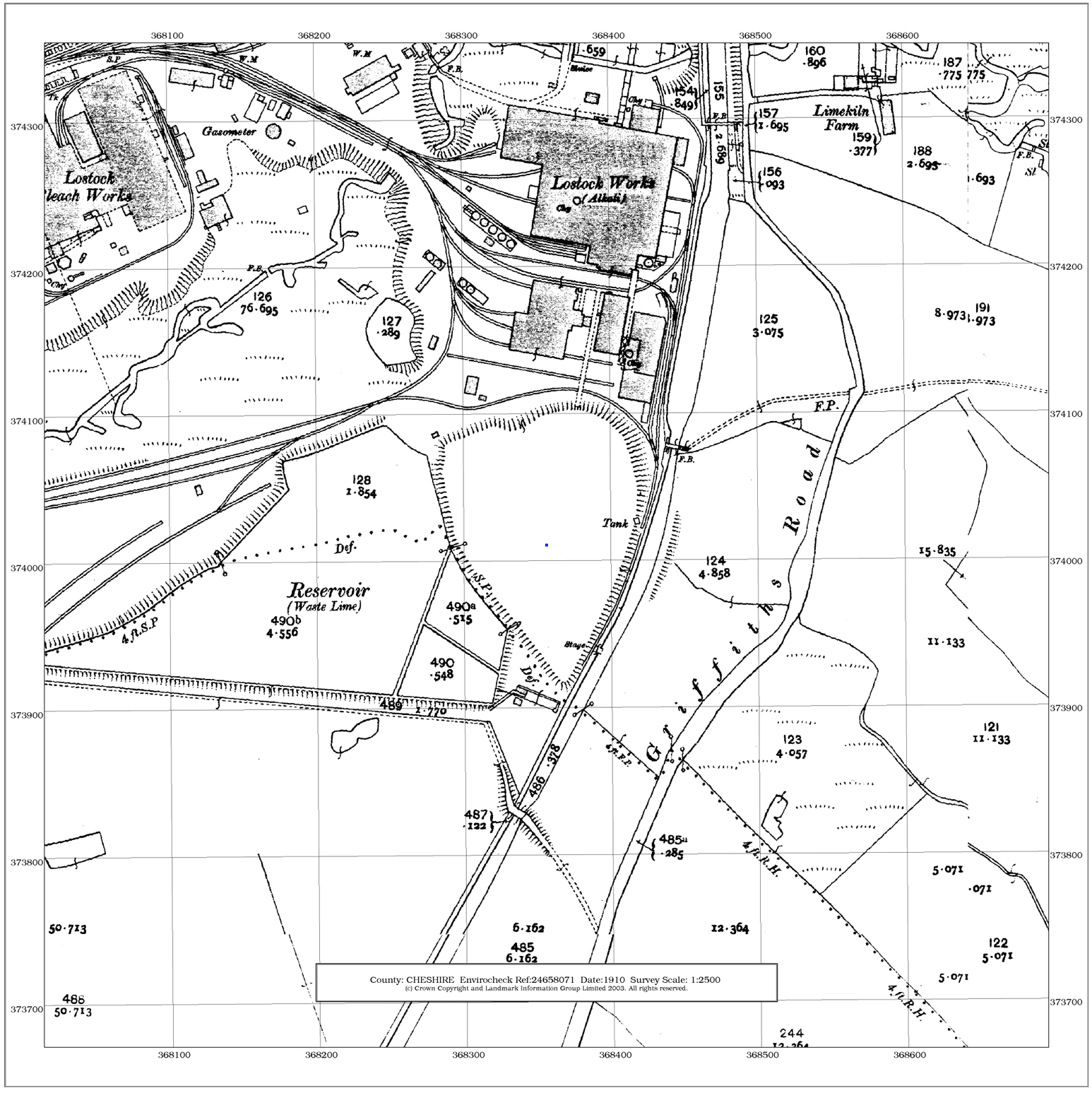

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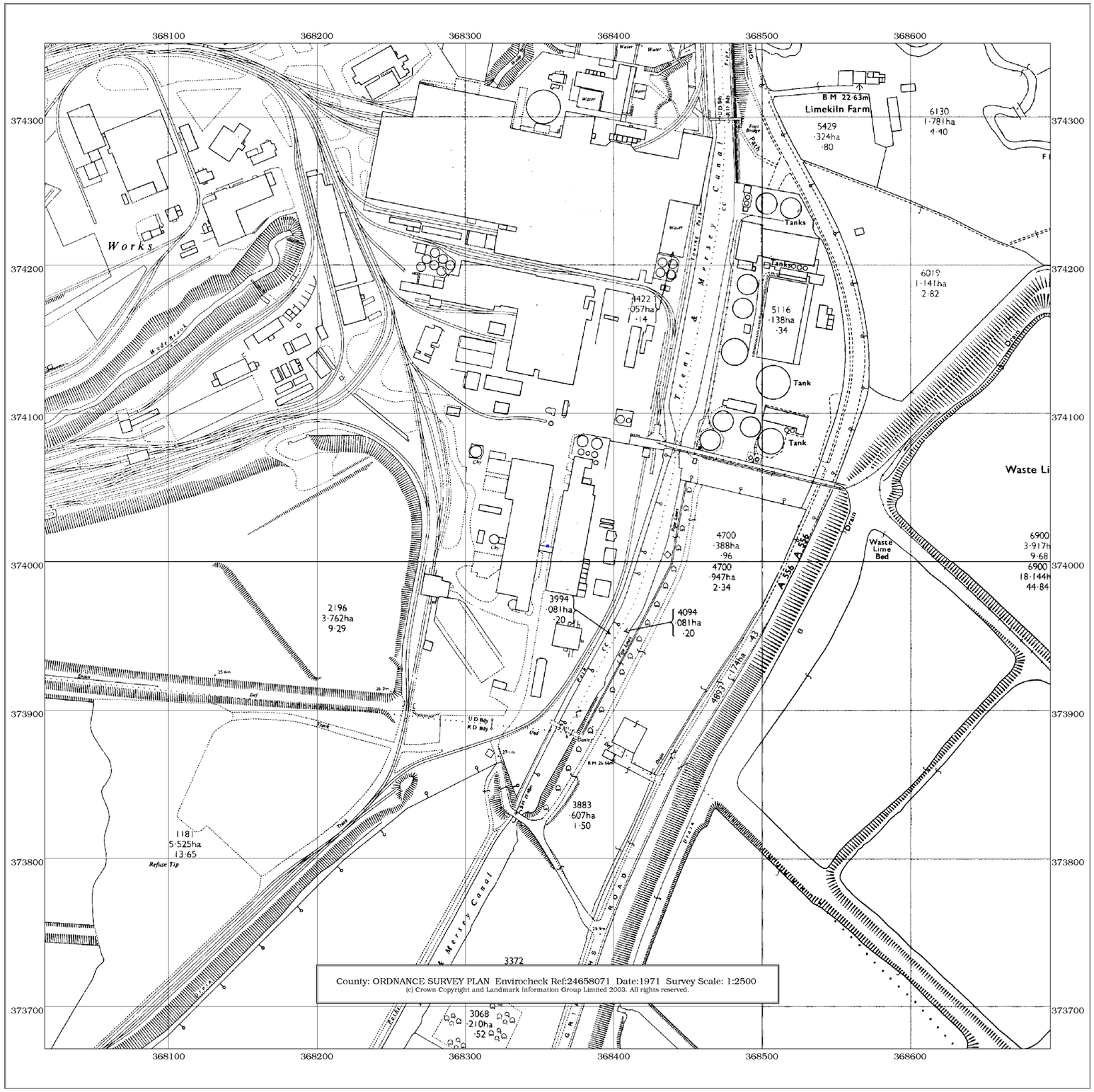
County: ORDNANCE SURVEY PLAN Envirocheck Ref:24658071 Date:1963-1964 Survey Scale: 1:1250

County : ORDNANCE SURVEY PLAN



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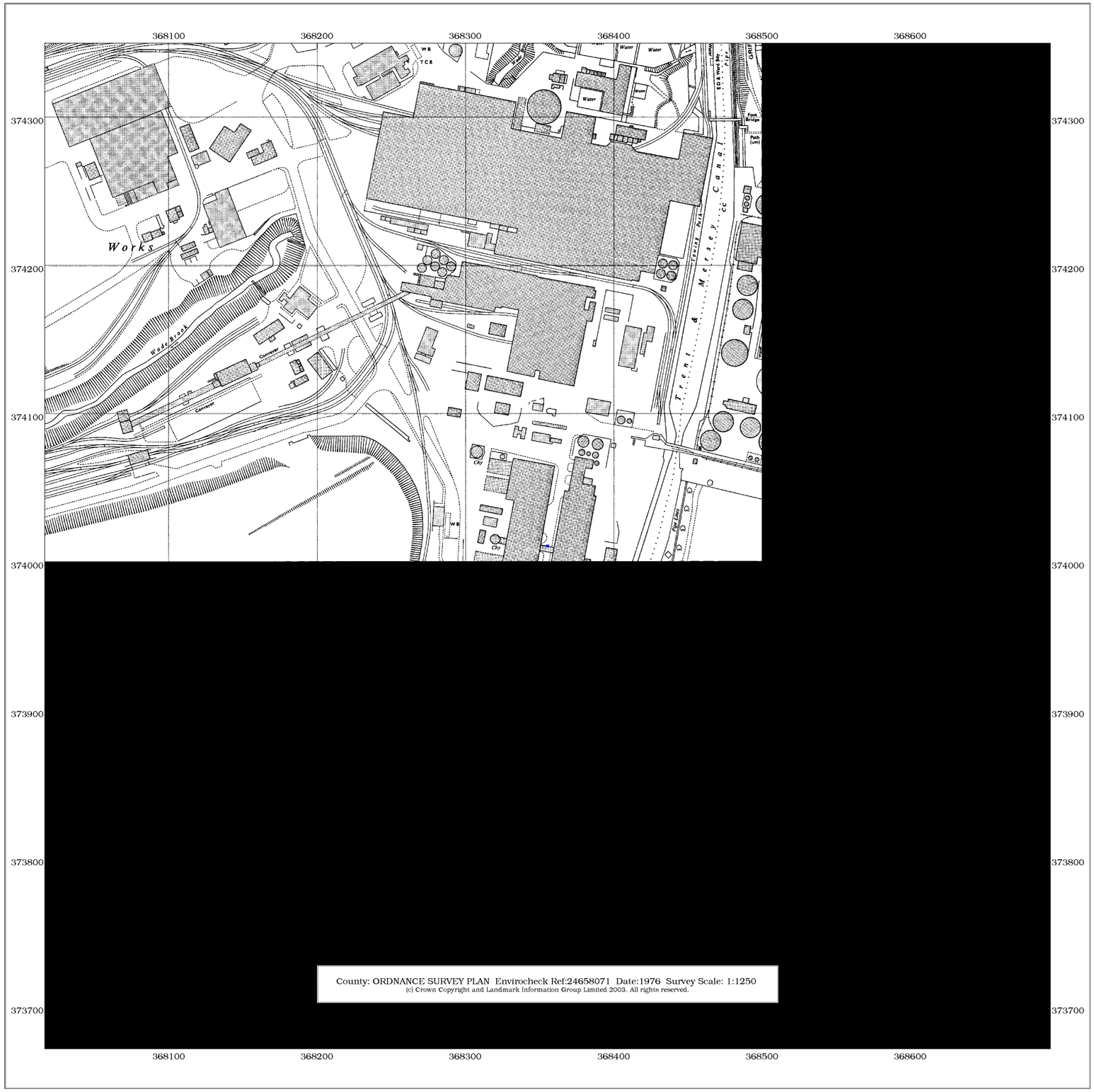

APPENDIX B - METHODOLOGY

BOREHOLES

The boreholes were advanced using a Comacchio solid stem rotary drilling rig supplied and operated by Tor Drilling under the full-time supervision of SLR.

The boreholes were positioned to delineate, as efficiently as possible, contamination impacts to soil and shallow perched groundwater.

SOIL SAMPLING AND FIELD SCREENING

Representative samples soil stratum were described in accordance with BS 5930, but visual and olfactory indications of hydrocarbon contamination were also included. At appropriate intervals defined by the site engineer, soil samples were collected and screened for the presence of volatile vapours. A plastic freezer bag was filled with soil and an equivalent volume of air, sealed for approximately 10 minutes and then punctured to allow the headspace to be analysed. A GMI Gasurveyor, calibrated against pentane was used to measure the hydrocarbon vapour concentrations. Results are given in parts per million Total Organic Vapour (ppmTOV), pentane equivalence. The test is dependent on temperature and soil type but independent of field personnel.

MONITORING WELL INSTALLATION

Slotted HDPE monitoring wells 50mm diameter were installed in all boreholes to provide a means of obtaining groundwater samples and monitoring soil gases. Well screens were positioned to intercept standing water levels, and the annulus between blank casing and the borehole was sealed with bentonite.

LABORATORY ANALYSES

Soil samples were selected for analysis to target high TOV screening results. Samples were retained for laboratory analysis for the range of contaminants specified.

Water samples were collected from all viable wells at regular intervals throughout the works. Samples were retained for laboratory analysis for the range of contaminants specified by the SLR project manager.

No preservatives were required for the analysis undertaken. Soil samples were collected in 250g and 60g glass amber screw-top jars. Water samples were collected in 1 litre green glass bottles and 40ml clear glass headspace vials supplied by the laboratory. All samples were kept in refrigerated conditions and transported under full chain of custody documentation.

BOREHOLE LOG

BOREHOLE No. **BH01**

Client: **WASTE RECYCLING GROUP**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0197.00556	17/12/07		

Project: **LOSTOCK**

Sheet: 1 of 1

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend (Thick-ness)	Depth	DESCRIPTION	
							0.20	MADE GROUND. Grey coarse angular GRAVEL (Type 1 M.O.T aggregate).	
0.50-0.70	D							MADE GROUND. Black sandy fine to coarse GRAVEL of ash and clinker.	
0.50-0.70	J								
0.50-0.70	V								
1							(1.80)		
							2.00		
2								MADE GROUND. Light greyish white SILT recovered as sludge (lime waste).	
2.50-3.50	D								
2.50-3.50	J								
2.50-3.50	V								
3									
4							(4.00)		
5									
							6.00		
6 6.00-7.00	D							Soft, dark brown slightly sandy, slightly silty CLAY with occasional fine to medium, rounded to sub-rounded gravel of shale.	
6.00-7.00	J								
6.00-7.00	V						(1.00)		
							7.00		
7								Borehole complete at 7.00m	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	Hole collapsed back to 5.7m. 50mm installation to 5.0m.

All dimensions in metres Scale 1:50	Contractor : Tor Drilling Plant: Comacchio Geo 205	Method: Solid Stem Auger Hole Size: 175mm	Logged By: BB	Approved By: RM, JA

Form SLR AGS3 UK BH File 403.0197.00556 LOSTOCK.GPJ 06-02-08

BOREHOLE LOG

BOREHOLE No. **BH02**

Client: **WASTE RECYCLING GROUP**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0197.00556	18/12/07		

Project: **LOSTOCK**

Sheet: 1 of 1

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend (Thick-ness)	Depth	DESCRIPTION	
							(0.70) 0.70	MADE GROUND. Concrete.	
1.00	D						(0.50) 1.20	MADE GROUND. Black sandy fine to coarse GRAVEL of ash, clinker and red brick.	
1.00	J								
1.00	V								
2.00	D							MADE GROUND. Light greyish white SILT recovered as sludge (lime waste).	
2.00	J								
2.00	V						(4.00)		
							5.20		
5.50	D							Soft, reddish brown slightly sandy silty CLAY.	
5.50	J						(1.80)		
5.50	V						7.00		
								Borehole complete at 7.00m	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	50mm installation to 5.0m.

All dimensions in metres Scale 1:50	Contractor : Tor Drilling Plant: Comacchio Geo 205	Method: Solid Stem Auger Hole Size: 175mm	Logged By: BB	Approved By: RM, JA

Form SLR AGS3 UK BH File 403.0197.00556 LOSTOCK.GPJ 06-02-08

BOREHOLE LOG

BOREHOLE No. **BH03**

Client: **WASTE RECYCLING GROUP**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0197.00556	18/12/07		

Project: **LOSTOCK**

Sheet: 1 of 1

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend (Thick-ness)	Depth	DESCRIPTION	
							0.30	MADE GROUND. Grey coarse angular GRAVEL (Type 1 M.O.T aggregate).	
							(0.40) 0.70	MADE GROUND. Concrete.	
							(2.80) 3.50	MADE GROUND. Light greyish white SILT recovered as sludge (lime waste). Poor Recovery.	
								Borehole complete at 3.50m	

1 2 3 4 5 6 7

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	Refusal at 3.5m. 50mm installation to base.

All dimensions in metres Scale 1:50	Contractor : Tor Drilling Plant: Comacchio Geo 205	Method: Solid Stem Auger Hole Size: 175mm	Logged By: BB	Approved By: RM, JA

Form SLR AGS3 UK BH File 403.0197.00556 LOSTOCK.GPJ 06-02-08

BOREHOLE LOG

BOREHOLE No. **BH04**

Client: **WASTE RECYCLING GROUP**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0197.00556	18/12/07		

Project: **LOSTOCK**

Sheet: 1 of 1

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend (Thick-ness)	Depth	DESCRIPTION	
0.50	D						(1.30)	MADE GROUND. Dark brown sandy fine to coarse GRAVEL of ash and clinker.	
0.50	J								
0.50	V								
							1.30		
							(1.90)	MADE GROUND. Light greyish white SILT recovered as sludge (lime waste).	
							3.20		
3.00	D							Soft, reddish brown slightly sandy, silty CLAY.	
3.00	J								
3.00	V								
							(3.80)	5.00 Clay becomes stiff.	
6.00	D								
6.00	J								
6.00	V						7.00		
								Borehole complete at 7.00m	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	50mm installation to 6.0m.

All dimensions in metres Scale 1:50	Contractor : Tor Drilling Plant: Comacchio Geo 205	Method: Solid Stem Auger Hole Size: 175mm	Logged By: BB	Approved By: RM, JA

Form SLR AGS3 UK BH File 403.0197.00556 LOSTOCK.GPJ 06-02-08

BOREHOLE LOG

BOREHOLE No. **BH05**

Client: **WASTE RECYCLING GROUP**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0197.00556	17/12/07		

Project: **LOSTOCK**

Sheet: 1 of 1

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend (Thick-ness)	Depth	DESCRIPTION	
							0.30	MADE GROUND. Tarmac over sub-base.	
0.50	D							MADE GROUND. Concrete.	
0.50	J						(0.80)		
0.50	V								
1							1.10		
1.10-3.00	D							MADE GROUND. Light greyish white SILT recovered as sludge (lime waste).	
1.10-3.00	J								
1.10-3.00	V								
2									
3							(3.70)		
4									
							4.80		
5 5.00-6.00	D							Soft, dark brown slightly sandy, silty CLAY.	
5.00-6.00	J								
5.00-6.00	V								
6							(2.20)		
							7.00		
7								Borehole complete at 7.00m	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	50mm installation to 6.0m.

All dimensions in metres Scale 1:50	Contractor : Tor Drilling Plant: Comacchio Geo 205	Method: Solid Stem Auger Hole Size: 175mm	Logged By: BB	Approved By: RM, JA

Form SLR AGS3 UK BH File 403.0197.00556 LOSTOCK.GPJ 06-02-08

BOREHOLE LOG

BOREHOLE No. **BH06**

Client: **WASTE RECYCLING GROUP**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0197.00556	18/12/07		

Project: **LOSTOCK**

Sheet: 1 of 1

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend (Thick-ness)	Depth	DESCRIPTION	
							(0.60) 0.60	MADE GROUND. Concrete.	
0.50	D								
0.50	J								
0.50	V						(0.40) 1.00	MADE GROUND. Black sandy fine to coarse GRAVEL of ash and clinker.	
								MADE GROUND. Light greyish white SILT recovered as sludge (lime waste).	
1.80	D								
1.80	J								
1.80	V						(3.80) 4.80		
								Soft, reddish brown slightly sandy silty CLAY.	
6.00	D						(2.20) 7.00		
6.00	J								
6.00	V								
								Borehole complete at 7.00m	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	50mm installation to 6.0m.

All dimensions in metres Scale 1:50	Contractor : Tor Drilling Plant: Comacchio Geo 205	Method: Solid Stem Auger Hole Size: 175mm	Logged By: BB	Approved By: RM, JA

Form SLR AGS3 UK BH File 403.0197.00556 LOSTOCK.GPJ 06-02-08

BOREHOLE LOG

BOREHOLE No. **BH07**

Client: **WASTE RECYCLING GROUP**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0197.00556	18/12/07		

Project: **LOSTOCK**

Sheet: 1 of 1

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend (Thick-ness)	Depth	DESCRIPTION	
							0.20	MADE GROUND. Concrete.	
							(1.00)	MADE GROUND. Black sandy fine to coarse GRAVEL of coal , ash and clinker.	
1.00	D						1.20		
1.00	J							MADE GROUND. Light greyish white SILT recovered as sludge (lime waste).	
1.00	V								
1.50	D								
1.50	J								
1.50	V								
								2.30 - 2.40 Pocket of soft, dark grey mottled black slightly gravelly silty CLAY. Gravels are fine of shale.	
							(3.00)		
3.30-3.40	D								
3.30-3.40	J								
3.30-3.40	V								
							4.20		
								Soft reddish brown slightly sandy, silty CLAY with occasional fine to medium rounded to sub-rounded gravels of shale.	
							(2.80)		
							7.00		
								Borehole complete at 7.00m	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	50mm installation to 6.0m.

All dimensions in metres	Contractor : Tor Drilling	Method: Solid Stem Auger	Logged By:	Approved By:
Scale 1:50	Plant: Comacchio Geo 205	Hole Size: 175mm	BB	RM, JA

Form SLR AGS3 UK BH File 403.0197.00556 LOSTOCK.GPJ 06-02-08

BOREHOLE LOG

BOREHOLE No. **BH08**

Client: **WASTE RECYCLING GROUP**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0197.00556	19/12/07		

Project: **LOSTOCK**

Sheet: 1 of 1

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend (Thick-ness)	Depth	DESCRIPTION	
1.00	D						(1.60)	MADE GROUND. Black sandy fine to medium GRAVEL of ash and clinker.	
1.00	J								
1.00	V						1.60		
								Soft grey slightly sandy, gravelly CLAY. Gravels are coarse sub-angular to rounded of shale and flint.	
3.00	D						(3.20)		
3.00	J								
3.00	V						4.80		
								Soft, light grey slightly sandy silty CLAY.	
							(2.20)		
							7.00		
								Borehole complete at 7.00m	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	50mm installation to 6.0m.

All dimensions in metres Scale 1:50	Contractor : Tor Drilling Plant: Comacchio Geo 205	Method: Solid Stem Auger Hole Size: 175mm	Logged By: BB	Approved By: RM, JA

Form SLR AGS3 UK BH File 403.0197.00556 LOSTOCK.GPJ 06-02-08

BOREHOLE LOG

BOREHOLE No. **BH09**

Client: **WASTE RECYCLING GROUP**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0197.00556	19/12/07		

Project: **LOSTOCK**

Sheet: 1 of 1

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend (Thick-ness)	Depth	DESCRIPTION	
							(2.00) 2.00	MADE GROUND. Concrete.	
2.50-3.00 2.50-3.00 2.50-3.00	D J V						(3.20) 5.20	Soft, light brown slighty silty sandy CLAY with occasional fine sub-angular to sub-rounded gravels of flint.	
							(1.80) 7.00	Firm light grey slightly sandy silty CLAY.	
								Borehole complete at 7.00m	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	50mm installation to 6.0m.

All dimensions in metres Scale 1:50	Contractor : Tor Drilling Plant: Comacchio Geo 205	Method: Solid Stem Auger Hole Size: 175mm	Logged By: BB	Approved By: RM, JA

Form SLR AGS3 UK BH File 403.0197.00556 LOSTOCK.GPJ 06-02-08

BOREHOLE LOG

BOREHOLE No. **BH10**

Client: **WASTE RECYCLING GROUP**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0197.00556	19/12/07		

Project: **LOSTOCK**

Sheet: 1 of 1

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend (Thick-ness)	Depth	DESCRIPTION	
							0.30	MADE GROUND. Concrete.	
								MADE GROUND. Black sandy fine to coarse GRAVEL of ash and clinker.	
2.50	D						(2.90)		
2.50	J								
2.50	V						3.20		
							3.40	MADE GROUND. Light greyish white SILT recovered as sludge (lime waste).	
								Soft, light brown slightly silty sandy CLAY.	
4.00	D						(2.00)		
4.00	J								
4.00	V						5.40		
								Borehole complete at 5.40m	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	Refusal at 5.4m. 50mm installation to 5.0m.

All dimensions in metres Scale 1:50	Contractor : Tor Drilling Plant: Comacchio Geo 205	Method: Solid Stem Auger Hole Size: 175mm	Logged By: BB	Approved By: RM, JA

Form SLR AGS3 UK BH File 403.0197.00556 LOSTOCK.GPJ 06-02-08

Soil Gas Monitoring Record Sheet 2.10.1: Soil Gas Sheet

Site Name : Lostock

Address:

Job Number: 403.0197.00556

Date: 24/1/08

Weather Conditions: Dry, 30% cc

Air Temperature (Deg C) 10

Wind Speed (mph) -

Ground Surface Conditions Damp, wet in places

Operator: BB

Equipment: GA2000

Next Calibration Due:

Sample Point Ref	Sample Point Type (e.g. spike, well etc)	Barometric Pressure (mbar)	Depth of Water (m)	Depth of well (m)	Methane (CH4)		Carbon Dioxide (CO2)		Oxygen (O2)		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Flow (l/hr)	Gas Pressure (mbar)	Sample Collected?	Sample Type
					Peak (%v/v)	Steady State (%v/v)	Peak (%v/v)	Steady State (%v/v)	Peak (%v/v)	Steady State (%v/v)						
1	well	1021	1.64	4.14	0.0	0.0	0.8	0.8	18.8	18.1	7	0	0	0.02	N	-
2	well	1021	1.09	4.66	0.2	0.2	0.0	0.0	20.3	20.3	6	0	0	0.52	N	-
3	well	1021	1.94	3.50	0.0	0.0	0.0	0.0	20.2	20.2	9	0	0	0.17	N	-
4	well	1021	0.23	5.94	0.2	0.2	0.0	0.0	18.9	18.5	602	0	0	0.05	N	-
5	well	1021	1.11	4.81	0.1	0.1	0.0	0.0	20.6	20.6	8	0	0	0.38	N	-
6	well	1021	0.65	5.79	0.1	0.1	0.0	0.0	19.5	19.5	38	0	0	-0.06	N	-
7	well	1021	0.30	5.80	0.1	0.1	0.0	0.0	21.1	21.1	40	0	0	-2.29	N	-
8	well	1021	0.64	5.54	0.8	0.8	0.0	0.0	20.5	20.5	7	0	0	1.12	N	-
9	well	1021	0.22	5.88	-	-	-	-	-	-	-	-	-	-	N	-
10	well	1021	0.69	5.33	2.8	2.8	0.0	0.0	19.9	19.8	52	0	0	1.02	N	-

Comments: BH9 had no gas headspace in well due to water level.

Soil Gas Monitoring Record Sheet 2.10.1: Soil Gas Sheet

Site Name : Lostock

Address:

Job Number: 403.0197.00556

Date: 10/1/08

Weather Conditions: Dry, 100% cc

Air Temperature (Deg C) 12

Wind Speed (mph) -

Ground Surface Conditions Damp, wet in places

Operator: BB

Equipment: GA2000

Next Calibration Due:

Sample Point Ref	Sample Point Type (e.g. spike, well etc)	Barometric Pressure (mbar)	Depth of Water (m)	Depth of well (m)	Methane (CH4)		Carbon Dioxide (CO2)		Oxygen (O2)		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Flow (l/hr)	Gas Pressure (mbar)	Sample Collected?	Sample Type
					Peak (%v/v)	Steady State (%v/v)	Peak (%v/v)	Steady State (%v/v)	Peak (%v/v)	Steady State (%v/v)						
1	well	988	1.70	4.14	0	0	0	0	19.2	18.7	134	0	0	0.14	N	-
2	well	988	1.48	4.66	0	0	0	0	20.3	20.2	2	0	0	0.37	Y	GW
3	well	988	1.90	3.50	0	0	0	0	20.3	20.3	14	0	0	0.29	N	-
4	well	988	0.36	5.94	0.3	0.3	0	0	16.8	14.2	>>>>	3	0	0.96	N	-
5	well	988	1.36	4.81	0	0	0	0	20.4	20.4	6	0	0	0.35	N	-
6	well	988	0.70	5.79	0.2	0.2	0	0	19.6	18.2	110	0	8.1	6.60	N	-
7	well	988	0.58	5.80	2.6	2..6	0	0	18.8	18.4	266	0	6.1	2.83	N	-
8	well	988	0.72	5.54	1.8	1.8	0	0	20.1	19.4	20	0	0	0.79	Y	GW
9	well	988	1.54	5.88	0.1	0.1	0.2	0.2	14.1	13.5	>>>>	3	0	0.05	Y	GW
10	well	988	0.67	5.33	17.4	17.4	0	0	16.8	15.9	76	0	>>>>	2.70	N	-

Comments: Hydrocarbon sheen on BH2 GW sample.

Soil Gas Monitoring Record Sheet 2.10.1: Soil Gas Sheet

Site Name : Lostock

Address:

Job Number: 403.0197.00556

Date: 16/1/08

Weather Conditions: Light showers, 100% cc

Air Temperature (Deg C) 12

Wind Speed (mph) -

Ground Surface Conditions Wet, standing in places

Operator: BB

Equipment: GA2000

Next Calibration Due:

Sample Point Ref	Sample Point Type (e.g. spike, well etc)	Barometric Pressure (mbar)	Depth of Water (m)	Depth of well (m)	Methane (CH4)		Carbon Dioxide (CO2)		Oxygen (O2)		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Flow (l/hr)	Gas Pressure (mbar)	Sample Collected?	Sample Type
					Peak (%v/v)	Steady State (%v/v)	Peak (%v/v)	Steady State (%v/v)	Peak (%v/v)	Steady State (%v/v)						
1	well	1007	1.95	4.14	0.0	0.0	0.3	0.3	19.2	18.6	4	0	0	0.05	N	-
2	well	1007	1.19	4.66	0.1	0.1	0.0	0.0	19.6	18.9	4	0	0	0.31	N	-
3	well	1007	1.94	3.50	0.0	0.0	0.0	0.0	20.2	20.2	4	0	0	0.11	N	-
4	well	1007	0.26	5.94	0.1	0.1	0.0	0.0	18.6	18.4	870	0	0	0.33	N	-
5	well	1007	0.97	4.81	0.0	0.0	0.0	0.0	20.4	20.4	4	0	0	0.24	N	-
6	well	1007	0.58	5.79	0.2	0.2	0.0	0.0	19.9	19.9	36	0	3.7	2.27	N	-
7	well	1007	0.35	5.80	0.2	0.2	0.0	0.0	20.6	20.6	45	0	0	2.62	N	-
8	well	1007	0.72	5.54	1.1	1.1	0.0	0.0	20.1	20.0	2	0	0	0.51	N	-
9	well	1007	1.90	5.88	0.1	0.1	0.4	0.4	18.6	18.0	72	0	3.8	0.13	N	-
10	well	1007	0.73	5.33	4.1	4.1	0.0	0.0	19.8	19.4	62	0	0	0.54	N	-

Comments:

Validated ✓
Preliminary

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
[*] Subcontracted test
[»] Shown on prev. report

Job Number: 08/00857/02/01 **Matrix:** LIQUID
Client: SLR Consulting Limited **Location:** Lostock
Client Ref. No.: 403.0197.0556 **Client Contact:** Ruth Melvine

Sample Identity	BH2	BH8	BH9							Method Code	LoD/Units
Depth (m)											
Sample Type	LIQUID	LIQUID	LIQUID								
Sampled Date	10.01.08	10.01.08	10.01.08								
Sample Received Date	15.01.08	15.01.08	15.01.08								
Batch	1	1	1								
Sample Number(s)	**1-2**	**3-4**	**5-6**								
Arsenic Dissolved (ICP-MS)	0.001	0.001	0.011							TM152[#]	<0.001 mg/l
Boron Dissolved (ICP-MS)	<0.01	0.10	0.21							TM152[#]	<0.01 mg/l
Cadmium Dissolved (ICP-MS)	<0.0004	<0.0004	0.0008							TM152[#]	<0.0004 mg/l
Chromium Dissolved (ICP-MS)	0.011	<0.001	0.022							TM152[#]	<0.001 mg/l
Copper Dissolved (ICP-MS)	0.018	<0.001	0.019							TM152[#]	<0.001 mg/l
Lead Dissolved (ICP-MS)	<0.001	<0.001	<0.001							TM152[#]	<0.001 mg/l
Nickel Dissolved (ICP-MS)	0.011	0.007	0.023							TM152[#]	<0.001 mg/l
Selenium Dissolved (ICP-MS)	0.002	0.002	0.011							TM152[#]	<0.001 mg/l
Zinc Dissolved (ICP-MS)	0.014	<0.003	0.005							TM152[#]	<0.003 mg/l
Mercury Dissolved (CVAF)	0.00007	<0.00001	<0.00001							TM183[#]	<0.00001 mg/
Ammoniacal Nitrogen Low as N	0.70	5.8	1.8							TM099[#]	<0.01 mg/l
Phenols Monohydric	0.05	0.06	<0.01							TM062[#]	<0.01 mg/l
Total Cyanide	<0.05	<0.05	<0.05							TM153[#]	<0.05 mg/l
pH Value	12.68	9.39	7.49							TM133[#]	<1.00 pH Units

Date 05.02.2008

Validated ✓
Preliminary

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 08/00857/02/01 **Matrix:** LIQUID
Client: SLR Consulting Limited **Location:** Lostock
Client Ref. No.: 403.0197.0556 **Client Contact:** Ruth Melvine

Sample Identity	BH2	BH8	BH9							Method Code	LoD/Units
Depth (m)											
Sample Type	LIQUID	LIQUID	LIQUID								
Sampled Date	10.01.08	10.01.08	10.01.08								
Sample Received Date	15.01.08	15.01.08	15.01.08								
Batch	1	1	1								
Sample Number(s)	**1-2**	**3-4**	**5-6**								
GRO (C4-C12)	11	<0.01	<0.01							TM089[#]	<0.01 mg/l
MTBE	<0.01	<0.01	<0.01							TM089[#]	<0.01 mg/l
Benzene	<0.01	<0.01	<0.01							TM089[#]	<0.01 mg/l
Toluene	0.02	<0.01	<0.01							TM089[#]	<0.01 mg/l
Ethyl benzene	0.06	<0.01	<0.01							TM089[#]	<0.01 mg/l
m & p Xylene	0.20	<0.01	<0.01							TM089[#]	<0.01 mg/l
o Xylene	0.13	<0.01	<0.01							TM089[#]	<0.01 mg/l
Aliphatics C5-C6	<0.01	<0.01	<0.01							TM089	<0.01 mg/l
Aliphatics >C6-C8	0.09	<0.01	<0.01							TM089	<0.01 mg/l
Aliphatics >C8-C10	1.1	<0.01	<0.01							TM089	<0.01 mg/l
Aliphatics >C10-C12	3.3	<0.01	<0.01							TM089	<0.01 mg/l
Aliphatics >C12-C16 Aqueous	150	0.03	<0.01							TM174	<0.01 mg/l
Aliphatics >C16-C21 Aqueous	180	0.07	<0.01							TM174	<0.01 mg/l
Aliphatics >C21-C35 Aqueous	53	<0.01	<0.01							TM174	<0.01 mg/l
Total Aliphatics C5-C35 Aqueous	390	0.10	<0.01							TM61/89	<0.01 mg/l
Aromatics C6-C7	<0.01	<0.01	<0.01							TM089[#]	<0.01 mg/l
Aromatics >C7-C8	0.02	<0.01	<0.01							TM089[#]	<0.01 mg/l
Aromatics >EC8-EC10	2.1	<0.01	<0.01							TM089	<0.01 mg/l
Aromatics >EC10-EC12	4.9	<0.01	<0.01							TM089	<0.01 mg/l
Aromatics >EC12-EC16 Aqueous	43	<0.01	<0.01							TM174	<0.01 mg/l
Aromatics >EC16-EC21 Aqueous	58	<0.01	<0.01							TM174	<0.01 mg/l
Aromatics >EC21-EC35 Aqueous	31	<0.01	<0.01							TM174	<0.01 mg/l
Total Aromatics C6-C35 Aqueous	140	<0.01	<0.01							TM61/89	<0.01 mg/l
TPH (Aliphatics and Aromatics C5-C35) Aqueous	530	0.10	<0.01							TM61/89	<0.01 mg/l

Date 05.02.2008

Validated ✓
Preliminary

ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 08/00857/02/01 **Matrix:** LIQUID
Client: SLR Consulting Limited **Location:** Lostock
Client Ref. No.: 403.0197.0556 **Client Contact:** Ruth Melvine

Sample Identity	BH2	BH8	BH9							Method Code	LoD/Units
Depth (m)											
Sample Type	LIQUID	LIQUID	LIQUID								
Sampled Date	10.01.08	10.01.08	10.01.08								
Sample Received Date	15.01.08	15.01.08	15.01.08								
Batch	1	1	1								
Sample Number(s)	1-2	3-4	5-6								
PAH by GCMS											
Naphthalene Aqueous	0.63	0.0011	<0.0001							TM178	<0.0001 mg/l
Acenaphthylene Aqueous	0.0022	0.000082	<0.000011							TM178	<0.000011 mg/l
Acenaphthene Aqueous	0.17	0.00013	<0.000015							TM178	<0.000015 mg/l
Fluorene Aqueous	0.26	0.00022	0.000039							TM178	<0.000014 mg/l
Phenanthrene Aqueous	0.65	0.00051	0.000097							TM178	<0.000022 mg/l
Anthracene Aqueous	0.11	0.00012	0.000020							TM178	<0.000015 mg/l
Fluoranthene Aqueous	0.14	0.00026	0.00029							TM178	<0.000017 mg/l
Pyrene Aqueous	0.14	0.00030	0.0012							TM178	<0.000015 mg/l
Benz(a)anthracene Aqueous	0.028	0.00010	<0.000017							TM178	<0.000017 mg/l
Chrysene Aqueous	0.022	0.00011	<0.000013							TM178	<0.000013 mg/l
Benzo(b)fluoranthene Aqueous	0.015	0.00016	<0.000023							TM178	<0.000023 mg/l
Benzo(k)fluoranthene Aqueous	0.0046	0.000051	<0.000027							TM178	<0.000027 mg/l
Benzo(a)pyrene Aqueous	0.0093	0.00011	0.000024							TM178	<0.000009 mg/l
Indeno(123cd)pyrene Aqueous	0.0027	0.000060	0.000020							TM178	<0.000014 mg/l
Dibenzo(ah)anthracene Aqueous	0.00087	0.000019	<0.000016							TM178	<0.000016 mg/l
Benzo(ghi)perylene Aqueous	0.0033	0.000097	0.00011							TM178	<0.000016 mg/l
PAH 16 Total Aqueous	2.2	0.0035	0.0018							TM178	<0.0001 mg/l

Date 05.02.2008

Validated ☑
Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 08/00857/02/01 **Matrix:** LIQUID
Client: SLR Consulting Limited **Location:** Lostock
Client Ref. No.: 403.0197.0556 **Client Contact:** Ruth Melvine

Sample Identity	BH2	BH8	BH9							Method Code	LoD/Units
Depth (m)											
Sample Type	LIQUID	LIQUID	LIQUID								
Sampled Date	10.01.08	10.01.08	10.01.08								
Sample Received Date	15.01.08	15.01.08	15.01.08								
Batch	1	1	1								
Sample Number(s)	**1-2**	**3-4**	**5-6**								
PCBs (vs Aroclor 1254)	NDP	-	-							TM198[#]	<0.001 mg/l
PCBs (vs Aroclor 1254)	-	<0.045	<0.045							TM198[#]	<0.045 mg/l

Date 05.02.2008

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 08/00857/02/01
Client: SLR Consulting Limited
Client Ref. No.: 403.0197.0556

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03×10^{-7}

NDP	No Determination Possible	*	Subcontracted test
NFD	No Fibres Detected	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
PFD	Possible Fibres Detected	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample [1]	Surrogate Corrected
TM062	MEWAM BOOK 124 1988.HMSO/ Method 17.7, Second Site property, March 2003	Determination of Phenolic compounds by HPLC with electro-chemical detection	✓		NA	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)			NA	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)	✓		NA	
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	✓		NA	
TM133	BS 1377: Part 3 1990	Determination of pH in Soil and Water using the GLpH pH Meter	✓		NA	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	✓		NA	
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the "Skalar SANS+ System" Segmented Flow Analyser	✓		NA	
TM174		Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID			NA	
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters			NA	
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry	✓		NA	
TM198	Modified: US EPA Method 8082. EA Method 174 and 5109631	Determination of Total Polychlorinated Biphenyls (PCBs) as Aroclor 1254 by GC-MS in Waters	✓		NA	
TM61/89		see TM061 and TM089 for details			NA	

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

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 08/00857/02/01
Client: SLR Consulting Limited
Client Ref. No.: 403.0197.0556

Summary of Coolbox temperatures

Batch No.	Coolbox Temperature (°C)
1	6.6

ALcontrol Laboratories Analytical Services
Sample Descriptions

Job Number: 07/22858/02/01
Client: SLR Consulting Limited
Client Ref : 403.0197.00556

Grain sizes

<0.063mm	Very Fine
0.1mm - 0.063mm	Fine
0.1mm - 2mm	Medium
2mm - 10mm	Coarse
>10mm	Very Coarse

Sample Identity	Depth (m)	Colour	Grain Size	Description	Batch
BH9	2.50-3.00	Brown	0.1mm - 0.063mm	Silty Clay	1

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

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

Validated ✓
Preliminary

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH9									**Method Code**	**LoD/Units**
Depth (m)	2.50-3.00										
Sample Type	SOLID										
Sampled Date	19.12.07										
Sample Received Date	21.12.07										
Batch	1										
Sample Number(s)	**25-27**										
Total Sulphate BRE	0.08									TM149	<0.01 %
Arsenic	<3									TM129[#M]	<3.0 mg/kg
Cadmium	<0.3									TM129	<0.3 mg/kg
Chromium	22									TM129[#M]	<4.5 mg/kg
Copper	14									TM129[#]	<6 mg/kg
Lead	4									TM129[#M]	<2 mg/kg
Mercury	<0.6									TM129[#M]	<0.6 mg/kg
Nickel	21									TM129[#M]	<0.9 mg/kg
Selenium	<3									TM129[#M]	<3 mg/kg
Zinc	47									TM129[#M]	<2.5 mg/kg
Ammonium as NH4 in 2:1 Extract BRE	0.0007									TM099[#]	<0.0003 g/l
Total Organic Carbon	<0.2									TM132[#M]	<0.2 %
Phenols Monohydric	<0.15									TM062[#M]	<0.15 mg/kg
Total Cyanide	<1									TM153[#M]	<1 mg/kg
Asbestos Presence Screen	No Fibres Detected									TM001	NONE
Chloride 2:1 water/soil extract BRE	0.51									TM097[#]	<0.001 g/l
Magnesium 2:1 water/soil extract BRE	0.003									TM129[#]	<0.001 g/l
Nitrate 2:1 water/soil extract BRE	0.0004									TM102[#]	<0.0003 g/l
pH Value	11.15									TM133[#M]	<1.00 pH Units
Soluble Sulphate 2:1 Extract as SO4 BRE	0.092									TM098[#]	<0.003 g/l
Total Sulphur	0.05									TM068[#]	<0.01 %
EPH (DRO) (C10-C40)	110									TM061[#M]	<35 mg/kg
EPH (DRO) (C10-C40) % Surrogate Recovery	110									TM061[#M]	%
EPH C10-12	<35									TM061[#]	<35 mg/kg
EPH >C12-16	39									TM061[#]	<35 mg/kg
EPH >C16-21	<35									TM061[#]	<35 mg/kg
EPH >C21-40	49									TM061[#]	<35 mg/kg

All results expressed on a dry weight basis.

Date 24.01.2008

Validated ✓
Preliminary

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH9									Method Code	LoD/Units
Depth (m)	2.50-3.00										
Sample Type	SOLID										
Sampled Date	19.12.07										
Sample Received Date	21.12.07										
Batch	1										
Sample Number(s)	25-27										
PAH by GCMS											
Naphthalene	<0.01									TM074[#M]	<0.01 mg/kg
Acenaphthylene	0.013									TM074[#M]	<0.005 mg/kg
Acenaphthene	<0.014									TM074[#M]	<0.014 mg/kg
Fluorene	0.024									TM074[#M]	<0.012 mg/kg
Phenanthrene	0.14									TM074[#M]	<0.021 mg/kg
Anthracene	0.037									TM074[#M]	<0.009 mg/kg
Fluoranthene	0.10									TM074[#M]	<0.025 mg/kg
Pyrene	0.082									TM074[#M]	<0.022 mg/kg
Benz(a)anthracene	0.056									TM074[#M]	<0.012 mg/kg
Chrysene	0.05									TM074[#M]	<0.01 mg/kg
Benzo(b)fluoranthene	0.049									TM074[#M]	<0.016 mg/kg
Benzo(k)fluoranthene	0.032									TM074[#M]	<0.025 mg/kg
Benzo(a)pyrene	0.044									TM074[#M]	<0.012 mg/kg
Indeno(123cd)pyrene	0.028									TM074[#M]	<0.011 mg/kg
Dibenzo(ah)anthracene	<0.008									TM074[#M]	<0.008 mg/kg
Benzo(ghi)perylene	0.03									TM074[#M]	<0.01 mg/kg
PAH 16 Total	0.70									TM074[#M]	<0.025 mg/kg

All results expressed on a dry weight basis.

Date 24.01.2008

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 07/22858/02/01
Client: SLR Consulting Limited
Client Ref. No.: 403.0197.00556

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03×10^{-7}

NDP	No Determination Possible	*	Subcontracted test
NFD	No Fibres Detected	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
PFD	Possible Fibres Detected	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample [1]	Surrogate Corrected
TM001	In - house Method	Screening of Soils for Fibres			WET	
TM008	BS 1377:Part 1977	Particle size distribution of solid samples			WET	
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	✓		DRY	
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	✓	✓	DRY	
TM062	MEWAM BOOK 124 1988.HMSO/ Method 17.7, Second Site property, March 2003	Determination of Phenolic compounds by HPLC with electro-chemical detection	✓	✓	WET	
TM068	ASTM D-1552	Total sulphur determination by combustion method	✓		DRY	
TM074	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS. MCERTS Accreditation on Soils for Naphthalene except when Kerosene present.	✓		DRY	
TM074	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS. MCERTS Accreditation on Soils for Naphthalene except when Kerosene present.	✓	✓	DRY	
TM097	Modified: US EPA Method 325.1 & 325.2	Determination of Chloride using the Kone Analyser	✓		DRY	
TM098	Method 4500E, AWWA/APHA, 20th Ed., 1999	Determination of Sulphate using the Kone Analyser	✓		DRY	
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	✓		WET	
TM102	Method 4500H, AWWA/APHA, 20th Ed., 1999	Determination of Total Oxidised Nitrogen using the Kone Analyser	✓		DRY	
TM129	Method 3120B, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 3050B	Determination of Metal Cations by IRIS Emission Spectrometer			DRY	
TM129	Method 3120B, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 3050B	Determination of Metal Cations by IRIS Emission Spectrometer	✓		DRY	

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

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 07/22858/02/01
Client: SLR Consulting Limited
Client Ref. No.: 403.0197.00556

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03×10^{-7}

NDP	No Determination Possible	*	Subcontracted test
NFD	No Fibres Detected	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
PFD	Possible Fibres Detected	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample [1]	Surrogate Corrected
TM129	Method 3120B, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 3050B	Determination of Metal Cations by IRIS Emission Spectrometer	✓	✓	DRY	
TM132	In - house Method	ELTRA CS800 Operators Guide	✓	✓	DRY	
TM133	BS 1377: Part 3 1990	Determination of pH in Soil and Water using the GLpH pH Meter	✓	✓	WET	
TM149	BS 1377: Part 3 1990 (Extraction)	Analysis of Total Sulphate using ICP-OES Spectrophotometer			DRY	
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the "Skalar SANS+ System" Segmented Flow Analyser	✓	✓	WET	

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

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 07/22858/02/01
Client: SLR Consulting Limited
Client Ref. No.: 403.0197.00556

Summary of Coolbox temperatures

Batch No.	Coolbox Temperature (°C)
1	11

ALcontrol Laboratories Analytical Services
Sample Descriptions

Job Number: 07/22858/02/01
Client: SLR Consulting Limited
Client Ref : 403.0197.00556

Grain sizes

<0.063mm	Very Fine
0.1mm - 0.063mm	Fine
0.1mm - 2mm	Medium
2mm - 10mm	Coarse
>10mm	Very Coarse

Sample Identity	Depth (m)	Colour	Grain Size	Description	Batch
BH1	0.50-0.70	Dark Brown	0.1mm - 2mm	Clinker with some Crushed Brick	1
BH1	2.00-6.00	Light Grey	0.1mm - 0.063mm	Silty Clay with some Stones	1
BH1	6.00-7.00	Brown	0.1mm - 0.063mm	Silty Clay with some Stones	1
BH2	1.0	Grey	0.1mm - 0.063mm	Silt Loam with some Stones	2
BH2	2.00	White	0.1mm - 0.063mm	Silty Clay with some Stones	1
BH2	5.5	Brown	0.1mm - 0.063mm	Silt Loam with some Stones	2
BH4	0.50	Brown	0.1mm - 0.063mm	Silty Clay with some Stones	1
BH4	3.0	White	0.1mm - 0.063mm	Sludge/Sediment with some Stones	2
BH5	0.5	Brown	0.1mm - 2mm	Gravel with some Stones	2
BH5	1.10-3.00	White	0.1mm - 0.063mm	Silty Clay with some Stones	1
BH5	5.0-6.0	Dark Brown	0.1mm - 0.063mm	Silty Clay with some Stones	2
BH6	0.5	Black	0.1mm - 2mm	Sandy Silt Loam with some Stones	2
BH6	1.8	Beige	0.1mm - 0.063mm	Sludge/Sediment with some Stones	2
BH7	1.0	Black	0.1mm - 0.063mm	Silt with some Stones	2
BH7	1.5	White	0.1mm - 0.063mm	Sludge/Sediment with some Stones	2
BH8	1.00	Dark Brown	0.1mm - 0.063mm	Silt with some Stones	1
BH8	3.0	Black	0.1mm - 0.063mm	Silty Clay Loam with some Stones	2
BH10	2.5	Black	0.1mm - 2mm	Sandy Silt Loam with some Stones	2
BH10	4.00	Brown	0.1mm - 0.063mm	Silty Clay with some Stones	1

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

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

Validated ✓
Preliminary

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH1	BH1	BH1	BH2	BH2	BH2	BH2	BH4	BH4	Method Code	LoD/Units
Depth (m)	0.50-0.70	2.00-6.00	6.00-7.00	1.0	2.00	5.5	5.5	0.50	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07		19.12.07	18.12.07	18.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	1	1	1	2	1	2	2	1	2		
Sample Number(s)	**1-3**	**4-6**	**7-9**	**31-32**	**10-12**	**34-35**	**33**	**13-15**	**36-38**		
Total Sulphate BRE	-	-	-	-	-	-	-	-	-	TM149	<0.01 %
Arsenic	10	4	-	4	-	-	<3	6	12	TM129[#M]	<3.0 mg/kg
Cadmium	2.1	1.1	-	<0.3	-	-	<0.3	<0.3	1.2	TM129	<0.3 mg/kg
Chromium	25	6.1	-	11	-	-	18	21	12	TM129[#M]	<4.5 mg/kg
Copper	61	23	-	26	-	-	11	25	15	TM129[#]	<6 mg/kg
Lead	19	20	-	35	-	-	3	12	12	TM129[#M]	<2 mg/kg
Mercury	<0.6	<0.6	-	<0.6	-	-	<0.6	<0.6	<0.6	TM129[#M]	<0.6 mg/kg
Nickel	45	11	-	21	-	-	18	23	7.5	TM129[#M]	<0.9 mg/kg
Selenium	<3	<3	-	<3	-	-	<3	<3	<3	TM129[#M]	<3 mg/kg
Zinc	26	36	-	34	-	-	32	40	47	TM129[#M]	<2.5 mg/kg
Ammonium as NH4 in 2:1 Extract BRE	-	-	-	-	-	-	-	-	-	TM099[#]	<0.0003 g/l
Total Organic Carbon	-	4.4	0.8	-	-	-	-	0.7	0.4	TM132[#M]	<0.2 %
Phenols Monohydric	-	-	-	<0.15	<0.15	-	-	<0.15	-	TM062[#M]	<0.15 mg/kg
Total Cyanide	<1	<1	-	-	-	-	-	<1	2	TM153[#]	<1 mg/kg
Ammoniacal Nitrogen as N	-	-	-	-	<15	<15	-	-	-	TM024[#M]	<15 mg/kg
Asbestos Presence Screen	No Fibres Detected	-	-	-	-	-	-	No Fibres Detected	-	TM001	NONE
Chloride 2:1 water/soil extract BRE	-	-	-	-	-	-	-	-	-	TM097[#]	<0.001 g/l
Magnesium 2:1 water/soil extract BRE	-	-	-	-	-	-	-	-	-	TM129[#]	<0.001 g/l
Nitrate 2:1 water/soil extract BRE	-	-	-	-	-	-	-	-	-	TM102[#]	<0.0003 g/l
pH Value	8.28	12.70	-	8.89	-	11.25	-	9.62	12.64	TM133[#M]	<1.00 pH Units
Soluble Sulphate 2:1 Extract as SO4 BRE	-	-	-	-	-	-	-	-	-	TM098[#]	<0.003 g/l
Total Sulphur	-	-	-	-	-	-	-	-	-	TM068[#]	<0.01 %

All results expressed on a dry weight basis.

Date 10.01.2008

Validated ☑
Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH1	BH1	BH1	BH2	BH2	BH2	BH2	BH4	BH4	Method Code	LoD/Units
Depth (m)	0.50-0.70	2.00-6.00	6.00-7.00	1.0	2.00	5.5	5.5	0.50	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07		19.12.07	18.12.07	18.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	1	1	1	2	1	2	2	1	2		
Sample Number(s)	**1-3**	**4-6**	**7-9**	**31-32**	**10-12**	**34-35**	**33**	**13-15**	**36-38**		
EPH (DRO) (C10-C40)	-	-	-	280	-	-	-	240	-	TM061[#M]	<35 mg/kg
EPH (DRO) (C10-C40) % Surrogate Recovery	-	-	-	98	-	-	-	98	-	TM061[#M]	%
EPH C10-12	-	-	-	<35	-	-	-	<35	-	TM061[#]	<35 mg/kg
EPH >C12-16	-	-	-	<35	-	-	-	<35	-	TM061[#]	<35 mg/kg
EPH >C16-21	-	-	-	<35	-	-	-	51	-	TM061[#]	<35 mg/kg
EPH >C21-40	-	-	-	220	-	-	-	150	-	TM061[#]	<35 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

Validated ✓
Preliminary

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH1	BH1	BH1	BH2	BH2	BH2	BH2	BH4	BH4	Method Code	LoD/Units
Depth (m)	0.50-0.70	2.00-6.00	6.00-7.00	1.0	2.00	5.5	5.5	0.50	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07		19.12.07	18.12.07	18.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	1	1	1	2	1	2	2	1	2		
Sample Number(s)	**1-3**	**4-6**	**7-9**	**31-32**	**10-12**	**34-35**	**33**	**13-15**	**36-38**		
PAH by GCMS											
Naphthalene	-	-	-	0.48	0.18	-	-	-	-	TM074[#M]	<0.01 mg/kg
Acenaphthylene	-	-	-	0.023	0.17	-	-	-	-	TM074[#M]	<0.005 mg/kg
Acenaphthene	-	-	-	0.023	0.029	-	-	-	-	TM074[#M]	<0.014 mg/kg
Fluorene	-	-	-	0.019	0.036	-	-	-	-	TM074[#M]	<0.012 mg/kg
Phenanthrene	-	-	-	0.39	1.9	-	-	-	-	TM074[#M]	<0.021 mg/kg
Anthracene	-	-	-	0.077	0.54	-	-	-	-	TM074[#M]	<0.009 mg/kg
Fluoranthene	-	-	-	0.37	5.2	-	-	-	-	TM074[#M]	<0.025 mg/kg
Pyrene	-	-	-	0.33	4.2	-	-	-	-	TM074[#M]	<0.022 mg/kg
Benz(a)anthracene	-	-	-	0.24	2.5	-	-	-	-	TM074[#M]	<0.012 mg/kg
Chrysene	-	-	-	0.22	3.1	-	-	-	-	TM074[#M]	<0.01 mg/kg
Benzo(b)fluoranthene	-	-	-	0.38	2.7	-	-	-	-	TM074[#M]	<0.016 mg/kg
Benzo(k)fluoranthene	-	-	-	0.15	2.4	-	-	-	-	TM074[#M]	<0.025 mg/kg
Benzo(a)pyrene	-	-	-	0.26	2.8	-	-	-	-	TM074[#M]	<0.012 mg/kg
Indeno(123cd)pyrene	-	-	-	0.17	1.2	-	-	-	-	TM074[#M]	<0.011 mg/kg
Dibenzo(ah)anthracene	-	-	-	0.050	0.47	-	-	-	-	TM074[#M]	<0.008 mg/kg
Benzo(ghi)perylene	-	-	-	0.22	1.2	-	-	-	-	TM074[#M]	<0.01 mg/kg
PAH 16 Total	-	-	-	3.4	29	-	-	-	-	TM074[#M]	<0.025 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

Validated ☑
Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
[*] Subcontracted test
[»] Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH1	BH1	BH1	BH2	BH2	BH2	BH2	BH4	BH4	Method Code	LoD/Units
Depth (m)	0.50-0.70	2.00-6.00	6.00-7.00	1.0	2.00	5.5	5.5	0.50	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07		19.12.07	18.12.07	18.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	1	1	1	2	1	2	2	1	2		
Sample Number(s)	**1-3**	**4-6**	**7-9**	**31-32**	**10-12**	**34-35**	**33**	**13-15**	**36-38**		
Phenols											
2-Chlorophenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2-Methylphenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2-Nitrophenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2,4-Dichlorophenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2,4-Dimethylphenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2,4,5-Trichlorophenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2,4,6-Trichlorophenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
4-Chloro-3-methylphenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
4-Methylphenol	-	-	-	-	-	-	-	-	0.3	TM157	<0.1 mg/kg
4-Nitrophenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Pentachlorophenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Phenol	-	-	-	-	-	-	-	-	0.5	TM157	<0.1 mg/kg
PAHs											
2-Chloronaphthalene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2-Methylnaphthalene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Acenaphthene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Acenaphthylene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Anthracene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Benzo(a)anthracene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Benzo(a)pyrene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Benzo(b)fluoranthene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Benzo(ghi)perylene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Benzo(k)fluoranthene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Chrysene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Dibenzo(a,h)anthracene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Fluoranthene	-	-	-	-	-	-	-	-	0.3	TM157	<0.1 mg/kg
Fluorene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Indeno(1,2,3-cd)pyrene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Naphthalene	-	-	-	-	-	-	-	-	0.5	TM157	<0.1 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

Validated ☑
Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH1	BH1	BH1	BH2	BH2	BH2	BH2	BH4	BH4	Method Code	LoD/Units
Depth (m)	0.50-0.70	2.00-6.00	6.00-7.00	1.0	2.00	5.5	5.5	0.50	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07		19.12.07	18.12.07	18.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	1	1	1	2	1	2	2	1	2		
Sample Number(s)	**1-3**	**4-6**	**7-9**	**31-32**	**10-12**	**34-35**	**33**	**13-15**	**36-38**		
PAHs (cont)											
Phenanthrene	-	-	-	-	-	-	-	-	1.2	TM157	<0.1 mg/kg
Pyrene	-	-	-	-	-	-	-	-	0.2	TM157	<0.1 mg/kg
Phthalates											
Bis(2-ethylhexyl) phthalate	-	-	-	-	-	-	-	-	0.2	TM157	<0.1 mg/kg
Butylbenzyl phthalate	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Di-n-butyl phthalate	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Di-n-Octyl phthalate	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Diethyl phthalate	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Dimethyl phthalate	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Other Semi-volatiles											
1,2-Dichlorobenzene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
1,2,4-Trichlorobenzene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
1,4-Dichlorobenzene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2-Nitroaniline	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2,4-Dinitrotoluene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2,6-Dinitrotoluene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
3-Nitroaniline	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
4-Bromophenylphenylether	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
4-Chloroaniline	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
4-Chlorophenylphenylether	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
4-Nitroaniline	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Azobenzene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Bis(2-chloroethoxy)methane	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Bis(2-chloroethyl)ether	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Carbazole	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Dibenzofuran	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Hexachlorobenzene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

Validated ✓
Preliminary

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
[*] Subcontracted test
[»] Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH1	BH1	BH1	BH2	BH2	BH2	BH2	BH4	BH4	Method Code	LoD/Units
Depth (m)	0.50-0.70	2.00-6.00	6.00-7.00	1.0	2.00	5.5	5.5	0.50	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07		19.12.07	18.12.07	18.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	1	1	1	2	1	2	2	1	2		
Sample Number(s)	**1-3**	**4-6**	**7-9**	**31-32**	**10-12**	**34-35**	**33**	**13-15**	**36-38**		
Other Semi-volatiles (cont)											
Hexachlorobutadiene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Hexachlorocyclopentadiene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Hexachloroethane	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Isophorone	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
N-nitrosodi-n-propylamine	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Nitrobenzene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

Validated ✓
Preliminary

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH1	BH1	BH1	BH2	BH2	BH2	BH2	BH4	BH4	Method Code	LoD/Units
Depth (m)	0.50-0.70	2.00-6.00	6.00-7.00	1.0	2.00	5.5	5.5	0.50	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07		19.12.07	18.12.07	18.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	1	1	1	2	1	2	2	1	2		
Sample Number(s)	**1-3**	**4-6**	**7-9**	**31-32**	**10-12**	**34-35**	**33**	**13-15**	**36-38**		
Volatile Organic Compounds											
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	<0.004	TM116[#]	<0.004 mg/kg
Chloromethane	-	-	-	-	-	-	-	-	<0.007	TM116[#]	<0.007 mg/kg
Vinyl Chloride	-	-	-	-	-	-	-	-	<0.01	TM116[#M]	<0.01 mg/kg
Bromomethane	-	-	-	-	-	-	-	-	<0.013	TM116[#]	<0.013 mg/kg
Chloroethane	-	-	-	-	-	-	-	-	<0.014	TM116[#]	<0.014 mg/kg
Trichlorofluoromethane	-	-	-	-	-	-	-	-	<0.006	TM116[#M]	<0.006 mg/kg
trans-1-2-Dichloroethene	-	-	-	-	-	-	-	-	<0.011	TM116[#]	<0.011 mg/kg
Dichloromethane	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
Carbon Disulphide	-	-	-	-	-	-	-	-	<0.007	TM116[#M]	<0.007 mg/kg
1.1-Dichloroethene	-	-	-	-	-	-	-	-	<0.01	TM116[#M]	<0.01 mg/kg
1.1-Dichloroethane	-	-	-	-	-	-	-	-	<0.008	TM116[#M]	<0.008 mg/kg
Methyl Tertiary Butyl Ether	-	-	-	-	-	-	-	-	<0.011	TM116[#M]	<0.011 mg/kg
cis-1-2-Dichloroethene	-	-	-	-	-	-	-	-	<0.005	TM116[#M]	<0.005 mg/kg
Bromochloromethane	-	-	-	-	-	-	-	-	<0.014	TM116[#]	<0.014 mg/kg
Chloroform	-	-	-	-	-	-	-	-	<0.008	TM116[#M]	<0.008 mg/kg
2.2-Dichloropropane	-	-	-	-	-	-	-	-	<0.012	TM116[#]	<0.012 mg/kg
1.2-Dichloroethane	-	-	-	-	-	-	-	-	<0.005	TM116[#]	<0.005 mg/kg
1.1.1-Trichloroethane	-	-	-	-	-	-	-	-	<0.007	TM116[#M]	<0.007 mg/kg
1.1-Dichloropropene	-	-	-	-	-	-	-	-	<0.011	TM116[#M]	<0.011 mg/kg
Benzene	-	-	-	-	-	-	-	-	<0.009	TM116[#M]	<0.009 mg/kg
Carbontetrachloride	-	-	-	-	-	-	-	-	<0.014	TM116[#M]	<0.014 mg/kg
Dibromomethane	-	-	-	-	-	-	-	-	<0.009	TM116[#]	<0.009 mg/kg
1.2-Dichloropropane	-	-	-	-	-	-	-	-	<0.012	TM116[#M]	<0.012 mg/kg
Bromodichloromethane	-	-	-	-	-	-	-	-	<0.007	TM116[#M]	<0.007 mg/kg
Trichloroethene	-	-	-	-	-	-	-	-	<0.009	TM116[#M]	<0.009 mg/kg
cis-1-3-Dichloropropene	-	-	-	-	-	-	-	-	<0.014	TM116[#M]	<0.014 mg/kg
trans-1-3-Dichloropropene	-	-	-	-	-	-	-	-	<0.014	TM116[#M]	<0.014 mg/kg
1.1.2-Trichloroethane	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
Toluene	-	-	-	-	-	-	-	-	<0.005	TM116[#M]	<0.005 mg/kg
1.3-Dichloropropane	-	-	-	-	-	-	-	-	<0.007	TM116[#]	<0.007 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

Validated ✓
Preliminary

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH1	BH1	BH1	BH2	BH2	BH2	BH2	BH4	BH4	Method Code	LoD/Units
Depth (m)	0.50-0.70	2.00-6.00	6.00-7.00	1.0	2.00	5.5	5.5	0.50	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07		19.12.07	18.12.07	18.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	1	1	1	2	1	2	2	1	2		
Sample Number(s)	**1-3**	**4-6**	**7-9**	**31-32**	**10-12**	**34-35**	**33**	**13-15**	**36-38**		
Volatile Organic Compounds (cont)											
Dibromochloromethane	-	-	-	-	-	-	-	-	<0.013	TM116[#]	<0.013 mg/kg
1.2-Dibromoethane	-	-	-	-	-	-	-	-	<0.012	TM116[#]	<0.012 mg/kg
Tetrachloroethene	-	-	-	-	-	-	-	-	<0.005	TM116[#]	<0.005 mg/kg
1.1.1.2-Tetrachloroethane	-	-	-	-	-	-	-	-	<0.01	TM116[#M]	<0.01 mg/kg
Chlorobenzene	-	-	-	-	-	-	-	-	<0.005	TM116[#M]	<0.005 mg/kg
Ethylbenzene	-	-	-	-	-	-	-	-	<0.004	TM116[#]	<0.004 mg/kg
p/m-Xylene	-	-	-	-	-	-	-	-	<0.014	TM116[#]	<0.014 mg/kg
Bromoform	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
Styrene	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
1.1.2.2-Tetrachloroethane	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
o-Xylene	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
1.2.3-Trichloropropane	-	-	-	-	-	-	-	-	<0.017	TM116[#]	<0.017 mg/kg
Isopropylbenzene	-	-	-	-	-	-	-	-	<0.005	TM116[#]	<0.005 mg/kg
Bromobenzene	-	-	-	-	-	-	-	-	<0.01	TM116[#M]	<0.01 mg/kg
2-Chlorotoluene	-	-	-	-	-	-	-	-	<0.009	TM116[#]	<0.009 mg/kg
Propylbenzene	-	-	-	-	-	-	-	-	<0.011	TM116[#]	<0.011 mg/kg
4-Chlorotoluene	-	-	-	-	-	-	-	-	<0.012	TM116[#]	<0.012 mg/kg
1.2.4-Trimethylbenzene	-	-	-	-	-	-	-	-	<0.009	TM116[#]	<0.009 mg/kg
4-Isopropyltoluene	-	-	-	-	-	-	-	-	<0.011	TM116[#]	<0.011 mg/kg
1.3.5-Trimethylbenzene	-	-	-	-	-	-	-	-	<0.008	TM116[#]	<0.008 mg/kg
1.2-Dichlorobenzene	-	-	-	-	-	-	-	-	<0.012	TM116[#M]	<0.012 mg/kg
1.4-Dichlorobenzene	-	-	-	-	-	-	-	-	<0.005	TM116[#M]	<0.005 mg/kg
sec-Butylbenzene	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
tert-Butylbenzene	-	-	-	-	-	-	-	-	<0.012	TM116[#]	<0.012 mg/kg
1.3-Dichlorobenzene	-	-	-	-	-	-	-	-	<0.006	TM116[#]	<0.006 mg/kg
n-Butylbenzene	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
1.2-Dibromo-3-chloropropane	-	-	-	-	-	-	-	-	<0.014	TM116[#]	<0.014 mg/kg
1.2.4-Trichlorobenzene	-	-	-	-	-	-	-	-	<0.006	TM116[#]	<0.006 mg/kg
Naphthalene	-	-	-	-	-	-	-	-	<0.013	TM116[#]	<0.013 mg/kg
1.2.3-Trichlorobenzene	-	-	-	-	-	-	-	-	<0.011	TM116[#]	<0.011 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

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Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
[*] Subcontracted test
[»] Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH1	BH1	BH1	BH2	BH2	BH2	BH2	BH4	BH4	Method Code	LoD/Units
Depth (m)	0.50-0.70	2.00-6.00	6.00-7.00	1.0	2.00	5.5	5.5	0.50	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07		19.12.07	18.12.07	18.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	1	1	1	2	1	2	2	1	2		
Sample Number(s)	**1-3**	**4-6**	**7-9**	**31-32**	**10-12**	**34-35**	**33**	**13-15**	**36-38**		
Volatile Organic Compounds (cont)											
Hexachlorobutadiene	-	-	-	-	-	-	-	-	<0.012	TM116[#]	<0.012 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

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ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
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Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH5	BH5	BH5	BH6	BH6	BH7	BH7	BH8	BH8	Method Code	LoD/Units
Depth (m)	0.5	1.10-3.00	5.0-6.0	0.5	1.8	1.0	1.5	1.00	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07	18.12.07	18.12.07	19.12.07	19.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	2	1	2	2	2	2	2	1	2		
Sample Number(s)	**42-44**	**16-18**	**45**	**46-48**	**49-51**	**55-57**	**58-60**	**22-24**	**61-63**		
Total Sulphate BRE	-	-	-	-	4.8	-	-	-	-	TM149	<0.01 %
Arsenic	7	12	-	25	-	6	11	14	3	TM129[#M]	<3.0 mg/kg
Cadmium	<0.3	1.2	-	1.5	-	1.6	1.3	0.3	<0.3	TM129	<0.3 mg/kg
Chromium	11	15	-	38	-	40	14	22	31	TM129[#M]	<4.5 mg/kg
Copper	12	17	-	79	-	80	17	63	28	TM129[#]	<6 mg/kg
Lead	8	13	-	52	-	62	23	21	24	TM129[#M]	<2 mg/kg
Mercury	<0.6	<0.6	-	<0.6	-	<0.6	<0.6	<0.6	<0.6	TM129[#M]	<0.6 mg/kg
Nickel	13	8.4	-	67	-	85	9.0	51	43	TM129[#M]	<0.9 mg/kg
Selenium	<3	<3	-	<3	-	<3	<3	<3	<3	TM129[#M]	<3 mg/kg
Zinc	32	46	-	57	-	49	54	42	58	TM129[#M]	<2.5 mg/kg
Ammonium as NH4 in 2:1 Extract BRE	-	-	-	-	0.0012	-	-	-	-	TM099[#]	<0.0003 g/l
Total Organic Carbon	-	-	-	-	-	-	-	9.0	2.4	TM132[#M]	<0.2 %
Phenols Monohydric	<0.15	1.4	-	<0.15	-	<0.15	1.0	-	-	TM062[#M]	<0.15 mg/kg
Total Cyanide	<1	2	-	-	-	-	-	<1	<1	TM153[#]	<1 mg/kg
Ammoniacal Nitrogen as N	-	<15	-	-	-	-	<15	-	-	TM024[#M]	<15 mg/kg
Asbestos Presence Screen	-	-	-	-	-	-	-	No Fibres Detected	-	TM001	NONE
Chloride 2:1 water/soil extract BRE	-	-	-	-	0.32	-	-	-	-	TM097[#]	<0.001 g/l
Magnesium 2:1 water/soil extract BRE	-	-	-	-	<0.001	-	-	-	-	TM129[#]	<0.001 g/l
Nitrate 2:1 water/soil extract BRE	-	-	-	-	<0.0006	-	-	-	-	TM102[#]	<0.0003 g/l
pH Value	12.19	12.77	-	8.54	12.66	8.76	12.67	8.27	8.61	TM133[#M]	<1.00 pH Units
Soluble Sulphate 2:1 Extract as SO4 BRE	-	-	-	-	0.016	-	-	-	-	TM098[#]	<0.003 g/l
Total Sulphur	-	-	-	-	1.3	-	-	-	-	TM068[#]	<0.01 %

All results expressed on a dry weight basis.

Date 10.01.2008

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ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
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Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH5	BH5	BH5	BH6	BH6	BH7	BH7	BH8	BH8	Method Code	LoD/Units
Depth (m)	0.5	1.10-3.00	5.0-6.0	0.5	1.8	1.0	1.5	1.00	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07	18.12.07	18.12.07	19.12.07	19.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	2	1	2	2	2	2	2	1	2		
Sample Number(s)	**42-44**	**16-18**	**45**	**46-48**	**49-51**	**55-57**	**58-60**	**22-24**	**61-63**		
GRO (C4-C12)	-	-	-	-	-	<0.01	0.08	-	-	TM089	<0.01 mg/kg
MTBE	-	-	-	-	-	<0.01	<0.01	-	-	TM089[#]	<0.01 mg/kg
Benzene	-	-	-	-	-	<0.01	<0.01	-	-	TM089[#M]	<0.01 mg/kg
Toluene	-	-	-	-	-	<0.01	<0.01	-	-	TM089[#M]	<0.01 mg/kg
Ethyl benzene	-	-	-	-	-	<0.01	<0.01	-	-	TM089[#M]	<0.01 mg/kg
m & p Xylene	-	-	-	-	-	<0.01	<0.01	-	-	TM089[#M]	<0.01 mg/kg
o Xylene	-	-	-	-	-	<0.01	<0.01	-	-	TM089[#M]	<0.01 mg/kg
Aliphatics C5-C6	-	-	-	-	-	<0.01	<0.01	-	-	TM089	<0.01 mg/kg
Aliphatics >C6-C8	-	-	-	-	-	<0.01	<0.01	-	-	TM089	<0.01 mg/kg
Aliphatics >C8-C10	-	-	-	-	-	<0.01	<0.01	-	-	TM089	<0.01 mg/kg
Aliphatics >C10-C12	-	-	-	-	-	<0.01	0.03	-	-	TM089	<0.01 mg/kg
Aliphatics >C12-C16	-	-	-	-	-	4.9	3.5	-	-	TM173[#]	<0.1 mg/kg
Aliphatics >C16-C21	-	-	-	-	-	7.5	15	-	-	TM173[#]	<0.1 mg/kg
Aliphatics >C21-C35	-	-	-	-	-	23	86	-	-	TM173[#]	<0.1 mg/kg
Total Aliphatics C5-C35	-	-	-	-	-	35	100	-	-	TM61/89	<0.1 mg/kg
Aromatics C6-C7	-	-	-	-	-	<0.01	<0.01	-	-	TM089	<0.01 mg/kg
Aromatics >C7-C8	-	-	-	-	-	<0.01	<0.01	-	-	TM089	<0.01 mg/kg
Aromatics >EC8-EC10	-	-	-	-	-	<0.01	<0.01	-	-	TM089	<0.01 mg/kg
Aromatics >EC10-EC12	-	-	-	-	-	<0.01	0.05	-	-	TM089	<0.01 mg/kg
Aromatics >EC12-EC16	-	-	-	-	-	5.7	1.3	-	-	TM173[#]	<0.1 mg/kg
Aromatics >EC16-EC21	-	-	-	-	-	7.6	6.2	-	-	TM173[#]	<0.1 mg/kg
Aromatics >EC21-EC35	-	-	-	-	-	14	44	-	-	TM173[#]	<0.1 mg/kg
Total Aromatics C6-C35	-	-	-	-	-	27	51	-	-	TM61/89	<0.1 mg/kg
TPH (Aliphatics and Aromatics C5-C35)	-	-	-	-	-	63	160	-	-	TM61/89	<0.1 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

Validated ☑
Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH5	BH5	BH5	BH6	BH6	BH7	BH7	BH8	BH8	Method Code	LoD/Units
Depth (m)	0.5	1.10-3.00	5.0-6.0	0.5	1.8	1.0	1.5	1.00	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07	18.12.07	18.12.07	19.12.07	19.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	2	1	2	2	2	2	2	1	2		
Sample Number(s)	**42-44**	**16-18**	**45**	**46-48**	**49-51**	**55-57**	**58-60**	**22-24**	**61-63**		
EPH (DRO) (C10-C40)	-	220	-	-	-	-	-	980	-	TM061[#M]	<35 mg/kg
EPH (DRO) (C10-C40) % Surrogate Recovery	-	100	-	-	-	-	-	96	-	TM061[#M]	%
EPH C10-12	-	<35	-	-	-	-	-	<35	-	TM061[#]	<35 mg/kg
EPH >C12-16	-	<35	-	-	-	-	-	<35	-	TM061[#]	<35 mg/kg
EPH >C16-21	-	<35	-	-	-	-	-	45	-	TM061[#]	<35 mg/kg
EPH >C21-40	-	160	-	-	-	-	-	900	-	TM061[#]	<35 mg/kg

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ALcontrol Laboratories Analytical Services
Table Of Results

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* Subcontracted test
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Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH5	BH5	BH5	BH6	BH6	BH7	BH7	BH8	BH8	Method Code	LoD/Units
Depth (m)	0.5	1.10-3.00	5.0-6.0	0.5	1.8	1.0	1.5	1.00	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07	18.12.07	18.12.07	19.12.07	19.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	2	1	2	2	2	2	2	1	2		
Sample Number(s)	**42-44**	**16-18**	**45**	**46-48**	**49-51**	**55-57**	**58-60**	**22-24**	**61-63**		
PAH by GCMS											
Naphthalene	-	0.25	0.11	-	-	0.89	0.14	-	-	TM074[#M]	<0.01 mg/kg
Acenaphthylene	-	0.061	0.010	-	-	0.016	0.040	-	-	TM074[#M]	<0.005 mg/kg
Acenaphthene	-	0.064	<0.014	-	-	0.015	0.039	-	-	TM074[#M]	<0.014 mg/kg
Fluorene	-	0.10	0.013	-	-	0.017	0.023	-	-	TM074[#M]	<0.012 mg/kg
Phenanthrene	-	1.6	0.10	-	-	0.51	1.4	-	-	TM074[#M]	<0.021 mg/kg
Anthracene	-	0.34	0.018	-	-	0.058	0.25	-	-	TM074[#M]	<0.009 mg/kg
Fluoranthene	-	0.32	0.059	-	-	0.65	0.38	-	-	TM074[#M]	<0.025 mg/kg
Pyrene	-	0.24	0.048	-	-	0.56	0.30	-	-	TM074[#M]	<0.022 mg/kg
Benz(a)anthracene	-	0.11	0.082	-	-	0.45	0.19	-	-	TM074[#M]	<0.012 mg/kg
Chrysene	-	0.16	0.06	-	-	0.52	0.19	-	-	TM074[#M]	<0.01 mg/kg
Benzo(b)fluoranthene	-	0.25	0.19	-	-	0.44	0.33	-	-	TM074[#M]	<0.016 mg/kg
Benzo(k)fluoranthene	-	0.27	0.097	-	-	0.13	0.19	-	-	TM074[#M]	<0.025 mg/kg
Benzo(a)pyrene	-	0.37	0.16	-	-	0.15	0.31	-	-	TM074[#M]	<0.012 mg/kg
Indeno(123cd)pyrene	-	0.18	0.11	-	-	0.10	0.18	-	-	TM074[#M]	<0.011 mg/kg
Dibenzo(ah)anthracene	-	0.058	0.030	-	-	0.046	0.042	-	-	TM074[#M]	<0.008 mg/kg
Benzo(ghi)perylene	-	0.21	0.13	-	-	0.17	0.22	-	-	TM074[#M]	<0.01 mg/kg
PAH 16 Total	-	4.5	1.2	-	-	4.7	4.2	-	-	TM074[#M]	<0.025 mg/kg

All results expressed on a dry weight basis.

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ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
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Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH5	BH5	BH5	BH6	BH6	BH7	BH7	BH8	BH8	Method Code	LoD/Units
Depth (m)	0.5	1.10-3.00	5.0-6.0	0.5	1.8	1.0	1.5	1.00	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07	18.12.07	18.12.07	19.12.07	19.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	2	1	2	2	2	2	2	1	2		
Sample Number(s)	**42-44**	**16-18**	**45**	**46-48**	**49-51**	**55-57**	**58-60**	**22-24**	**61-63**		
PCBs (vs Aroclor 1254)	<0.2	<0.02	-	-	-	-	-	-	-	TM070[#]	<0.02 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

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ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
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[»] Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH5	BH5	BH5	BH6	BH6	BH7	BH7	BH8	BH8	Method Code	LoD/Units
Depth (m)	0.5	1.10-3.00	5.0-6.0	0.5	1.8	1.0	1.5	1.00	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07	18.12.07	18.12.07	19.12.07	19.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	2	1	2	2	2	2	2	1	2		
Sample Number(s)	**42-44**	**16-18**	**45**	**46-48**	**49-51**	**55-57**	**58-60**	**22-24**	**61-63**		
SVOC by GCMS											
Phenols											
2-Chlorophenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2-Methylphenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2-Nitrophenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2,4-Dichlorophenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2,4-Dimethylphenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2,4,5-Trichlorophenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2,4,6-Trichlorophenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
4-Chloro-3-methylphenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
4-Methylphenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
4-Nitrophenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Pentachlorophenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Phenol	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
PAHs											
2-Chloronaphthalene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2-Methylnaphthalene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Acenaphthene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Acenaphthylene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Anthracene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Benzo(a)anthracene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Benzo(a)pyrene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Benzo(b)fluoranthene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Benzo(ghi)perylene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Benzo(k)fluoranthene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Chrysene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Dibenzo(a,h)anthracene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Fluoranthene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Fluorene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Indeno(1,2,3-cd)pyrene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg

All results expressed on a dry weight basis.

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ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH5	BH5	BH5	BH6	BH6	BH7	BH7	BH8	BH8	Method Code	LoD/Units
Depth (m)	0.5	1.10-3.00	5.0-6.0	0.5	1.8	1.0	1.5	1.00	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07	18.12.07	18.12.07	19.12.07	19.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	2	1	2	2	2	2	2	1	2		
Sample Number(s)	**42-44**	**16-18**	**45**	**46-48**	**49-51**	**55-57**	**58-60**	**22-24**	**61-63**		
PAHs (cont)											
Naphthalene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Phenanthrene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Pyrene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Phthalates											
Bis(2-ethylhexyl) phthalate	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Butylbenzyl phthalate	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Di-n-butyl phthalate	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Di-n-Octyl phthalate	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Diethyl phthalate	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Dimethyl phthalate	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Other Semi-volatiles											
1,2-Dichlorobenzene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
1,2,4-Trichlorobenzene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
1,4-Dichlorobenzene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2-Nitroaniline	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2,4-Dinitrotoluene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
2,6-Dinitrotoluene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
3-Nitroaniline	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
4-Bromophenylphenylether	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
4-Chloroaniline	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
4-Chlorophenylphenylether	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
4-Nitroaniline	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Azobenzene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Bis(2-chloroethoxy)methane	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Bis(2-chloroethyl)ether	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Carbazole	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Dibenzofuran	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

Validated ✓
Preliminary

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH5	BH5	BH5	BH6	BH6	BH7	BH7	BH8	BH8	Method Code	LoD/Units
Depth (m)	0.5	1.10-3.00	5.0-6.0	0.5	1.8	1.0	1.5	1.00	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07	18.12.07	18.12.07	19.12.07	19.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	2	1	2	2	2	2	2	1	2		
Sample Number(s)	**42-44**	**16-18**	**45**	**46-48**	**49-51**	**55-57**	**58-60**	**22-24**	**61-63**		
Other Semi-volatiles (cont)											
Hexachlorobenzene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Hexachlorobutadiene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Hexachlorocyclopentadiene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Hexachloroethane	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Isophorone	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
N-nitrosodi-n-propylamine	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg
Nitrobenzene	-	-	-	-	-	-	-	-	<0.1	TM157	<0.1 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

Validated ✓
Preliminary

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH5	BH5	BH5	BH6	BH6	BH7	BH7	BH8	BH8	Method Code	LoD/Units
Depth (m)	0.5	1.10-3.00	5.0-6.0	0.5	1.8	1.0	1.5	1.00	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07	18.12.07	18.12.07	19.12.07	19.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	2	1	2	2	2	2	2	1	2		
Sample Number(s)	**42-44**	**16-18**	**45**	**46-48**	**49-51**	**55-57**	**58-60**	**22-24**	**61-63**		
Volatile Organic Compounds											
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	<0.004	TM116[#]	<0.004 mg/kg
Chloromethane	-	-	-	-	-	-	-	-	<0.007	TM116[#]	<0.007 mg/kg
Vinyl Chloride	-	-	-	-	-	-	-	-	<0.01	TM116[#M]	<0.01 mg/kg
Bromomethane	-	-	-	-	-	-	-	-	<0.013	TM116[#]	<0.013 mg/kg
Chloroethane	-	-	-	-	-	-	-	-	<0.014	TM116[#]	<0.014 mg/kg
Trichlorofluoromethane	-	-	-	-	-	-	-	-	<0.006	TM116[#M]	<0.006 mg/kg
trans-1-2-Dichloroethene	-	-	-	-	-	-	-	-	<0.011	TM116[#]	<0.011 mg/kg
Dichloromethane	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
Carbon Disulphide	-	-	-	-	-	-	-	-	<0.007	TM116[#M]	<0.007 mg/kg
1.1-Dichloroethene	-	-	-	-	-	-	-	-	<0.01	TM116[#M]	<0.01 mg/kg
1.1-Dichloroethane	-	-	-	-	-	-	-	-	<0.008	TM116[#M]	<0.008 mg/kg
Methyl Tertiary Butyl Ether	-	-	-	-	-	-	-	-	<0.011	TM116[#M]	<0.011 mg/kg
cis-1-2-Dichloroethene	-	-	-	-	-	-	-	-	<0.005	TM116[#M]	<0.005 mg/kg
Bromochloromethane	-	-	-	-	-	-	-	-	<0.014	TM116[#]	<0.014 mg/kg
Chloroform	-	-	-	-	-	-	-	-	<0.008	TM116[#M]	<0.008 mg/kg
2.2-Dichloropropane	-	-	-	-	-	-	-	-	<0.012	TM116[#]	<0.012 mg/kg
1.2-Dichloroethane	-	-	-	-	-	-	-	-	<0.005	TM116[#]	<0.005 mg/kg
1.1.1-Trichloroethane	-	-	-	-	-	-	-	-	<0.007	TM116[#M]	<0.007 mg/kg
1.1-Dichloropropene	-	-	-	-	-	-	-	-	<0.011	TM116[#M]	<0.011 mg/kg
Benzene	-	-	-	-	-	-	-	-	<0.009	TM116[#M]	<0.009 mg/kg
Carbontetrachloride	-	-	-	-	-	-	-	-	<0.014	TM116[#M]	<0.014 mg/kg
Dibromomethane	-	-	-	-	-	-	-	-	<0.009	TM116[#]	<0.009 mg/kg
1.2-Dichloropropane	-	-	-	-	-	-	-	-	<0.012	TM116[#M]	<0.012 mg/kg
Bromodichloromethane	-	-	-	-	-	-	-	-	<0.007	TM116[#M]	<0.007 mg/kg
Trichloroethene	-	-	-	-	-	-	-	-	<0.009	TM116[#M]	<0.009 mg/kg
cis-1-3-Dichloropropene	-	-	-	-	-	-	-	-	<0.014	TM116[#M]	<0.014 mg/kg
trans-1-3-Dichloropropene	-	-	-	-	-	-	-	-	<0.014	TM116[#M]	<0.014 mg/kg
1.1.2-Trichloroethane	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
Toluene	-	-	-	-	-	-	-	-	<0.005	TM116[#M]	<0.005 mg/kg
1.3-Dichloropropane	-	-	-	-	-	-	-	-	<0.007	TM116[#]	<0.007 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

Validated ✓
Preliminary

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH5	BH5	BH5	BH6	BH6	BH7	BH7	BH8	BH8	Method Code	LoD/Units
Depth (m)	0.5	1.10-3.00	5.0-6.0	0.5	1.8	1.0	1.5	1.00	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07	18.12.07	18.12.07	19.12.07	19.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	2	1	2	2	2	2	2	1	2		
Sample Number(s)	**42-44**	**16-18**	**45**	**46-48**	**49-51**	**55-57**	**58-60**	**22-24**	**61-63**		
Volatile Organic Compounds (cont)											
Dibromochloromethane	-	-	-	-	-	-	-	-	<0.013	TM116[#]	<0.013 mg/kg
1.2-Dibromoethane	-	-	-	-	-	-	-	-	<0.012	TM116[#]	<0.012 mg/kg
Tetrachloroethene	-	-	-	-	-	-	-	-	<0.005	TM116[#]	<0.005 mg/kg
1.1.1.2-Tetrachloroethane	-	-	-	-	-	-	-	-	<0.01	TM116[#M]	<0.01 mg/kg
Chlorobenzene	-	-	-	-	-	-	-	-	<0.005	TM116[#M]	<0.005 mg/kg
Ethylbenzene	-	-	-	-	-	-	-	-	<0.004	TM116[#]	<0.004 mg/kg
p/m-Xylene	-	-	-	-	-	-	-	-	<0.014	TM116[#]	<0.014 mg/kg
Bromoform	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
Styrene	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
1.1.2.2-Tetrachloroethane	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
o-Xylene	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
1.2.3-Trichloropropane	-	-	-	-	-	-	-	-	<0.017	TM116[#]	<0.017 mg/kg
Isopropylbenzene	-	-	-	-	-	-	-	-	<0.005	TM116[#]	<0.005 mg/kg
Bromobenzene	-	-	-	-	-	-	-	-	<0.01	TM116[#M]	<0.01 mg/kg
2-Chlorotoluene	-	-	-	-	-	-	-	-	<0.009	TM116[#]	<0.009 mg/kg
Propylbenzene	-	-	-	-	-	-	-	-	<0.011	TM116[#]	<0.011 mg/kg
4-Chlorotoluene	-	-	-	-	-	-	-	-	<0.012	TM116[#]	<0.012 mg/kg
1.2.4-Trimethylbenzene	-	-	-	-	-	-	-	-	<0.009	TM116[#]	<0.009 mg/kg
4-Isopropyltoluene	-	-	-	-	-	-	-	-	<0.011	TM116[#]	<0.011 mg/kg
1.3.5-Trimethylbenzene	-	-	-	-	-	-	-	-	<0.008	TM116[#]	<0.008 mg/kg
1.2-Dichlorobenzene	-	-	-	-	-	-	-	-	<0.012	TM116[#M]	<0.012 mg/kg
1.4-Dichlorobenzene	-	-	-	-	-	-	-	-	<0.005	TM116[#M]	<0.005 mg/kg
sec-Butylbenzene	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
tert-Butylbenzene	-	-	-	-	-	-	-	-	<0.012	TM116[#]	<0.012 mg/kg
1.3-Dichlorobenzene	-	-	-	-	-	-	-	-	<0.006	TM116[#]	<0.006 mg/kg
n-Butylbenzene	-	-	-	-	-	-	-	-	<0.01	TM116[#]	<0.01 mg/kg
1.2-Dibromo-3-chloropropane	-	-	-	-	-	-	-	-	<0.014	TM116[#]	<0.014 mg/kg
1.2.4-Trichlorobenzene	-	-	-	-	-	-	-	-	<0.006	TM116[#]	<0.006 mg/kg
Naphthalene	-	-	-	-	-	-	-	-	<0.013	TM116[#]	<0.013 mg/kg
1.2.3-Trichlorobenzene	-	-	-	-	-	-	-	-	<0.011	TM116[#]	<0.011 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

Validated ☑
Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH5	BH5	BH5	BH6	BH6	BH7	BH7	BH8	BH8	Method Code	LoD/Units
Depth (m)	0.5	1.10-3.00	5.0-6.0	0.5	1.8	1.0	1.5	1.00	3.0		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	17.12.07	17.12.07	17.12.07	18.12.07	18.12.07	18.12.07	18.12.07	19.12.07	19.12.07		
Sample Received Date	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07	21.12.07		
Batch	2	1	2	2	2	2	2	1	2		
Sample Number(s)	**42-44**	**16-18**	**45**	**46-48**	**49-51**	**55-57**	**58-60**	**22-24**	**61-63**		
Volatile Organic Compounds (cont)											
Hexachlorobutadiene	-	-	-	-	-	-	-	-	<0.012	TM116[#]	<0.012 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

Validated ✓
Preliminary

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH10	BH10								Method Code	LoD/Units
Depth (m)	2.5	4.00									
Sample Type	SOLID	SOLID									
Sampled Date	19.12.07	19.12.07									
Sample Received Date	21.12.07	21.12.07									
Batch	2	1									
Sample Number(s)	**64-66**	**28-30**									
Total Sulphate BRE	-	0.33								TM149	<0.01 %
Arsenic	13	4								TM129[#M]	<3.0 mg/kg
Cadmium	0.8	<0.3								TM129	<0.3 mg/kg
Chromium	33	21								TM129[#M]	<4.5 mg/kg
Copper	92	16								TM129[#]	<6 mg/kg
Lead	67	7								TM129[#M]	<2 mg/kg
Mercury	<0.6	<0.6								TM129[#M]	<0.6 mg/kg
Nickel	63	21								TM129[#M]	<0.9 mg/kg
Selenium	<3	<3								TM129[#M]	<3 mg/kg
Zinc	41	41								TM129[#M]	<2.5 mg/kg
Ammonium as NH4 in 2:1 Extract BRE	-	0.0010								TM099[#]	<0.0003 g/l
Total Organic Carbon	-	-								TM132[#M]	<0.2 %
Phenols Monohydric	-	-								TM062[#M]	<0.15 mg/kg
Total Cyanide	-	-								TM153[#]	<1 mg/kg
Ammoniacal Nitrogen as N	-	-								TM024[#M]	<15 mg/kg
Asbestos Presence Screen	-	-								TM001	NONE
Chloride 2:1 water/soil extract BRE	-	3.6								TM097[#]	<0.001 g/l
Magnesium 2:1 water/soil extract BRE	-	0.009								TM129[#]	<0.001 g/l
Nitrate 2:1 water/soil extract BRE	-	0.0084								TM102[#]	<0.0003 g/l
pH Value	8.39	8.80								TM133[#M]	<1.00 pH Units
Soluble Sulphate 2:1 Extract as SO4 BRE	-	0.58								TM098[#]	<0.003 g/l
Total Sulphur	-	0.11								TM068[#]	<0.01 %

All results expressed on a dry weight basis.

Date 10.01.2008

Validated ✓
Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

[#] ISO 17025 accredited
[M] MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/22858/02/01 **Matrix:** SOLID
Client: SLR Consulting Limited **Location:** LOSTOCK
Client Ref. No.: 403.0197.00556 **Client Contact:** Ruth Melvine

Sample Identity	BH10	BH10								Method Code	LoD/Units
Depth (m)	2.5	4.00									
Sample Type	SOLID	SOLID									
Sampled Date	19.12.07	19.12.07									
Sample Received Date	21.12.07	21.12.07									
Batch	2	1									
Sample Number(s)	**64-66**	**28-30**									
EPH (DRO) (C10-C40)	100	-								TM061[#M]	<35 mg/kg
EPH (DRO) (C10-C40) % Surrogate Recovery	92	-								TM061[#M]	%
EPH C10-12	<35	-								TM061[#]	<35 mg/kg
EPH >C12-16	<35	-								TM061[#]	<35 mg/kg
EPH >C16-21	<35	-								TM061[#]	<35 mg/kg
EPH >C21-40	58	-								TM061[#]	<35 mg/kg

All results expressed on a dry weight basis.

Date 10.01.2008

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 07/22858/02/01
Client: SLR Consulting Limited
Client Ref. No.: 403.0197.00556

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03×10^{-7}

NDP	No Determination Possible	*	Subcontracted test
NFD	No Fibres Detected	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
PFD	Possible Fibres Detected	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample [1]	Surrogate Corrected
TM001	In - house Method	Screening of Soils for Fibres			WET	
TM008	BS 1377:Part 1977	Particle size distribution of solid samples			WET	
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium in soil samples	✓	✓	WET	
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	✓		DRY	
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	✓	✓	DRY	
TM062	MEWAM BOOK 124 1988.HMSO/ Method 17.7, Second Site property, March 2003	Determination of Phenolic compounds by HPLC with electro-chemical detection	✓	✓	WET	
TM068	ASTM D-1552	Total sulphur determination by combustion method	✓		DRY	
TM070	Modified: US EPA Method 8250 & 625	Determination of Total Polychlorinated Biphenyls (PCB's) as Aroclor 1254 and the ICE 7 Congeners by GC-MS	✓		DRY	
TM074	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS. MCERTS Accreditation on Soils for Naphthalene except when Kerosene present.	✓		DRY	
TM074	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS. MCERTS Accreditation on Soils for Naphthalene except when Kerosene present.	✓	✓	DRY	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)			WET	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)	✓		WET	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)	✓	✓	WET	
TM097	Modified: US EPA Method 325.1 & 325.2	Determination of Chloride using the Kone Analyser	✓		DRY	

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

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 07/22858/02/01
Client: SLR Consulting Limited
Client Ref. No.: 403.0197.00556

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03×10^{-7}

NDP	No Determination Possible	*	Subcontracted test
NFD	No Fibres Detected	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
PFD	Possible Fibres Detected	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample [1]	Surrogate Corrected
TM098	Method 4500E, AWWA/APHA, 20th Ed., 1999	Determination of Sulphate using the Kone Analyser	✓		DRY	
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	✓		WET	
TM102	Method 4500H, AWWA/APHA, 20th Ed., 1999	Determination of Total Oxidised Nitrogen using the Kone Analyser	✓		DRY	
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS	✓		WET	
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS	✓	✓	WET	
TM129	Method 3120B, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 3050B	Determination of Metal Cations by IRIS Emission Spectrometer			DRY	
TM129	Method 3120B, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 3050B	Determination of Metal Cations by IRIS Emission Spectrometer	✓		DRY	
TM129	Method 3120B, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 3050B	Determination of Metal Cations by IRIS Emission Spectrometer	✓	✓	DRY	
TM132	In - house Method	ELTRA CS800 Operators Guide	✓	✓	DRY	
TM133	BS 1377: Part 3 1990	Determination of pH in Soil and Water using the GLpH pH Meter	✓	✓	WET	
TM149	BS 1377: Part 3 1990 (Extraction)	Analysis of Total Sulphate using ICP-OES Spectrophotometer			DRY	
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the "Skalar SANS+ System" Segmented Flow Analyser	✓		WET	
TM157		Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone			WET	
TM173		Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID	✓		DRY	

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

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 07/22858/02/01
Client: SLR Consulting Limited
Client Ref. No.: 403.0197.00556

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03×10^{-7}

NDP	No Determination Possible	*	Subcontracted test
NFD	No Fibres Detected	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
PFD	Possible Fibres Detected	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample [1]	Surrogate Corrected
TM61/89		see TM061 and TM089 for details			WET	

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

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 07/22858/02/01
Client: SLR Consulting Limited
Client Ref. No.: 403.0197.00556

Summary of Coolbox temperatures

Batch No.	Coolbox Temperature (°C)
1	11
2	1.4

ALcontrol Laboratories

Extractable Petroleum Hydrocarbons (EPH) By GC-FID

Carbon Range C10-C40

Job Number : 07/22858/02/01
Client : SLR Consulting Limited
Client Ref : 403.0197.00556
Matrix [Units] : SOLID [mg/kg]

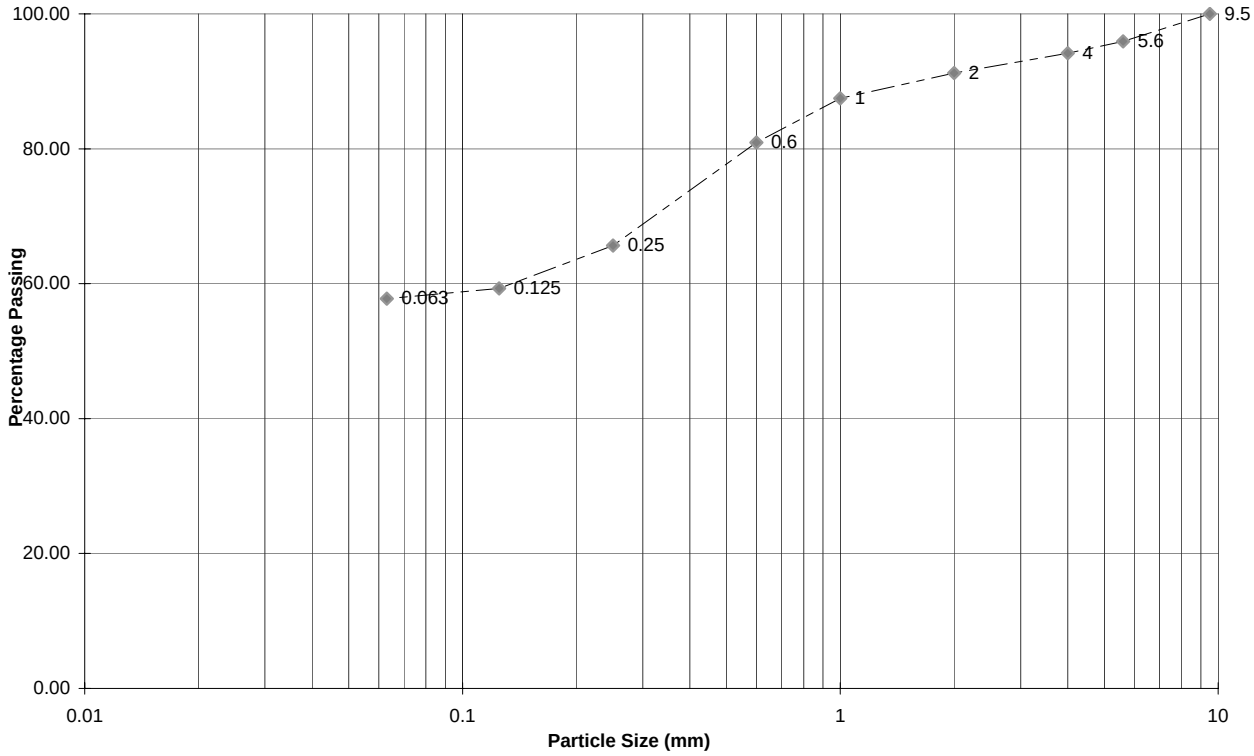
All results expressed on a dry weight basis.

Sample No	Sample Identity	Depth	EPH	Interpretation
13	BH4	0.50	240	biodegraded diesel/humic acids
17	BH5	1.10-3.00	220	biodegraded diesel/bitumen/tar
22	BH8	1.00	980	Biodegraded diesel/ PAHs/bitumen tar
31	BH2	1.0	280	biodegraded diesel/PAHs/Bitumen/Tar
64	BH10	2.5	100	used engine oil/PAHs/humic acids

Extractable Petroleum Hydrocarbons (formally Diesel Range Organics) :- Any compound extractable in n-hexane within the carbon range C10-C40, includes Aliphatic (Min Oil), Aromatic (PAHs) and naturally occurring compounds.

Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	95.94
4	94.18
2	91.23
1	87.46
600um	80.93
250um	65.67
125um	59.30
63um	57.78



Sample Number 37
Client SLR Consuling Ltd
Sample ID BH4

Particle Proportions			
>60mm	Cobbles	-	%
>2mm	Gravel	8.8	%
>0.063mm	Sand	33.4	%
<0.063mm	Silt & Clay	57.8	%

Description:	slightly gravelly sandy SILT / CLAY

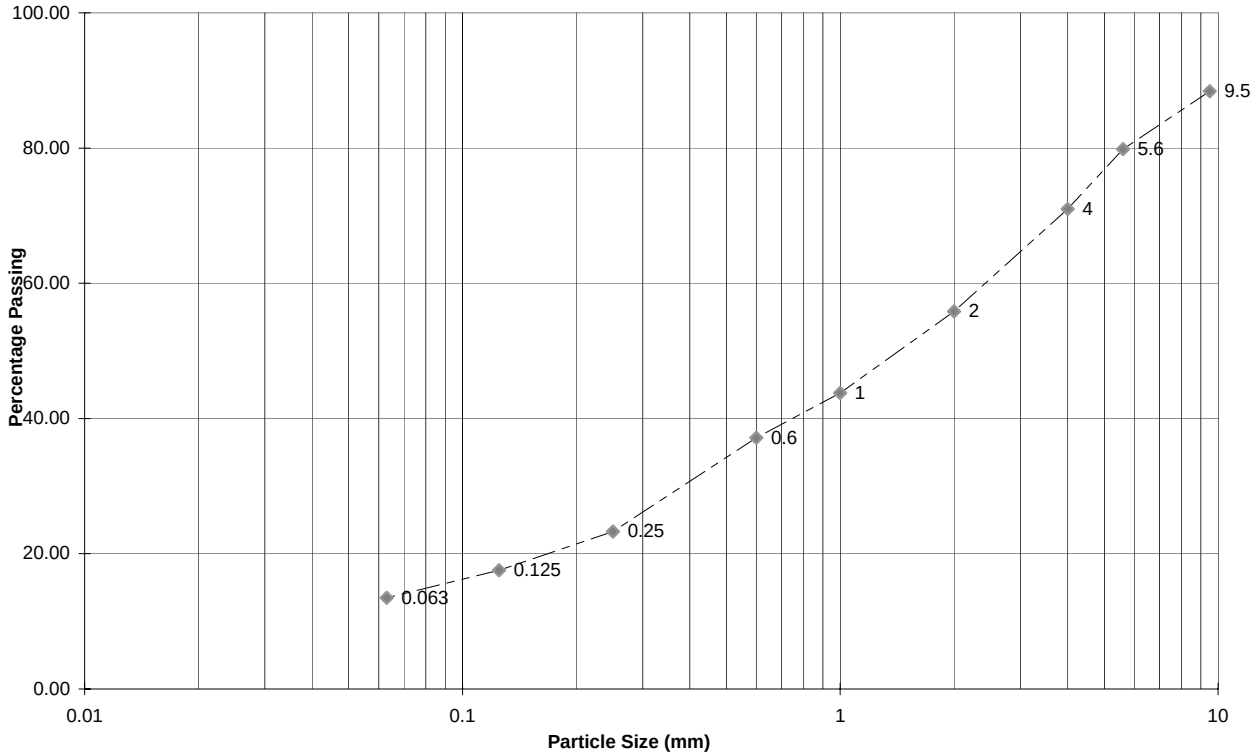
Particle Size Distribution

Particle Size (mm)	% Passing
9.5	88.41
5.6	79.86
4	70.98
2	55.84
1	43.79
600um	37.15
250um	23.27
125um	17.57
63um	13.51

Sample Number 23
Client SLR Consuling Ltd
Sample ID BH8

Particle Proportions			
>60mm	Cobbles	-	%
>2mm	Gravel	44.2	%
>0.063mm	Sand	42.3	%
<0.063mm	Silt & Clay	13.5	%

Description:	clayey silty, SAND / GRAVEL



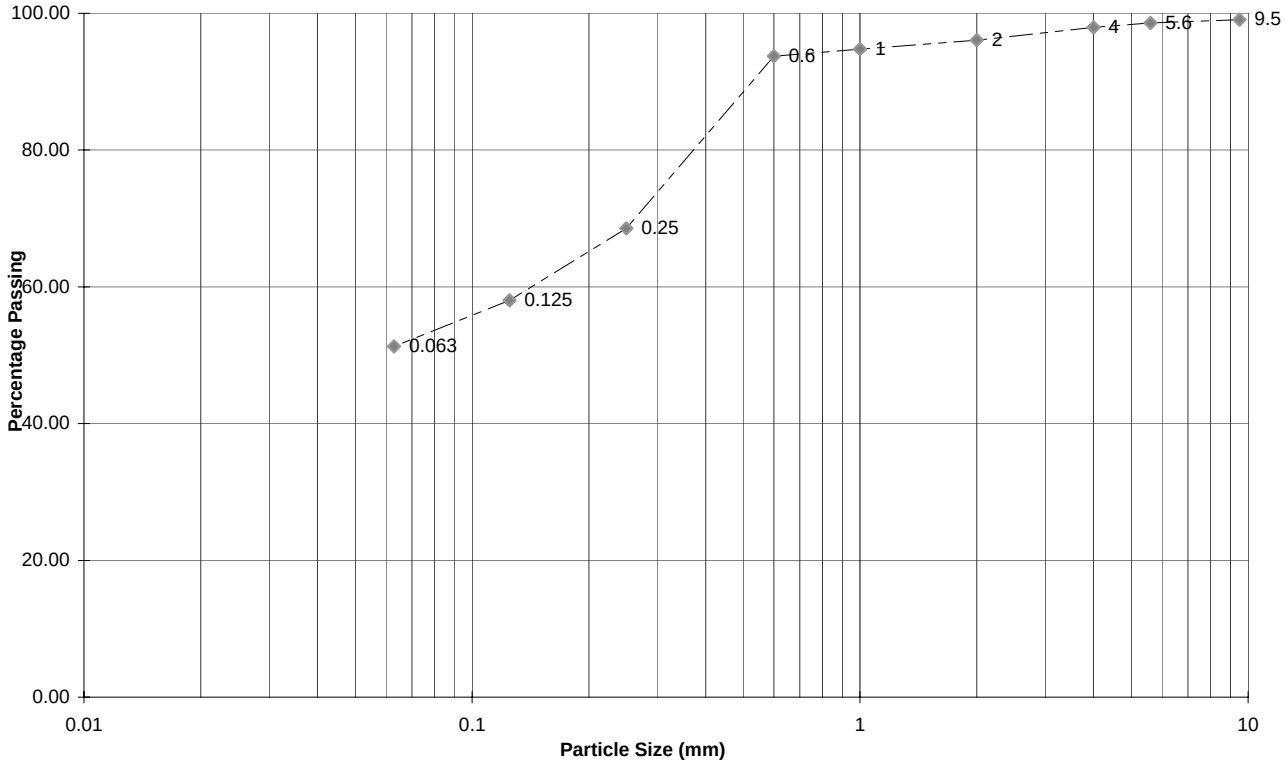
Particle Size Distribution

Particle Size (mm)	% Passing
9.5	99.07
5.6	98.59
4	97.92
2	96.08
1	94.76
600um	93.72
250um	68.55
125um	58.03
63um	51.27

Sample Number 14
Client SLR Consuling Ltd
Sample ID BH4

Particle Proportions			
>60mm	Cobbles	-	%
>2mm	Gravel	3.9	%
>0.063mm	Sand	44.8	%
<0.063mm	Silt & Clay	51.3	%

Description:	slightly gravelly very sandy SILT/CLAY



ALcontrol Geochem

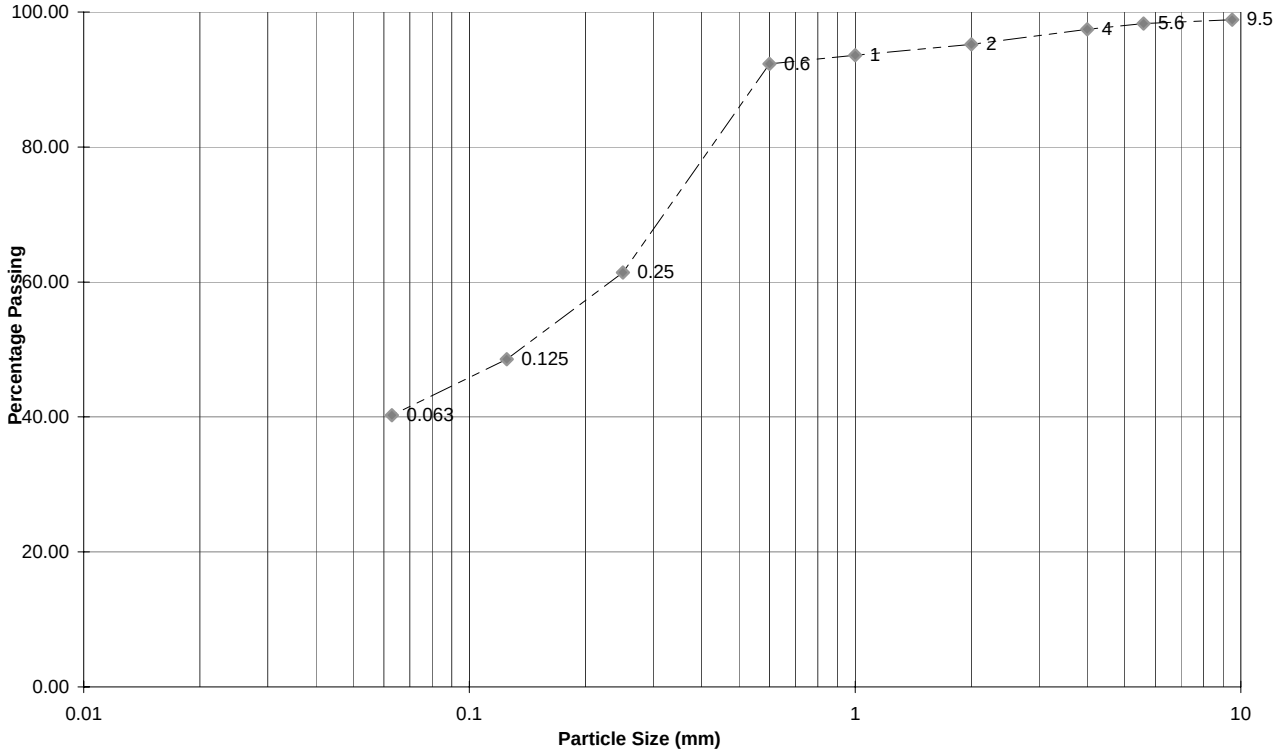
Particle Size Distribution

Particle Size (mm)	% Passing
9.5	98.87
5.6	98.28
4	97.45
2	95.19
1	93.58
600um	92.30
250um	61.43
125um	48.53
63um	40.24

Sample Number 8
Client SLR Consuling Ltd
Sample ID BH1

Particle Proportions			
>60mm	Cobbles	-	%
>2mm	Gravel	4.8	%
>0.063mm	Sand	55.0	%
<0.063mm	Silt & Clay	40.2	%

Description:	slightly gravelly very clayey silty SAND



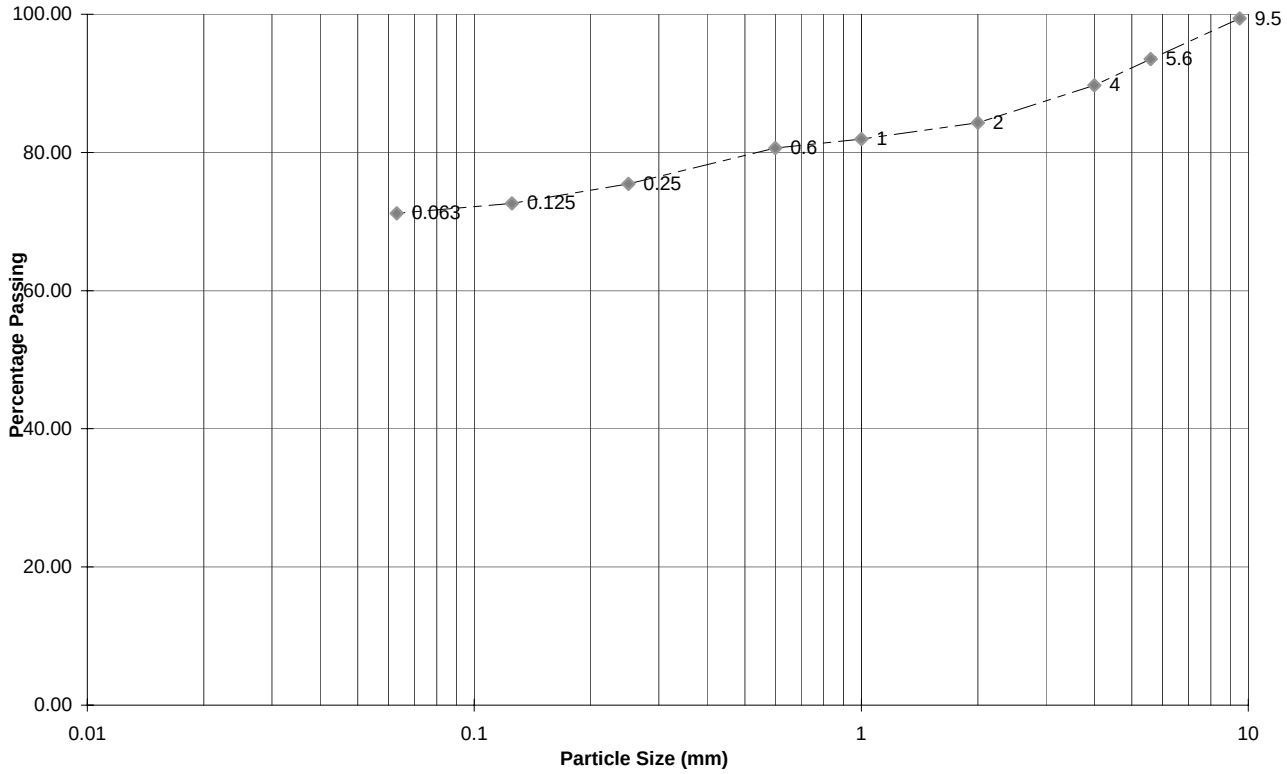
Particle Size Distribution

Particle Size (mm)	% Passing
9.5	99.38
5.6	93.52
4	89.74
2	84.30
1	81.96
600um	80.63
250um	75.43
125um	72.64
63um	71.17

Sample Number 5
Client SLR Consuling Ltd
Sample ID BH1

Particle Proportions			
>60mm	Cobbles	-	%
>2mm	Gravel	15.7	%
>0.063mm	Sand	13.1	%
<0.063mm	Silt & Clay	71.2	%

Description:	sandy gravelly SILT/CLAY



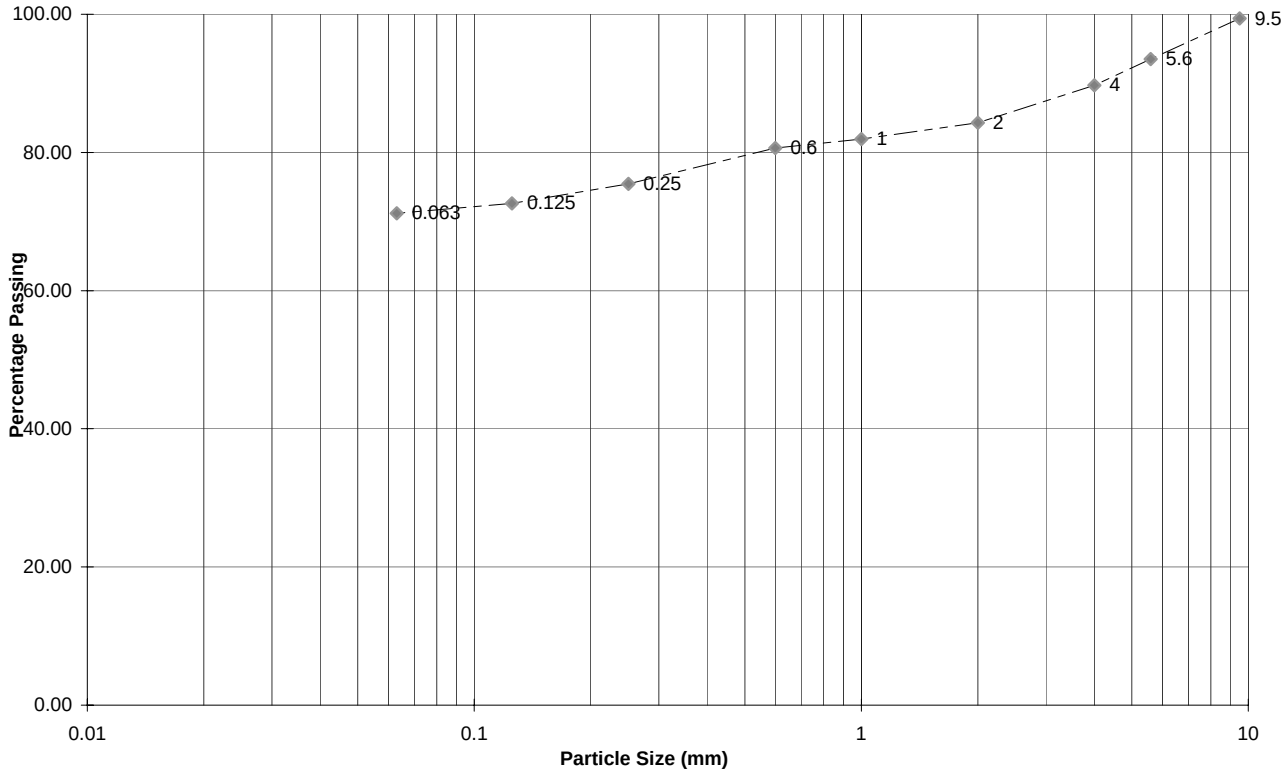
Particle Size Distribution

Particle Size (mm)	% Passing
9.5	99.38
5.6	93.52
4	89.74
2	84.30
1	81.96
600um	80.63
250um	75.43
125um	72.64
63um	71.17

Sample Number 5
Client SLR Consuling Ltd
Sample ID BH1

Particle Proportions			
>60mm	Cobbles	-	%
>2mm	Gravel	15.7	%
>0.063mm	Sand	13.1	%
<0.063mm	Silt & Clay	71.2	%

Description:	sandy gravelly SILT/CLAY



SLR VERSION 3. 'GENERIC ASSESSMENT CRITERIA' (mg/kg)

Chemical	GAC Source	SOM	Residential with plant uptake			Residential without plant uptake	Allotments			Commercial/ Industrial
			pH 6	pH 7	pH 8		pH 6	pH 7	pH 8	
METALS										
Arsenic	SGV 1			20		20		20		500
Cadmium	SGV 3		1	2	8	30	1	2	8	1,400
Chromium	SGV 4			130		200		130		5,000
Lead	SGV 10			450		450		450		750
Mercury	SGV 5			8		15		8		480
Nickel	SGV 7			50		75		50		5,000
Selenium	SGV 9			35		260		35		8,000
Copper	SLR			220		2,300		220		170,000
Zinc	SLR			570		4,200		580		230,000
Vanadium	SLR			250		280		260		7,100
Beryllium	LQM/ CIEH			12		85				2,000
ORGANICS										
Monohydric Phenol	SGV 8	1%		78		22,000		80		22,000
		2.5%		150		34,000		160		43,000
		5%		280		37,000		280		78,000
BTEX COMPOUNDS										
Toluene	SGV 15	1%		3		3		31		150
		2.5%		7		8		73		350
		5%		14		15		140		680
Ethyl Benzene	SGV 16	1%		9		16		18		48,000
		2.5%		21		41		43		

		5 %	41	80	85	
Benzene	S LR	1 %	0.024 (0.068 no inhal)	0.038 (20 no inhal)	0.068	1.7 (450 no inhal)
		2.5 %	0.056	0.087	0.15	3.8
		5 %	0.11	0.17	0.30	7.3

Chemical	GAC Source	SOM	Residential with plant uptake	Residential without plant uptake	Allotments	Commercial/ Industrial
Xylene	SLR	1%	6.3	7.9	30	340
		2.5%	15	19	70	825
		5%	30	38	144	1,700
POLYCYCLIC AROMATIC HYDROCARBONS						
Naphthalene	SLR	1%	7	7	7	290
		2.5%	17	17	17	720
		5%	34	34	34	1,400
Benzo(a)Pyrene	LQM/ CIEH		1.1	1.3		30
Dibenz(a,h)anthracene	LQM/ CIEH		1.1	1.3		30
Fluorene	LQM/ CIEH	1%	38	2,600		59,000
		2.5%	91			
		5%	180			
PETROLEUM HYDROCARBON FRACTIONS						
Aliphatic EC 5-6	SLR	1%	0.36	0.37	17	17
		2.5%	0.64	0.65	30	30
		5%	1.1	1.1	52	52
Aliphatic EC>6-8	SLR	1%	3.8	3.8		
		2.5%	8.5	8.5	≥1,000*	≥1,000*
		5%	16	16		
Aliphatic EC>8-10	SLR	1%	5.0	5.0	720	
		2.5%	12	12	≥1,000*	≥1,000*
		5%	24	24	≥1,000*	
Aliphatic EC>10-12	SLR	1%	43	43	≥1,000*	≥1,000*
		2.5%	100	100		

		5%	200	200		
Aliphatic EC>12-16	SLR		3,200	7,100	3,400	≥10,000*
Aliphatic EC>16-21	SLR		≥10,000*	≥10,000*	≥10,000*	≥10,000*
Aliphatic EC>21-35	SLR		≥10,000*	≥10,000*	≥10,000*	≥10,000*
Aliphatic EC>35-44	SLR		≥10,000*	≥10,000*	≥10,000*	≥10,000*

Chemical	GAC Source	SOM	Residential with plant uptake	Residential without plant uptake	Allotments	Commercial/ Industrial
Aromatic EC>8-10	SLR	1%	6.0	10	15	≥1,000*
		2.5%	15	25	37	
		5%	30	49	≥1,000*	
Aromatic EC>10-12	SLR	1%	4.0	59	4.3	≥1,000*
		2.5%	10	140	11	
		5%	20	270	≥1,000*	
Aromatic EC>12-16	SLR		80	2,000	80	≥10,000*
Aromatic EC>16-21	SLR		700	2,100	710	≥10,000*
Aromatic EC>21-35	SLR		790	2,100	830	≥10,000*
Aromatic EC>35-44	SLR		790	2,100	830	≥10,000*
Aliphatic & Aromatic EC>44-70	SLR		870	2,100	910	≥10,000*
CHLORINATED SOLVENTS						
Carbon tetrachloride	SLR	1%	0.04	0.04		2.5
		2.5%	0.095	0.11		5.9
		5%	0.19	0.21		11
Tetrachloroethane	LQM/ CIEH	1%	0.56	3.6		150
		2.5%	1.3	8.1		330
		5%	2.4	15		620
Vinyl chloride	LQM/ CIEH	1%	0.001	0.001		0.06
		2.5%	0.002	0.0025		0.11
		5%	0.003	0.0045		0.20
Chlorobenzene	LQM/ CIEH	1%	11	33		140,000
		2.5%	25	79		140,000
		5%	50	160		140,000
Dichloroethane	LQM/ CIEH	1%	0.0079	0.012		0.54
		2.5%	0.017	0.026		1.2
		5%	0.033	0.049		2.2

Chemical	GAC Source	SOM	Residential with plant uptake	Residential without plant uptake	Allotments	Commercial/ Industrial
Tetrachloroethene	LQM/ CIEH	1%	1.0	1.5		63
		2.5%	2.3	3.4		150
		5%	4.5	6.6		280
Trichloroethene	LQM/ CIEH	1%	0.13	0.15		6.4
		2.5%	0.31	0.35		15
		5%	0.60	0.67		29
Trichloroethane	LQM/ CIEH	1%	12	13		550
		2.5%	27	30		1,300
		5%	53	58		2,500
Hexachlorobutadiene	LQM/ CIEH	1%	0.0042	0.05		2.0
		2.5%	0.01	0.12		4.7
		5%	0.021	0.23		8.8
Trichloromethane	LQM/ CIEH	1%	0.89	1.7		79
		2.5%	2.0	3.9		180
		5%	3.9	7.5		350
PESTICIDES						
Atrazine	LQM/ CIEH	1%	0.020			
		2.5%	0.049	7.0		150
		5%	0.098			

Notes:

1. Generic assessment criteria in mg/kg dry weight in soil
2. SGV - Soil Guideline Value reports, DEFRA/EA 2002-05. Refer to relevant "CLR", "SGV" or "Tox" report for further details
3. Based on sandy soil as defined in CLR 10
4. Chromium is assumed to be all Chromium (VI)
5. Only cadmium is pH influenced
6. SLR – Version 2 'SLR in-house criteria' produced using CLEA UK model (beta version)
7. SOM – Soil Organic Matter Content
8. No Inhal – Dermal and oral pathways only (i.e. inhalation pathway considered to be removed)
9. * – Health based criteria generated using the CLEA UK model are considerably higher than these values, the values reported are the hazardous waste criteria for 'PRO' (1,000 mg/kg) and DRO (10,000 mg/kg)

This table constitutes the third release (i.e. Version 3) of 'generic assessment criteria' (GAC) to be used by SLR staff for screening purposes in the generic quantitative risk assessment of potentially contaminated land. The values contained in the table are comprised of:

- 'Soil Guideline Values' (SGVs) published to date by the Environment Agency/Defra;

- Selected 'Generic Assessment Criteria for Human Health Risk Assessment' published by LQM/CIEH (Nathanail et al, 2007); and
- SLR-generated values, derived using the beta version of the CLEA UK model (released by the Environment Agency in November 2005).

'SLR' values have been generated following the approaches recommended in CLR reports 9 & 10 (EA/Defra, 2002) and associated material (CLEA briefing notes and CLEA UK Handbook) and are therefore based on health criteria values selected following the hierarchy of preferred sources described in CLR 9. Physico-chemical input parameters for the CLEA UK model were selected from Environment Agency/Defra publications, where available, and authoritative data sources[1].

GAC for chlorinated solvents have been derived using health criteria and do not preclude the presence of 'nuisance level' odour (i.e. exceedance of odour threshold) even in the absence of a direct human health risk.

Petroleum hydrocarbon contamination should be assessed using GAC for indicator compounds (i.e. BTEX compounds, benzo[a]pyrene and naphthalene) in conjunction with the values detailed above for hydrocarbon transport fractions. An additive 'Hazard Index' approach should be employed for the assessment of threshold effect hydrocarbons (i.e. the fractions and TEX). No values are presented for transport fractions 'aromatic EC 5-7' and 'aromatic EC>7-8' as these are comprised solely of benzene and toluene, respectively, and are assessed by consideration of these indicator compounds. Similarly, it is possible to subtract the concentrations of ethylbenzene and 'total xylenes' from the 'aromatic EC>8-10' fraction to avoid double-counting.

GAC for petroleum hydrocarbons have been derived using health criteria and the application of limit values based on hazardous waste criteria. These criteria do not consider visual aesthetics (e.g. staining of soil) or the presence of 'nuisance level' odour (i.e. exceedance of odour threshold) which should also be assessed, especially for residential developments.

This table of GAC are for use within SLR only and will added to as further SGVs are published by Environment Agency/Defra and values are generated in-house for additional contaminants. Future releases will be labelled Version 4, 5….etc. and will supersede all previous versions.

LQM/CIEH Reference:

Nathanail CP, McCaffrey C, Ashmore M, Chemg Y, Gillet A, Hooker P & Ogden RC (2007) *Generic Assessment Criteria for Human Health Risk Assessment*. Land Quality Press, Nottingham. ISBN 0-9547474-3-7

[1] E.g. CRC Handbook of Chemistry and Physics, IUPAC-NIST Solubility Series and US Environmental Protection Agency.

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