JOHNSON POOLE & BLOOMER
LAND CONSULTANTS

REPORT

ON

SITE INVESTIGATIONS

at

EWENNY ROAD INDUSTRIAL ESTATE

MAESTEG

KC709-65/NJW

JOHNSON POOLE & BLOOMER CONSULTANTS
Unit 5, Neptune Court, Vanguard Way,
Cardiff, Wales CF24 5PJ
Tel: 029 20451515 Fax: 029 20451199
E-mail enquiries@jpbwales.co.uk

EWENNY ROAD INDUSTRIAL ESTATE
MAESTEG

SITE INVESTIGATIONS REPORT

This report was carried out in accordance with JPB Quality Management procedures.

Report prepared by:	Signature:	.....
	Name:	R Davies
	Position:	Geologist
Report checked by:	Signature:	.....
	Name:	N J Waite
	Position:	Director
Report approved by:	Signature:	.....
	Name:	N J Waite
	Position:	Director

For the Attention of Mr R Chapman

Bridgend County Borough Council
Civic Offices
Angel Street
Bridgend
CF31 4WB

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CONTENTS

1 INTRODUCTION

1.1 Further to written instructions received from Mr Richard Chapman acting on behalf of Bridgend County Borough Council dated 8 February 2010, we have undertaken a site investigation of the proposed development site known as Ewenny Road Industrial Estate, Maesteg as defined on our Drawing No. G/KC709/03.

1.2 A Desk Study Report has previously been prepared for the site by the Structural Design Department of Bridgend County Borough Council, Reference SCOA05500, dated 9 February 2010, upon which the scope of the site investigation works was based.

1.3 Site investigation works were undertaken in two phases, the initial phase comprising windowless sampling and cable tool boring between 15 and 22 February 2010 and a supplementary phase of works to assess mining stability issues, this phase of works comprising rotary drillholes undertaken between 11 and 18 March 2010.

1.4 In association with the rotary drillhole investigations, liaisons were undertaken with The Coal Authority to obtain mine plan data to assist with the interpretation of the mining investigation.

1.5 This report contains the findings and recommendations based on these investigation works, prepared in the context of the prospective purchase of the site for proposed redevelopment for a possible mixed redevelopment (i.e. possible residential and/or commercial/industrial use).

1.6 The initial findings of these investigation works were originally issued in our Preliminary Report on Site Investigations, Reference KC709-52/NJW dated March 2010, with the conclusions on the mining investigation included in our e-mail report, Reference KC709-61 dated 19 March 2010.

1.7 Whilst confident in the findings of our report we are unable to give assurance they will be accepted by other authorities without question. We therefore advise that where appropriate our report and associated matters are submitted to approving bodies and approval obtained or sought before detailed design, siteworks or other irrevocable action is embarked upon.

1.8 The conclusions reached in this report are necessarily restricted to those which can be determined from the information consulted and may be subject to amendment in the light of additional information becoming available.

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1.12 It should be noted that soil and rock conditions are highly variable and may differ between sampling points and this may affect interpolation. Additional features may exist buried at depth and undetected by investigation. Other information may become available on the conditions of the site not available at the date of this report and thus site assessment may be subject to amendment in the light of such additional information becoming available.

1.13 This report is prepared and written in the context of the purpose stated above and should not be used in a differing context. Furthermore, new information, improved practices and legislation may necessitate an alteration to the report in the whole or in part after its submission. Therefore, with any change in circumstances or after the expiry of one year from the date of this report, this report should be referred to Johnson Poole and Bloomer Limited for re-assessment and, if necessary, re-appraisal.

2 CONCEPTUAL SITE MODEL

2.1 On the basis of the desk study researches undertaken by the Client as part of the Phase 1 Desk Study (paragraph 1.2), the following initial ground model was anticipated:-

- A significant thickness of Made/Disturbed Ground, probably consisting essentially of Colliery Spoil, the thickness probably increasing from west to east across the site.
- A substantial thickness of natural superficial soils overlies the Middle Coal Measures at an horizon above the Cae David seam in the vicinity of the sub-crop of the Two and a Half and Upper Yard Coal seams.
- Old unrecorded workings in these seams may exist beneath the site which could impact on site stability.
- A land use history which could have resulted in ground contamination; including colliery and railway land, coke ovens and more recent mixed industrial use; potential contaminants including metals, PAH's, diesel, VOC's, elevate sulphates and loss on ignition values (i.e. risk of combustion).
- Afon Llynfi abuts the site to the east which could be considered the principle "controlled waters" receptor to any contamination on-site.
- Off-site uses to the north which could exhibit a similar ground model and ground contamination.

2.2 The anticipated Conceptual Site Model based upon the original archival researches is included in the Desk Study Report (paragraph 1.2).

3 SITE INVESTIGATION WORKS

3.1 Objectives of the Site Investigation and Methodology

3.1.1 The initial conceptual site model was used to inform the design of the site investigation. Where chemical analyses data has been obtained for soils, JPBL's Risk Assessment methodology comprises a quantitative risk assessment of contaminant concentrations performed using appropriate risk assessment models and tools such as CLEA Version 1.06.

3.1.2 Where chemical analyses data has been obtained for water, JPBL's Risk Assessment methodology comprises an initial Tier 1 approach which compares potential contaminant concentrations with generic assessment criteria such as the Environmental Quality Standards (EQS), 2004 and the Water Supply (Water Quality) Regulations, 2001.

3.1.3 In order to test and develop the initial CSM, the site investigations had the following objectives:-

- To identify the extent of any Made Ground at the site (potential contaminant source).
- To determine the geotechnical properties of the soils.
- To determine mining conditions and ground stability issues.
- To determine appropriate foundation design solutions for the development.
- To determine buried concrete design.
- To determine pavement/road design parameters.
- To identify the nature, extent and concentration of contaminants in shallow soil.
- To determine what threat the site contaminants pose to off-site human receptors (occupants of adjacent properties).
- To determine what threat the site poses to on-site human receptors (workers and occupants).

3.1.4 In order to achieve these objectives, the investigation comprised a combination of track mounted window sampling and cable tool boring and specialist laboratory testing of recovered soil samples for geotechnical and chemical characteristics, coupled with rotary drillholes to investigate mining stability issues.

3.1.5 These investigations are described in more detail in Section 3.2 of this report.

3.2 Scope of Site Investigation Works

3.2.1 The site investigation works were conducted in general accordance with BS 5930: 1999 in two phases of works between 15 and 22 January 2010 and 11 and 18 March 2010.

3.2.2 The first phase of works comprised:-

(i) 28 No. track mounted windowless sample holes (two being "re-drills") to depths of between 0.20 and 4.45 metres below ground level to assess the load bearing characteristics and ground chemistry of the near surface soil succession (Appendix A).

(ii) 6 No. cable tool boreholes extending to depths of between 6.60 and 12.30 metres below ground level to further assess the load bearing characteristics and ground chemistry of the deeper soil succession (Appendix B).

(iii) installation and monitoring of combined ground gas/groundwater monitoring in 2 No. cable tool boreholes (Boreholes 1 and 4); the results of the limited gas monitoring programme being included in Appendix E.

3.2.3 The second phase of site investigation works comprised:-

(i) 6 No. rotary open hole drillholes sunk to depths of between 31.00 and 46.00 metres to assess the solid geological/mining structure and investigate for the presence of old mine workings; the logs of which are included in Appendix C.

3.2.4 Representative disturbed soil samples were taken from the windowless sample holes and cable tool boreholes for assessment and a selected number submitted for chemical laboratory testing (Appendix D).

3.2.5 The supervision and logging of the site investigation works were carried out in the presence of a Geologist, who examined the ground conditions revealed in-situ and prepared the logs attached in Appendices A, B and C.

3.2.6 The approximate locations of the site investigation works are indicated on our Drawing No. G/KC709/03, whilst initial phase of the location of the rotary drillholes and associated mining data are shown on our Drawing No. G/KC709/04.

4.0 LABORATORY TESTING

4.1 In order to confirm ground chemistry, 33 No. representative samples of the near surface soils were analysed for a detailed suite of contaminants, considered relevant to the site on the basis of the initial Conceptual Site Model (paragraph 2.0) which included analyses in accordance with BRE SD-1 to facilitate buried concrete design.

4.2 30 No. additional soil samples were analysed for pH, water soluble and total sulphate and total sulphur to further assist with buried concrete design.

4.3 15 No. representative samples were also analysed for Hydrocarbons (EPH by GC FID), 7 No. for speciated TPH by GC FID (CWG - UK) and 7 No. for Volatile Organics.

4.4 18 No. soil samples displaying potentially elevated levels of ash, clinker and coal were assessed for Loss on Ignition Values, with 10 No. samples subsequently being subjected to the determinations of Calorific Value.

4.5 8 No. shallow soil samples were also screened for the presence of asbestos fibres.

4.6 The programme of secondary testing including the analyses of 8 No. additional soil samples for a suite of metals only (in the vicinity of Windowless Sample 9).

4.7 In view of the locally elevated metal levels (most significantly levels of Arsenic, Copper, Lead and Zinc), leachability testing to the old NRA methodology was undertaken on 5 No. soil samples displaying the highest total metal levels.

4.8 The results of the chemical analyses are included in Appendix D.

5 GROUND CONDITIONS

5.1 Soil Succession

5.1.1 Detailed logs of the investigation works into the superficial soil succession are included in Appendices A and B, whilst the general ground conditions can be briefly summarised as follows.

5.1.2 The windowless sample holes generally recorded a concrete slab typically 0.15 to 0.25 metres thick within the existing building overlying a thin horizon of "engineering fill", typically comprising brown sandy gravel of stone with concrete.

5.1.3 The "engineering fill" was locally absent and also locally comprised a brown sand, whilst a much greater thickness of concrete 0.65 metres thick was recorded in Windowless Sample 14.

5.1.4 The mantle of Made Ground comprised a variable graded sequence of "colliery spoils" varying in grading from gravelly clays to silty sandy gravel of mudstones, with rare coal and sandstones.

5.1.5 With the exception of Windowless Sample 3, on the extreme north-western margins of the site, the windowless sample holes all terminated within Made Ground.

5.1.6 Windowless Sample 3 proved the base of the Made Ground at 2.60 metres, overlying a soft to firm sandy silty clay.

5.1.7 The cable tool boreholes proved the thickness of Made Ground to vary between 1.80 metres (Borehole 2) to 11.60 metres (Borehole 6) beneath the site; the thickness increasing in a southerly and easterly direction beneath the site.

5.1.8 The results of SPT/CPT's carried out within the Made Ground give highly variable "N" values, probably in part reflecting the gravel/cobble content.

5.1.9 The investigation works did however indicate a general trend of decreasing relative density with depth; "N" values typically being in the range of 8 to 22 at 1.00 metre, reducing to the order of 6 to 15 at 3.00 metres, with the majority of the results less than 13 below this level.

5.1.10 Thus in summary, the Made Ground would typically be considered as displaying a loose to medium density in-situ relative density on the basis of in-situ SPT/CPT, although local exceptions do occur (e.g. an N value of 3 at 3.00 metres in Windowless Sample 23).

5.1.11 Limited investigation of the natural soils beneath the Made Ground was undertaken as part of the investigation of the superficial soils, principally due to the abundance of cobbles and boulders in the natural soils.

5.1.12 The greatest penetration of the natural soils in the cable tool boreholes occurred in Borehole 2, where soft and firm brown sandy gravelly clays were proven to 3.80 metres depth, overlying dense and very dense gravels and cobbles.

5.1.13 In the rotary drillhole investigation, the majority of the natural superficial soils comprised "granular", variably graded sandy gravels and cobbles extending to depths of between 11.50 (Drillholes 3 and 4) and 18.40 metres below ground level (Drillhole 2).

5.2 Solid Geology

5.2.1 On the basis of the published geological plan (paragraph 1.2), the Cae David seam is conjectured to sub-crop beneath the northern site margins and dip in a southerly direction beneath the site; the overlying Two and a Half and Upper Yard seams being conjectured to sub-crop beneath the central and southern reaches of the site.

5.2.2 On the basis of mineshaft sections in the general locality of the site, the stratigraphical succession beneath the site would be expected to be as follows:-

Seam	Thickness (m)	Separation (m)
Upper Yard	0.90	
		4.60 - 13.70
Two and a Half	0.50 - 0.75	
		5.50
Eighteen Inch	0.30 - 0.70	
		9.00 - 15.00
Cae David	0.90	

5.2.3 The Cae David seam is recorded as being extensively worked beneath the site (paragraph 5.2.7), whilst further liaisons with The Coal Authority have revealed no recorded workings within the remaining seams detailed above (paragraph 5.2.2) beneath the site, recorded workings in the (Upper) Yard and Two and a Half, all terminating to the west/south-west of the site.

5.2.4 The Eighteen Inch seam is not recorded as being of workable quality/thickness in the vicinity of the site.

5.2.5 A series of 6 No. rotary open hole drillholes were sunk along the western and southern site margins; the locations of the drillholes being dictated by the presence of existing building(s) upon the majority of the site, the location of services and the known superficial geology; drillholes being located in areas to avoid very thick superficial soils.

5.2.6 Drillhole 1 located upon the north-western corner of the site encountered workings at 23.80 metres depth to the base (rockhead at 13.70 metres), which we interpret to be associated with the Cae David Seam, artesian groundwater being encountered in association with these workings.

5.2.7 Subsequent plotting of the anticipated location of the underground roadway associated with the "old level" beneath the eastern boundary of the site (paragraph 8.2.3) highlighted the possibility that this Drillhole intercepted this main roadway, which could actually lie at a shallower depth than the seam itself.

5.2.8 The indicative locations of this roadway and the approximate (northern) recorded edge of the Cae David workings (taken from Abandonment Plan R10472 received from The Coal Authority) are shown on our Drawing No. G/KC709/04.

5.2.9 Drillhole 2, further east along the northern site boundary did not encounter any obvious workings, although "poor coal", 0.80 metres thick, was recorded at 24.30 metres depth (rockhead proved at 18.40 metres).

5.2.10 On the basis of the geological structure we are of the opinion that this horizon can only relate to the Cae David.

5.2.11 Drillhole 3 located south of Drillhole 1 along the western site boundary recorded workings at 36.00 metres depth (rockhead 11.50 metres depth), again almost certainly related to the Cae David.

5.2.12 Two seams were recorded at shallower depth in Drillhole 3, the seam splits comparing closely with that anticipated from geological records to be the Two and a Half (at 16.80 metres depth) and the Eighteen Inch (at 22.00 metres depth).

5.2.13 The Two and a Half is significantly thinner than anticipated (0.20 metres compared to the recorded thicknesses of 0.50 to 0.75 metres) suggesting the possibility that this seam may have been worked; the workings having closed up.

5.2.14 Drillhole 4 proved rockhead at 11.50 metres and workings (again almost certainly associated with the Cae David) at 44.00 metres depth; three thin seams overlying the Cae David, the lower at 24.20 and 29.30 metres again being interpreted to be the Two and a Half and Eighteen Inch Coals, whilst the upper seam may be the Upper Yard near its sub-crop at a depth of 14.70 metres.

5.2.15 Drillhole 5, located near the south-western corner of the site proved rockhead at 10.80 metres with four relatively thin seams of coal; the lower three being interpreted as the Upper Yard (19.30 metres), the Two and a Half (31.20 metres) and Eighteen Inch (35.10 metres).

5.2.16 This drillhole was not extended to the level of the Cae David, which would have been anticipated to lie at approximately 50 metres depth at this location.

5.2.17 In Drillhole 6, only three seams of coal were recorded in the depth investigated; the second (1.00 metre thick at 21.80 metres depth) being interpreted as the Upper Yard and the third (0.40 metres thick at 37.40 metres depth) being the Eighteen Inch; the Two and a Half apparently being missing at this location, although no direct evidence of workings (as increased drilling rates or loss of flush) being recorded.

5.2.18 On the basis of mine plan data and the results of the rotary drilling, the seams would appear to dip in a southerly direction at a dip of between 9 and 13° to the horizontal, which is compatible with the "regional" dip in this area.

5.2.19 It should be noted that the rotary drilling interpretation has been hampered by significant quantities of groundwater throughout the works.

5.2.20 On the basis of these investigation works, it is concluded that the 0.70 metres thick seam in the earlier Borehole 1 (Earth Science investigation) is probably the Two and a Half and it is unlikely that the 0.80 metres thick seam in their Drillhole 4 is the same seam, it being more likely to be the Upper Yard; the sub-crop location of all seams being further north than shown on the published geological plan.

5.2.21 The drilling works carried out on-site (both recently and historically) have only revealed evidence of "open" (voided) workings in the Cae David seam (at depths of 23.80 to 44.00 metres being below ground level); the depth to this seam (and workings within it) increasing from north to south across the site, although "thinning" and local absence of seams above (Two and a Half and Upper Yard) infer that such seams may have been worked, but the workings have generally "closed up".

5.3 Groundwater Conditions

5.3.1 No groundwater inflows were recorded into any of the windowless sample holes, whilst inflows into the cable tool boreholes were masked by the addition of water to assist drilling.

5.3.2 Perched water was encountered within the engineering sub-base at 0.50 metres in Boreholes 1 and 2, whilst groundwater was recorded at the base of the Made Ground at depths of between 9.20 and 9.80 metres in Boreholes 4, 5 and 6; standing water levels subsequently being recorded at depths of 8.50 to 8.90 metres below ground level.

5.3.3 Standing water levels of 3.17 and 7.60 metres below ground level have subsequently been recorded in Boreholes 1 and 4 respectively.

5.3.4 During the rotary drillholes investigation strong groundwater inflows were encountered within the natural superficial soils at depths of between 4.70 and 8.50 metres, whilst strong groundwater inflows were subsequently recorded in association with workings in the Cae David seam at depths of between 23.00 and 42.70 metres below ground level; the groundwater in the workings in Drillhole 1 being "artesian".

5.3.5 It should be noted that the groundwater regime beneath the site may be subject to seasonal and other variations and as such, different groundwater conditions may be encountered whilst undertaking any future investigations or development works at the site.

6 GROUND CHEMISTRY

6.1 Risk Assessment Approach

6.1.1 The UK framework for risk assessment is going through a period of significant change, with the Environment Agency withdrawing, in August 2008, the existing CLEA (Contaminated Land Exposure Assessment) framework. A new version of the CLEA model (version 1.04) was released in January 2009, followed by subsequent releases of CLEA Version 1.05 in September 2009 and CLEA Version 1.06 in October 2009, although not all of the withdrawn publications and supporting information have been re-released.

6.1.2 On this basis, JPBL's risk assessment approach is constantly changing to coincide with release of documentation during the EA's programme. To this end, in the absence of certain data sets, guidance and supporting information, there is currently no single approach to assessing the risk to human health from soil contamination.

Human Health

6.1.3 The assessment of risk to human health can consider the potential for exposure based on comparison of the results from site specific ground investigation to conservative generic criteria.

6.1.4 Soil guideline values (SGVs) have recently been published by the EA for a limited number of determinands for a single soil type. SGVs are scientific; risk based generic assessment criteria for generic land use scenarios that can be used in the preliminary assessments of the risk to human health provided that the scenario is sufficiently representative of, or suitably conservative for, the conceptual site model. SGVs are currently published for eleven determinands; arsenic, cadmium, nickel, mercury, selenium, phenol, benzene, toluene, ethylbenzene, xylenes and dioxins, furans and dioxin-like PCB's.

6.1.5 The published SGVs are based on a sandy loam soil with 6% SOM (Environment Agency, 2009a). If the soil at the site in question departs from the generic assumptions inherent in the SGV, three options are presented by the EA to the risk assessor:-

- If the soil type is likely to be less protective of receptors, the risk assessor should derive a new GAC (SAC) by adjusting the SGV for soil type and SOM. For example, a sandier, SOM-deficient soil is likely to provide less protection against exposure to volatile sources than that used in the derivation of the SGV.
- If the soil type is likely to be more protective (for example a soil with a higher clay content and greater SOM for the same volatile source), or is sufficiently similar to the SGV assumption, the SGV can be used.
- If the soil type is likely to be more protective, a new GAC (SAC) could be derived (particularly where the representative soil concentration of a chemical on a site exceed an SGV) by adjusting the SGV, thereby providing a less overly conservative screening tool.

6.1.6 Where the SGV is considered inappropriate to represent the site conditions, or where an SGV is not yet published for a determinand, soil assessment criteria (SAC) are derived for the site using CLEA Version 1.06 (released on 5 October 2009).

6.1.7 In view of the limited applicability of the published SGVs (in terms of relevant soils types) as part of this assessment, the published SGVs have not generally been adopted and SACs have been derived for the majority of common inorganic and organic analytical determinands using toxicological data from various sources, including the revised TOX Reports (arsenic, cadmium, nickel, mercury, selenium and phenol, benzene, toluene, ethylbenzene, xylenes and dioxins, furans and dioxin-like PCB's), the previously published TOX Reports (TOX 1 to 25) and the data obtained from the LQM / CIEH publication 2nd edition.

6.1.8 The TOX reports are currently being replaced on a rolling programme by the EA, as and when each new SGV report is published. The EA has stated "that much of the existing information in the TOX reports will not be affected by changes and will continue to be a useful interim resource until we make our new reports available" (EA website).

6.1.9 The (now withdrawn) SGV for lead used a calculation based on blood lead concentrations. It is proposed by the EA that the SGV for lead will be calculated using an index dose in the future, however; the required information for this proposed new approach is not available at the time of writing. On this basis, and in the absence of any other UK approved guidance, the recorded soil lead concentrations at this site have been calculated using the RISC4.0 model, referred to in more detail below.

6.1.10 Using the RISC4.0 model, risk estimates are compared with acceptability criteria at the risk evaluation stage in order to determine their significance for the dermal and ingestion pathways. It is considered that a Human Hazard Index (Quotient) in excess of 1.0, or an increased lifetime cancer risk in excess of one in one hundred thousand (10^{-5}) are considered to be significant. Risk estimates for contaminants exceeding these criteria are considered to indicate that the contaminant poses a human health risk and that remedial action may be required to prevent actual harm.

6.1.11 The RISC4.0 modelling is compliant with the Risk Based Corrective Action (RBCA) philosophy and has been the subject of a comparative bench marking study carried out by the EA. Where the model allows, the input parameters have been adjusted to reflect the currently adopted UK approach.

6.1.12 RISC4.0 is currently used to asses lead (as indicated above), PCBs and the chronic toxicity of cyanide.

6.1.13 The acute toxicity of cyanide has been assessed using comparison to the worst case known fatal dose.

6.1.14 The soil modelling parameters calculated using both CLEA Version 1.06 and RISC4.0 are included in Appendix K.

Groundwater and Leachability

6.1.15 In the absence of published groundwater quality standards, the Freshwater Environmental Quality Standards (EQS) (for direct abstraction to potable supply and for the protection of aquatic life) have been used to assess the concentrations of individual parameters identified in the groundwater samples (if groundwater samples have been recovered in the investigation). EQS derived for DEFRA for specific contaminants, namely anthracene and benzo(a)pyrene, have also been utilised, as published in October 2004 in Annex G Environmental Quality Standards List. Predicted No Effect Concentration (PNEC) values have also been utilised for fluoranthene and pyrene as there are currently no UK EQS values for these determinands. PNEC values relate to EC guidance, as opposed to EQS values, which are specific to the UK.

6.1.16 In addition, reference has been made to The Water Supply (Water Quality) (England and Wales) Regulations 2001 and 1989 where relevant, for drinking water, in the absence of EQS, or related EQS guidance, for specific determinands.

6.1.17 Leachability analyses has been conducted on selected soil samples, in order to determine the likely mobility of the soil contaminants, and whether a threat to surface and groundwaters exists. Leachate concentrations have also been assessed against the same criteria as the groundwater samples, which also includes a similar assessment of alkalinity, where relevant.

6.1.18 Where EQS values are dependant upon the alkalinity of the receiving waters, a regional alkalinity of 0 to 100 mg/litre $CaCO_3$ has been applied and the relevant Tier 1 criteria for this alkalinity used.

6.2 Ground Chemistry - Site Investigations

6.2.1 Whilst conducting the site investigation works, no obvious visual or olfactory evidence of contamination of the sub-soils was identified on-site, although localised discolouration of areas of the ground floor slab of the existing structures, particularly the older structure on the western half of the site, was noted.

6.3 Summary of Soil Chemical Analyses - Human Health

6.3.1 The land use history of the site is such that problematic environmental issues could be anticipated associated with the previous industrial activities, including railway and colliery use, coke ovens and more recent manufacturing processes outlined in the Phase 1 Desk Study prepared by the Client.

6.3.2 In accordance with standard procedures, representative near surface soil samples have been submitted for a detailed suite of potential contaminants based upon the initial Conceptual Site Model, or in the absence of specific contamination sources, a generic suite of typical contaminants.

6.3.3 In deriving the Soil Assessment Criteria (SAC), this site has been assessed for a "residential with home grown produce" end use, the most sensitive potential site use and it has been considered as one averaging area. The exposure pathways considered within this assessment include:-

- Direct ingestion of soil and dust;
- Ingestion of home grown produce and soil attributed to produce;
- Dermal contact with soil and dust (indoor and outdoor);
- Inhalation of indoor and outdoor dust;
- Inhalation of indoor and outdoor vapours.

6.3.4 The assessment has been based upon an end user considered to be the most conservative for the above end use; a female child of age classes AC1 to AC6.

6.3.5 The laboratory testing has revealed highly variable pH and Organic Contents for the shallow soils, as well as significant variations in soils type (granular "engineering fills" and finer grained, locally more cohesive "colliery soils") and so a "sensitivity analyses" has been carried out to determine the most critical site conditions for human health risk assessment using CLEA 1.06; the most critical situation on-site relating to the more granular soil horizons, with lowest Organic Matter levels.

6.3.6 Thus the soils properties selected for the risk assessment are "sandy silty loam" with the pH and Soil Organic Matter (SOM) adjusted to reflect the typical site conditions of pH 9.40 and a SOM of 8.2%.

6.3.7 A summary of the Human Health Risk Assessment results is included in Appendix J.

6.3.8 Comparison of the reported concentrations with the calculated SAC's using CLEA Version 1.06 indicates the only exceedance of the calculated SAC were:

- 6 No. exceedances for Arsenic; the highest value of 210 mg/kg (compared with the calculated SAC of 32.40 mg/kg) being recorded at 0.70 metres in Windowless Sample 9 within the Colliery Spoil.
- 1 No. exceedance for Cadmium, with a value of 6.2 mg/kg (compared with the calculated SAC of 5.18 mg/kg) also being recorded at 0.70 metres in Windowless Sample 9 within the Colliery Spoil.
- 1 No. exceedance for Zinc, with a value of 6,800 mg/kg (compared with the calculated SAC of 3,745 mg/kg) also being recorded at 0.70 metres in Windowless Sample 9 within the Colliery Spoil.
- 1 No. exceedance of Benzo(a)pyrene, with a value of 3.8 mg/kg (compared with the calculated SAC of 1.00 mg/kg) being recorded at 0.10 metres in Windowless Sample 12 within the shallow "engineering fill" adjacent to the Petroleum Store.

6.3.9 Two positive occurrences of Trichloroethylene with values of 55 and 6.6 mg/kg were recorded at 0.25 and 0.50 metres respectively in Windowless Sample 25 located in the old "pickling shop". These values both exceed the Tier 1 criteria of 0.672 mg/kg published by LQM/CIEH (but see paragraph 6.3.12).

6.3.10 A lower value of 1.4 mg/kg total VOC was obtained at 0.90 metres depth at this location.

6.3.11 RISC4.0 modelling of the dermal and ingestion pathways has calculated the Human Hazard Index (Quotient) and lifetime cancer risk for Lead and Cyanide, to be below 1.0 or less than one in one hundred thousand respectively, with the exception of the elevated Lead level of 2,200 kg/mg in Windowless Sample 9 at 0.70 metres. On this basis, the reported concentrations of these parameters are not generally considered to pose an increased risk to human health, with the exception of the single elevated Lead level in Windowless Sample 9.

6.3.12 RISC4.0 has also been used to assess the elevated levels of Trichloroethylene; only the higher value of 55 mg/kg giving a Human Hazard Index (Quotient) to be above 1.0 or lifetime cancer risk greater than one in one hundred thousand respectively. On this basis, only the shallowest sample at Windowless Sample 25 would be considered to pose an increased risk to human health.

6.3.13 With respect to Total Petroleum Hydrocarbons, the representative samples screened for TPH indicated relatively low EPH levels varying between 13 and 320 mg/kg with a single higher value of 540 mg/kg in the engineering fill in Windowless Sample 12, adjacent to the Petroleum Store.

6.3.14 Secondary analyses undertaken to speciate TPH in the samples exhibiting the highest EPH levels gave total speciated Aliphatic and Aromatic Hydrocarbons ranging between <10 and 230 mg/kg (the highest level being recorded at 0.25 metres depth in Windowless Sample 1); none of the speciated hydrocarbon fractions exceeding the calculated SAC (Appendix K).

6.3.15 None of the shallow soil samples screened for asbestos fibres exhibited evidence of such fibres.

6.3.16 Laboratory testing on samples exhibiting notable concentrations of ash and coal fragments in the Colliery Spoil has exhibited Loss on Ignition values varying between 6.2 and 48%, with a mean value of 26% compared to our in-house trigger value of 20%.

6.3.17 Calorific value determination on samples displaying the highest Loss on Ignition Values, gave relatively low values ranging between 2.0 and 5.2 MJ/kg (the highest value relating to the maximum Loss on Ignition Value of 48% in Windowless Sample 2 at 0.50 metres); all results lying below the threshold of 7.0 MJ/kg at which there is considered to be an unacceptable risk from smouldering (ICRCL 61/84).

6.4 Tier 1 Risk Assessment - Leachability Analyses

6.4.1 In conjunction with this site investigation, leachability testing (to the former NRA test methodology) has been conducted on 5 No. samples of the Made Ground displaying elevated metal levels.

6.4.2 The individual leachate metal concentrations in the samples analysed lie below their respective EQS values (where published) or The Water Supply (Water Quality) Regulations.

7 GROUND GAS

7.1 General

7.1.1 In view of the presence of Made Ground at the site, gas monitoring has been initiated in standpipes installed in two of the recent boreholes.

7.1.2 The assessment of ground gas as a potential constraint to development has been the subject of a great deal of research and published guidance. Ground gas can be a concern for several reasons; flammable gases may cause an explosion, build-up of gases within poorly ventilated areas may lead to asphyxia or toxic gases may cause harm to those exposed to them. Some physical properties of ground gases are tabulated below.

Gas	Explosive Range	Density at 20°C (kg/m^3)	Toxicity (% by volume in air)*
Methane	5 - 15% by volume	0.72	30 (low)
Carbon Dioxide	N/A	1.98	0.5 (high)
Carbon Monoxide	12.5 - 74.2% by volume	1.25	0.02 (high)
Hydrogen Sulphide	4.2 - 46% by volume	1.54	0.001 (high)

* short term exposure limits

7.1.3 Gas levels were measured using a portable Geotechnical Instruments GS2000 detection unit, recording methane, carbon dioxide, oxygen, hydrogen sulphide, carbon monoxide concentrations, flow rate (via an external pod) and relative and atmospheric pressure. The results of the limited gas monitoring to date are presented in Appendix E.

7.2 Analyses of Results

7.2.1 Standpipes have been installed in Boreholes 1 and 4 and have been monitored three times since their installation; the results of the gas monitoring being included in Appendix E.

7.2.2 The standpipes have had their response zones sealed in the Made Ground.

7.2.3 Methane gas concentrations ranging between zero and 0.10% have been recorded.

7.2.4 Carbon Dioxide gas concentrations ranging between 0.70 and 5.80% have been recorded.

7.2.5 Recorded Flow Rates have remained at zero during the limited monitoring to date.

7.2.6 Hydrogen Sulphide concentrations of zero ppm have been recorded during the monitoring exercise.

7.2.7 Carbon Monoxide concentrations ranging between 3 and 30 ppm have been recorded during the monitoring exercise.

8 DISCUSSION AND RECOMMENDATIONS

8.1 Introduction

8.1.1 It is understood that the purchase of the site is under consideration for future redevelopment, although no details are available regarding the nature of the redevelopment.

8.1.2 However it is understood that this could comprise a mixed use development including residential and commercial/industrial properties and the following recommendations have been made on this basis.

8.1.3 Previous archival researches (paragraph 1.2) indicated a solid ground structure which presents a potential risk of shallow mining influencing site stability and thus for clarity, the issues of mining stability, foundation design and ground chemistry have been dealt with separately below.

8.1.4 It should be noted that, at the request of the Client, the technical assessment of mining stability issues includes both the main subject site (the previous Cooper Standard site) and the industrial development area to the north (i.e. the total site area indicated on The Coal Authority's Coal and Brine report included in Appendix F).

8.2 Mining Stability

8.2.1 The following comments and recommendations on mining stability issues are based solely on archival researches for the previous industrial development land, north of the main site area, whilst recommendations for the main site area (the old Cooper Standard site) take into account the findings of the site investigation works detailed in Paragraph 3.2.3.

8.2.2 Mining stability issues arise with respect to the recorded presence of two old mine entries on the overall site area and the potential presence of old mine workings in several seams at various depths beneath it.

8.2.3 The Coal Authority has records of a single mine entry (and old adit) within, or within 20 metres of, the boundaries of the main site area, with a second mine entry located within the industrial area to the north; this mine entry being the Oakwood Colliery No. 1 Downcast shaft.

8.2.4 The Coal Authority mine entry datasheets (Appendix G) indicate that they have "no treatment details" for the old adit upon the north-eastern reaches of the main development site, whilst the main Oakwood Colliery Shaft is advised to be 230 metres deep; the shaft being reported to have been "filled to an unknown specification".

8.2.5 It is recommended that a "conservative" approach be taken in terms of the potential future instability of the mine entries, and the associated risk(s) that they could pose, and it should be ensured that the mine entries do not present a risk to ground stability and any structure proposed in close proximity to them.

8.2.6 In our opinion there will be a need to undertake some form of future ground stabilisation works at the site which will necessitate either treating (stabilising) the infill materials to the mine entries in a controlled manner and/or capping or zone grouting, as appropriate; depending on the intended land use in close proximity to the mine entries.

8.2.7 It is normal "good practice" to plan the site layout so that any recorded mine entries do not lie beneath, or within the curtlage of any individual properties (particularly residential properties that would at some stage be sold on the open market).

8.2.8 With regard to the old adit upon the north-eastern reaches of main site area, the "mouth" of the adit will lie at significant depth below existing ground level (having pre-dated the substantial overfilling of the site); the greatest risk of instability probably occurring in association with the (open) roadway from the adit (paragraph 5.2.7; Drawing No. G/KC709/04).

8.2.9 Thus it is recommended that the adit and associated roadway be searched for and treated by systematic grid (zone) drilling and grouting.

8.2.10 With regard to the main Oakwood Colliery shaft present upon the site area to the north, in the absence of information to the contrary, it should be concluded that this shaft presents a risk to ground stability and should be treated to a specification, compatible with the intended land use in its proximity.

8.2.11 On the basis of the anticipated ground conditions in the vicinity of the shaft (relatively deep Made Ground and superficial soils to a depth of the order of 17.00 metres based upon the published shaft section), it is anticipated that any "shaft cap" over the shaft would need to be constructed within granular superficial soils.

8.2.12 Thus it is recommended that the shaft be stabilised by drilling and pressure grouting the infill materials and a "zone grouting" exercise be undertaken around/above the mouth of the shaft, and consideration given to disposing with the need for a shaft cap, depending upon the proposed land use.

8.2.13 With regard to the stability of site with respect to past underground mining, the drilling works carried out on the main site area (both recently and historically) have only revealed evidence of open (voided) workings in the Cae David seam (at depths of 23.80 to 44.00 metres below ground level), the depth to this seam (and workings within it) increasing from north to south across the site.

8.2.14 At the shallowest proven depth of workings in the Cae David (Drillhole 1), we are of the opinion that it is marginal as to whether the workings present a theoretical risk to surface stability (adopting a worst case scenario of an open roadway in the workings 1.20 to 1.50 metres high) but due to the increased thickness of drift (and hence reduced "rock cover"), the risk of instability would theoretically increase eastwards along the northern site boundary.

8.2.15 At Drillhole 3, the workings within the Cae David are sufficiently deep not to present a risk to site stability and similarly further east (i.e. below the south-eastern corner of the very old works building, south of the adit location), even assuming a drift thickness of circa 20 metres, such workings would not present a significant risk to site instability.

8.2.16 Thus only a relatively small area of the site (extreme north-eastern corner), which includes the roadway from the old adit, would be at theoretical risk from the Cae David workings which would warrant further more detailed assessment after demolition (and ideally when a development layout was available).

8.2.17 Two other seams (the Two and a Half and Upper Yard) occur at sufficiently shallow depth beneath parts of the site to theoretically present a risk to site stability if workings have occurred and open workings/roadways exist.

8.2.18 However no evidence of open workings has been revealed, although reduced seam thicknesses (and apparent local absence of the Two and a Half seam in Drillhole 6) infer that localised workings may have occurred but have closed up, with minimal voiding.

8.2.19 Thus in summary with respect to mining stability issues, we conclude that:-

- A small risk of instability associated with Cae David workings exists on the north-eastern corner of the site which warrants further consideration.
- A potential risk to surface stability exists in association with the main roadway from the old Adit located on the north-eastern site boundary.
- The location of the latter will potentially impose a very localised constraint on-site layout in any future residential development as it is generally acknowledged that no mine entry (even after treatment) should lie within the curtilage of an individual private property.
- This adit will need to be searched for and treated as part of future development proposals.
- Whilst the risk of instability exists associated with possible old workings in the Two and a Half and Upper Yard seams, the risk of open workings requiring significant quantities of grouting to ensure site stability is, in our opinion, small.
- A contingency for local treatment of working in the Cae David, Two and a Half and Upper Yard seams should be made, although the costs associated with the latter two seams are, in our opinion, likely to be principally associated with proof drilling to confirm lack of open voiding (rather than large grout quantities).
- With regard to the un-investigated site to the north, the only significant risk of mining instability relates to the main Oakwood Colliery Shaft (on the western site margins) and possible "shallow" workings in the Cae David beneath the extreme southern site margins.
- The majority of the development area to the north of the main (investigated) site area is unlikely to be affected by shallow mining, although this will need to be confirmed by site specific investigations.

8.3 Foundation Design

8.3.1 With regard to the load bearing characteristics of the near surface soils and due to the thickness of the Made Ground on the vast majority of the site and its variable relative density, the use of conventional spread foundations on the site for residential or commercial premises cannot be recommended due to the risk of unacceptable total or differential settlement.

8.3.2 Thus it is recommended that one of the following founding options be considered, depending upon the nature of the development (i.e. size of structures, the structural loads and the sensitivity of the structures to differential settlement):-

- the incorporation of a controlled earthworks exercise (excavation and re-compaction/replacement) in association with the demolition works to provide an engineered surface within which structures can be founded.
- the use of in-situ ground improvement techniques (such as vibratory stabilisation), facilitating the use of lightly reinforced foundations developing bearing pressures of upto 125 kN/m^2 after treatment.
- the transfer of structural loads to suitable natural soils beneath the Made Ground, requiring the use of piled foundations on the vast majority of the site.

8.3.3 It is anticipated that a controlled earthworks exercise would be sufficient to allow the construction of relatively lightweight two storey residential structures and lightweight, steel framed industrial buildings on lightly reinforced foundations, whilst in-situ ground treatment or piling would be required for heavier "commercial" structures.

8.3.4 On the basis of mining stability issues, provided the necessary proof drilling/ stabilisation works are carried out, the use of nominal reinforcement in foundations (to provide a basic span/cantilever facility) is considered adequate to accommodate the potential risk of minor residual mining subsidence.

8.3.5 The only potential exception to this is considered to be in the immediate locality of the old mine adit located upon the north-eastern reaches of the main site.

8.3.6 Subject to the findings of the stabilisation works to the adit/roadway in the Cae David seam, it may be necessary to consider local upgrading of foundations to raft foundations for proposed residential structures in the immediate vicinity.

8.3.7 Whilst the results of combustibility tests indicate there is a relatively low risk of smouldering/combustion of the Made Ground on-site (paragraph 6.3.17), a controlled earthworks exercise would have the added benefit of mitigating the potential risk of combustion should more coaly horizons exist near surface.

8.3.8 The suspected location of an old (historic) culvert under the site will act as a potential constraint on development and may necessitate the use of piled foundations for any structures located in its immediate vicinity.

8.3.9 If this is the case, more robust (intensive) probe drilling/grouting would be required beneath proposed piled structures.

8.4 Buried Concrete Design

8.4.1 Representative soil samples have been submitted for pH and sulphate analyses and the results indicate near neutral to slightly alkaline pH values, typically ranging between 8.40 and 9.90 across the site, with local values upto 11.40.

8.4.2 Highly variable sulphate levels have been recorded across the site; water soluble sulphate concentrations generally lying below 0.5 g/litre but with values locally upto 1.20 to 2.40 g/litre, whilst Total Sulphate levels typically lie below 0.20% but with locally higher values upto 0.75%.

8.4.3 Low total sulphur levels have been recorded in the majority of soils (generally less than 0.10%) but with locally much higher values of upto 1.15% (in Windowless Sample 23), indicating that when taking Total Sulphate levels into account, Total Potential Sulphate is locally a potential design criteria for buried concrete.

8.4.4 The highest total and water soluble sulphate and total sulphur levels commonly occur beneath the more easterly "new extension" to the existing buildings (Windowless Samples 20 to 24 inclusive).

8.4.5 In accordance with BRE SD-1, 2005, on the basis of the identified pH and sulphate levels, shallow buried concrete would typically need to be designed to Design Sulphate Class DS-2 and the site allocated an ACEC classification of AC-2s due to the site being classified as brownfield with static groundwater conditions.

8.4.6 However higher Total Sulphur levels have locally been recorded, particularly on the eastern site reaches (Windowless Samples 20 to 22), which when taking account of the total sulphate levels, indicate conditions where Total Potential Sulphate is a potential design criteria.

8.4.7 Soils in this area exhibit higher Total Sulphur levels (upto 1.15%) which, when taking account of the Total Sulphate levels, suggest that Total Potential Sulphate (of 1.50 to 2.60%) is a potential design criteria.

8.4.8 These levels of Total Potential Sulphate would require upgrading of buried concrete design to the use of Design Sulphate Class DS-5 and the use of an ACEC Classification of AC-4s in this area.

8.4.9 Thus it is recommended that, when more details of the Development are known, the Designer review the risk of disturbed soils from the Colliery Spoil coming into contact with buried concrete, and the need to design against Total Potential Sulphate.

8.5 Environmental Issues

8.5.1 The site investigation works have confirmed the validity of the initial Conceptual Site Model in terms of the overall ground model.

8.5.2 The land use history of the site is such that problematic environmental issues could reasonably be expected and local problematic conditions have been revealed.

8.5.3 However the vast majority of the analyses have identified a ground chemistry generally within the calculated SAC for a "residential with home grown produce" environment indicating that general and widespread mitigation measures are not required to ensure the human health of long term site users/site occupiers.

8.5.4 However local exceedances of the SAC have been recorded which would present a risk to human health, where direct contact with soils was possible (i.e. within garden /soft landscaped areas).

8.5.5 In terms of the elevated metals in Windowless Sample 9 and the VOC's in Windowless Sample 25, it is recommended that these local "outliners" be fully investigated and appropriate mitigation measures implemented.

8.5.6 With regard to the elevated VOC's in Windowless Sample 25, this is known to be an area of concern and allowance should be made for delineating and mitigating (removing or treating) these contaminants.

8.5.7 With regard to the elevated metals in Windowless Sample 9, the results of leachability testing indicated low leachable metal levels (below the relevant EQS or Drinking Water Standards, where direct comparison is possible) and thus such materials are considered to pose a low risk to controlled waters.

8.5.8 Thus, subject to the detailed development layout, it may be acceptable to leave these soils in-situ, particularly if they occur beneath a proposed building.

8.5.9 Whilst several elevated Arsenic levels have been recorded, the majority (excluding Windowless Sample 9) of these occur within the shallow mantle of "engineering fill" upon the southern reaches of the site which may at least in part reflect a "natural origin" in the constituent rocks. Also, it is likely that at least some of these materials will be removed during the site clearance works.

8.5.10 Thus subject to final design levels and layout, it is considered that the engineering fills displaying "elevated" Arsenic levels could be mitigated by their selective re-use beneath buildings and hardstanding areas, remote from main service runs.

8.5.11 Beneath proposed buildings and hard landscaped external areas (access road and parking areas) where no direct contact with the soils is possible, no risk to human health exists and no mitigation measures are considered necessary.

8.5.12 On the basis of the proven ground chemistry, normal levels of PPE are considered appropriate for construction workers.

8.5.13 With regard to protection of buried constructional materials, the design of buried concrete has been dealt with in Section 8.4, whilst with respect to "plastic" ducting, the general absence of significant "hydrocarbon" contamination implies that no general upgrading of "ducting" would be required (provided no hydrocarbon contaminated soils are identified during groundworks), with the likely exception of the area of elevated VOC's (subject to the mitigation measure implemented in this area).

8.5.14 Whilst no visual/olfactory evidence of hydrocarbon contamination was identified during siteworks, the metal and TPH levels locally exceed the "strict" WRAS guidelines in relation to protection of potable water supplies.

8.5.15 Thus the local water supply company would need to be approached with regard to the need for any mitigation measures, in particular the need for upgrading of pipework to "protectaline" or similar.

8.5.16 However in our opinion, it is considered that "mitigation" measures (if any are required at all) could be limited to the use of clean backfill to such pipework (provided the area of VOC is "remediated"), although this would need to be agreed with the relevant water supply company.

8.5.17 Whilst locally high Loss on Ignition values have been obtained in the Colliery Spoil, the results of Calorific Value determination indicate that these materials are not susceptible to "combustion", and thus no specific mitigation measures are considered necessary, although it would be prudent to ensure that power cables are isolated from the indigenous Made Ground.

8.5.18 With respect to off-site disposal of excess constructional arisings on the basis of the prevailing ground chemistry, this is unlikely to be generally problematic, although it may be necessary to carry out WAC testing to confirm the "waste classification".

8.5.19 This requirement would particularly be the case for arisings from the area off Windowless Sample 9 exhibiting elevated metal levels.

8.5.20 BRE 211 indicates that "basic Radon requirements are necessary in any new residential premises" unless a site specific Radon report is obtained from the BGS.

8.5.21 Assessment of the limited ground gas monitoring in accordance with the NHBC Traffic Light System indicates an Amber 1 site classification, reflecting the elevated Carbon Dioxide levels in the boreholes.

8.5.22 Thus it is recommended that the sub-structure of any proposed dwellings be designed to incorporate "mitigation measures" to satisfy such a "site characteristic".

8.5.23 It is however recommended that the results of the ground gas monitoring exercise and "Site Categorisation" be confirmed and agreed with the local Environmental Health Officer and NHBC, prior to undertaking any irrevocable design or construction works at the site.

8.5.24 In terms of the wider environment, leachability analyses undertaken on samples of the Made Ground exhibiting elevated total metals indicated low leachable concentrations and no exceedances when compared to the published EQS and "Drinking Water" Standards.

8.5.25 Thus provided local mitigation measures are undertaken in the vicinity of the old "pickling area" (paragraph 8.5.6), and on the basis of the proven ground chemistry, the site is not considered to present a significant risk to controlled waters.

9 SUMMARY

9.1 The presence of an old mine adit beneath the north-eastern reaches of the main site area, and the abandoned downcast shaft of the Oakwood Colliery upon the industrial area to the north will impose localised constraints on site development in their immediate vicinity.

9.2 It is recommended that both mine entries be located and stabilised in accordance with a specification compatible with the proposed land use in their immediate locality.

9.3 Intrusive investigation works have identified a potential risk to site stability upon the north-eastern reaches of the main site area associated with old workings within the Cae David seam, whilst elsewhere the risk of ground instability associated with past mining is considered to be low.

9.4 The potential redevelopment area, north of the main site area (paragraph 8.1.5) is unlikely to be at risk from shallow mining workings, other than in association with possible workings in the Cae David encroaching within the southern reaches, although this will need confirmation by intrusive investigation.

9.5 Due to the thickness and relatively variable nature of the mantle of Made Ground, the use of conventional spread foundations is not generally recommended.

9.6 Thus subject to the nature of the proposed structures, it is envisaged that one of the following founding options would be required:-

- adoption of a controlled earthworks exercise upon which structures (particularly residential structures) could be founded.
- use of in-situ ground improvement (such as vibratory stabilisation).
- use of piled foundations for more heavily loaded commercial structures.

9.7 The proven ground chemistry is such that general mitigation measures are not considered necessary in the context of the risk to human health.

9.8 However local mitigation of the elevated VOC's in the area of the old "pickling area" is recommended.

9.9 No constraints/limitations on the re-use of site arisings on-site is considered necessary, provided no significant hydrocarbon contamination is identified during groundworks and arisings from the area of Windowless Sample 9 or the "engineering fill" displaying "elevated" Arsenic levels are not re-used in garden areas.

9.10 If excess constructional arisings are to be disposed off-site, the classification of "waste" and cost of off-site disposal should be clarified with the Environment Agency/Landfill Operators, although off-site disposal is not considered to be problematic on the basis of the proven ground chemistry (with the possible exception of shallow arisings from the vicinity of Windowless Samples 9 and 25).

9.11 Due to current legislation it will probably be necessary to undertake Waste Acceptance Criteria (WAC's) to classify excess constructional arisings before it can be disposed off-site.

9.12 Basic protective measures are considered necessary with respect to the naturally occurring Radon, whilst the site is classified as Amber 1 on the basis of ground gas monitoring undertaken.

9.13 This summary should not be read in isolation or out of context from the foregoing report.

9.14 We trust this report meets with your requirements but if you have any queries, please do not hesitate to contact the undersigned.

R Davies BSc (Hons)
Geologist

N J Waite BSc CGeol FGS
Director

APPENDIX A

Windowless Sample Logs

Works

DH 1

DH 2

DH 3

DH 4

DH 5

DH 6

Tanks

Tanks

112.8m

MP 7.5

Tank

El Sub Sta

Factory

Factory

Tank

1

2

3

4

The Bungalows

9.2m

Club

OAKWOOD DRIVE

118.9m

Shelter

Drain

Oddfellows Rest (PH)

Shelter

Nant y Twlc

Nant y Twlc

106.1m

Hall

Track

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OS Mastermap Base Supplied By Bridgend County Borough Council/Cyngor Bwrdeistref Sirol Pen-y-Bont ar Ogwr Ref: SS8690

KEY

Drillhole

Drillhole location (ESP July 1999)

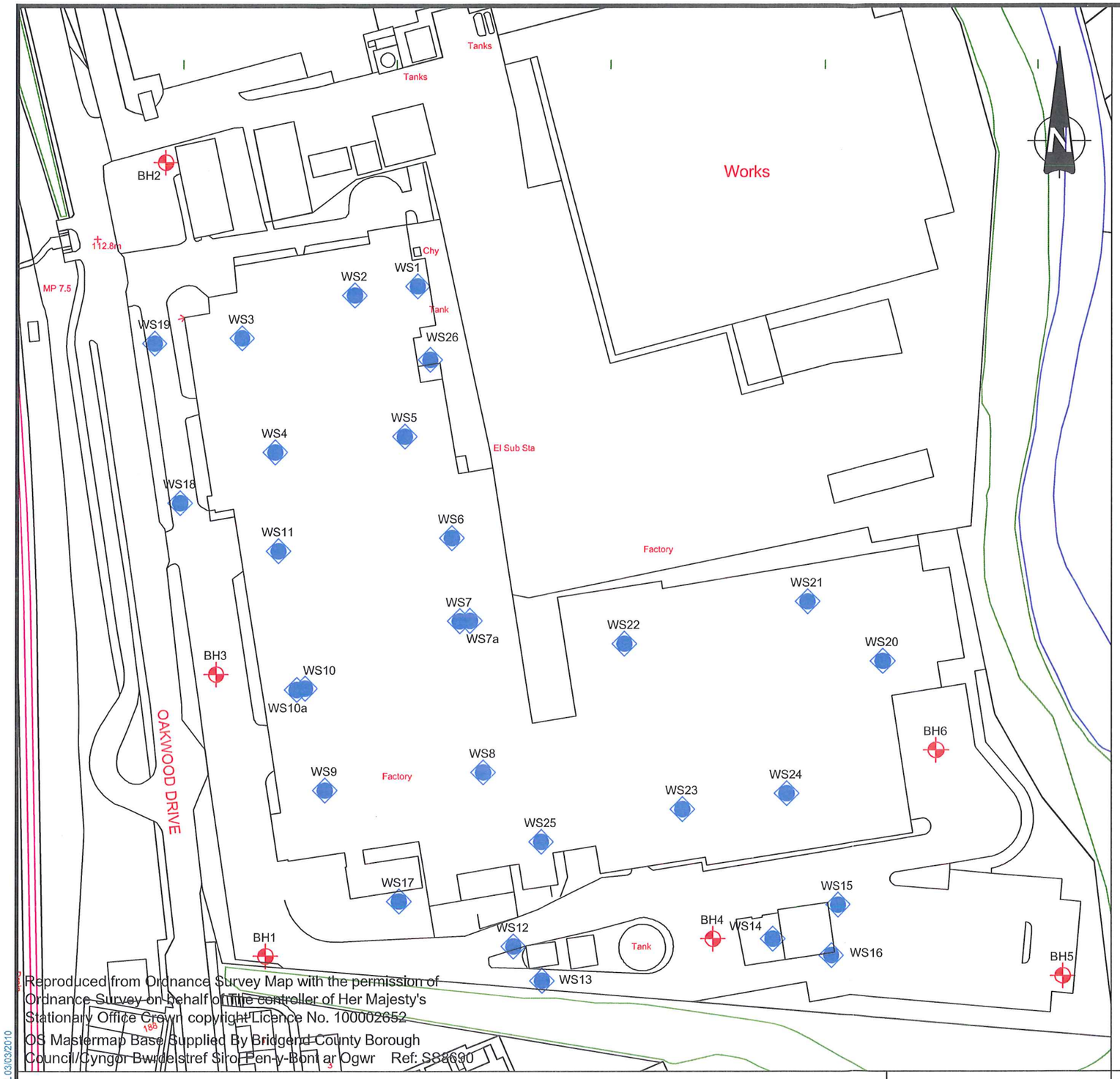
Approximate northern extent of old workings in Cae David from Coal Authority Plan R10472 (Sheet 1 of 9).

Approximate location of old adit and main roadway from Coal Authority Plan R10472 (Sheet 1 of 9).

JOHNSON POOLE & BLOOMER LIMITED
LAND CONSULTANTS

Engineer RD	Client Bridgend County Borough Council		Title Approximate Location of Mining Investigation Locations and Mine Plan data
Checked NJW	Project Ewenny Road Industrial Estate, Maesteg		
Approved NJW	Date Febuary 2010	Scale 1:1000 @ A3	Drawing G/KC709/04

KC709 04 EWENNY ROAD FINAL 23/03/2010



Location	Easting	Northing	Level m AOD
BH1	286119.621	190441.411	112.25
BH2	286095.860	190626.225	112.68
BH3	286107.870	190507.063	112.55
BH4	286224.085	190445.437	112.59
BH5	286305.977	190436.785	112.40
BH6	286276.383	190489.400	112.59
WS1	286154.914	190597.371	112.89
WS2	286140.228	190595.255	112.92
WS3	286113.867	190585.285	112.90
WS4	286121.739	190558.741	112.89
WS5	286151.946	190562.385	112.88
WS6	286163.053	190538.799	112.86
WS7	286164.902	190519.462	112.83
WS7a	286167.272	190519.531	112.84
WS8	286170.395	190484.270	112.81
WS9	286133.360	190480.054	112.85
WS10	286128.710	190503.797	112.84
WS10a	286126.801	190503.483	112.85
WS11	286122.521	190535.760	112.86
WS12	286177.493	190443.692	112.15
WS13	286184.251	190435.691	112.26
WS14	286238.040	190445.448	112.57
WS15	286253.295	190453.388	112.67
WS16	286251.706	190441.608	112.70
WS17	286150.707	190454.186	112.27
WS18	286099.385	190546.945	112.45
WS19	286093.317	190584.054	112.53
WS20	286263.736	190510.142	112.80
WS21	286246.082	190524.027	112.79
WS22	286203.348	190514.198	112.83
WS23	286216.920	190475.676	112.79
WS24	286241.258	190479.359	112.76
WS25	286184.022	190468.096	112.79
WS26	286157.908	190580.249	112.82

KEY

Borehole

Windowless Sample Location

JOHNSON POOLE & BLOOMER LIMITED
LAND CONSULTANTS

Engineer RD	Client Bridgend County Borough Council		Title Approximate Locations of Site Investigation Works
Checked NJW	Project Ewenny Road Industrial Estate, Maesteg		
Approved NJW	Date Febuary 2010	Scale 1:1000 @ A3	Drawing G/KC709/03

KC709.03 EWENNY ROAD FINAL 03/03/2010

APPENDIX B

Cable Tool Borehole Logs

JOHNSON POOLE & BLOOMER

Site	Borehole Number
Ewenny Road Industrial Estate, Maesteg	BH1

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm to 7.50m 200mm to 9.00m	112.25	Bridgend County Borough Council	KC709
	Location	**Dates**	**Engineer**	**Sheet**
	G/KC709/03	16/02/2010- 17/02/2010		1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
					112.20	(0.05)	MADE GROUND: Tarmacadam			
0.15	D1				112.05	0.05 (0.15)	MADE GROUND: Concrete slab.		▼1	
						0.20			▽1	
0.50	D2			medium(1) at 0.50m, rose to 0.30m in 20 mins, sealed at 1.50m.	111.65	(0.40) 0.60	MADE GROUND: Dark grey brown slightly silty sandy fine to coarse sub-angular gravel, of stone.			
1.00	D3						MADE GROUND: Black brown very clayey silty sandy fine to coarse angular, sub-angular and sub-rounded gravel, of mudstone, stone and rare coal, with some sub-rounded cobbles, of stone. Medium dense in-situ.			
1.20	C4			N=13						
2.00	D5									
2.50	C6			N=29						
3.00	D7									
						(5.90)				
4.00	C8			N=10						
5.00	D9			N=13						
5.00	C10									
6.00	D11									
					105.75	6.50				
						(0.30)	MADE GROUND: Driller description: Brown silty sandy clay with gravels and cobbles.			
					105.45	6.80				
7.00	C12			50 blows for 130mm after seating		(1.10)	Very dense brown very clayey silty sandy fine to coarse sub-angular and sub-rounded GRAVEL, with some sub-rounded cobbles.			
					104.35	7.90				
8.00	D13						Very dense grey brown slightly silty sandy fine to coarse sub-rounded and rounded GRAVEL and COBBLES. (Possible boulders).			
8.60	C14			50 blows for 45mm after seating		(1.50)				
9.00	D15									
9.20	C16			50 blows for 45mm after seating	102.85	9.40				

Remarks
Break out tarmacadam and concrete 0.75 hour.
Hand excavate starter pit to 1.20 metres 1.00 hour.
Chiselling from 7.00m to 7.60m for 1 hour. Chiselling from 7.60m to 8.60m for 3.5 hours. Chiselling from 8.60m to 9.20m for 3 hours.

Scale (approx)	Logged By
1:50	RD

Figure No. KC709.BH1

JOHNSON POOLE & BLOOMER

Site	Borehole Number
Ewenny Road Industrial Estate, Maesteg	BH2

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	200mm to 6.40m	112.68	Bridgend County Borough Council	KC709
	Location G/KC709/03	**Dates** 18/02/2010	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					112.63	(0.05)	MADE GROUND: Tarmacadam.		
0.15	D1				112.48	0.05 (0.15) 0.20	MADE GROUND: Concrete slab.		▼1 ▽1
0.50	D2			medium(1) at 0.50m, rose to 0.30m in 20 mins, sealed at 1.50m.	112.08	(0.40) 0.60	MADE GROUND: Black brown silty sandy fine to coarse angular and sub-angular gravel, of stone and rare ash.		
1.00	D3						MADE GROUND: Very loose/soft brown grey mottled black brown gravelly sandy silty clay. Gravel is fine to coarse sub-angular, of stone.		
1.20	C4			N=2		(1.20)			
					110.88	1.80			
2.00	D5						Medium dense grey brown slightly silty very sandy fine to coarse sub-angular and sub-rounded GRAVEL.		
2.50	C6			N=20					
						(2.00)			
3.00	D7								
					108.88	3.80			
4.00	C8			50 blows for 110mm after seating			Very dense grey brown slightly silty sandy fine to coarse sub-rounded and rounded GRAVEL and COBBLES. (Possible boulders).		
5.00	D9								
						(2.80)			
5.50	C10			50 blows for 85mm after seating					
				50 blows for 65mm after seating					
6.60	C11				106.08	6.60			
							Complete at 6.60m		

Remarks
Break out tarmacadam and concrete 0.50 hour.
Hand excavated starter pit to 1.20 metres 1.00 hour.
Chiselling from 3.40m to 3.80m for 1 hour. Chiselling from 3.80m to 5.50m for 3 hours. Chiselling from 5.50m to 6.40m for 2.25 hours.

Scale (approx)	Logged By
1:50	RD

Figure No. KC709.BH2

JOHNSON POOLE & BLOOMER

Site	Borehole Number
Ewenny Road Industrial Estate, Maesteg	BH3

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	200mm to 7.50m	112.55	Bridgend County Borough Council	KC709
	Location G/KC709/03	**Dates** 19/02/2010	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					112.50	(0.05)	MADE GROUND: Tarmacadam.		
0.15	D1				112.35	0.05 (0.15)	MADE GROUND: Concrete slab.		
0.50	D2				112.05	0.20 (0.30)	MADE GROUND: Dark brown grey slightly silty sandy fine to coarse sub-angular gravel, of stone and rare ash.		
						0.50			
1.00	D3						MADE GROUND: Black brown very clayey silty sandy fine to coarse angular and sub-angular gravel of predominantly stone, rare coal. Dense in-situ.		
1.20	C4			N=34		(1.40)			
					110.65	1.90			
2.00	D5						MADE GROUND: Dark brown grey slightly clayey silty sandy fine to coarse angular and sub-angular gravel, of predominantly stone and rare coal. Medium dense in-situ.		
2.50	C6			N=14		(1.10)			
					109.55	3.00	Firm brown mottled buff brown and grey gravelly sandy silty CLAY. Gravel is fine to coarse sub-angular and sub-rounded.		
3.50	D7								
4.00	C8			N=20		(2.80)			
5.00	D9								
5.50	C10			N=24					
					106.75	5.80	Very dense brown slightly silty sandy fine to coarse sub-rounded and rounded GRAVEL and COBBLES. (Possible boulders).		
6.50	D11					(1.80)			
7.10	C12			50 blows for 90mm after seating					
7.50	D13								
7.60	C14			50 blows for 90mm after seating	104.95	7.60	Complete at 7.60m		

Remarks
Break out tarmacadam and concrete 0.50 hour.
Hand excavate starter pit to 1.20 metres 1.00 hour.
Chiselling from 1.30m to 1.50m for 0.5 hours. Chiselling from 6.70m to 7.10m for 1 hour. Chiselling from 7.10m to 7.60m for 1 hour.

Scale (approx)	Logged By
1:50	RD

Figure No. KC709.BH3

JOHNSON POOLE & BLOOMER

Site	Borehole Number
Ewenny Road Industrial Estate, Maesteg	BH4

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm to 11.70m	112.59	Bridgend County Borough Council	KC709
	Location G/KC709/03	**Dates** 19/02/2010	**Engineer**	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						(0.20)	MADE GROUND: Tarmacadam.			
0.15	D1				112.39	0.20	MADE GROUND: Black brown mottled red brown slightly clayey silty sandy fine to coarse angular and sub-angular gravel, of mudstone and rare coal and brick. Loose in-situ.			
0.50	D2									
1.00	D3					(1.80)				
1.20	C4			N=9						
2.00	D5				110.59	2.00	MADE GROUND: Black brown gravelly sandy silty clay, with sub-angular cobbles, of mudstone and frgaments of wood. Gravel is fine to coarse angular and sub-angular, of predominantly mudstone, rare coal and brick. Medium dense becoming loose in-situ.			
2.50	C6			N=11						
3.50	D7									
4.00	C8			N=4						
5.00	D9									
5.50	C10			N=6						
						(7.70)				
6.50	D11									
7.50	C12			N=9						
8.00	D13								▼1	
9.50	C14			Medium(1) at N=18 9.80m, rose to 8.90m in 20 mins.	102.89	9.70				
						(0.40)	Medium dense brown grey slightly clayey silty gravelly SAND. Gravel is fine to coarse		▽1	

Remarks
Hand excavate starter pit to 1.20 metres 1.00 hour.

Scale (approx)	Logged By
1:50	RD

Figure No. KC709.BH4

JOHNSON POOLE & BLOOMER

Site	Borehole Number
Ewenny Road Industrial Estate, Maesteg	BH4

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm to 11.70m	112.59	Bridgend County Borough Council	KC709
	Location G/KC709/03	**Dates** 19/02/2010	**Engineer**	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
10.00	D15				102.49	(0.40) 10.10	sub-rounded.			
							Very dense grey brown slightly silty sandy fine to coarse rounded GRAVEL and COBBLES. (Possible boulders).			
11.00	C16			50 blows for 225mm after seating		(2.00)				
11.80	C17			50 blows for 95mm after seating						
					100.49	12.10	Complete at 12.10m			

Remarks
Chiselling from 11.40m to 11.80m for 1 hour.

Scale (approx)	Logged By
1:50	RD

Figure No. KC709.BH4

JOHNSON POOLE & BLOOMER

Site	Borehole Number
Ewenny Road Industrial Estate, Maesteg	BH5

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm to 11.00m	112.40	Bridgend County Borough Council	KC709
	Location G/KC709/03	**Dates** 22/02/2010	**Engineer**	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.20)	MADE GROUND: Tarmacadam.		
0.15	D1				112.20	0.20			
					112.10	(0.10)	MADE GROUND: Grey mottled black brown silty sandy fine to coarse angular gravel, of stone.		
0.50	D2					0.30			
							MADE GROUND: Black brown mottled red brown very clayey silty sandy fine to coarse angular and sub-angular gravel, of predominantly mudstone, rare coal. Medium dense in-situ.		
1.00	D3								
1.20	C4			N=12					
2.00	D5								
2.50	C6			N=14					
						(5.70)			
3.50	D7								
4.00	C8			N=14					
5.00	D9								
5.50	C10			N=11					
					106.40	6.00			
							MADE GROUND: Black brown gravelly sandy silty clay. Gravel is fine to coarse angular and sub-angular, of mudstone. Medium dense/dense in-situ.		
6.50	D11								
7.50	C12			N=25					
						(3.90)			
8.00	D13								▼1
9.50	C14			Medium(1) at 9.80m, rose to N=33 8.90m in 20 mins, sealed at 11.00m.					▽1
					102.50	9.90			

Remarks
Hand excavate starter pit to 1.20 metres 1.00 hour.

Scale (approx)	Logged By
1:50	RD

Figure No. KC709.BH5

JOHNSON POOLE & BLOOMER

Site	Borehole Number
Ewenny Road Industrial Estate, Maesteg	BH5

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm to 11.00m	112.40	Bridgend County Borough Council	KC709
	Location G/KC709/03	**Dates** 22/02/2010	**Engineer**	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	D15						Very dense grey brown slightly silty sandy fine to coarse rounded GRAVEL and COBBLES. (Possible boulders).		
						(1.60)			
11.10	C16			50 blows for 145mm after seating.	100.90	11.50			
							Complete at 11.50m		

Remarks
Chiselling from 10.60m to 11.10m for 1 hour.

Scale (approx)	Logged By
1:50	RD

Figure No. KC709.BH5

JOHNSON POOLE & BLOOMER

Site	Borehole Number
Ewenny Road Industrial Estate, Maesteg	BH6

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	60mm cased to 11.00m	112.59	Bridgend County Borough Council	KC709

Location	Dates	Engineer	Sheet
G/KC709/03	23/02/2010		1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.20)	MADE GROUND: Concrete slab.		
0.15	D1				112.39	0.20			
						(0.40)	MADE GROUND: Black brown mottled grey silty sandy fine to coarse angular and sub-angular gravel, of mudstone and brick, with fragments of wood and metal.		
0.50	D2				111.99	0.60			
1.00	D3						MADE GROUND: Black brown clayey silty sandy fine to coarse angular and sub-angular gravel, of mudstone. Medium dense locally loose in-situ.		
1.20	S4			N=10					
2.00	D5								
2.50	S6			N=10					
3.50	D7								
4.00	S8			N=5					
						(7.90)			
5.00	D9								
5.50	S10			N=12					
6.50	D11								
7.50	S12			N=10					
8.00	D13								
					104.09	8.50			▼1
							MADE GROUND: Black brown gravelly sandy silty clay. Gravel is fine to coarse angular and sub-angular, of predominantly mudstone and rare coal. Loose in-situ.		
						(1.10)			▽1
9.50	S14			Medium(1) at 9.20m, rose to 8.50m in 20 mins. N=8	102.99	9.60			
							MADE GROUND: Black brown very clayey silty sandy fine ot coarse angular and sub-anguar gravel, of stone.		

Remarks
Hand excavate starter pit to 1.20 metres 1.00 hour.

Scale (approx)	Logged By
1:50	RD

Figure No.
KC709.BH6

JOHNSON POOLE & BLOOMER

Site	Borehole Number
Ewenny Road Industrial Estate, Maesteg	BH6

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	60mm cased to 11.00m	112.59	Bridgend County Borough Council	KC709
	Location G/KC709/03	**Dates** 23/02/2010	**Engineer**	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	D15					(2.00)	MADE GROUND: Black brown very clayey silty sandy fine ot coarse angular and sub-anguar gravel, of stone.		
11.50	C16			50 blows for 265mm after seating.	100.99	11.60	Very dense grey brown clayey silty sandy fine to coarse sub-rounded GRAVEL and COBBLES. (Possible boulders).		
12.00	D17					(1.00)			
12.60	C18			50 blows for 210mm after seating.	99.99	12.60	Complete at 12.60m		

Remarks
Chiselling from 10.60m to 11.10m for 1 hour. Chiselling from 11.90m to 12.30m for 1 hour.

Scale (approx)	Logged By
1:50	RD

Figure No. KC709.BH6

APPENDIX C

Rotary Drillhole Logs

JOHNSON POOLE & BLOOMER

Site Ewenny Road Industrial Estate, Maesteg			**Borehole Number** DH1
Machine : Beretta T44 **Flush :** Air **Core Dia :** **Method :** Openhole	**Casing Diameter** 150mm to 14.50m **Location** G/KC709/04	**Ground Level (mOD)** 112.53 **Dates** 11/03/2010	**Client** Bridgend County Borough Council **Engineer**	**Job Number** KC709 **Sheet** 1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						112.33	(0.20) 0.20	MADE GROUND: Tarmacadam		
						111.93	(0.40) 0.60	MADE GROUND: Black brown colliery spoil.		
							(1.80)	Grey gravelly sandy silty CLAY.		
						110.13	2.40	Grey brown sandy rounded and sub-rounded GRAVEL and COBBLES, (possible boulders).		
							(3.00)			
						107.13	5.40	Grey brown sandy rounded and sub-rounded GRAVEL and COBBLES, with clay bands, (possible boulders).		
					Water strike(1) at 8.50m.					▽1
							(8.30)			
					Water strike(2) at 11.00m.					▽2
					Water strike(3) at 13.70m.	98.83	13.70	Dark grey brown MUDSTONE.		▽3
							(2.30)			
						96.53	16.00	Dark grey brown MUDSTONE, with grey sandstone bands.		
							(7.00)			

Remarks
Delivery and installation of sand bags to contain artesian groundwater, 1.75 hours.
Standing for Artesian Water pressure to drop, 2.50 hours.
Plug borehole at 22.00 metres and backfill using bentonite / cement grout and hand-mixed concrete at surface.
Suspected old mine workings encountered between 23.00 and 23.80 metres; loss of flush, strong groundwater inflow and irregular drilling progress recorded.

Scale (approx)	Logged By
1:100	RD

Figure No. KC709.DH1

JOHNSON POOLE & BLOOMER

Site Ewenny Road Industrial Estate, Maesteg			**Borehole Number** DH1
Machine : Beretta T44 **Flush :** Air **Core Dia :** **Method :** Openhole	**Casing Diameter** 150mm to 14.50m **Location** G/KC709/04	**Ground Level (mOD)** 112.53 **Dates** 11/03/2010	**Client** Bridgend County Borough Council **Engineer**	**Job Number** KC709 **Sheet** 2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					Water strike(4) at 23.00m.		(7.00)			
						89.53	23.00	Black brown gravel and cobbles, of mudstone and coal (Interpreted as backfilled mine workings).Driller recorded "backfilled workings".		▽4
							(0.80)			
						88.73	23.80			
						88.53	(0.20)	Black brown COAL.		
							24.00	Dark grey brown MUDSTONE.		
							(4.30)			
						84.23	28.30	Brown grey SANDSTONE.		
							(2.70)			
						81.53	31.00	Complete at 31.00m		

Remarks

Scale (approx)	Logged By
1:100	RD

Figure No. KC709.DH1

JOHNSON POOLE & BLOOMER

Site Ewenny Road Industrial Estate, Maesteg			**Borehole Number** DH2
Machine : Beretta T44 **Flush :** Air **Core Dia:** **Method :** Openhole	**Casing Diameter** 150mm to 19.50m **Location** G/KC709/04	**Ground Level (mOD)** 112.54 **Dates** 12/03/2010	**Client** Bridgend County Borough Council **Engineer**	**Job Number** KC709 **Sheet** 1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						112.34	(0.20) 0.20	MADE GROUND: Concrete slab.		
								MADE GROUND: Black brown colliery spoil.		
							(3.60)			
						108.74	3.80	Grey brown sandy rounded GRAVEL and COBBLES, (possible boulders).		
							(6.10)			▽1
					Water strike(1) at 7.50m.					
						102.64	9.90	Grey brown sandy rounded GRAVEL and COBBLES, with clay bands, (possible boulders).		
							(8.50)			
						94.14	18.40	Dark grey brown MUDSTONE.		

Remarks
Hand excavated trial pit to 1.00 metre.
Backfill borehole using bentonite / cement grout and hand-mixed concrete at surface.
No evidence of mine workings encountered (such as loss of flush, voiding, broken ground or strong water inflows).

Scale (approx)	Logged By
1:100	RD

Figure No. KC709.DH2

JOHNSON POOLE & BLOOMER

Site Ewenny Road Industrial Estate, Maesteg			**Borehole Number** DH2
Machine : Beretta T44 **Flush :** Air **Core Dia :** **Method :** Openhole	**Casing Diameter** 150mm to 19.50m **Location** G/KC709/04	**Ground Level (mOD)** 112.54 **Dates** 12/03/2010	**Client** Bridgend County Borough Council **Engineer**	**Job Number** KC709 **Sheet** 2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							(5.10)			
						89.04	23.50	Black brown COAL, with dark brown grey mudstone bands.		
							(0.80)			
						88.24	24.30	Dark brown grey MUDSTONE, with grey sandstone bands.		
							(2.70)			
						85.54	27.00	Dark brown grey MUDSTONE.		
							(1.00)			
						84.54	28.00	Grey SANDSTONE, with dark grey mudstone bands.		
							(12.00)			
						72.54	40.00			

Remarks

Scale (approx)	Logged By
1:100	RD

Figure No. KC709.DH2

JOHNSON POOLE & BLOOMER

Site Ewenny Road Industrial Estate, Maesteg			**Borehole Number** DH3
Machine : Beretta T44 **Flush :** Air **Core Dia :** **Method :** Openhole	**Casing Diameter** 150mm to 12.50m **Location** G/KC709/04	**Ground Level (mOD)** 112.54 **Dates** 15/03/2010-16/03/2010	**Client** Bridgend County Borough Council **Engineer**	**Job Number** KC709 **Sheet** 1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						112.34	(0.20) 0.20	MADE GROUND: Tarmacadam.		
								MADE GROUND: Black brown colliery spoil.		
							(1.60)			
						110.74	1.80	Grey brown gravelly sandy silty CLAY.		
							(3.20)			
						107.54	5.00	Grey brown rounded GRAVEL and COBBLES, becoming clayey with depth, (possible boulders).		
					Water strike(1) at 8.00m.		(6.50)			▽1
						101.04	11.50	Dark grey brown MUDSTONE.		
							(5.10)			
						95.94	16.60			
						95.74	(0.20) 16.80	Black brown COAL.		
								Dark grey brown MUDSTONE, with sandstone bands.		
							(4.80)			

Remarks
Hand excavated trial pit to 1.20 metres.
Track drilling rig to compound, 0.50 hours.
Plug borehole at 35.00 metres and backfill using bentonite / cement grout and hand-mixed concrete at surface.
Suspected old mine workings encountered between 35.50 and 36.00 metres; loss of flush, strong groundwater inflow and irreguler drilling progress recorded.

Scale (approx)	Logged By
1:100	RD

Figure No. KC709.DH3

JOHNSON POOLE & BLOOMER

Site Ewenny Road Industrial Estate, Maesteg			**Borehole Number** DH3
Machine : Beretta T44 **Flush :** Air **Core Dia:** **Method :** Openhole	**Casing Diameter** 150mm to 12.50m **Location** G/KC709/04	**Ground Level (mOD)** 112.54 **Dates** 15/03/2010-16/03/2010	**Client** Bridgend County Borough Council **Engineer**	**Job Number** KC709 **Sheet** 2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							(4.80)			
						90.94	21.60			
							(0.60)	Black brown COAL, with mudstone bands.		
						90.34	22.20	Dark grey brown MUDSTONE.		
							(13.30)			
					Water strike(2) at 35.50m.	77.04	35.50			▽2
							(0.50)	Black brown gravel and cobbles, of mudstone and coal (interpreted as backfilled mine workings). Driller recorded "backfilled workings".		
						76.54	36.00	Dark grey brown MUDSTONE, with sandstone bands.		
							(4.00)			
						72.54	40.00			

Remarks

Scale (approx)	Logged By
1:100	RD

Figure No. KC709.DH3

JOHNSON POOLE & BLOOMER

Site Ewenny Road Industrial Estate, Maesteg			**Borehole Number** DH4
Machine : Beretta T44 **Flush :** Air **Core Dia :** **Method :** Openhole	**Casing Diameter** 150mm cased to 12.50m **Location** G/KC709/04	**Ground Level (mOD)** 112.51 **Dates** 16/03/2010-17/03/2010	**Client** Bridgend County Borough Council **Engineer**	**Job Number** KC709 **Sheet** 1/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						112.31	(0.20) 0.20	MADE GROUND: Tarmacadam.		
								MADE GROUND: Black brown colliery spoil.		
							(2.30)			
						110.01	2.50	MADE GROUND: Brown grey gravelly sandy silty clay.		
							(2.10)			
						107.91	4.60	Grey brown sandy rounded GRAVEL and COBBLES, (possible boulders).		
					Water strike(1) at 7.00m.					▽1
							(6.90)			
						101.01	11.50	Dark grey brown MUDSTONE, with sandstone bands.		
							(2.90)			
						98.11	14.40			
						97.81	(0.30) 14.70	Black brown COAL.		
								Dark grey brown MUDSTONE, with siltstone and sandstone bands.		
							(9.20)			

Remarks
Track drilling rig to/from compound, 1.00 hour.
Plug borehole at 42.00 metres and backfill using bentonite / cement grout and hand-mixed concrete at surface.
Suspected old mine workings encountered between 42.70 and 44.00 metres; loss of flush, strong groundwater inflow and irregular drilling progress recorded.

Scale (approx)	Logged By
1:100	RD

Figure No. KC709.DH4

JOHNSON POOLE & BLOOMER	Site: Ewenny Road Industrial Estate, Maesteg	Borehole Number: DH4

Machine : Beretta T44 Flush : Air Core Dia : Method : Openhole	Casing Diameter: 150mm cased to 12.50m	Ground Level (mOD): 112.51	Client: Bridgend County Borough Council	Job Number: KC709
	Location: G/KC709/04	Dates: 16/03/2010-17/03/2010	Engineer	Sheet: 2/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							(9.20)			
						88.61	23.90			
						88.31	(0.30) 24.20	Black brown COAL.		
								Dark grey brown MUDSTONE, with sandstone bands.		
							(4.80)			
						83.51	29.00			
						83.21	(0.30) 29.30	Black brown COAL.		
								Dark grey brown MUDSTONE, with sandstone bands.		
							(13.40)			

Remarks

Scale (approx)	Logged By
1:100	RD

Figure No. KC709.DH4

JOHNSON POOLE & BLOOMER

Site Ewenny Road Industrial Estate, Maesteg			**Borehole Number** DH4
Machine : Beretta T44 **Flush :** Air **Core Dia :** **Method :** Openhole	**Casing Diameter** 150mm cased to 12.50m **Location** G/KC709/04	**Ground Level (mOD)** 112.51 **Dates** 16/03/2010-17/03/2010	**Client** Bridgend County Borough Council **Engineer**	**Job Number** KC709 **Sheet** 3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							(13.40)			
					Water strike(2) at 42.70m.	69.81	42.70	Black brown gravel and cobbles, of mudstone and coal (interpreted as backfilled mine workings). Driller recorded "backfilled workings".		▽2
							(1.30)			
						68.51	44.00	Dark grey brown MUDSTONE, with sandstone bands.		
							(2.00)			
						66.51	46.00	Complete at 46.00m		

Remarks

Scale (approx)	Logged By
1:100	RD

Figure No. KC709.DH4

JOHNSON POOLE & BLOOMER

Site Ewenny Road Industrial Estate, Maesteg			**Borehole Number** DH5
Machine : Beretta T44 **Flush :** Air **Core Dia:** **Method :** Openhole	**Casing Diameter** 150mm to 11.00m **Location** G/KC709/04	**Ground Level (mOD)** 112.27 **Dates** 17/03/2010	**Client** Bridgend County Borough Council **Engineer**	**Job Number** KC709 **Sheet** 1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							(4.50)	MADE GROUND: Black brown colliery spoil.		
					Water strike(1) at 4.70m.	107.77	4.50	Grey brown sandy rounded GRAVEL and COBBLES, (possible boulders).		▽1
							(6.30)			
						101.47	10.80	Brown grey SANDSTONE, with dark grey brown siltstone and mudstone bands.		
							(3.80)			
						97.67	14.60			
							(0.40)	Black brown COAL.		
						97.27	15.00	Dark grey brown MUDSTONE, with siltstone and sandstone bands.		
							(3.80)			
						93.47	18.80			
							(0.50)	Black brown COAL.		
						92.97	19.30	Dark grey brown MUDSTONE, with sandstone bands.		

Remarks
Track drilling rig/from compound, 1.00 hour.
Backfill borehole using bentonite / cement grout and hand-mixed concrete at surface.
No evidence of mine workings encountered (such as loss of flush, voiding, broken ground or strong water inflows).

Scale (approx)	Logged By
1:100	RD

Figure No. KC709.DH5

JOHNSON POOLE & BLOOMER

Site Ewenny Road Industrial Estate, Maesteg			**Borehole Number** DH5
Machine : Beretta T44 **Flush :** Air **Core Dia:** **Method :** Openhole	**Casing Diameter** 150mm to 11.00m **Location** G/KC709/04	**Ground Level (mOD)** 112.27 **Dates** 17/03/2010	**Client** Bridgend County Borough Council **Engineer**	**Job Number** KC709 **Sheet** 2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							(11.50)			
						81.47	30.80			
							(0.40)	Black brown COAL.		
						81.07	31.20			
								Dark grey brown MUDSTONE, with sandstone bands.		
							(3.50)			
						77.57	34.70			
							(0.40)	Black brown COAL.		
						77.17	35.10			
								Dark grey brown MUDSTONE.		
							(1.90)			
						75.27	37.00			
								Complete at 37.00m		

Remarks

Scale (approx)	Logged By
1:100	RD

Figure No. KC709.DH5

JOHNSON POOLE & BLOOMER

Site Ewenny Road Industrial Estate, Maesteg			**Borehole Number** DH6
Machine : Beretta T44 **Flush :** Air **Core Dia:** **Method :** Openhole	**Casing Diameter** 150mm to 12.50m **Location** G/KC709/04	**Ground Level (mOD)** 112.32 **Dates** 17/03/2010-18/03/2010	**Client** Bridgend County Borough Council **Engineer**	**Job Number** KC709 **Sheet** 1/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							(6.40)	MADE GROUND: Black brown colliery spoil.		
					Water strike(1) at 5.50m.	105.92	6.40	Grey brown sandy rounded GRAVEL and COBBLES, (possible boulders).		▽1
							(5.30)			
						100.62	11.70	Grey brown sandy rounded GRAVEL and COBBLES, with sandstone boulders.		
							(0.80)			
						99.82	12.50	Brown grey SANDSTONE, with mudstone bands.		
							(2.50)			
						97.32	15.00	Dark grey brown MUDSTONE.		
							(1.40)			
						95.92	16.40	Black brown COAL.		
						95.62	(0.30) 16.70	Dark grey brown MUDSTONE, with sandstone bands.		
							(4.10)			

Remarks
Track drilling rig to/from compound, 1.00 hour.
Backfill borehole using bentonite / cement grout and hand-mixed concrete at surface.
No evidence of mine workings (such as loss of flush, voiding, broken ground or strong water inflows).

Scale (approx)	Logged By
1:100	RD

Figure No. KC709.DH6

JOHNSON POOLE & BLOOMER	Site: Ewenny Road Industrial Estate, Maesteg	Borehole Number: DH6

Machine : Beretta T44 Flush : Air Core Dia : Method : Openhole	Casing Diameter: 150mm to 12.50m Location: G/KC709/04	Ground Level (mOD): 112.32 Dates: 17/03/2010-18/03/2010	Client: Bridgend County Borough Council Engineer	Job Number: KC709 Sheet: 2/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							(4.10)			
						91.52	20.80	Black brown COAL.		
							(1.00)			
						90.52	21.80	Dark grey brown MUDSTONE, with sandstone bands.		
							(15.20)			
						75.32	37.00			
							(0.40)	Black brown COAL.		
						74.92	37.40			
								Dark grey MUDSTONE, with sandstone bands.		

Remarks

Scale (approx)	Logged By
1:100	RD

Figure No. KC709.DH6

JOHNSON POOLE & BLOOMER

Site Ewenny Road Industrial Estate, Maesteg			**Borehole Number** DH6
Machine : Beretta T44 **Flush :** Air **Core Dia :** **Method :** Openhole	**Casing Diameter** 150mm to 12.50m **Location** G/KC709/04	**Ground Level (mOD)** 112.32 **Dates** 17/03/2010-18/03/2010	**Client** Bridgend County Borough Council **Engineer**	**Job Number** KC709 **Sheet** 3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							(8.60)			
						66.32	46.00	Complete at 46.00m		

Remarks

Scale (approx)	Logged By
1:100	RD

Figure No. KC709.DH6

APPENDIX D

Laboratory Testing - Chemical

Certificate of Analysis

2139

Date: 19/03/2010

Certificate Number: 10-36493

Client: Johnson, Poole & Bloomer Limited
Unit 5 Neptune Court
Vanguard Way
Cardiff
Wales
CF24 5PJ

Our Reference: 10-36493

Client Reference: KC709

Contract Title: Ewenny Road

Description: 10 soil samples

Date Received: 11/03/2010

Date Started: 15/03/2010

Date Completed: 19/03/2010

Test Procedures: Identified by prefix DETSn, details available upon request.

Notes: Observations and interpretations are outside the scope of UKAS accreditation
* denotes test not included in laboratory scope of accreditation
# denotes test that holds MCERT accreditation, however, MCERTS accreditation is only implied if the report carries the MCERTS logo
$ denotes tests completed by an approved subcontractor
I/S denotes insufficient sample to carry out test
U/S denotes that the sample is not suitable for testing
DETSM denotes tests carried out by DETS Midlands laboratory
Solid samples will be disposed 1 month and liquids 2 weeks after the date of issue of this test certificate
Asbestos subsamples will be kept for 6 months

Approved By:

Authorised Signatories: Rob Brown
Business Manager

Derwentside Environmental Testing Services Limited
Unit 2, Park Road Industrial Estate South, Consett, Co Durham, DH8 5PY
Tel: 01207 582333 • Fax 01207 582444 • email: info@dets.co.uk • www.dets.co.uk

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-36493
Client Ref: KC709
Contract Title: Ewenny Road

		Lab No.	248312	248313	248314	248315	248316
		Sample Ref	WS1	WS9	WS9	WS9	WS8
		Depth	0.50	0.30	1.70	3.60	2.20
		Other Ref					
		Sample Type					
Test	**Units**	**DETSxx**					
Arsenic	mg/kg	DETS 042#		58	15	12	9
Cadmium	mg/kg	DETS 042#		0.6	1.1	0.6	0.5
Chromium	mg/kg	DETS 042#		28	29	25	44
Hexavalent Chromium	mg/kg	DETSC2204*					
Copper	mg/kg	DETS 042#		50	30	24	54
Lead	mg/kg	DETS 042#		39	26	20	50
Mercury	mg/kg	DETS 081#		0.39	< 0.05	< 0.05	0.13
Nickel	mg/kg	DETS 042#		42	32	27	40
Selenium	mg/kg	DETS 042#		2.2	< 0.5	0.6	< 0.5
Zinc	mg/kg	DETS 042#		130	84	67	92
Cyanide total	mg/kg	DETS 067#					
Organic matter	%	DETS 002#					
Sulphide	mg/kg	DETS 024#					
Total Sulphate as SO4	%	DETS 075#					
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#					
Total Sulphur as S	%	DETS 064					
pH		DETS 008#					
Aliphatic C5-C6	mg/kg	DETS 072*	0.32				
Aliphatic C6-C8	mg/kg	DETS 072*	< 0.01				
Aliphatic C8-C10	mg/kg	DETS 072*	< 0.01				
Aliphatic C10-C12	mg/kg	DETS 072#	< 1.5				
Aliphatic C12-C16	mg/kg	DETS 072#	< 1.2				
Aliphatic C16-C21	mg/kg	DETS 072#	< 1.5				
Aliphatic C21-C35	mg/kg	DETS 072#	3.8				
Aromatic C5-C7	mg/kg	DETS 072*	< 0.01				
Aromatic C7-C8	mg/kg	DETS 072*	< 0.01				
Aromatic C8-C10	mg/kg	DETS 072*	0.21				
Aromatic C10-C12	mg/kg	DETS 072#	< 0.9				
Aromatic C12-C16	mg/kg	DETS 072#	< 0.5				
Aromatic C16-C21	mg/kg	DETS 072#	< 0.6				
Aromatic C21-C35	mg/kg	DETS 072#	< 1.4				
Aliphatic C5-C35	mg/kg	DETS 072*	< 10				
Aromatic C5-C35	mg/kg	DETS 072*	< 10				
TPH Ali/Aro	mg/kg	DETS 072*	< 10				

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-36493
Client Ref: KC709
Contract Title: Ewenny Road

	Lab No.	248312	248313	248314	248315	248316
	Sample Ref	WS1	WS9	WS9	WS9	WS8
	Depth	0.50	0.30	1.70	3.60	2.20
	Other Ref					
	Sample Type					
Test	**Units**	**DETSxx**				
Acenaphthene	mg/kg	DETS 050				
Acenaphthylene	mg/kg	DETS 050				
Anthracene	mg/kg	DETS 050				
Benzo(a)anthracene	mg/kg	DETS 050				
Benzo(a)pyrene	mg/kg	DETS 050				
Benzo(b)fluoranthene	mg/kg	DETS 050				
Benzo(k)fluoranthene	mg/kg	DETS 050				
Benzo(g,h,i)perylene	mg/kg	DETS 050				
Chrysene	mg/kg	DETS 050				
Dibenzo(a,h)anthracene	mg/kg	DETS 050				
Fluoranthene	mg/kg	DETS 050				
Fluorene	mg/kg	DETS 050				
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050				
Naphthalene	mg/kg	DETS 050				
Phenanthrene	mg/kg	DETS 050				
Pyrene	mg/kg	DETS 050				
PAH	mg/kg	DETS 050				
Phenol - Monohydric	mg/kg	DETS 067#				

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-36493
Client Ref: KC709
Contract Title: Ewenny Road

		Lab No.	248317	248318	248319	248320	248592
		Sample Ref	WS21	WS22	WS24	WS20	WS7a
		Depth	0.20	0.20	0.25	0.60	1.80
		Other Ref					
		Sample Type					
Test	**Units**	**DETSxx**					
Arsenic	mg/kg	DETS 042#	3	20	2		2
Cadmium	mg/kg	DETS 042#	0.3	0.9	0.3		0.3
Chromium	mg/kg	DETS 042#	8	27	8		8
Hexavalent Chromium	mg/kg	DETSC2204*	< 1	< 1	< 1		
Copper	mg/kg	DETS 042#	11	57	5		5
Lead	mg/kg	DETS 042#	6	48	6		6
Mercury	mg/kg	DETS 081#	< 0.05	0.13	< 0.05		< 0.05
Nickel	mg/kg	DETS 042#	4	39	4		4
Selenium	mg/kg	DETS 042#	1.3	1.0	1.3		1.1
Zinc	mg/kg	DETS 042#	24	120	40		33
Cyanide total	mg/kg	DETS 067#	< 0.1	0.1	< 0.1		
Organic matter	%	DETS 002#	1.0	7.9	1.1		
Sulphide	mg/kg	DETS 024#	< 10	69	270		
Total Sulphate as SO4	%	DETS 075#	0.03	0.34	0.04	0.02	
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	72	1900	140	50	
Total Sulphur as S	%	DETS 064	0.02	0.19	0.05	0.05	
pH		DETS 008#	9.7	8.8	9.5	8.9	
Aliphatic C5-C6	mg/kg	DETS 072*					
Aliphatic C6-C8	mg/kg	DETS 072*					
Aliphatic C8-C10	mg/kg	DETS 072*					
Aliphatic C10-C12	mg/kg	DETS 072#					
Aliphatic C12-C16	mg/kg	DETS 072#					
Aliphatic C16-C21	mg/kg	DETS 072#					
Aliphatic C21-C35	mg/kg	DETS 072#					
Aromatic C5-C7	mg/kg	DETS 072*					
Aromatic C7-C8	mg/kg	DETS 072*					
Aromatic C8-C10	mg/kg	DETS 072*					
Aromatic C10-C12	mg/kg	DETS 072#					
Aromatic C12-C16	mg/kg	DETS 072#					
Aromatic C16-C21	mg/kg	DETS 072#					
Aromatic C21-C35	mg/kg	DETS 072#					
Aliphatic C5-C35	mg/kg	DETS 072*					
Aromatic C5-C35	mg/kg	DETS 072*					
TPH Ali/Aro	mg/kg	DETS 072*					

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-36493
Client Ref: KC709
Contract Title: Ewenny Road

		Lab No.	248317	248318	248319	248320	248592
		Sample Ref	WS21	WS22	WS24	WS20	WS7a
		Depth	0.20	0.20	0.25	0.60	1.80
		Other Ref					
		Sample Type					
Test	**Units**	**DETSxx**					
Acenaphthene	mg/kg	DETS 050	< 0.1	0.1	< 0.1		
Acenaphthylene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1		
Anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1		
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1		
Benzo(a)pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1		
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1		
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1		
Benzo(g,h,i)perylene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1		
Chrysene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1		
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1		
Fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1		
Fluorene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1		
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1		
Naphthalene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1		
Phenanthrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1		
Pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1		
PAH	mg/kg	DETS 050	< 1.6	< 1.6	< 1.6		
Phenol - Monohydric	mg/kg	DETS 067#	< 0.3	< 0.3	< 0.3		

Certificate of Analysis

2139

Certificate Number: 10-35772-2

Date: 22/03/2010

Client:	Johnson, Poole & Bloomer Limited Unit 5 Neptune Court Vanguard Way Cardiff Wales CF24 5PJ
Our Reference:	10-35772-2
Client Reference:	KC709-33
Contract Title:	Ewenny Road Industrial Estate
Description:	30 soil samples, 4 leachate samples
Date Received:	22/02/2010
Date Started:	22/02/2010
Date Completed:	22/03/2010
Test Procedures:	Identified by prefix DETSn, details available upon request.
Notes:	**This report supersedes 10-35772-1, Leachate samples added** Observations and interpretations are outside the scope of UKAS accreditation * denotes test not included in laboratory scope of accreditation # denotes test that holds MCERT accreditation $ denotes tests completed by an approved subcontractor I/S denotes insufficient sample to carry out test N/S denotes that the sample is not suitable for testing DETSM denotes tests carried out by DETS Midlands laboratory Solid samples will be disposed 1 month and liquids 2 weeks after the date of issue of this test certificate Asbestos subsamples will be kept for 6 months
Approved By:	
Authorised Signatories:	Richard Bennett Director

Derwentside Environmental Testing Services Limited
Unit 2, Park Road Industrial Estate South, Consett, Co Durham, DH8 5PY
Tel: 01207 582333 • Fax 01207 582444 • email: info@dets.co.uk • www.dets.co.uk

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

Sample Details

Sample ID	Number	Depth	DETS Ref	Matrix Description	Date Sampled	Time Sampled	Preservation	Analysis Complete
WS1	1	0.15	243294	dark brown sandy GRAVEL made ground with brick	Not Provided	Not Provided	None	22/03/2010
WS1	2	0.25	243295	dark brown sandy GRAVEL made ground with brick	Not Provided	Not Provided	None	22/03/2010
WS2	1	0.30	243296	brown sandy clayey GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS2	2	0.50	243297	dark brown sandy GRAVEL made ground with coal	Not Provided	Not Provided	None	22/03/2010
WS3	1	0.50	243298	dark brown sandy GRAVEL made ground with coal	Not Provided	Not Provided	None	22/03/2010
WS3	2	2.40	243299	dark brown gravelly SAND	Not Provided	Not Provided	None	22/03/2010
WS4	1	0.40	243300	dark brown sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS4	2	0.90	243301	dark brown clayey sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS5	1	0.25	243302	dark brown sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS5	2	0.40	243303	dark brown sandy GRAVEL made ground with coal	Not Provided	Not Provided	None	22/03/2010
WS6	1	0.20	243304	dark brown clayey silty sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS6	2	0.70	243305	dark brown sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS7	2	0.50	243306	dark brown sandy GRAVEL made ground with coal	Not Provided	Not Provided	None	22/03/2010
WS8	1	0.15	243307	dark brown gravelly clayey silty SAND	Not Provided	Not Provided	None	22/03/2010
WS8	2	0.90	243308	dark brown sandy GRAVEL made ground with brick	Not Provided	Not Provided	None	22/03/2010
WS9	2	0.70	243309	dark brown clayey sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS10	1	0.20	243310	dark brown clayey silty SAND	Not Provided	Not Provided	None	22/03/2010
WS10	2	0.80	243311	dark brown sandy GRAVEL made ground with brick	Not Provided	Not Provided	None	22/03/2010
WS12	1	0.10	243312	dark brown gravelly clayey SAND made ground with coal	Not Provided	Not Provided	None	22/03/2010
WS12	2	0.20	243313	brown/grey sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS12	3	0.50	243314	dark brown clayey sandy GRAVEL made ground with brick	Not Provided	Not Provided	None	22/03/2010
WS13	1	0.10	243315	dark brown clayey sandy GRAVEL made ground with brick	Not Provided	Not Provided	None	22/03/2010
WS13	2	0.90	243316	dark brown clayey sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS14	1	0.70	243317	dark brown sandy clayey GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS14	2	1.30	243318	dark brown clayey sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS15	1	0.20	243319	brown clayey sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS15	3	0.80	243320	dark brown clayey sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS16	2	0.30	243321	dark brown sandy clayey GRAVEL made ground with brick	Not Provided	Not Provided	None	22/03/2010
WS8	1	0.80	243322	dark brown sandy GRAVEL made ground with brick and coal	Not Provided	Not Provided	None	22/03/2010
WS8	2	0.90	243323	dark brown gravelly clayey SAND	Not Provided	Not Provided	None	22/03/2010

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243294	243295	243296	243297
		Sample Ref	WS1	WS1	WS2	WS2
		Depth	0.15	0.25	0.30	0.50
		Other Ref	1	2	1	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Arsenic	mg/kg	DETS 042#	8	7	1	
Cadmium	mg/kg	DETS 042#	0.7	0.6	0.3	
Chromium	mg/kg	DETS 042#	15	10	10	
Hexavalent Chromium	mg/kg	DETSC2204'	< 1	< 1	< 1	
Copper	mg/kg	DETS 042#	40	71	23	
Lead	mg/kg	DETS 042#	52	110	33	
Mercury	mg/kg	DETS 081#	< 0.05	< 0.05	0.07	
Nickel	mg/kg	DETS 042#	14	29	18	
Selenium	mg/kg	DETS 042#	< 0.5	< 0.5	< 0.5	
Zinc	mg/kg	DETS 042#	420	390	66	
Calorific Value	KJ/kg	DETS 037*				5200
Cyanide total	mg/kg	DETS 067#	< 0.1	< 0.1	< 0.1	
Loss on ignition	%	DETS 003#				48
Organic matter	%	DETS 002#	1.9	4.0	3.1	
Sulphide	mg/kg	DETS 024#	17	13	29	
Total Sulphate as SO4	%	DETS 075#	0.12	0.28	0.04	0.05
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	360	440	160	200
Total Sulphur as S	%	DETS 064	0.07	0.16	0.03	0.04
pH		DETS 008#	10.8	11.3	10.8	9.3
Aliphatic C5-C6	mg/kg	DETS 072*	< 0.01	< 0.01		
Aliphatic C6-C8	mg/kg	DETS 072*	< 0.01	< 0.01		
Aliphatic C8-C10	mg/kg	DETS 072*	< 0.01	< 0.01		
Aliphatic C10-C12	mg/kg	DETS 072#	< 1.5	< 1.5		
Aliphatic C12-C16	mg/kg	DETS 072#	1.6	13		
Aliphatic C16-C21	mg/kg	DETS 072#	7.8	53		
Aliphatic C21-C35	mg/kg	DETS 072#	19	97		
Aromatic C5-C7	mg/kg	DETS 072*	< 0.01	< 0.01		
Aromatic C7-C8	mg/kg	DETS 072*	< 0.01	< 0.01		
Aromatic C8-C10	mg/kg	DETS 072*	< 0.01	< 0.01		
Aromatic C10-C12	mg/kg	DETS 072#	< 0.9	< 0.9		
Aromatic C12-C16	mg/kg	DETS 072#	< 0.5	1.8		
Aromatic C16-C21	mg/kg	DETS 072#	1.4	13		
Aromatic C21-C35	mg/kg	DETS 072#	8.7	53		
Aliphatic C5-C35	mg/kg	DETS 072*	29	160		
Aromatic C5-C35	mg/kg	DETS 072*	10	68		
TPH Ali/Aro	mg/kg	DETS 072*	39	230		

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243294	243295	243296	243297
		Sample Ref	WS1	WS1	WS2	WS2
		Depth	0.15	0.25	0.30	0.50
		Other Ref	1	2	1	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Acenaphthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	DETS 050	< 0.1	0.4	0.1	
Anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	
Benzo(g,h,i)perylene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	
Chrysene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	DETS 050	< 0.1	0.4	< 0.1	
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	
Naphthalene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	
Pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	
PAH	mg/kg	DETS 050	< 1.6	< 1.6	< 1.6	
EPH (C10-C40)	mg/kg	DETS 051#	94	320		
Phenol - Monohydric	mg/kg	DETS 067#	< 0.3	0.8	< 0.3	

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243298	243299	243300	243301
		Sample Ref	WS3	WS3	WS4	WS4
		Depth	0.50	2.40	0.40	0.90
		Other Ref	1	2	1	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Arsenic	mg/kg	DETS 042#	6		9	
Cadmium	mg/kg	DETS 042#	0.2		0.5	
Chromium	mg/kg	DETS 042#	16		18	
Hexavalent Chromium	mg/kg	DETSC2204'	< 1		< 1	
Copper	mg/kg	DETS 042#	44		46	
Lead	mg/kg	DETS 042#	20		29	
Mercury	mg/kg	DETS 081#	0.07		0.19	
Nickel	mg/kg	DETS 042#	27		41	
Selenium	mg/kg	DETS 042#	< 0.5		< 0.5	
Zinc	mg/kg	DETS 042#	60		97	
Calorific Value	KJ/kg	DETS 037*		3500		2000
Cyanide total	mg/kg	DETS 067#	< 0.1		< 0.1	
Loss on ignition	%	DETS 003#		34		20
Organic matter	%	DETS 002#	15		9.8	
Sulphide	mg/kg	DETS 024#	28		40	
Total Sulphate as SO4	%	DETS 075#	0.04	0.05	0.05	0.05
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	220	250	130	150
Total Sulphur as S	%	DETS 064	0.04	0.05	0.03	0.04
pH		DETS 008#	9.4	9.2	9.0	8.8
Aliphatic C5-C6	mg/kg	DETS 072*				
Aliphatic C6-C8	mg/kg	DETS 072*				
Aliphatic C8-C10	mg/kg	DETS 072*				
Aliphatic C10-C12	mg/kg	DETS 072#				
Aliphatic C12-C16	mg/kg	DETS 072#				
Aliphatic C16-C21	mg/kg	DETS 072#				
Aliphatic C21-C35	mg/kg	DETS 072#				
Aromatic C5-C7	mg/kg	DETS 072*				
Aromatic C7-C8	mg/kg	DETS 072*				
Aromatic C8-C10	mg/kg	DETS 072*				
Aromatic C10-C12	mg/kg	DETS 072#				
Aromatic C12-C16	mg/kg	DETS 072#				
Aromatic C16-C21	mg/kg	DETS 072#				
Aromatic C21-C35	mg/kg	DETS 072#				
Aliphatic C5-C35	mg/kg	DETS 072*				
Aromatic C5-C35	mg/kg	DETS 072*				
TPH Ali/Aro	mg/kg	DETS 072*				

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243298	243299	243300	243301
		Sample Ref	WS3	WS3	WS4	WS4
		Depth	0.50	2.40	0.40	0.90
		Other Ref	1	2	1	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Acenaphthene	mg/kg	DETS 050	0.5		< 0.1	
Acenaphthylene	mg/kg	DETS 050	0.3		0.2	
Anthracene	mg/kg	DETS 050	< 0.1		< 0.1	
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1		< 0.1	
Benzo(a)pyrene	mg/kg	DETS 050	< 0.1		< 0.1	
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1		< 0.1	
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1		< 0.1	
Benzo(g,h,i)perylene	mg/kg	DETS 050	< 0.1		< 0.1	
Chrysene	mg/kg	DETS 050	< 0.1		< 0.1	
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1		< 0.1	
Fluoranthene	mg/kg	DETS 050	< 0.1		< 0.1	
Fluorene	mg/kg	DETS 050	0.2		< 0.1	
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1		< 0.1	
Naphthalene	mg/kg	DETS 050	< 0.1		< 0.1	
Phenanthrene	mg/kg	DETS 050	0.2		< 0.1	
Pyrene	mg/kg	DETS 050	< 0.1		< 0.1	
PAH	mg/kg	DETS 050	< 1.6		< 1.6	
EPH (C10-C40)	mg/kg	DETS 051#	68			
Phenol - Monohydric	mg/kg	DETS 067#	< 0.3		< 0.3	

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243302	243303	243304	243305
		Sample Ref	WS5	WS5	WS6	WS6
		Depth	0.25	0.40	0.20	0.70
		Other Ref	1	2	1	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Arsenic	mg/kg	DETS 042#	8		24	
Cadmium	mg/kg	DETS 042#	0.4		0.9	
Chromium	mg/kg	DETS 042#	16		20	
Hexavalent Chromium	mg/kg	DETSC2204'	< 1		< 1	
Copper	mg/kg	DETS 042#	28		270	
Lead	mg/kg	DETS 042#	18		25	
Mercury	mg/kg	DETS 081#	< 0.05		0.23	
Nickel	mg/kg	DETS 042#	24		36	
Selenium	mg/kg	DETS 042#	< 0.5		< 0.5	
Zinc	mg/kg	DETS 042#	320		260	
Calorific Value	KJ/kg	DETS 037*				
Cyanide total	mg/kg	DETS 067#	< 0.1		< 0.1	
Loss on ignition	%	DETS 003#				20
Organic matter	%	DETS 002#	5.8		3.1	
Sulphide	mg/kg	DETS 024#	< 10		71	
Total Sulphate as SO4	%	DETS 075#	0.79	0.34	0.07	0.07
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	670	800	240	81
Total Sulphur as S	%	DETS 064	0.22	0.15	0.07	0.06
pH		DETS 008#	11.4	9.3	9.9	9.3
Aliphatic C5-C6	mg/kg	DETS 072*				
Aliphatic C6-C8	mg/kg	DETS 072*				
Aliphatic C8-C10	mg/kg	DETS 072*				
Aliphatic C10-C12	mg/kg	DETS 072#				
Aliphatic C12-C16	mg/kg	DETS 072#				
Aliphatic C16-C21	mg/kg	DETS 072#				
Aliphatic C21-C35	mg/kg	DETS 072#				
Aromatic C5-C7	mg/kg	DETS 072*				
Aromatic C7-C8	mg/kg	DETS 072*				
Aromatic C8-C10	mg/kg	DETS 072*				
Aromatic C10-C12	mg/kg	DETS 072#				
Aromatic C12-C16	mg/kg	DETS 072#				
Aromatic C16-C21	mg/kg	DETS 072#				
Aromatic C21-C35	mg/kg	DETS 072#				
Aliphatic C5-C35	mg/kg	DETS 072*				
Aromatic C5-C35	mg/kg	DETS 072*				
TPH Ali/Aro	mg/kg	DETS 072*				

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243302	243303	243304	243305
		Sample Ref	WS5	WS5	WS6	WS6
		Depth	0.25	0.40	0.20	0.70
		Other Ref	1	2	1	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Acenaphthene	mg/kg	DETS 050	< 0.1		< 0.1	
Acenaphthylene	mg/kg	DETS 050	< 0.1		< 0.1	
Anthracene	mg/kg	DETS 050	< 0.1		< 0.1	
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1		< 0.1	
Benzo(a)pyrene	mg/kg	DETS 050	< 0.1		< 0.1	
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1		< 0.1	
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1		< 0.1	
Benzo(g,h,i)perylene	mg/kg	DETS 050	< 0.1		< 0.1	
Chrysene	mg/kg	DETS 050	< 0.1		< 0.1	
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1		< 0.1	
Fluoranthene	mg/kg	DETS 050	< 0.1		< 0.1	
Fluorene	mg/kg	DETS 050	< 0.1		< 0.1	
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1		< 0.1	
Naphthalene	mg/kg	DETS 050	< 0.1		< 0.1	
Phenanthrene	mg/kg	DETS 050	< 0.1		< 0.1	
Pyrene	mg/kg	DETS 050	< 0.1		< 0.1	
PAH	mg/kg	DETS 050	< 1.6		< 1.6	
EPH (C10-C40)	mg/kg	DETS 051#	99			
Phenol - Monohydric	mg/kg	DETS 067#	< 0.3		< 0.3	

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243306	243307	243308	243309
		Sample Ref	WS7	WS8	WS8	WS9
		Depth	0.50	0.15	0.90	0.70
		Other Ref	2	1	2	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Arsenic	mg/kg	DETS 042#	13	51		210
Cadmium	mg/kg	DETS 042#	0.5	0.6		6.2
Chromium	mg/kg	DETS 042#	20	19		17
Hexavalent Chromium	mg/kg	DETSC2204'	< 1	< 1		< 1
Copper	mg/kg	DETS 042#	43	50		340
Lead	mg/kg	DETS 042#	29	34		2200
Mercury	mg/kg	DETS 081#	0.13	0.32		0.12
Nickel	mg/kg	DETS 042#	30	32		43
Selenium	mg/kg	DETS 042#	1	1.1		1
Zinc	mg/kg	DETS 042#	83	130		6800
Calorific Value	KJ/kg	DETS 037*			3000	
Cyanide total	mg/kg	DETS 067#	< 0.1	< 0.1		< 0.1
Loss on ignition	%	DETS 003#			31	
Organic matter	%	DETS 002#	10	3.0		8.1
Sulphide	mg/kg	DETS 024#	17	13		42
Total Sulphate as SO4	%	DETS 075#	0.11	0.02	0.04	0.05
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	160	55	110	120
Total Sulphur as S	%	DETS 064	0.09	0.02	0.24	0.04
pH		DETS 008#	9.1	9.3	9.2	8.8
Aliphatic C5-C6	mg/kg	DETS 072*	< 0.01			
Aliphatic C6-C8	mg/kg	DETS 072*	< 0.01			
Aliphatic C8-C10	mg/kg	DETS 072*	< 0.01			
Aliphatic C10-C12	mg/kg	DETS 072#	< 1.5			
Aliphatic C12-C16	mg/kg	DETS 072#	1.9			
Aliphatic C16-C21	mg/kg	DETS 072#	3.8			
Aliphatic C21-C35	mg/kg	DETS 072#	19			
Aromatic C5-C7	mg/kg	DETS 072*	< 0.01			
Aromatic C7-C8	mg/kg	DETS 072*	< 0.01			
Aromatic C8-C10	mg/kg	DETS 072*	< 0.01			
Aromatic C10-C12	mg/kg	DETS 072#	< 0.9			
Aromatic C12-C16	mg/kg	DETS 072#	1.4			
Aromatic C16-C21	mg/kg	DETS 072#	3.2			
Aromatic C21-C35	mg/kg	DETS 072#	7.9			
Aliphatic C5-C35	mg/kg	DETS 072*	25			
Aromatic C5-C35	mg/kg	DETS 072*	13			
TPH Ali/Aro	mg/kg	DETS 072*	38			

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243306	243307	243308	243309
		Sample Ref	WS7	WS8	WS8	WS9
		Depth	0.50	0.15	0.90	0.70
		Other Ref	2	1	2	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Acenaphthene	mg/kg	DETS 050	0.3	< 0.1		0.1
Acenaphthylene	mg/kg	DETS 050	< 0.1	< 0.1		0.3
Anthracene	mg/kg	DETS 050	< 0.1	< 0.1		2.1
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Benzo(a)pyrene	mg/kg	DETS 050	< 0.1	< 0.1		0.8
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1		1.4
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1		0.6
Benzo(g,h,i)perylene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Chrysene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Fluorene	mg/kg	DETS 050	0.4	< 0.1		0.8
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Naphthalene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Phenanthrene	mg/kg	DETS 050	0.5	< 0.1		1.5
Pyrene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
PAH	mg/kg	DETS 050	< 1.6	< 1.6		7.6
EPH (C10-C40)	mg/kg	DETS 051#	120			
Phenol - Monohydric	mg/kg	DETS 067#	< 0.3	< 0.3		< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243310	243311	243312	243313
		Sample Ref	WS10	WS10	WS12	WS12
		Depth	0.20	0.80	0.10	0.20
		Other Ref	1	2	1	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Arsenic	mg/kg	DETS 042#	66	9	60	6
Cadmium	mg/kg	DETS 042#	1	0.7	2.4	0.2
Chromium	mg/kg	DETS 042#	17	19	22	10
Hexavalent Chromium	mg/kg	DETSC2204'	< 1		< 1	< 1
Copper	mg/kg	DETS 042#	43	38	250	13
Lead	mg/kg	DETS 042#	76	34	150	12
Mercury	mg/kg	DETS 081#	0.44	0.12	0.24	< 0.05
Nickel	mg/kg	DETS 042#	27	43	46	8
Selenium	mg/kg	DETS 042#	1.9	< 0.5	1	2.1
Zinc	mg/kg	DETS 042#	200	95	320	46
Calorific Value	KJ/kg	DETS 037*		3100		
Cyanide total	mg/kg	DETS 067#	< 0.1		< 0.1	< 0.1
Loss on ignition	%	DETS 003#		31		
Organic matter	%	DETS 002#	3.0		5.9	2.7
Sulphide	mg/kg	DETS 024#	50		120	1800
Total Sulphate as SO4	%	DETS 075#	0.03	0.06	0.29	3.1
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	44	210	240	1900
Total Sulphur as S	%	DETS 064	0.02	0.06	0.22	0.57
pH		DETS 008#	9.0	8.8	8.7	11.3
Aliphatic C5-C6	mg/kg	DETS 072*			< 0.01	
Aliphatic C6-C8	mg/kg	DETS 072*			< 0.01	
Aliphatic C8-C10	mg/kg	DETS 072*			< 0.01	
Aliphatic C10-C12	mg/kg	DETS 072#			< 1.5	
Aliphatic C12-C16	mg/kg	DETS 072#			2.3	
Aliphatic C16-C21	mg/kg	DETS 072#			4.8	
Aliphatic C21-C35	mg/kg	DETS 072#			17	
Aromatic C5-C7	mg/kg	DETS 072*			< 0.01	
Aromatic C7-C8	mg/kg	DETS 072*			< 0.01	
Aromatic C8-C10	mg/kg	DETS 072*			< 0.01	
Aromatic C10-C12	mg/kg	DETS 072#			< 0.9	
Aromatic C12-C16	mg/kg	DETS 072#			0.6	
Aromatic C16-C21	mg/kg	DETS 072#			9.4	
Aromatic C21-C35	mg/kg	DETS 072#			24	
Aliphatic C5-C35	mg/kg	DETS 072*			25	
Aromatic C5-C35	mg/kg	DETS 072*			34	
TPH Ali/Aro	mg/kg	DETS 072*			59	

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243310	243311	243312	243313
		Sample Ref	WS10	WS10	WS12	WS12
		Depth	0.20	0.80	0.10	0.20
		Other Ref	1	2	1	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Acenaphthene	mg/kg	DETS 050	< 0.1		0.3	< 0.1
Acenaphthylene	mg/kg	DETS 050	< 0.1		0.3	< 0.1
Anthracene	mg/kg	DETS 050	< 0.1		2.6	< 0.1
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1		5.1	< 0.1
Benzo(a)pyrene	mg/kg	DETS 050	< 0.1		3.8	< 0.1
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1		5.5	< 0.1
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1		2.2	< 0.1
Benzo(g,h,i)perylene	mg/kg	DETS 050	< 0.1		2.2	< 0.1
Chrysene	mg/kg	DETS 050	< 0.1		3.6	< 0.1
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1		0.4	< 0.1
Fluoranthene	mg/kg	DETS 050	< 0.1		9.2	< 0.1
Fluorene	mg/kg	DETS 050	< 0.1		0.5	< 0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1		2.9	< 0.1
Naphthalene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Phenanthrene	mg/kg	DETS 050	< 0.1		5.2	< 0.1
Pyrene	mg/kg	DETS 050	< 0.1		7.4	< 0.1
PAH	mg/kg	DETS 050	< 1.6		51	< 1.6
EPH (C10-C40)	mg/kg	DETS 051#	30		540	
Phenol - Monohydric	mg/kg	DETS 067#	< 0.3		< 0.3	< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243314	243315	243316	243317
		Sample Ref	WS12	WS13	WS13	WS14
		Depth	0.50	0.10	0.90	0.70
		Other Ref	3	1	2	1
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Arsenic	mg/kg	DETS 042#		55	9	16
Cadmium	mg/kg	DETS 042#		0.7	0.4	0.5
Chromium	mg/kg	DETS 042#		50	22	26
Hexavalent Chromium	mg/kg	DETSC2204'		< 1	< 1	< 1
Copper	mg/kg	DETS 042#		160	46	46
Lead	mg/kg	DETS 042#		400	26	27
Mercury	mg/kg	DETS 081#		0.17	0.13	0.14
Nickel	mg/kg	DETS 042#		34	37	39
Selenium	mg/kg	DETS 042#		< 0.5	0.6	0.6
Zinc	mg/kg	DETS 042#		210	75	90
Calorific Value	KJ/kg	DETS 037*				
Cyanide total	mg/kg	DETS 067#		< 0.1	< 0.1	< 0.1
Loss on ignition	%	DETS 003#	12			
Organic matter	%	DETS 002#		4.0	13	11
Sulphide	mg/kg	DETS 024#		220	20	34
Total Sulphate as SO4	%	DETS 075#	0.09	0.67	0.06	0.03
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	1200	1500	230	64
Total Sulphur as S	%	DETS 064	0.06	0.29	0.03	0.25
pH		DETS 008#	9.6	9.0	9.3	9.0
Aliphatic C5-C6	mg/kg	DETS 072*				
Aliphatic C6-C8	mg/kg	DETS 072*				
Aliphatic C8-C10	mg/kg	DETS 072*				
Aliphatic C10-C12	mg/kg	DETS 072#				
Aliphatic C12-C16	mg/kg	DETS 072#				
Aliphatic C16-C21	mg/kg	DETS 072#				
Aliphatic C21-C35	mg/kg	DETS 072#				
Aromatic C5-C7	mg/kg	DETS 072*				
Aromatic C7-C8	mg/kg	DETS 072*				
Aromatic C8-C10	mg/kg	DETS 072*				
Aromatic C10-C12	mg/kg	DETS 072#				
Aromatic C12-C16	mg/kg	DETS 072#				
Aromatic C16-C21	mg/kg	DETS 072#				
Aromatic C21-C35	mg/kg	DETS 072#				
Aliphatic C5-C35	mg/kg	DETS 072*				
Aromatic C5-C35	mg/kg	DETS 072*				
TPH Ali/Aro	mg/kg	DETS 072*				

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243314	243315	243316	243317
		Sample Ref	WS12	WS13	WS13	WS14
		Depth	0.50	0.10	0.90	0.70
		Other Ref	3	1	2	1
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Acenaphthene	mg/kg	DETS 050		< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	DETS 050		< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	DETS 050		< 0.1	< 0.1	0.2
Benzo(a)anthracene	mg/kg	DETS 050		< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	DETS 050		< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	DETS 050		< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	DETS 050		< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	mg/kg	DETS 050		< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	DETS 050		< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	mg/kg	DETS 050		< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	DETS 050		< 0.1	0.3	< 0.1
Fluorene	mg/kg	DETS 050		< 0.1	0.2	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050		< 0.1	< 0.1	< 0.1
Naphthalene	mg/kg	DETS 050		< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	DETS 050		< 0.1	0.5	0.6
Pyrene	mg/kg	DETS 050		< 0.1	0.3	< 0.1
PAH	mg/kg	DETS 050		< 1.6	< 1.6	< 1.6
EPH (C10-C40)	mg/kg	DETS 051#			120	
Phenol - Monohydric	mg/kg	DETS 067#		< 0.3	< 0.3	< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243318	243319	243320	243321
		Sample Ref	WS14	WS15	WS15	WS16
		Depth	1.30	0.20	0.80	0.30
		Other Ref	2	1	3	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Arsenic	mg/kg	DETS 042#		2		10
Cadmium	mg/kg	DETS 042#		0.4		0.4
Chromium	mg/kg	DETS 042#		5		15
Hexavalent Chromium	mg/kg	DETSC2204'		< 1		< 1
Copper	mg/kg	DETS 042#		5		52
Lead	mg/kg	DETS 042#		6		28
Mercury	mg/kg	DETS 081#		< 0.05		0.12
Nickel	mg/kg	DETS 042#		3		36
Selenium	mg/kg	DETS 042#		0.7		< 0.5
Zinc	mg/kg	DETS 042#		40		90
Calorific Value	KJ/kg	DETS 037*			3300	
Cyanide total	mg/kg	DETS 067#		< 0.1		< 0.1
Loss on ignition	%	DETS 003#	23		33	
Organic matter	%	DETS 002#		1.0		3.9
Sulphide	mg/kg	DETS 024#		29		. 48
Total Sulphate as SO4	%	DETS 075#	0.04	0.05	0.01	0.02
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	39	26	33	31
Total Sulphur as S	%	DETS 064	0.12	< 0.01	0.1	0.03
pH		DETS 008#	8.8	9.1	9.0	9.1
Aliphatic C5-C6	mg/kg	DETS 072*				
Aliphatic C6-C8	mg/kg	DETS 072*				
Aliphatic C8-C10	mg/kg	DETS 072*				
Aliphatic C10-C12	mg/kg	DETS 072#				
Aliphatic C12-C16	mg/kg	DETS 072#				
Aliphatic C16-C21	mg/kg	DETS 072#				
Aliphatic C21-C35	mg/kg	DETS 072#				
Aromatic C5-C7	mg/kg	DETS 072*				
Aromatic C7-C8	mg/kg	DETS 072*				
Aromatic C8-C10	mg/kg	DETS 072*				
Aromatic C10-C12	mg/kg	DETS 072#				
Aromatic C12-C16	mg/kg	DETS 072#				
Aromatic C16-C21	mg/kg	DETS 072#				
Aromatic C21-C35	mg/kg	DETS 072#				
Aliphatic C5-C35	mg/kg	DETS 072*				
Aromatic C5-C35	mg/kg	DETS 072*				
TPH Ali/Aro	mg/kg	DETS 072*				

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243318	243319	243320	243321
		Sample Ref	WS14	WS15	WS15	WS16
		Depth	1.30	0.20	0.80	0.30
		Other Ref	2	1	3	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Acenaphthene	mg/kg	DETS 050		< 0.1		0.2
Acenaphthylene	mg/kg	DETS 050		< 0.1		0.2
Anthracene	mg/kg	DETS 050		< 0.1		0.4
Benzo(a)anthracene	mg/kg	DETS 050		< 0.1		< 0.1
Benzo(a)pyrene	mg/kg	DETS 050		< 0.1		< 0.1
Benzo(b)fluoranthene	mg/kg	DETS 050		< 0.1		< 0.1
Benzo(k)fluoranthene	mg/kg	DETS 050		< 0.1		< 0.1
Benzo(g,h,i)perylene	mg/kg	DETS 050		< 0.1		< 0.1
Chrysene	mg/kg	DETS 050		< 0.1		< 0.1
Dibenzo(a,h)anthracene	mg/kg	DETS 050		< 0.1		< 0.1
Fluoranthene	mg/kg	DETS 050		< 0.1		< 0.1
Fluorene	mg/kg	DETS 050		< 0.1		< 0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050		< 0.1		< 0.1
Naphthalene	mg/kg	DETS 050		< 0.1		< 0.1
Phenanthrene	mg/kg	DETS 050		< 0.1		0.4
Pyrene	mg/kg	DETS 050		< 0.1		< 0.1
PAH	mg/kg	DETS 050		< 1.6		< 1.6
EPH (C10-C40)	mg/kg	DETS 051#				
Phenol - Monohydric	mg/kg	DETS 067#		< 0.3		< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243322	243323
		Sample Ref	WS8	WS8
		Depth	0.80	0.90
		Other Ref	1	2
		Sample Type	S	S
Test	**Units**	**DETSxx**		
Arsenic	mg/kg	DETS 042#	12	24
Cadmium	mg/kg	DETS 042#	0.5	1.1
Chromium	mg/kg	DETS 042#	17	44
Hexavalent Chromium	mg/kg	DETSC2204'	< 1	< 1
Copper	mg/kg	DETS 042#	36	88
Lead	mg/kg	DETS 042#	22	64
Mercury	mg/kg	DETS 081#	< 0.05	0.16
Nickel	mg/kg	DETS 042#	25	39
Selenium	mg/kg	DETS 042#	< 0.5	1.3
Zinc	mg/kg	DETS 042#	56	140
Calorific Value	KJ/kg	DETS 037*		
Cyanide total	mg/kg	DETS 067#	< 0.1	< 0.1
Loss on ignition	%	DETS 003#		34
Organic matter	%	DETS 002#	5.1	15
Sulphide	mg/kg	DETS 024#	21	470
Total Sulphate as SO4	%	DETS 075#	0.26	0.04
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	300	42
Total Sulphur as S	%	DETS 064	0.11	0.04
pH		DETS 008#	11.3	9.5
Aliphatic C5-C6	mg/kg	DETS 072*		
Aliphatic C6-C8	mg/kg	DETS 072*		
Aliphatic C8-C10	mg/kg	DETS 072*		
Aliphatic C10-C12	mg/kg	DETS 072#		
Aliphatic C12-C16	mg/kg	DETS 072#		
Aliphatic C16-C21	mg/kg	DETS 072#		
Aliphatic C21-C35	mg/kg	DETS 072#		
Aromatic C5-C7	mg/kg	DETS 072*		
Aromatic C7-C8	mg/kg	DETS 072*		
Aromatic C8-C10	mg/kg	DETS 072*		
Aromatic C10-C12	mg/kg	DETS 072#		
Aromatic C12-C16	mg/kg	DETS 072#		
Aromatic C16-C21	mg/kg	DETS 072#		
Aromatic C21-C35	mg/kg	DETS 072#		
Aliphatic C5-C35	mg/kg	DETS 072*		
Aromatic C5-C35	mg/kg	DETS 072*		
TPH Ali/Aro	mg/kg	DETS 072*		

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243322	243323
		Sample Ref	WS8	WS8
		Depth	0.80	0.90
		Other Ref	1	2
		Sample Type	S	S
Test	**Units**	**DETSxx**		
Acenaphthene	mg/kg	DETS 050	< 0.1	0.2
Acenaphthylene	mg/kg	DETS 050	< 0.1	< 0.1
Anthracene	mg/kg	DETS 050	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	DETS 050	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1
Benzo(g,h,i)perylene	mg/kg	DETS 050	< 0.1	< 0.1
Chrysene	mg/kg	DETS 050	< 0.1	< 0.1
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1	< 0.1
Fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1
Fluorene	mg/kg	DETS 050	< 0.1	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1	< 0.1
Naphthalene	mg/kg	DETS 050	< 0.1	0.3
Phenanthrene	mg/kg	DETS 050	< 0.1	< 0.1
Pyrene	mg/kg	DETS 050	< 0.1	< 0.1
PAH	mg/kg	DETS 050	< 1.6	< 1.6
EPH (C10-C40)	mg/kg	DETS 051#	30	
Phenol - Monohydric	mg/kg	DETS 067#	< 0.3	< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243313	243317	243319	243321
		Sample Ref	WS12	WS14	WS15	WS16
		Depth	0.20	0.70	0.20	0.30
		Other Ref	2	1	1	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Total VOC's	mg/kg	DETS 068*	0.01	0.22	0.01	0.38
1,1 Dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Methylene Chloride	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichlororopane+1,2-dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Carbon tetrachloride + 1,1-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	mg/kg	DETS 068*	< 0.01	0.02	< 0.01	< 0.01
1,2-dichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	mg/kg	DETS 068*	< 0.01	0.05	< 0.01	0.34
1,2-dichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	mg/kg	DETS 068*	0.01	0.1	< 0.01	0.02
trans-1,3-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene+1,1,1,2-tetrachloroethane	mg/kg	DETS 068*	< 0.01	0.01	0.01	< 0.01
m+p-Xylene	mg/kg	DETS 068*	< 0.01	0.03	< 0.01	0.02
o-Xylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Styrene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Bromoform	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Bromobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
sec-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene+p-isopropyltoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	243313	243317	243319	243321
		Sample Ref	WS12	WS14	WS15	WS16
		Depth	0.20	0.70	0.20	0.30
		Other Ref	2	1	1	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
1,2-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
Naphthalene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis
Leachate Samples

Our Ref: 10-35772-2
Client Ref: KC709-33
Contract Title: Ewenny Road Industrial Estate

		Lab No.	247635	247636	247637	247638
		Sample Ref	WS9	WS10	WS12	WS13
		Depth	0.70	0.20	0.10	0.10
		Other Ref				
		Sample Type				
Test	**Units**	**DETSxx**				
Arsenic Dissolved	ug/l	DETS 010	2	9	< 1	< 1
Copper Dissolved	ug/l	DETS 042	< 2	< 2	< 2	< 2
Lead Dissolved	ug/l	DETS 042	< 4	< 4	< 4	< 4
Zinc Dissolved	ug/l	DETS 042	< 1	< 1	< 1	< 1

Appendix A - Details of Analysis

Method details are shown only for those determinants listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS.
No Recovery Factors are used in the determination of results. Results reported assume 100% recovery
Full method statements are available on request.

Method	Name of Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETS 002	Organic Matter	%	0.01	Air Dried	No	Yes	Yes
DETS 003	Loss on Ignition	%	0.01	Air Dried	No	Yes	Yes
DETS 004	Total Sulphate	%	0.01	Air Dried	No	Yes	Yes
DETS 075	Total Sulphate	%	0.01	Air Dried	No	Yes	Yes
DETS 004	Water Soluble Sulphate	mg/l	10.00	Air Dried	No	Yes	Yes
DETS 076	Water Soluble Sulphate	mg/l	10.00	Air Dried	No	Yes	Yes
DETS 006	Chloride	mg/kg	0.01	Air Dried	No	Yes	Yes
DETS 008	pH	pH Units	0.10	Air Dried	No	Yes	Yes
DETS 042	Selenium	mg/kg	0.50	Air Dried	No	Yes	Yes
DETS 019	Ammonia	mg/kg	0.02	Air Dried	No	Yes	Yes
DETS 020	Boron (Water Soluble)	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 024	Sulphide	mg/kg	10.00	Air Dried	No	Yes	Yes
DETS 042	Antimony	mg/kg	1.00	Air Dried	No	No	No
DETS 042	Arsenic	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Barium	mg/kg	1.50	Air Dried	No	Yes	Yes
DET S 042	Beryllium	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Cadmium	mg/kg	0.10	Air Dried	No	Yes	Yes

Appendix A - Details of Analysis

Method details are shown only for those determinants listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS.
No Recovery Factors are used in the determination of results. Results reported assume 100% recovery
Full method statements are available on request.

Method	Name of Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETS 042	Cobalt	mg/kg	0.70	Air Dried	No	Yes	Yes
DETS 042	Copper	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETS 042	Iron	mg/kg	1.00	Air Dried	No	Yes	No
DETS 042	Lead	mg/kg	0.30	Air Dried	No	Yes	Yes
DETS 042	Manganese	mg/kg	20.00	Air Dried	No	Yes	Yes
DETS 081	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETS 042	Molybdenum	mg/kg	0.40	Air Dried	No	Yes	Yes
DETS 042	Nickel	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Thallium	mg/kg	1.00	Air Dried	No	No	No
DETS 042	Vanadium	mg/kg	0.80	Air Dried	No	Yes	Yes
DETS 042	Zinc	mg/kg	1.00	Air Dried	No	Yes	Yes
DETS 049	Sulphur (Free)	mg/kg	0.50	As Received	No	Yes	Yes
DETS 050	PAH	mg/kg	0.10	As Received	No	Yes	No
DETS 051	TPH (C10 - C40)	mg/kg	20.00	As Received	No	Yes	Yes
DETS 052	PCB	mg/kg	0.01	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method details are shown only for those determinants listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS.
No Recovery Factors are used in the determination of results. Results reported assume 100% recovery
Full method statements are available on request.

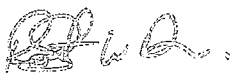
Method	Name of Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzne	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 067	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETS 067	Easily Liberatable Cyanide	mg/kg	0.1	Air Dried	No	Yes	Yes
DETS 067	Complex Cyanide	mg/kg	0.30	Air Dried	No	Yes	No
DETS 067	Total Cyanide	mg/kg	0.40	Air Dried	No	Yes	Yes
DETS 067	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETS 068	VOC	mg/kg	0.01	As Received	No	No	No

Certificate of Analysis

2139

Certificate Number: 10-35854-1

Date: 22/03/2010

Client:	Johnson, Poole & Bloomer Limited Unit 5 Neptune Court Vanguard Way Cardiff Wales CF24 5PJ
Our Reference:	10-35854-1
Client Reference:	KC709-50
Contract Title:	Ewenny Road
Description:	29 soil samples, 1 leachate sample
Date Received:	24/02/2010
Date Started:	24/02/2010
Date Completed:	22/03/2010
Test Procedures:	Identified by prefix DETSn, details available upon request.
Notes:	**This report supersedes 10-35854, additional testing carried out** Observations and interpretations are outside the scope of UKAS accreditation * denotes test not included in laboratory scope of accreditation # denotes test that holds MCERT accreditation $ denotes tests completed by an approved subcontractor I/S denotes insufficient sample to carry out test N/S denotes that the sample is not suitable for testing DETSM denotes tests carried out by DETS Midlands laboratory Solid samples will be disposed 1 month and liquids 2 weeks after the date of issue of this test certificate Asbestos subsamples will be kept for 6 months
Approved By:	
Authorised Signatories:	Rob Brown Business Manager

Derwentside Environmental Testing Services Limited
Unit 2, Park Road Industrial Estate South, Consett, Co Durham, DH8 5PY
Tel: 01207 582333 • Fax 01207 582444 • email: info@dets.co.uk • www.dets.co.uk

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

Sample Details

Sample ID	Number	Depth	DETS Ref	Matrix Description	Date Sampled	Time Sampled	Preservation	Analysis Complete
WS10A	1	1.80	243897	black gravelly sandy CLAY made ground contains coal	Not Provided	Not Provided	None	22/03/2010
WS19	2	0.70	243898	black gravelly sandy CLAY	Not Provided	Not Provided	None	22/03/2010
WS19	3	1.40	243899	brown grey sandy CLAY	Not Provided	Not Provided	None	22/03/2010
WS19	5	2.90	243900	brown gravelly sandy CLAY	Not Provided	Not Provided	None	22/03/2010
WS20	1	0.20	243901	grey brown sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS21	2	0.40	243902	black sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS21	3	3.90	243903	black sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS22	2	0.50	243904	grey sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS22	3	0.70	243905	grey clayey sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS22	4	2.70	243906	black gravelly sandy CLAY	Not Provided	Not Provided	None	22/03/2010
WS23	1	0.30	243907	grey sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS23	2	0.70	243908	grey gravelly sandy CLAY	Not Provided	Not Provided	None	22/03/2010
WS23	3	1.50	243909	black sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS24	2	0.40	243910	black sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS24	3	2.90	243911	dark brown gravelly sandy CLAY	Not Provided	Not Provided	None	22/03/2010
WS25	1	0.25	243912	grey sandy CLAY	Not Provided	Not Provided	None	22/03/2010
WS25	2	0.50	243913	black gravelly sandy CLAY	Not Provided	Not Provided	None	22/03/2010
WS25	3	0.90	243914	black sandy GRAVEL made ground contains coal	Not Provided	Not Provided	None	22/03/2010
WS26	1	0.50	243915	black sandy GRAVEL made ground contains coal	Not Provided	Not Provided	None	22/03/2010
WS26	2	1.20	243916	black sandy GRAVEL made ground contains coal	Not Provided	Not Provided	None	22/03/2010
WS26	3	2.90	243917	black sandy GRAVEL made ground contains coal	Not Provided	Not Provided	None	22/03/2010
BH1		2.00	243918	brown sandy CLAY	Not Provided	Not Provided	None	22/03/2010
BH3		5.00	243919	brown sandy CLAY	Not Provided	Not Provided	None	22/03/2010
BH4		6.00	243920	black sandy CLAY	Not Provided	Not Provided	None	22/03/2010
WS5	4	3.80	243921	black sandy GRAVEL made ground contains coal	Not Provided	Not Provided	None	22/03/2010
WS8	4	2.80	243922	brown gravelly sandy CLAY	Not Provided	Not Provided	None	22/03/2010
WS11	2	2.70	243923	black sandy GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS12	5	2.10	243924	brown sandy clayey GRAVEL	Not Provided	Not Provided	None	22/03/2010
WS15	4	1.80	243925	dark brown gravelly sandy CLAY	Not Provided	Not Provided	None	22/03/2010

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243897	243898	243899	243900
		Sample Ref	WS10A	WS19	WS19	WS19
		Depth	1.80	0.70	1.40	2.90
		Other Ref	1	2	3	5
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Arsenic	mg/kg	DETS 042#		4		
Cadmium	mg/kg	DETS 042#		0.2		
Chromium	mg/kg	DETS 042#		14		
Hexavalent Chromium	mg/kg	DETSC2204*		< 1		
Copper	mg/kg	DETS 042#		17		
Lead	mg/kg	DETS 042#		13		
Mercury	mg/kg	DETS 081#		0.1		
Nickel	mg/kg	DETS 042#		20		
Selenium	mg/kg	DETS 042#		< 0.5		
Zinc	mg/kg	DETS 042#		35		
Calorific Value	KJ/kg	DETS 037*				
Cyanide total	mg/kg	DETS 067#		< 0.1		
Loss on ignition	%	DETS 003#			15	
Organic matter	%	DETS 002#		22		
Sulphide	mg/kg	DETS 024#		66		
Total Sulphate as SO4	%	DETS 075#	0.03	0.03	0.02	< 0.01
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	75	45	56	17
Total Sulphur as S	%	DETS 064	0.04	0.11	0.06	0.02
pH		DETS 008#	8.7	8.9	8.6	8.7
Aliphatic C5-C6	mg/kg	DETS 072*				
Aliphatic C6-C8	mg/kg	DETS 072*				
Aliphatic C8-C10	mg/kg	DETS 072*				
Aliphatic C10-C12	mg/kg	DETS 072#				
Aliphatic C12-C16	mg/kg	DETS 072#				
Aliphatic C16-C21	mg/kg	DETS 072#				
Aliphatic C21-C35	mg/kg	DETS 072#				
Aromatic C5-C7	mg/kg	DETS 072*				
Aromatic C7-C8	mg/kg	DETS 072*				
Aromatic C8-C10	mg/kg	DETS 072*				
Aromatic C10-C12	mg/kg	DETS 072#				
Aromatic C12-C16	mg/kg	DETS 072#				
Aromatic C16-C21	mg/kg	DETS 072#				
Aromatic C21-C35	mg/kg	DETS 072#				
Aliphatic C5-C35	mg/kg	DETS 072*				
Aromatic C5-C35	mg/kg	DETS 072*				
TPH Ali/Aro	mg/kg	DETS 072*				

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243897	243898	243899	243900
		Sample Ref	WS10A	WS19	WS19	WS19
		Depth	1.80	0.70	1.40	2.90
		Other Ref	1	2	3	5
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Acenaphthene	mg/kg	DETS 050		< 0.1		
Acenaphthylene	mg/kg	DETS 050		< 0.1		
Anthracene	mg/kg	DETS 050		< 0.1		
Benzo(a)anthracene	mg/kg	DETS 050		< 0.1		
Benzo(a)pyrene	mg/kg	DETS 050		< 0.1		
Benzo(b)fluoranthene	mg/kg	DETS 050		< 0.1		
Benzo(k)fluoranthene	mg/kg	DETS 050		< 0.1		
Benzo(g,h,i)perylene	mg/kg	DETS 050		< 0.1		
Chrysene	mg/kg	DETS 050		< 0.1		
Dibenzo(a,h)anthracene	mg/kg	DETS 050		< 0.1		
Fluoranthene	mg/kg	DETS 050		< 0.1		
Fluorene	mg/kg	DETS 050		< 0.1		
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050		< 0.1		
Naphthalene	mg/kg	DETS 050		< 0.1		
Phenanthrene	mg/kg	DETS 050		< 0.1		
Pyrene	mg/kg	DETS 050		< 0.1		
PAH	mg/kg	DETS 050		< 1.6		
EPH (C10-C40)	mg/kg	DETS 051#		< 10		
Benzene	mg/kg	DETS 062#				
Ethylbenzene	mg/kg	DETS 062#				
Toluene	mg/kg	DETS 062#				
Xylene	mg/kg	DETS 062#				
MTBE	mg/kg	DETS 062				
Phenol - Monohydric	mg/kg	DETS 067#		< 0.3		

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243901	243902	243903	243904
		Sample Ref	WS20	WS21	WS21	WS22
		Depth	0.20	0.40	3.90	0.50
		Other Ref	1	2	3	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Arsenic	mg/kg	DETS 042#	2	11		2
Cadmium	mg/kg	DETS 042#	0.2	0.4		< 0.1
Chromium	mg/kg	DETS 042#	5	58		4
Hexavalent Chromium	mg/kg	DETSC2204*	< 1	< 1		< 1
Copper	mg/kg	DETS 042#	4	47		1
Lead	mg/kg	DETS 042#	6	26		1
Mercury	mg/kg	DETS 081#	< 0.05	0.08		< 0.05
Nickel	mg/kg	DETS 042#	3	50		1
Selenium	mg/kg	DETS 042#	0.8	< 0.5		2.2
Zinc	mg/kg	DETS 042#	31	100		4
Calorific Value	KJ/kg	DETS 037*				
Cyanide total	mg/kg	DETS 067#	< 0.1	< 0.1		< 0.1
Loss on ignition	%	DETS 003#				
Organic matter	%	DETS 002#	0.6	18		1
Sulphide	mg/kg	DETS 024#	35	51		2400
Total Sulphate as SO4	%	DETS 075#	0.02	0.01	< 0.01	0.75
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	43	24	28	2600
Total Sulphur as S	%	DETS 064	0.03	0.04	0.51	0.78
pH		DETS 008#	9.2	8.9	8.9	11.0
Aliphatic C5-C6	mg/kg	DETS 072*				
Aliphatic C6-C8	mg/kg	DETS 072*				
Aliphatic C8-C10	mg/kg	DETS 072*				
Aliphatic C10-C12	mg/kg	DETS 072#				
Aliphatic C12-C16	mg/kg	DETS 072#				
Aliphatic C16-C21	mg/kg	DETS 072#				
Aliphatic C21-C35	mg/kg	DETS 072#				
Aromatic C5-C7	mg/kg	DETS 072*				
Aromatic C7-C8	mg/kg	DETS 072*				
Aromatic C8-C10	mg/kg	DETS 072*				
Aromatic C10-C12	mg/kg	DETS 072#				
Aromatic C12-C16	mg/kg	DETS 072#				
Aromatic C16-C21	mg/kg	DETS 072#				
Aromatic C21-C35	mg/kg	DETS 072#				
Aliphatic C5-C35	mg/kg	DETS 072*				
Aromatic C5-C35	mg/kg	DETS 072*				
TPH Ali/Aro	mg/kg	DETS 072*				

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243901	243902	243903	243904
		Sample Ref	WS20	WS21	WS21	WS22
		Depth	0.20	0.40	3.90	0.50
		Other Ref	1	2	3	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Acenaphthene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Acenaphthylene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Anthracene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Benzo(a)pyrene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Benzo(g,h,i)perylene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Chrysene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Fluorene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Naphthalene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Phenanthrene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
Pyrene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1
PAH	mg/kg	DETS 050	< 1.6	< 1.6		< 1.6
EPH (C10-C40)	mg/kg	DETS 051#	< 10			< 10
Benzene	mg/kg	DETS 062#				
Ethylbenzene	mg/kg	DETS 062#				
Toluene	mg/kg	DETS 062#				
Xylene	mg/kg	DETS 062#				
MTBE	mg/kg	DETS 062				
Phenol - Monohydric	mg/kg	DETS 067#	< 0.3	0.3		< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243905	243906	243907	243908
		Sample Ref	WS22	WS22	WS23	WS23
		Depth	0.70	2.70	0.30	0.70
		Other Ref	3	4	1	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Arsenic	mg/kg	DETS 042#			3	
Cadmium	mg/kg	DETS 042#			< 0.1	
Chromium	mg/kg	DETS 042#			7	
Hexavalent Chromium	mg/kg	DETSC2204*			< 1	
Copper	mg/kg	DETS 042#			2	
Lead	mg/kg	DETS 042#			1	
Mercury	mg/kg	DETS 081#			< 0.05	
Nickel	mg/kg	DETS 042#			2	
Selenium	mg/kg	DETS 042#			4	
Zinc	mg/kg	DETS 042#			9	
Calorific Value	KJ/kg	DETS 037*				
Cyanide total	mg/kg	DETS 067#			0.5	
Loss on ignition	%	DETS 003#	16			6.2
Organic matter	%	DETS 002#			1	
Sulphide	mg/kg	DETS 024#			2900	
Total Sulphate as SO4	%	DETS 075#	0.02	0.01	0.7	0.07
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	130	51	2000	220
Total Sulphur as S	%	DETS 064	0.1	0.03	1.1	0.04
pH		DETS 008#	8.7	9.7	11.1	8.5
Aliphatic C5-C6	mg/kg	DETS 072*				
Aliphatic C6-C8	mg/kg	DETS 072*				
Aliphatic C8-C10	mg/kg	DETS 072*				
Aliphatic C10-C12	mg/kg	DETS 072#				
Aliphatic C12-C16	mg/kg	DETS 072#				
Aliphatic C16-C21	mg/kg	DETS 072#				
Aliphatic C21-C35	mg/kg	DETS 072#				
Aromatic C5-C7	mg/kg	DETS 072*				
Aromatic C7-C8	mg/kg	DETS 072*				
Aromatic C8-C10	mg/kg	DETS 072*				
Aromatic C10-C12	mg/kg	DETS 072#				
Aromatic C12-C16	mg/kg	DETS 072#				
Aromatic C16-C21	mg/kg	DETS 072#				
Aromatic C21-C35	mg/kg	DETS 072#				
Aliphatic C5-C35	mg/kg	DETS 072*				
Aromatic C5-C35	mg/kg	DETS 072*				
TPH Ali/Aro	mg/kg	DETS 072*				

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243905	243906	243907	243908
		Sample Ref	WS22	WS22	WS23	WS23
		Depth	0.70	2.70	0.30	0.70
		Other Ref	3	4	1	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Acenaphthene	mg/kg	DETS 050			< 0.1	
Acenaphthylene	mg/kg	DETS 050			< 0.1	
Anthracene	mg/kg	DETS 050			< 0.1	
Benzo(a)anthracene	mg/kg	DETS 050			< 0.1	
Benzo(a)pyrene	mg/kg	DETS 050			< 0.1	
Benzo(b)fluoranthene	mg/kg	DETS 050			< 0.1	
Benzo(k)fluoranthene	mg/kg	DETS 050			< 0.1	
Benzo(g,h,i)perylene	mg/kg	DETS 050			< 0.1	
Chrysene	mg/kg	DETS 050			< 0.1	
Dibenzo(a,h)anthracene	mg/kg	DETS 050			< 0.1	
Fluoranthene	mg/kg	DETS 050			< 0.1	
Fluorene	mg/kg	DETS 050			< 0.1	
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050			< 0.1	
Naphthalene	mg/kg	DETS 050			< 0.1	
Phenanthrene	mg/kg	DETS 050			< 0.1	
Pyrene	mg/kg	DETS 050			< 0.1	
PAH	mg/kg	DETS 050			< 1.6	
EPH (C10-C40)	mg/kg	DETS 051#			< 10	
Benzene	mg/kg	DETS 062#				
Ethylbenzene	mg/kg	DETS 062#				
Toluene	mg/kg	DETS 062#				
Xylene	mg/kg	DETS 062#				
MTBE	mg/kg	DETS 062				
Phenol - Monohydric	mg/kg	DETS 067#			< 0.3	

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243909	243910	243911	243912
		Sample Ref	WS23	WS24	WS24	WS25
		Depth	1.50	0.40	2.90	0.25
		Other Ref	3	2	3	1
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Arsenic	mg/kg	DETS 042#		9		8
Cadmium	mg/kg	DETS 042#		0.3		0.3
Chromium	mg/kg	DETS 042#		50		13
Hexavalent Chromium	mg/kg	DETSC2204*		< 1		< 1
Copper	mg/kg	DETS 042#		39		36
Lead	mg/kg	DETS 042#		22		62
Mercury	mg/kg	DETS 081#		0.09		0.2
Nickel	mg/kg	DETS 042#		42		21
Selenium	mg/kg	DETS 042#		0.6		< 0.5
Zinc	mg/kg	DETS 042#		88		240
Calorific Value	KJ/kg	DETS 037*				
Cyanide total	mg/kg	DETS 067#		< 0.1		< 0.1
Loss on ignition	%	DETS 003#			13	
Organic matter	%	DETS 002#		14		15
Sulphide	mg/kg	DETS 024#		110		120
Total Sulphate as SO4	%	DETS 075#	0.08	0.03	0.02	0.1
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	370	77	55	260
Total Sulphur as S	%	DETS 064	0.08	0.04	0.1	0.13
pH		DETS 008#	9.4	9.3	8.4	9.3
Aliphatic C5-C6	mg/kg	DETS 072*				< 0.01
Aliphatic C6-C8	mg/kg	DETS 072*				16
Aliphatic C8-C10	mg/kg	DETS 072*				< 0.01
Aliphatic C10-C12	mg/kg	DETS 072#				1.4
Aliphatic C12-C16	mg/kg	DETS 072#				0.5
Aliphatic C16-C21	mg/kg	DETS 072#				2.3
Aliphatic C21-C35	mg/kg	DETS 072#				11
Aromatic C5-C7	mg/kg	DETS 072*				< 0.01
Aromatic C7-C8	mg/kg	DETS 072*				< 0.01
Aromatic C8-C10	mg/kg	DETS 072*				< 0.01
Aromatic C10-C12	mg/kg	DETS 072#				< 0.1
Aromatic C12-C16	mg/kg	DETS 072#				< 0.1
Aromatic C16-C21	mg/kg	DETS 072#				< 0.1
Aromatic C21-C35	mg/kg	DETS 072#				< 0.1
Aliphatic C5-C35	mg/kg	DETS 072*				32
Aromatic C5-C35	mg/kg	DETS 072*				< 10
TPH Ali/Aro	mg/kg	DETS 072*				32

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243909	243910	243911	243912
		Sample Ref	WS23	WS24	WS24	WS25
		Depth	1.50	0.40	2.90	0.25
		Other Ref	3	2	3	1
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Acenaphthene	mg/kg	DETS 050		< 0.1		< 0.1
Acenaphthylene	mg/kg	DETS 050		< 0.1		< 0.1
Anthracene	mg/kg	DETS 050		< 0.1		< 0.1
Benzo(a)anthracene	mg/kg	DETS 050		< 0.1		< 0.1
Benzo(a)pyrene	mg/kg	DETS 050		< 0.1		< 0.1
Benzo(b)fluoranthene	mg/kg	DETS 050		< 0.1		< 0.1
Benzo(k)fluoranthene	mg/kg	DETS 050		< 0.1		< 0.1
Benzo(g,h,i)perylene	mg/kg	DETS 050		< 0.1		< 0.1
Chrysene	mg/kg	DETS 050		< 0.1		< 0.1
Dibenzo(a,h)anthracene	mg/kg	DETS 050		< 0.1		< 0.1
Fluoranthene	mg/kg	DETS 050		< 0.1		< 0.1
Fluorene	mg/kg	DETS 050		< 0.1		< 0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050		< 0.1		< 0.1
Naphthalene	mg/kg	DETS 050		< 0.1		< 0.1
Phenanthrene	mg/kg	DETS 050		< 0.1		< 0.1
Pyrene	mg/kg	DETS 050		< 0.1		< 0.1
PAH	mg/kg	DETS 050		< 1.6		< 1.6
EPH (C10-C40)	mg/kg	DETS 051#		13		
Benzene	mg/kg	DETS 062#				< 0.01
Ethylbenzene	mg/kg	DETS 062#				< 0.01
Toluene	mg/kg	DETS 062#				< 0.01
Xylene	mg/kg	DETS 062#				< 0.01
MTBE	mg/kg	DETS 062				< 0.01
Phenol - Monohydric	mg/kg	DETS 067#		< 0.3		< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243913	243914	243915	243916
		Sample Ref	WS25	WS25	WS26	WS26
		Depth	0.50	0.90	0.50	1.20
		Other Ref	2	3	1	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Arsenic	mg/kg	DETS 042#	13		24	10
Cadmium	mg/kg	DETS 042#	0.4		1.4	0.3
Chromium	mg/kg	DETS 042#	33		78	50
Hexavalent Chromium	mg/kg	DETSC2204*	< 1		< 1	< 1
Copper	mg/kg	DETS 042#	46		270	39
Lead	mg/kg	DETS 042#	30		140	24
Mercury	mg/kg	DETS 081#	0.07		0.06	0.1
Nickel	mg/kg	DETS 042#	33		77	42
Selenium	mg/kg	DETS 042#	0.6		< 0.5	1.6
Zinc	mg/kg	DETS 042#	110		1200	110
Calorific Value	KJ/kg	DETS 037*		3400		3100
Cyanide total	mg/kg	DETS 067#	< 0.1		0.2	< 0.1
Loss on ignition	%	DETS 003#		34		32
Organic matter	%	DETS 002#	16		25	20
Sulphide	mg/kg	DETS 024#	320		180	74
Total Sulphate as SO4	%	DETS 075#	0.04		0.09	0.01
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	130		200	40
Total Sulphur as S	%	DETS 064	0.05		0.06	0.03
pH		DETS 008#	9.2		9.3	9.2
Aliphatic C5-C6	mg/kg	DETS 072*	< 0.01			
Aliphatic C6-C8	mg/kg	DETS 072*	2.8			
Aliphatic C8-C10	mg/kg	DETS 072*	< 0.01			
Aliphatic C10-C12	mg/kg	DETS 072#	0.6			
Aliphatic C12-C16	mg/kg	DETS 072#	0.1			
Aliphatic C16-C21	mg/kg	DETS 072#	< 0.1			
Aliphatic C21-C35	mg/kg	DETS 072#	0.2			
Aromatic C5-C7	mg/kg	DETS 072*	< 0.01			
Aromatic C7-C8	mg/kg	DETS 072*	< 0.01			
Aromatic C8-C10	mg/kg	DETS 072*	< 0.01			
Aromatic C10-C12	mg/kg	DETS 072#	0.1			
Aromatic C12-C16	mg/kg	DETS 072#	< 0.1			
Aromatic C16-C21	mg/kg	DETS 072#	< 0.1			
Aromatic C21-C35	mg/kg	DETS 072#	0.3			
Aliphatic C5-C35	mg/kg	DETS 072*	< 10			
Aromatic C5-C35	mg/kg	DETS 072*	< 10			
TPH Ali/Aro	mg/kg	DETS 072*	< 10			

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243913	243914	243915	243916
		Sample Ref	WS25	WS25	WS26	WS26
		Depth	0.50	0.90	0.50	1.20
		Other Ref	2	3	1	2
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Acenaphthene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Acenaphthylene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Anthracene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Benzo(g,h,i)perylene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Chrysene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Fluoranthene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Fluorene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Naphthalene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Phenanthrene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
Pyrene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1
PAH	mg/kg	DETS 050	< 1.6		< 1.6	< 1.6
EPH (C10-C40)	mg/kg	DETS 051#			140	
Benzene	mg/kg	DETS 062#	< 0.01			
Ethylbenzene	mg/kg	DETS 062#	< 0.01			
Toluene	mg/kg	DETS 062#	< 0.01			
Xylene	mg/kg	DETS 062#	< 0.01			
MTBE	mg/kg	DETS 062	< 0.01			
Phenol - Monohydric	mg/kg	DETS 067#	< 0.3		< 0.3	< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243917	243918	243919	243920
		Sample Ref	WS26	BH1	BH3	BH4
		Depth	2.90	2.00	5.00	6.00
		Other Ref	3			
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Arsenic	mg/kg	DETS 042#				
Cadmium	mg/kg	DETS 042#				
Chromium	mg/kg	DETS 042#				
Hexavalent Chromium	mg/kg	DETSC2204*				
Copper	mg/kg	DETS 042#				
Lead	mg/kg	DETS 042#				
Mercury	mg/kg	DETS 081#				
Nickel	mg/kg	DETS 042#				
Selenium	mg/kg	DETS 042#				
Zinc	mg/kg	DETS 042#				
Calorific Value	KJ/kg	DETS 037*				
Cyanide total	mg/kg	DETS 067#				
Loss on ignition	%	DETS 003#				
Organic matter	%	DETS 002#				
Sulphide	mg/kg	DETS 024#				
Total Sulphate as SO4	%	DETS 075#	0.02	< 0.01	< 0.01	0.03
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	40	11	16	47
Total Sulphur as S	%	DETS 064	0.03	0.01	< 0.01	0.04
pH		DETS 008#	9.9	8.9	8.7	8.9
Aliphatic C5-C6	mg/kg	DETS 072*				
Aliphatic C6-C8	mg/kg	DETS 072*				
Aliphatic C8-C10	mg/kg	DETS 072*				
Aliphatic C10-C12	mg/kg	DETS 072#				
Aliphatic C12-C16	mg/kg	DETS 072#				
Aliphatic C16-C21	mg/kg	DETS 072#				
Aliphatic C21-C35	mg/kg	DETS 072#				
Aromatic C5-C7	mg/kg	DETS 072*				
Aromatic C7-C8	mg/kg	DETS 072*				
Aromatic C8-C10	mg/kg	DETS 072*				
Aromatic C10-C12	mg/kg	DETS 072#				
Aromatic C12-C16	mg/kg	DETS 072#				
Aromatic C16-C21	mg/kg	DETS 072#				
Aromatic C21-C35	mg/kg	DETS 072#				
Aliphatic C5-C35	mg/kg	DETS 072*				
Aromatic C5-C35	mg/kg	DETS 072*				
TPH Ali/Aro	mg/kg	DETS 072*				

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243917	243918	243919	243920
		Sample Ref	WS26	BH1	BH3	BH4
		Depth	2.90	2.00	5.00	6.00
		Other Ref	3			
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Acenaphthene	mg/kg	DETS 050				
Acenaphthylene	mg/kg	DETS 050				
Anthracene	mg/kg	DETS 050				
Benzo(a)anthracene	mg/kg	DETS 050				
Benzo(a)pyrene	mg/kg	DETS 050				
Benzo(b)fluoranthene	mg/kg	DETS 050				
Benzo(k)fluoranthene	mg/kg	DETS 050				
Benzo(g,h,i)perylene	mg/kg	DETS 050				
Chrysene	mg/kg	DETS 050				
Dibenzo(a,h)anthracene	mg/kg	DETS 050				
Fluoranthene	mg/kg	DETS 050				
Fluorene	mg/kg	DETS 050				
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050				
Naphthalene	mg/kg	DETS 050				
Phenanthrene	mg/kg	DETS 050				
Pyrene	mg/kg	DETS 050				
PAH	mg/kg	DETS 050				
EPH (C10-C40)	mg/kg	DETS 051#				
Benzene	mg/kg	DETS 062#				
Ethylbenzene	mg/kg	DETS 062#				
Toluene	mg/kg	DETS 062#				
Xylene	mg/kg	DETS 062#				
MTBE	mg/kg	DETS 062				
Phenol - Monohydric	mg/kg	DETS 067#				

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243921	243922	243923	243924
		Sample Ref	WS5	WS8	WS11	WS12
		Depth	3.80	2.80	2.70	2.10
		Other Ref	4	4	2	5
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Arsenic	mg/kg	DETS 042#				
Cadmium	mg/kg	DETS 042#				
Chromium	mg/kg	DETS 042#				
Hexavalent Chromium	mg/kg	DETSC2204*				
Copper	mg/kg	DETS 042#				
Lead	mg/kg	DETS 042#				
Mercury	mg/kg	DETS 081#				
Nickel	mg/kg	DETS 042#				
Selenium	mg/kg	DETS 042#				
Zinc	mg/kg	DETS 042#				
Calorific Value	KJ/kg	DETS 037*	3400		3600	
Cyanide total	mg/kg	DETS 067#				
Loss on ignition	%	DETS 003#	35		35	
Organic matter	%	DETS 002#				
Sulphide	mg/kg	DETS 024#				
Total Sulphate as SO4	%	DETS 075#		0.01		0.01
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#		38		21
Total Sulphur as S	%	DETS 064		0.04		0.02
pH		DETS 008#		9.0	8.9	9.0
Aliphatic C5-C6	mg/kg	DETS 072*				
Aliphatic C6-C8	mg/kg	DETS 072*				
Aliphatic C8-C10	mg/kg	DETS 072*				
Aliphatic C10-C12	mg/kg	DETS 072#				
Aliphatic C12-C16	mg/kg	DETS 072#				
Aliphatic C16-C21	mg/kg	DETS 072#				
Aliphatic C21-C35	mg/kg	DETS 072#				
Aromatic C5-C7	mg/kg	DETS 072*				
Aromatic C7-C8	mg/kg	DETS 072*				
Aromatic C8-C10	mg/kg	DETS 072*				
Aromatic C10-C12	mg/kg	DETS 072#				
Aromatic C12-C16	mg/kg	DETS 072#				
Aromatic C16-C21	mg/kg	DETS 072#				
Aromatic C21-C35	mg/kg	DETS 072#				
Aliphatic C5-C35	mg/kg	DETS 072*				
Aromatic C5-C35	mg/kg	DETS 072*				
TPH Ali/Aro	mg/kg	DETS 072*				

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243921	243922	243923	243924
		Sample Ref	WS5	WS8	WS11	WS12
		Depth	3.80	2.80	2.70	2.10
		Other Ref	4	4	2	5
		Sample Type	S	S	S	S
Test	**Units**	**DETSxx**				
Acenaphthene	mg/kg	DETS 050				
Acenaphthylene	mg/kg	DETS 050				
Anthracene	mg/kg	DETS 050				
Benzo(a)anthracene	mg/kg	DETS 050				
Benzo(a)pyrene	mg/kg	DETS 050				
Benzo(b)fluoranthene	mg/kg	DETS 050				
Benzo(k)fluoranthene	mg/kg	DETS 050				
Benzo(g,h,i)perylene	mg/kg	DETS 050				
Chrysene	mg/kg	DETS 050				
Dibenzo(a,h)anthracene	mg/kg	DETS 050				
Fluoranthene	mg/kg	DETS 050				
Fluorene	mg/kg	DETS 050				
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050				
Naphthalene	mg/kg	DETS 050				
Phenanthrene	mg/kg	DETS 050				
Pyrene	mg/kg	DETS 050				
PAH	mg/kg	DETS 050				
EPH (C10-C40)	mg/kg	DETS 051#				
Benzene	mg/kg	DETS 062#				
Ethylbenzene	mg/kg	DETS 062#				
Toluene	mg/kg	DETS 062#				
Xylene	mg/kg	DETS 062#				
MTBE	mg/kg	DETS 062				
Phenol - Monohydric	mg/kg	DETS 067#				

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243925
		Sample Ref	WS15
		Depth	1.80
		Other Ref	4
		Sample Type	S
Test	**Units**	**DETSxx**	
Arsenic	mg/kg	DETS 042#	
Cadmium	mg/kg	DETS 042#	
Chromium	mg/kg	DETS 042#	
Hexavalent Chromium	mg/kg	DETSC2204*	
Copper	mg/kg	DETS 042#	
Lead	mg/kg	DETS 042#	
Mercury	mg/kg	DETS 081#	
Nickel	mg/kg	DETS 042#	
Selenium	mg/kg	DETS 042#	
Zinc	mg/kg	DETS 042#	
Calorific Value	KJ/kg	DETS 037*	
Cyanide total	mg/kg	DETS 067#	
Loss on ignition	%	DETS 003#	
Organic matter	%	DETS 002#	
Sulphide	mg/kg	DETS 024#	
Total Sulphate as SO4	%	DETS 075#	0.01
Sulphate Aqueous Extract as SO4	mg/l	DETS 076#	22
Total Sulphur as S	%	DETS 064	0.02
pH		DETS 008#	9.0
Aliphatic C5-C6	mg/kg	DETS 072*	
Aliphatic C6-C8	mg/kg	DETS 072*	
Aliphatic C8-C10	mg/kg	DETS 072*	
Aliphatic C10-C12	mg/kg	DETS 072#	
Aliphatic C12-C16	mg/kg	DETS 072#	
Aliphatic C16-C21	mg/kg	DETS 072#	
Aliphatic C21-C35	mg/kg	DETS 072#	
Aromatic C5-C7	mg/kg	DETS 072*	
Aromatic C7-C8	mg/kg	DETS 072*	
Aromatic C8-C10	mg/kg	DETS 072*	
Aromatic C10-C12	mg/kg	DETS 072#	
Aromatic C12-C16	mg/kg	DETS 072#	
Aromatic C16-C21	mg/kg	DETS 072#	
Aromatic C21-C35	mg/kg	DETS 072#	
Aliphatic C5-C35	mg/kg	DETS 072*	
Aromatic C5-C35	mg/kg	DETS 072*	
TPH Ali/Aro	mg/kg	DETS 072*	

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243925
		Sample Ref	WS15
		Depth	1.80
		Other Ref	4
		Sample Type	S
Test	**Units**	**DETSxx**	
Acenaphthene	mg/kg	DETS 050	
Acenaphthylene	mg/kg	DETS 050	
Anthracene	mg/kg	DETS 050	
Benzo(a)anthracene	mg/kg	DETS 050	
Benzo(a)pyrene	mg/kg	DETS 050	
Benzo(b)fluoranthene	mg/kg	DETS 050	
Benzo(k)fluoranthene	mg/kg	DETS 050	
Benzo(g,h,i)perylene	mg/kg	DETS 050	
Chrysene	mg/kg	DETS 050	
Dibenzo(a,h)anthracene	mg/kg	DETS 050	
Fluoranthene	mg/kg	DETS 050	
Fluorene	mg/kg	DETS 050	
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	
Naphthalene	mg/kg	DETS 050	
Phenanthrene	mg/kg	DETS 050	
Pyrene	mg/kg	DETS 050	
PAH	mg/kg	DETS 050	
EPH (C10-C40)	mg/kg	DETS 051#	
Benzene	mg/kg	DETS 062#	
Ethylbenzene	mg/kg	DETS 062#	
Toluene	mg/kg	DETS 062#	
Xylene	mg/kg	DETS 062#	
MTBE	mg/kg	DETS 062	
Phenol - Monohydric	mg/kg	DETS 067#	

Summary of Asbestos Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

Laboratory Number	Sample Ref	Depth	Other Ref	Material	Result
243898	WS19	0.70	2	Soil	NAD
243901	WS20	0.20	1	Soil	NAD
243902	WS21	0.40	2	Soil	NAD
243904	WS22	0.50	2	Soil	NAD
243907	WS23	0.30	1	Soil	NAD
243910	WS24	0.40	2	Soil	NAD
243913	WS25	0.50	2	Soil	NAD
243915	WS26	0.50	1	Soil	NAD

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos
NAD = No Asbestos Detected. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos

Samples are analysed using polarised light microscopy in accordance with HSG248 and documented in-house methods. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'.

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243912	243913	243914
		Sample Ref	WS25	WS25	WS25
		Depth	0.25	0.50	0.90
		Other Ref	1	2	3
		Sample Type	S	S	S
Test	**Units**	**DETSxx**			
Total VOC's	mg/kg	DETS 068*	55	6.6	1.4
1,1 Dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	
Methylene Chloride	mg/kg	DETS 068*	< 0.01	< 0.01	
Trans-1,2-dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	
1,1-dichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	
2,2-dichlororopane+1,2-dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	
Bromochloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	
Chloroform	mg/kg	DETS 068*	< 0.01	< 0.01	
1,1,1-trichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	
Carbon tetrachloride + 1,1-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	
Benzene	mg/kg	DETS 068*	< 0.01	< 0.01	
1,2-dichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	
Trichloroethylene	mg/kg	DETS 068*	55	6.6	
1,2-dichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	
Dibromomethane	mg/kg	DETS 068*	< 0.01	< 0.01	
Bromodichloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	
cis-1,3-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	
Toluene	mg/kg	DETS 068*	< 0.01	< 0.01	
trans-1,3-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	
1,1,2-trichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	
Tetrachloroethylene	mg/kg	DETS 068*	0.08	< 0.01	
1,3-dichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	
Dibromochloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	
1,2-dibromoethane	mg/kg	DETS 068*	< 0.01	< 0.01	
Chlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	
Ethylbenzene+1,1,1,2-tetrachloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	
m+p-Xylene	mg/kg	DETS 068*	< 0.01	< 0.01	
o-Xylene	mg/kg	DETS 068*	< 0.01	< 0.01	
Styrene	mg/kg	DETS 068*	< 0.01	< 0.01	
Bromoform	mg/kg	DETS 068*	< 0.01	< 0.01	
Isopropylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	
Bromobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	
1,2,3-trichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	
n-propylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	
2-chlorotoluene	mg/kg	DETS 068*	< 0.01	< 0.01	
1,3,5-trimethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	
4-chlorotoluene	mg/kg	DETS 068*	< 0.01	< 0.01	
Tert-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	
1,2,4-trimethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	
sec-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	
1,3-dichlorobenzene+p-isopropyltoluene	mg/kg	DETS 068*	< 0.01	< 0.01	
1,4-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	
n-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	
1,2-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	

Summary of Chemical Analysis
Soil Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	243912	243913	243914
		Sample Ref	WS25	WS25	WS25
		Depth	0.25	0.50	0.90
		Other Ref	1	2	3
		Sample Type	S	S	S
Test	**Units**	**DETSxx**			
1,2-dibromo-3-chloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	
1,2,4-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	
Hexachlorobutadiene	mg/kg	DETS 068*	< 0.01	< 0.01	
Naphthalene	mg/kg	DETS 068*	< 0.01	< 0.01	
1,2,3-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	

Summary of Chemical Analysis
Leachate Samples

Our Ref: 10-35854-1
Client Ref: KC709-50
Contract Title: Ewenny Road

		Lab No.	247654
		Sample Ref	WS26
		Depth	0.50
		Other Ref	
		Sample Type	
Test	**Units**	**DETSxx**	
Zinc Dissolved	ug/l	DETS 042	58

Appendix A - Details of Analysis

Method details are shown only for those determinants listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS.
No Recovery Factors are used in the determination of results. Results reported assume 100% recovery
Full method statements are available on request.

Method	Name of Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETS 002	Organic Matter	%	0.01	Air Dried	No	Yes	Yes
DETS 003	Loss on Ignition	%	0.01	Air Dried	No	Yes	Yes
DETS 004	Total Sulphate	%	0.01	Air Dried	No	Yes	Yes
DETS 075	Total Sulphate	%	0.01	Air Dried	No	Yes	Yes
DETS 004	Water Soluble Sulphate	mg/l	10.00	Air Dried	No	Yes	Yes
DETS 076	Water Soluble Sulphate	mg/l	10.00	Air Dried	No	Yes	Yes
DETS 006	Chloride	mg/kg	0.01	Air Dried	No	Yes	Yes
DETS 008	pH	pH Units	0.10	Air Dried	No	Yes	Yes
DETS 042	Selenium	mg/kg	0.50	Air Dried	No	Yes	Yes
DETS 019	Ammonia	mg/kg	0.02	Air Dried	No	Yes	Yes
DETS 020	Boron (Water Soluble)	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 024	Sulphide	mg/kg	10.00	Air Dried	No	Yes	Yes
DETS 042	Antimony	mg/kg	1.00	Air Dried	No	No	No
DETS 042	Arsenic	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Barium	mg/kg	1.50	Air Dried	No	Yes	Yes
DET S 042	Beryllium	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Cadmium	mg/kg	0.10	Air Dried	No	Yes	Yes

Appendix A - Details of Analysis

Method details are shown only for those determinants listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS.
No Recovery Factors are used in the determination of results. Results reported assume 100% recovery
Full method statements are available on request.

Method	Name of Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETS 042	Cobalt	mg/kg	0.70	Air Dried	No	Yes	Yes
DETS 042	Copper	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETS 042	Iron	mg/kg	1.00	Air Dried	No	Yes	No
DETS 042	Lead	mg/kg	0.30	Air Dried	No	Yes	Yes
DETS 042	Manganese	mg/kg	20.00	Air Dried	No	Yes	Yes
DETS 081	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETS 042	Molybdenum	mg/kg	0.40	Air Dried	No	Yes	Yes
DETS 042	Nickel	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Thallium	mg/kg	1.00	Air Dried	No	No	No
DETS 042	Vanadium	mg/kg	0.80	Air Dried	No	Yes	Yes
DETS 042	Zinc	mg/kg	1.00	Air Dried	No	Yes	Yes
DETS 049	Sulphur (Free)	mg/kg	0.50	As Received	No	Yes	Yes
DETS 050	PAH	mg/kg	0.10	As Received	No	Yes	No
DETS 051	TPH (C10 - C40)	mg/kg	20.00	As Received	No	Yes	Yes
DETS 052	PCB	mg/kg	0.01	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method details are shown only for those determinants listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS.
No Recovery Factors are used in the determination of results. Results reported assume 100% recovery
Full method statements are available on request.

Method	Name of Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzne	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 067	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETS 067	Easily Liberatable Cyanide	mg/kg	0.1	Air Dried	No	Yes	Yes
DETS 067	Complex Cyanide	mg/kg	0.30	Air Dried	No	Yes	No
DETS 067	Total Cyanide	mg/kg	0.40	Air Dried	No	Yes	Yes
DETS 067	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETS 068	VOC	mg/kg	0.01	As Received	No	No	No

APPENDIX E

Ground Gas/Groundwater Monitoring Results

Gas Risk Assessment Datasheet

Site Name		Ewenny Road Industrial Estate, Maesteg
Project Number		KC709
Low rise housing	**(Yes/No)**	Yes
Monitoring position No.		BG
		BH1
		BH4

Gas Monitoring Instrument Used

Geotechnical Instruments GA 2000 and Flow Pod
Minimum Flow Detection Limit 0.1 Litres per hour

	Date	**Visit**
Gas Samples Taken		
Dates of Monitoring:	**25.02.10**	**1st Visit**
	03.03.10	**2nd Visit**
	26.03.10	**3rd Visit**

GAS MONITORING
Summary Tables

METHANE
(% in air)

Date	Borehole No.													
	BG	BH1	BH4											
25.02.10	0	0	0.1											
03.03.10	0	0.1	-											
26.03.10	0	0	0											
Gas Sample														
Maximum	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NB. RESULTS SHOWN ARE MAXIMUM FIGURES OBTAINED DURING MONITORING														

OXYGEN
(% in air)

Date	Borehole No.													
	BG	BH1	BH4											
25.02.10	19.7	5.2	16.8											
03.03.10	20	5.3	-											
26.03.10	20.6	12.6	1.7											
Gas Sample														
Minimum	19.7	5.2	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NB. RESULTS SHOWN ARE MINIMUM FIGURES OBTAINED DURING MONITORING														

CARBON DIOXIDE
(% in air)

Date	Borehole No.													
	BG	BH1	BH4											
25.02.10	0.0	5.3	0.7											
03.03.10	0.0	5.8	-											
26.03.10	0.0	3.8	3.8											
Gas Sample														
Maximum	0	5.8	3.8	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
NB. RESULTS SHOWN ARE MAXIMUM FIGURES OBTAINED DURING MONITORING														

CARBON MONOXIDE
(ppm)

Date	Borehole No.													
	BG	BH1	BH4											
25.02.10	1	3	30											
03.03.10	1	5	-											
26.03.10	0	0	0											
Gas Sample														
Maximum	1	5	30	0	0	0	0	0	0					
NB. RESULTS SHOWN ARE MAXIMUM FIGURES OBTAINED DURING MONITORING														

HYDROGEN SULPHIDE
(ppm)

Date	Borehole No.													
	BG	BH1	BH4											
25.02.10	0	0	0											
03.03.10	0	0	-											
26.03.10	0	0	0											
Gas Sample														
Maximum	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
NB. RESULTS SHOWN ARE MAXIMUM FIGURES OBTAINED DURING MONITORING														

FLOW RATE
(litres per hour)

Date	Borehole No.													
	BH1	BH4												
25.02.10	0	0												
03.03.10	0	-												
26.03.10	0	0												
Gas Sample														
Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
NB. RESULTS SHOWN ARE MAXIMUM FIGURES OBTAINED DURING MONITORING														

RELATIVE PRESSURE

(mbar)

Date	Borehole No.												
	BH1	BH4											
25.02.10	-0.44	-0.25											
03.03.10	-0.36	-											
26.03.10	0.05	0.04											
Gas Sample													
Maximum	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NB. RESULTS SHOWN ARE FIGURES OBTAINED BEFORE MONITORING													

WEATHER CONDITIONS

Date	Time	Pressure (mbar)	Wind Speed	Weather Description
25.02.10	16:00	970-971	Moderate	Cold and overcast
03.03.10	11:00	1005	Moderate	Cold and overcast
26.03.10	12:00	984	Moderate	Cold and overcast

General comments

Date	Borehole No.												
	BH1	BH4											
25.02.10													
03.03.10													
26.03.10													

Key

Note :-

Unless indicated otherwise standpipes were found sealed, monitored and left sealed.

BG	Background value.
-	Not monitored on date shown.
+	Standpipe found venting, monitored and left sealed.
V	Standpipe monitored and left venting.
^	Groundwater sample taken after monitoring.
C	Car parked over standpipe, unable to monitor.
º	Gas sample taken before monitoring.
?	Unable to locate borehole position.
B	Bung stuck in standpipe, unable to monitor water.
C	Borehole not complete.
NDP	No Determination Possible
F	Standpipe found damaged/destroyed.
N	No access available to standpipe.
A	Standpipe buried by recent overfill exercise.
N/A	-

GROUNDWATER MONITORING

GROUNDWATER LEVEL
(metres below ground level)

	Borehole No.												
	BH1	BH4											
Base of Standpipe													
Date													
25.02.10	-	-											
03.03.10	3.17	7.6											
26.03.10	3.35	7.96											

GROUNDWATER REDUCED LEVEL
(metres AD)

		Borehole No.												
		BH1	BH4											
Base of Standpipe														
Date	Ground Level (mAD)													
25.02.10														
03.03.10														
26.03.10														

General comments

Date	Borehole No.												
	BH1	BH4											
25.02.10													
03.03.10													
26.03.10													

Note :-

Unless indicated otherwise standpipes were found sealed, monitored and left sealed

BG	Background value.
-	Not monitored on date shown.
+	Standpipe found venting, monitored and left sealed.
V	Standpipe monitored and left venting.
^	Groundwater sample taken after monitoring.
C	Car parked over standpipe, unable to monitor.
o	Gas sample taken before monitoring.
?	Unable to locate borehole position.
B	Bung stuck in standpipe, unable to monitor water.
C	Borehole not complete.
NDP	No Determination Possible
F	Standpipe found damaged/destroyed.
N	No access available to standpipe.
A	Standpipe buried by recent overfill exercise.
N/A	-

Template used CARDIFF Gas Risk Assessment datasheet-Ver c

GAS RISK ASSESSMENT DATASHEET

Site	**Ewenny Road Industrial Estate, Maesteg**	**Low rise housing**	**Yes**
Job Ref	**KC709**	**Minimum Flow Detection Limit**	**0.1 Litres per hour**

	Maximum Methane Concentrations				Maximum methane value during monitoring
Date	25.02.10	03.03.10	26.03.10	Gas Sample	
Borehole					
BH1	0	0.1	0		0.1
BH4	0.1	-	0		0.1
					0
					0
					0
					0.1

	Maximum Carbon Dioxide Concentrations				Maximum CO2 value during monitoring
Date	25.02.10	03.03.10	26.03.10	Gas Sample	
Borehole					
BH1	5.3	5.8	3.8		5.8
BH4	0.7	-	3.8		3.8
					0
					0
					0
					5.8

	Maximum Flow Rate				Maximum flow rate during monitoring
Date	25.02.10	03.03.10	26.03.10	Gas Sample	
Borehole					
BH1	0	0	0		0
BH4	0	-	0		0
					0
					0
					0
					0
					0
Minimum Detection Limit					0.1
					0.1

METHANE RISK ASSESSMENT		
TIER 2 RISK ASSESSMENT		
CH_4 GAS SCREENING VALUE	**0.0001**	**L/hr**
CARBON DIOXIDE RISK ASSESSMENT		
TIER 2 RISK ASSESSMENT		
CO_2 GAS SCREENING VALUE	**0.0058**	**L/hr**

AMBER 1

APPENDIX F

The Coal Authority - Coal and Brine Report

The Coal Authority

FMB

Issued by:
The Coal Authority, Mining Reports Office, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire NG18 4RG
ON-Line Service: www.groundstability.com - Phone: 0845 762 6848 - DX 716176 MANSFIELD 5

BRIDGEND COUNTY BOROUGH COUNCIL,
DX 151420 BRIDGEND 6

Person dealing with this matter:	**Louise Tipper**
Our reference:	**00005112-10**
Your reference:	CSS/STRUCT/RJC-03
Electronic Ref:	
RRUID:	007.00027130730001
Date of your enquiry:	**04 February 2010**
Date we received your enquiry:	**08 February 2010**
Date of issue:	**08 February 2010**

This report is for the property described in the address below and the attached plan.

Coal and Brine Report

Site At Ewenny Road Industrial Estate, Maesteg, Mid Glamorgan

This report is based on and limited to the records held by, the Coal Authority, and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Coal mining	Yes
Brine Compensation District	No

Information from the Coal Authority

Underground Coal Mining

Past

The property is in the likely zone of influence from workings in 13 seams of coal at shallow to 280m depth, and last worked in 1918.

Present

The property is not in the likely zone of influence of any present underground coal workings.

Future

The property is not in an area for which the Coal Authority is determining whether to grant a licence to remove coal using underground methods.

The property is not in an area for which a licence has been granted to remove coal using underground methods.

The property is not in an area that is likely to be affected at the surface from any planned future workings.

However reserves of coal exist in the local area which could be worked at some time in the future.

No notice of the risk of the land being affected by subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991.

Mine entries

Within, or within 20 metres of, the boundary of the property there are 2 mine entries, the approximate positions of which are shown on the attached plan.

Coal Authority records disclose the following information:

286190-003. No treatment details.

286190-002. This shaft is reported to have been filled to an unknown specification .

Records may be incomplete. Consequently, there may exist in the local area mine entries of which the Coal Authority has no knowledge.

Coal-mining geology

The Authority is not aware of any evidence of damage arising due to geological faults or other lines of weakness that have been affected by coal mining.

Opencast Coal Mining

Past

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

Present

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

Future

The property is not within 800 metres of the boundary of an opencast site for which the Coal Authority is determining whether to grant a licence to remove coal by opencast methods.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

Coal-mining subsidence

The Coal Authority has not received a damage notice or claim for the property since 1 January 1984. There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

There is no record of a mine gas emission requiring action by the Coal Authority within the boundary of the property.

Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

Withdrawal of Support

The property is in an area for which a notice of entitlement to withdraw support was published in 1977.

The property is not in an area for which a notice has been given under section 41 of the Coal Industry Act 1994, revoking the entitlement to withdraw support.

Working Facilities Orders

The property is not in an area for which an Order has been made under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

Payments to Owners of Former Copyhold Land

The property is not in an area for which a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Comments on Coal Authority information

In view of the mining circumstances a prudent developer would seek appropriate technical advice before any works are undertaken.

Therefore if development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. Developers should be aware that the investigation of coal seams/ former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

The attached plan shows the approximate location of the disused mine entry/entries referred to in this report. For reasons of clarity, mine entry symbols may not be drawn to the same scale as the plan. Property owners have the benefit of statutory protection (under the Coal Mining Subsidence act 1991*). This contains provision for the making good, to the reasonable satisfaction of the owner, of physical damage from disused coal mine workings including disused coal mine entries. A leaflet setting out the rights and the obligations of either the Coal Authority or other responsible persons under the 1991 Act can be obtained by telephoning 0845 762 6848 or online at www.coal.gov.uk/services/subsidence.
If you wish to discuss the relevance of any of the information contained in this report you should seek the advice of a qualified mining engineer or surveyor. If you or your adviser wish to examine the source plans from which the information has been taken these are normally available at our Mansfield office, free of charge, by prior appointment, telephone 01623 637233. Should you or your adviser wish to carry out any physical investigations that may enter, disturb or interfere with any disused mine entry the prior permission of the owner must be sought. For coal mine entries the owner will normally be the Coal Authority.
The Coal Authority, regardless of responsibility and in conjunction with other public bodies, provide an emergency call out facility in coalfield areas to assess the public safety implications of mining features (including disused mine entries). Our emergency telephone number at all times is 01623 646333.

*Note, this Act does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

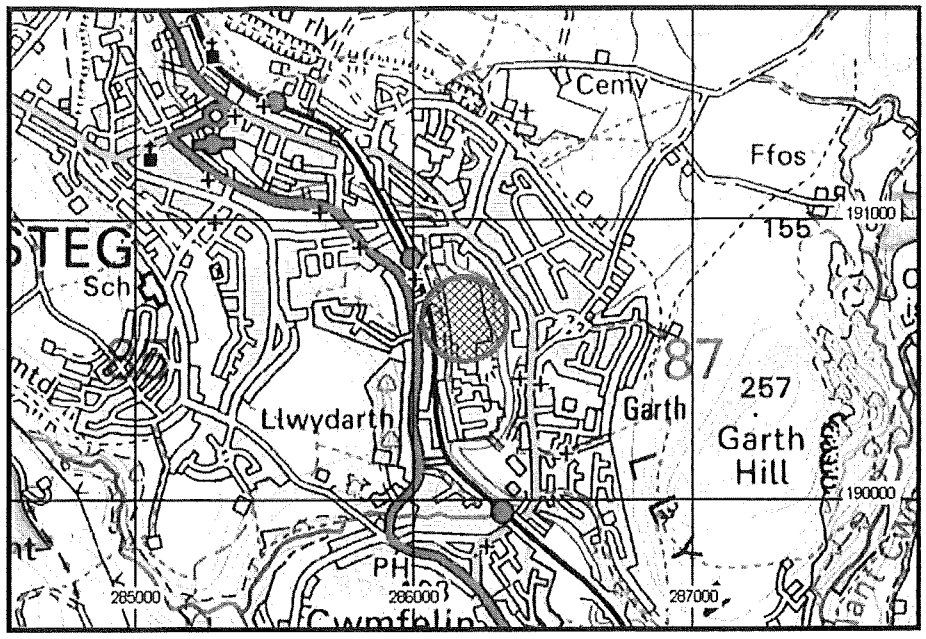
Additional remarks

This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions 2006. The report is compliant with Home Information Pack requirements.

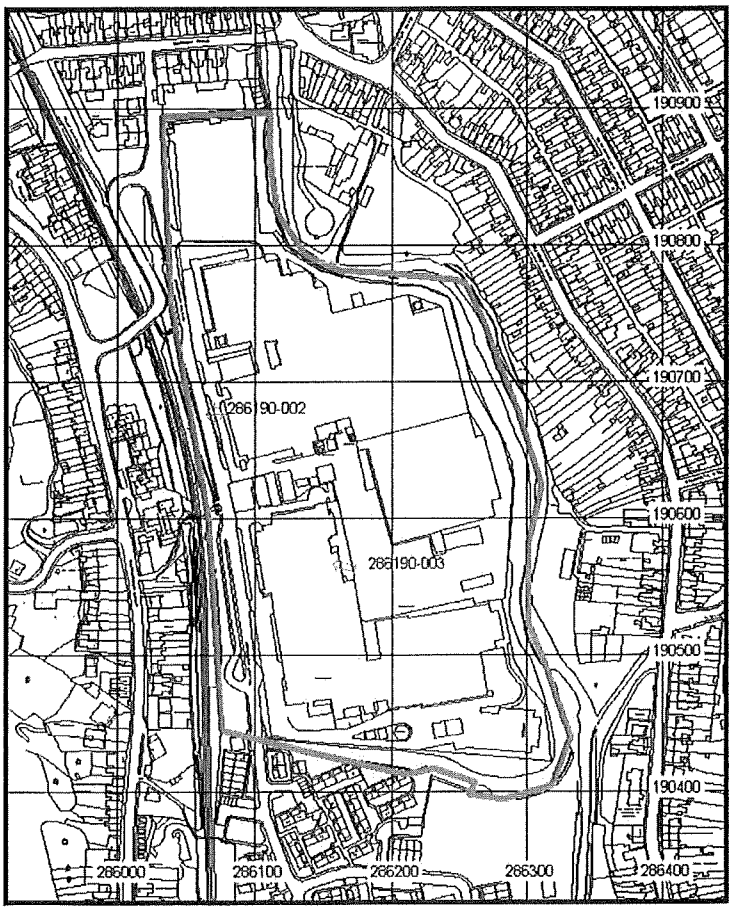
Issued by:	The Coal Authority, 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG
Date:	08 Feb 2010
Coal and Brine Report at:	Site At Ewenny Road Industrial Estate, Maesteg, Mid Glamorgan
Reference number:	00005112-10
Cost:	£64.00
Plus VAT:	£11.20
Total received:	£75.20
VAT registration number:	598 5850 68

Location map

Approximate
position
of property



Enquiry boundary



Key

Approximate position of enquiry boundary shown

Disused Adit or Mineshaft

Mapping sourced from Ordnance Survey

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APPENDIX G

The Coal Authority - Mine Entry Datasheet

The Coal Authority,
Mining Reports Office,
200 Lichfield Lane,
Berry Hill,
Mansfield,
Nottinghamshire,
NG18 4RG
Telephone: 0845 762 6848
DX 716176 MANSFIELD 5
ON-Line Service: www.groundstability.com

The Coal Authority

Cost :	£ 56.00
Plus V.A.T. :	£ 9.80
Total Received:	£ 65.80
V.A.T. Reg.Number	589 585 068

BRIDGEND COUNTY BOROUGH COUNCIL,
MORIEN HOUSE,
BENNETT STREET,
BRIDGEND INDUSTRIAL ESTATE,
BRIDGEND,
MID GLAMORGAN,
CF31 3SH

This matter is being dealt with by Paul Heap

Our Ref: **00008726-10**

Your Ref: CSS/STRUCT/RJC-07

RRUID: 007.00027284280001

Date: 02 March 2010

Dear Sir,

Coal Mining Report
INDUSTRIAL ESTATE, EWENNY ROAD, MAESTEG, MID GLAMORGAN

I refer to your enquiry dated 26 February 2010, received 1 March 2010, in connection with the above.

This report relates to the address given above and the location plan where supplied.

As requested I enclose the mine entry data sheet(s) held for the shaft(s) referred to.

We acknowledge receipt of your remittance in payment of our fee.

Yours faithfully

Stephen Pennell
Director of Mining Information and Services

Mine Entry Data

Shaft/Adit:	Adit
Mine Entry Reference:	286190-003
Source:	1/2500 O.S Sheet Glam 26:9 1870 Ed Ab plans R10472 R14543
Colliery Name:	Unknown
Entry Name:	Old Coal Level
Date Abandoned:	N/A
Depth of Superficial Deposits (m):	Unknown
Depth of Shaft (m):	Unknown
Diameter of Shaft (m):	Unknown
Probable Adit Azimuth:	284
Treatment Details:	None
Conveyance:	N/A
Other Information:	N

Mine Entry Data (Continued)

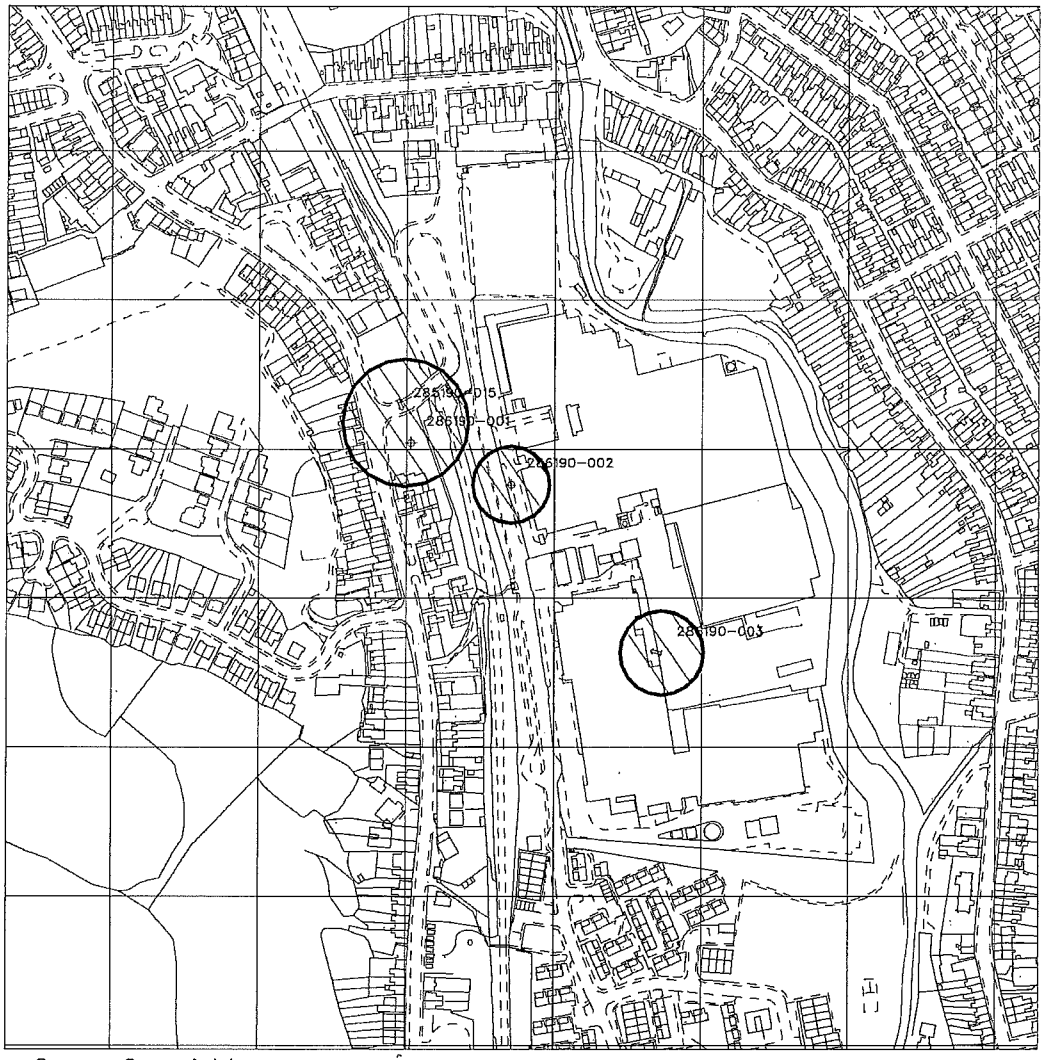
Shaft/Adit:	Shaft
Mine Entry Reference:	286190-002
Source:	1/2500 O.S Sheet Glam 26:9 1870 1900 1920 Ed Ab plans 5591 5593 5645 8381 8589 9253 R10470 R10471 R10472 SWR2274 Geological Sheet Glam 26:SW 2nd Ed (and 1920 Prov Ed - site of) Other: Tondu Roll 22
Colliery Name:	Unknown
Entry Name:	Maesteg Merthyr or Oakwood No.1 Downcast
Date Abandoned:	N/A
Depth of Superficial Deposits (m):	Unknown
Depth of Shaft (m):	200.0
Diameter of Shaft (m):	Unknown
Probable Adit Azimuth:	N/A
Treatment Details:	This shaft is reported to have been filled to an unknown specification
Conveyance:	N/A
Other Information:	N

Mine Entry Data (Continued)

Shaft/Adit:	Shaft
Mine Entry Reference:	286190-001
Source:	1/2500 O.S Sheet Glam 26:9 1900 1920 1939 Spec Ed Ab plans 5591 5593 5645 8381 8589 9253 R10470 R10471 R10472 SWA2274 Geological Sheet Glam 26:SW 2nd Ed (and 1920 Prov Ed - site of) Other: Tondu Roll 22
Colliery Name:	Unknown
Entry Name:	Maesteg Merthyr or Oakwood No.2 Upcast
Date Abandoned:	N/A
Depth of Superficial Deposits (m):	Unknown
Depth of Shaft (m):	230.0
Diameter of Shaft (m):	Unknown
Probable Adit Azimuth:	N/A
Treatment Details:	This shaft was filled and capped by Ogwr Borough Council in October 1974 Specification unknown
Conveyance:	N/A
Other Information:	Y

Mine Entry Data (Continued)

Shaft/Adit:	Adit
Mine Entry Reference:	285190-015
Source:	Ab plans 8381 8589 R10472
Colliery Name:	Unknown
Entry Name:	Cae-Defaid Slant
Date Abandoned:	N/A
Depth of Superficial Deposits (m):	Unknown
Depth of Shaft (m):	Unknown
Diameter of Shaft (m):	Unknown
Probable Adit Azimuth:	155
Treatment Details:	Filled with hardcore and capped to an unknown specification in 1974 01-OCT-1974
Conveyance:	N/A
Other Information:	N



PLAN NOT TO SCALE

This is a plan of the boundaries of the property in respect of which this report has been prepared. It is the responsibility of the user to ensure that the boundaries shown correspond with those of the property.

APPROXIMATE POSITION OF ENQUIRY BOUNDARY SHOWN

APPROXIMATE POSITION OF DISUSED MINE SHAFTS SHOWN

APPROXIMATE POSITION OF DISUSED MINE ADITS SHOWN

This plan shows the approximate location of the disused mine entry/entries referred to in the attached mining report. For reasons of clarity, mine entry symbols may not be drawn to the same scale as the plan.
Property owners have the benefit of statutory protection (under the Coal Mining Subsidence Act 1991). This contains provision for the making good, to the reasonable satisfaction of the owner, of physical damage from disused coal mine workings including disused coal mine entries. A DTI leaflet setting out the rights and the obligations of either the Coal Authority or other responsible persons under the 1991 Act can be obtained by telephoning 0845 762 6848.
If you wish to discuss the relevance of any of the information contained in the attached report you should seek the advice of a qualified mining engineer or surveyor. If you or your adviser wish to examine the source plans from which the information has been taken these are available at our Mansfield office, free of charge, by prior appointment, telephone 01623 637233. Should you or your advisor wish to carry out any physical investigations that may enter, disturb or interfere with any disused mine entry the prior permission of the owner must be sought. For coal mine entries the owner will normally be the Coal Authority.
The Coal Authority, regardless of responsibility and in conjunction with other public bodies, provide an emergency call out facility in coalfield areas to assess the public safety implications of mining features (including disused mine entries). Our emergency telephone number at all times is 01623 646333.

The Coal Authority,
Mining Reports Office,
200 Lichfield Lane,
Berry Hill,
Mansfield,
Nottinghamshire,
NG18 4RG
Telephone: 0845 762 6848
DX 716176 MANSFIELD 5
ON-Line Service: www.groundstability.com

The Coal Authority

GENERAL CONDITIONS OF CONTRACT FOR THE SUPPLY OF MINING INFORMATION

1. In the General Conditions, the Coal Authority is referred to as the CA and the Company, firm or person to whom the information and/or material is to be supplied is referred to as the Purchaser. The supply of any information and/or material by the CA to the Purchaser shall be subject to these General Conditions of Contract.

2. The following should be taken into account by the Purchaser when making use of any information and/or material supplied.

(1) The information supplied is constantly updated. The CA will supply the Purchaser with the most up to date information and/or material at the time of supply, but give no warranty or representation that such information and/or material will not become obsolete or incorrect over any period of time.

(2) Information supplied should not be enlarged to any greater scale than that at which it is supplied or accuracy will be affected.

3. The information and/or material supplied is composed from data based in many cases on measurements and records of various standards of reliability and age. Under no circumstances should the information and/or material be relied on as the sole or major basis for any production, construction or financial decisions. The CA make no financial decissions. The CA make no representations and do not warrant the accuracy or completeness of the information and/or material.

4.(1) Subject to sub-clause 3 of this Condition, the CA shall indemnify the Purchaser against all and any claims for loss or damage suffered or expense incurred arising out of death or personal injury to any person to the extent that such death or injury results from negligence in the supply of the information and/or material by the CA or its employees.

(2) Save as set out in the sub-clause 1 of this Condition, the CA 's liability to the purchaser for the loss or damage suffered or expenses incurred to persons and property arising directly or indirectly from the supply of the information and/or material by the CA and/or its interpretation by the Purchaser or any third party shall be limited to a sum equal to the total sum payable by the Purchaser to the CA for the supply of information and/or material; but there shall be no liability whatsoever on the CA (save as set out in sub-clause 1) where the information and/or material is suppied free of charge.

(3)In any event, the CA shall not be liable for any indirect economic loss (including, but not limited to, loss of profits, loss of value, loss of contracts, loss of production or wastage of labour) arising directly or indirectly out of the supply of the information and/or material and/or its use or interpretation by the Purchaser or any third party.

(4) The Purchaser shall fully indemnify the CA and its employees against all and any claims for loss or damage sufferred or expense incurred save for death or personal injury resulting from the CA's negligence (but including any indirect or consequential loss or damage to CA property) arising directly or indirectly from the supply of the information and/or material by the CA and/or its use or interpretation by the Purchaser or any third party.

(5) The Purchaser shall insure his liabilities under this Condition with an insurer acceptable to the CA and shall, if required by the CA, produce satisfactory evidence that such a policy of insurance has been affected and maintained in full.

5.(1) Copyright in any information supplied remains with the CA and the Purchaser shall only use the information and/or material for the purpose of the assignment to which their request for information and/or material relates.

(2) All information and/or material and any interpretation thereof shall be kept strictly confidential and shall not be supplied to any third party (or any employee or member or officer of the Purchaser not directly employed by the Purchaser in the assignment to which the request for information and/or material relates) without the written consent of the CA. Any Consent shall be on such conditions as the CA thinks fit.

(3) The information and/or material or any interpretation thereof shall not be published by the Purchaser (or any employee not directly employed by the Purchaser in the assignment to which the request for information relates) either independently or as part of any other document without the prior written consent of the CA. Any consent shall be on such conditions as the CA thinks fit.

(4) The Purchaser shall maintain such security as is necessary to ensure that it complies with its obligations under this Condition and that the information and/or material and any interpretation thereof remains secure and is not obtained by any person not directly employed by the Purchaser in the assignment to which their request for information relates, without the Purchasers knowledge.

6. Unless payment is made in advance, the CA shall issue an invoice to the Purchaser on supply of the information and/or material and payment shall be made by the Purchaser to:

Finance Department, The Coal Authority, 200 Lichfield Lane
Berry Hill, Mansfield, Notts, NG18 4RG

within 30 days from the date of the invoice. Any sums outstanding after 30 days shall bear interest, at the rate of 5% per annum above the Lloyds TSB Bank PLC base, from the date of the invoice to the date of actual payment. In the event that payment is not made within 30 days from the date of invoice, the CA shall have the absolute right to require the return of the information and/or material forthwith by written notice.

7. Copies of any results from tests on materials, or based on information, supplied by the CA will be made available to the CA free of charge.

8. The Purchasers shall ensure that these General Conditions (and in particular Conditions 2, 3 and 5) are brought to the attention of any of its employees using the information and/or material and any other person to whom the information and/or material is disclosed with the consent of the CA.

Our Ref:	00008726-10
Your Ref:	CSS/STRUCT/RJC-07
RRUID:	007.00027284280001
Date:	2 March 2010

APPENDIX H

Rotary Drillhole Logs - Earth Science Partnership (July 1999)

EARTH SCIENCE PARTNERSHIP	PROJECT:STANDARD PRODUCTS LTD., MAESTEG	Drillhole No.: 1
Client: Bay Associates	Project No.: 1879c Location:	Sheet: 1 of 2 Ground Level: 50.4 (site datum)

DRILLING METHODS AND EQUIPMENT

Depth	Method	Bit type	Hole Diam.	Core Diam.	Casing Depth	Casing Size
GL-18.0 18.0-30.0	Odex Open hole Open hole		138mm	n/a	18.0	138mm

PROGRESS

Date	Time	Hole Depth	Casing Depth
9.7.99		30.0	18.0

RUN (FLUSH) %	TCR (ICR)	SCR %	Max Mia.	Rqd %	F.I.	Penetration test: seating	Penetration test: test drive	N	DEPTH (Thickness)	DESCRIPTION	Level O.D.
									(12.8)	MADE GROUND: Colliery spoil tip material	
									12.8 (13.6) 20.0	SAND and GRAVEL with cobbles	

Remarks: (1) All density and strength measurements are based on field observation only.

Ground Water			Orientation
Depth	Behaviour	Sealed	Vertical
12.80	Groundwater strike	-	Logged by
			Driller

EARTH SCIENCE PARTNERSHIP	PROJECT:STANDARD PRODUCTS LTD., MAESTEG	Drillhole No.: 1
	Project No.: 1879e	Sheet: 2 of 2
Client: Bay Associates	Location:	Ground Level: 50.4 (site datum)

DRILLING METHODS AND EQUIPMENT

Depth	Method	Bit type	Hole Diam.	Core Diam.	Casing Depth	Casing Size
			138mm	n/a	18.0	138mm

PROGRESS

Date	Time	Hole Depth	Casing Depth
9.7.99		30.0	18.0

RUN (FLUSH) %	TCR (ICR)	SCR %	Max Min.	Rqd %	F.I.	Penetration test: seating	Penetration test: test drive	N	DEPTH (Thickness)	DESCRIPTION	Level O.D.
										SAND and GRAVEL with cobbles	
									26.4		
										Silty MUDSTONE with bands of hard sandstone	
									(3.6)		
									30.0	End of drillhole	

Remarks: (1) All density and strength measurements are based on field observation only.

Ground Water			Orientation
Depth	Behaviour	Sealed	Vertical
			Logged by Driller

EARTH SCIENCE PARTNERSHIP	PROJECT:STANDARD PRODUCTS LTD., MAESTEG	Drillhole No.: 2
	Project No.: 1879c	Sheet: 1 of 2
Client: Bay Associates	Location:	Ground Level: 50.3m (site datum)

DRILLING METHODS AND EQUIPMENT

Depth	Method	Bit type	Hole Diam.	Core Diam.	Casing Depth	Casing Size
GL-21.5	Odex Open hole		138mm	n/a	21.5	138mm
21.5-30.0	Open hole					

PROGRESS

Date	Time	Hole Depth	Casing Depth
9.7.99		30.0	21.5

RUN (FLUSH) %	TCR (ICR)	SCR %	Max Mis.	Rqd %	F.I.	Penetration test: seating	Penetration test: test drive	N	DEPTH (Thickness)	DESCRIPTION	Level O.D.
									(8.9)	MADE GROUND: Colliery spoil tip material	
									8.9 (12.2)	SAND and GRAVEL with cobbles	
									20.0		

Remarks: (1) All density and strength measurements are based on field observation only.

Ground Water			Orientation
Depth	Behaviour	Sealed	Vertical
8.9m	Groundwater strike	-	Logged by
			Driller

EARTH SCIENCE PARTNERSHIP	PROJECT:STANDARD PRODUCTS LTD., MAESTEG	Drillhole No.: 2
	Project No.: 1879e	Sheet: 2 of 2
Client: Bay Associates	Location:	Ground Level: 50.3m (site datum)

DRILLING METHODS AND EQUIPMENT

Depth	Method	Bit type	Hole Diam.	Core Diam.	Casing Depth	Casing Size
			138mm	n/a	21.5	138mm

PROGRESS

Date	Time	Hole Depth	Casing Depth
9.7.99		30.0	21.5

RUN (FLUSH) %	TCR (ICR)	SCR %	Max Mia.	Rqd %	F.I.	Penetration test: seating	Penetration test: test drive	N	DEPTH (Thickness)	DESCRIPTION	Level O.D.
										As previous sheet	
									21.1		
										Silty MUDSTONE	
									(3.6)		
									24.7		
										COAL (700mm)	
									25.4		
										Silty MUDSTONE with hard sandstone bands	
									(4.6)		
									30.0		
										End of drillhole.	

Remarks: (1) All density and strength measurements are based on field observation only.

Ground Water			Orientation
Depth	Behaviour	Sealed	Vertical
			Logged by Driller

EARTH SCIENCE PARTNERSHIP	PROJECT: STANDARD PRODUCTS LTD., MAESTEG	Drillhole No.: 3
	Project No.: 1879c	Sheet: 1 of 2
Client: Bay Associates	Location:	Ground Level 50.9m (site datum)

DRILLING METHODS AND EQUIPMENT

Depth	Method	Bit type	Hole Diam.	Core Diam.	Casing Depth	Casing Size
GL – 26.5	Odex Open hole		138mm	n/a	26.5	138mm
26.5 – 30.0	Open hole					

PROGRESS

Date	Time	Hole Depth	Casing Depth
12.7.99		30.0	26.5

RUN (FLUSH) %	TCR (ICR)	SCR %	Max Min.	Rqd %	F.I.	Penetration test: seating	Penetration test: test drive	N	DEPTH (Thickness)	DESCRIPTION	Level O.D.
									(12.1)	MADE GROUND: Colliery spoil tip material	
									12.1 (13.9)	SAND and GRAVEL with cobbles	

Remarks: (1) All density and strength measurements are based on field observation only.

Ground Water			Orientation
Depth	Behaviour	Sealed	Vertical
26.0	Groundwater Strike	-	Logged by
			Driller

EARTH SCIENCE PARTNERSHIP	PROJECT: STANDARD PRODUCTS LTD., MAESTEG	Drillhole No.: 3
	Project No.: 1879e	Sheet: 2 of 2
Client: Bay Associates	Location:	Ground Level 50.9m (site datum)

DRILLING METHODS AND EQUIPMENT

Depth	Method	Bit type	Hole Diam.	Core Diam.	Casing Depth	Casing Size
			138mm	n/a	26.5	138mm

PROGRESS

Date	Time	Hole Depth	Casing Depth
12.7.99		30.0	

RUN (FLUSH) %	TCR (ICR)	SCR %	Max Nia.	Rqd %	F.I.	Penetration test: seating	Penetration test: test drive	N	DEPTH (Thickness)	DESCRIPTION	Level O.D.
										SAND and GRAVEL with cobbles	
									26.0		
									(4.0)	Silty MUDSTONE with hard sandstone bands	
									30.0	End of drillhole.	

Remarks: (1) All density and strength measurements are based on field observation only.

Ground Water			Orientation
Depth	Behaviour	Sealed	Vertical
			Logged by Driller

EARTH SCIENCE PARTNERSHIP	PROJECT: STANDARD PRODUCTS LTD., MAESTEG	Drillhole No.: 4
	Project No.: 1879c	Sheet: 1 of 2
Client: Bay Associates	Location:	Ground Level: 50.4m (site datum)

DRILLING METHODS AND EQUIPMENT

Depth	Method	Bit type	Hole Diam.	Core Diam.	Casing Depth	Casing Size
GL – 21.5	Odex Open hole		138mm	n/a	21.5	138mm
21.5-30.0	Open hole					

PROGRESS

Date	Time	Hole Depth	Casing Depth
12.7.99		30.0	21.5

RUN (FLUSH) %	TCR (ICR)	SCR %	Max Mio.	Rqd %	F.I.	Penetration test: seating	Penetration test: test drive	N	DEPTH (Thickness)	DESCRIPTION	Level O.D.
									(11.2)	MADE GROUND: Colliery spoil tip material	
									11.2	SAND and GRAVEL with cobbles	
									(9.6)		

Remarks: (1) All density and strength measurements are based on field observation only.

Ground Water			Orientation
Depth	Behaviour	Sealed	Vertical
11.2	Groundwater strike	-	Logged by Driller

EARTH SCIENCE PARTNERSHIP	PROJECT:STANDARD PRODUCTS LTD., MAESTEG	Drillhole No.: 4
	Project No.: 1879e	Sheet: 2 of 2
Client: Bay Associates	Location:	Ground Level: 50.4m (site datum)

DRILLING METHODS AND EQUIPMENT

Depth	Method	Bit type	Hole Diam.	Core Diam.	Casing Depth	Casing Size
			138mm	n/a	21.5	138mm

PROGRESS

Date	Time	Hole Depth	Casing Depth
12.7.99		30.0	21.5

RUN (FLUSH) %	TCR (ICR)	SCR %	Max Min.	Rqd %	F.I.	Penetration test: seating	Penetration test: test drive	N	DEPTH (Thickness)	DESCRIPTION	Level O.D.
									20.8	As previous sheet	
									(3.6)	Silty MUDSTONE	
									24.4	COAL (800mm)	
									25.2	Silty MUDSTONE with hard sandstone bands	
									(4.8)		
									30.0	End of drillhole.	

Remarks: (1) All density and strength measurements are based on field observation only.

Ground Water			Orientation
Depth	Behaviour	Sealed	Vertical
			Logged by Driller

APPENDIX J

Human Health Risk Assessment - Summary

Human Health Risk Assessment Summary
RESIDENTIAL WITH PLANT UPTAKE

Site	**EWENNY ROAD**
Job Number	**KC709-64**
Comments	**HHRA SHEET2 PRIMARY SECONDARY AND TERTIARY ANALYSIS**

Soil Organic Matter (%)	Value Used by CLEA v1.06	8.2
Soil pH	Value Used by CLEA v1.06	9.4

Analyte	Number of Samples	Minimum Value	Maximum Value	No. Exceeding SAC	US95 Statistical Value	US95 Exceeds SAC?	Outlier?	SAC Source	Soil Assessment Criteria	Unit
Aliphatic C5-C6	7	0.01	0.32	0	0.14	NO	YES	CLEA v1.06	374.385	mg/kg
Aliphatic C6-C8	7	0.01	16	0	7.07	NO	NO	CLEA v1.06	1280.203	mg/kg
Aliphatic C8-C10	7	0.01	0.01	0	0.01	NO	NO	CLEA v1.06	372.376	mg/kg
Aliphatic C10-C12	7	0.6	1.5	0	1.60	NO	NO	CLEA v1.06	1683.409	mg/kg
Aliphatic C12-C16	7	0.1	13	0	6.25	NO	NO	CLEA v1.06	4076.871	mg/kg
Aliphatic C16-C21	7	0.1	53	--	24.36	--	NO	--	--	n/a
Aliphatic C21-C35	7	0.2	97	--	48.16	--	NO	--	--	n/a
Aromatic C5-C7	7	0.01	0.01	0	0.01	NO	NO	CLEA v1.06	441.745	mg/kg
Aromatic C7-C8	7	0.01	0.01	0	0.01	NO	NO	CLEA v1.06	935.433	mg/kg
Aromatic C8-C10	7	0.01	0.21	0	0.09	NO	YES	CLEA v1.06	304.535	mg/kg
Aromatic C10-C12	7	0.1	0.9	0	0.96	NO	NO	CLEA v1.06	472.808	mg/kg
Aromatic C12-C16	7	0.1	1.8	0	1.19	NO	NO	CLEA v1.06	727.140	mg/kg
Aromatic C16-C21	7	0.1	13	0	7.76	NO	NO	CLEA v1.06	867.641	mg/kg
Aromatic C21-C35	7	0.1	53	0	27.77	NO	NO	CLEA v1.06	1251.565	mg/kg
Benzene	2	0.01	0.01	0	0.01	NO	#N/A	CLEA v1.06	0.555	mg/kg
Ethylbenzene	2	0.01	0.01	0	0.01	NO	#N/A	CLEA v1.06	621.371	mg/kg
Toluene	2	0.01	0.01	0	0.01	NO	#N/A	CLEA v1.06	935.433	mg/kg

Human Health Risk Assessment Summary
Residential WITH PLANT UPTAKE

Site	**EWENNY ROAD**
Job Number	**KC709-63**
Comments	**PRIMARY SECONDARY AND TERTIARY ANALYSIS**

Soil Organic Matter (%)	Value Used by CLEA v1.06	8.2
Soil pH	Value Used by CLEA v1.06	9.4

Analyte	Number of Samples	Minimum Value	Maximum Value	No. Exceeding SAC	US95 Statistical Value	US95 Exceeds SAC?	Outlier?	SAC Source	Soil Assessment Criteria	Unit
Arsenic	39	1	210	6	30.55	NO	YES	CLEA v1.06	32.398	mg/kg
Cadmium	39	0.1	6.2	1	0.98	NO	YES	CLEA v1.06	5.175	mg/kg
Hexavalent Chromium	33	1	1	0	1.00	NO	NO	CLEA v1.06	3.380	mg/kg
Copper	39	1	340	0	85.27	NO	NO	CLEA v1.06	2326.548	mg/kg
Lead	39	1	2200	0	122.79	----	YES	Risc 4 Assesment Required	See Risc 4 Output	n/a
Mercury, inorganic	39	0.05	0.44	0	0.15	NO	NO	CLEA v1.06	168.684	mg/kg
Nickel	39	1	77	0	33.07	NO	NO	CLEA v1.06	531.385	mg/kg
Selenium	39	0.5	4	0	1.15	NO	YES	CLEA v1.06	350.241	mg/kg
Zinc	39	4	6800	1	615.07	NO	YES	CLEA v1.06	3745.432	mg/kg
Cyanide total	33	0.1	0.5	0	0.14	----	YES	Risc 4 Assesment Required	See Risc 4 Output	n/a
Acenaphthene	33	0.1	0.5	0	0.16	NO	YES	CLEA v1.06	1286.547	mg/kg
Acenaphthylene	33	0.1	0.4	0	0.16	NO	YES	CLEA v1.06	1094.818	mg/kg
Anthracene	33	0.1	2.6	0	0.41	NO	YES	CLEA v1.06	10999.057	mg/kg
Benzo(a)anthracene	33	0.1	5.1	0	0.51	NO	YES	CLEA v1.06	6.105	mg/kg
Benzo(a)pyrene	33	0.1	3.8	1	0.43	NO	YES	CLEA v1.06	1.009	mg/kg
Benzo(b)fluoranthene	33	0.1	5.5	0	0.59	NO	YES	CLEA v1.06	7.114	mg/kg
Benzo(k)fluoranthene	33	0.1	2.2	0	0.29	NO	YES	CLEA v1.06	10.131	mg/kg
Benzo(g,h,i)perylene	33	0.1	2.2	0	0.27	NO	YES	CLEA v1.06	46.965	mg/kg
Chrysene	33	0.1	3.6	0	0.39	NO	YES	CLEA v1.06	9.541	mg/kg
Dibenzo(a,h)anthracene	33	0.1	0.4	0	0.12	NO	YES	CLEA v1.06	0.911	mg/kg
Fluoranthene	33	0.1	9.2	0	0.85	NO	YES	CLEA v1.06	738.569	mg/kg
Fluorene	33	0.1	0.8	0	0.21	NO	YES	CLEA v1.06	973.792	mg/kg
Indeno(1,2,3-c,d)pyrene	33	0.1	2.9	0	0.33	NO	YES	CLEA v1.06	4.258	mg/kg
Naphthalene	33	0.1	0.3	0	0.12	NO	YES	CLEA v1.06	24.302	mg/kg
Phenanthrene	33	0.1	5.2	0	0.62	NO	YES	CLEA v1.06	450.318	mg/kg
Pyrene	33	0.1	7.4	0	0.70	NO	YES	CLEA v1.06	1716.912	mg/kg
Phenol - Monohydric	33	0.3	0.8	0	0.34	NO	YES	CLEA v1.06	457.607	mg/kg

APPENDIX K

CLEA Version 1.06 and RISC4.0 Model Data

Title:
New Project
07/08/09 15:35

Scenarios:
Child Resident - Typical
Adult Resident - Typical

Routes:
INGESTION OF SOIL
DERMAL CONTACT WITH SOIL
INGESTION OF ROOT VEGETABLES
INGESTION OF ABOVE GROUND VEGETABLES

Chemicals:
Lead

SUMMARY OF INPUT PARAMETERS	SCENARIO: 1	2
LIFETIME AND BODY WEIGHT		
Body Weight (kg)	15.	70.
Lifetime (years)	6.0	43.
INGESTION OF SOIL		
Soil Ingestion Rate (mg/day)	1.00E+02	60.
Exp. Frequency Soil (events/year)	3.65E+02	3.65E+02
Exp. Duration Soil (years)	6.0	43.
Absorption Adjustment Factor for Ingestion of Soil (-)		
Lead	1.0	1.0
Soil Bioavailability (-)		
Lead	1.0	1.0
DERMAL CONTACT WITH SOIL		
Total Skin Surface Area (cm^2)	6.70E+03	1.76E+04
Fraction Skin Exposed to Soil (-)	0.23	5.00E-02
Adherence Factor for Soil (mg/cm^2)	1.0	0.30
Exposure Freq. Soil (events/year)	3.65E+02	3.65E+02
Exposure Duration Soil (years)	6.0	43.
Absorption Adjustment Factor for Dermal Exposure to Soil (-)		
Lead	1.00E-02	1.00E-02
Soil Bioavailability (-)		
Lead	1.0	1.0
INGESTION OF ROOT VEGETABLES		
INGESTION OF ABOVE GROUND VEGETABLES		
Root Veg. Ingestion Rate (g/day)	69.	1.25E+02
Above Ground Veg. Ing. Rate(g/day)	18.	12.
Fraction Organic Carbon in Soil g/g	1.20E-02	1.20E-02
Exp. Frequency Veg. (events/year)	3.65E+02	3.65E+02
Exp. Duration Veg. Intake (years)	6.0	43.
Fraction grown in home garden (-)	0.39	0.39
Koc [(mg/l)/mg/l)]		
Lead	ND	ND
log Kow		
Lead	ND	ND
Vegetable Uptake Factor [-] (from chemical database)		
Lead	ND	ND
Kd [(mg/L)/(mg/kg)] (from chemical database)		
Lead	9.9	9.9
MEDIA CONCENTRATIONS		
Concentration in Surficial Soil (mg/kg) Used in calculating carcinogenic risk and hazard index		
Lead	2.20E+03	2.20E+03

Conc. in Garden Soil (mg/kg)
This will be the same as surficial soil conc.
Used in calculating carcinogenic risk and hazard index

Lead	2.20E+03	2.20E+03

SLOPE FACTORS AND REFERENCE DOSES

Ingestion Slope Factor [1/(mg/kg-day)]

Lead	ND	ND

Ingestion Reference Dose (mg/kg-day)

Lead	3.60E-03	3.60E-03

Dermal Slope Factor [1/(mg/kg-day)]

Lead	ND	ND

Dermal Reference Dose (mg/kg-day)

Lead	3.60E-03	3.60E-03

SUMMARY OF RESULTS	SCENARIO: 1	2
INGESTION OF SOIL		
Daily Doses and Risk for : Lead		
CADD (mg/kg-day)	1.47E-02	1.89E-03
LADD (mg/kg-day)	1.47E-02	1.89E-03
Cancer Risk (-)	0.00E+00	0.00E+00
Hazard Index (-)	4.07E+00	5.24E-01
DERMAL CONTACT WITH SOIL		
Daily Doses and Risk for : Lead		
CADD (mg/kg-day)	2.26E-03	8.30E-05
LADD (mg/kg-day)	2.26E-03	8.30E-05
Cancer Risk (-)	0.00E+00	0.00E+00
Hazard Index (-)	6.28E-01	2.30E-02
INGESTION OF ROOT VEGETABLES		
Soil-to-root Concentration Factor, Bvr (mg/mg)		
Lead	0.0	0.0
Daily Doses and Risk for : Lead		
CADD (mg/kg-day)	0.00E+00	0.00E+00
LADD (mg/kg-day)	0.00E+00	0.00E+00
Cancer Risk (-)	0.00E+00	0.00E+00
Hazard Index (-)	0.00E+00	0.00E+00
INGESTION OF ABOVE GROUND VEGETABLES		
Soil-to-above-ground Concentration Factor, Bva (mg/mg)		
Lead	0.0	0.0
Daily Doses and Risk for : Lead		
CADD (mg/kg-day)	0.00E+00	0.00E+00
LADD (mg/kg-day)	0.00E+00	0.00E+00
Cancer Risk (-)	0.00E+00	0.00E+00
Hazard Index (-)	0.00E+00	0.00E+00

SUMMARY OF HAZARD QUOTIENTS
For Surface Soil

CASE 1:
Child Resident - Typical

	Ingestion of Soil	Dermal Contact Soil	Ingestion of Root Vegetables	Ingestion AboveGround Vegetables	TOTAL
Lead	4.1E+00	6.3E-01	0.0E+00	0.0E+00	4.7E+00
TOTAL	4.1E+00	6.3E-01	0.0E+00	0.0E+00	4.7E+00

CASE 2:
Adult Resident - Typical

	Ingestion of Soil	Dermal Contact Soil	Ingestion of Root Vegetables	Ingestion AboveGround Vegetables	TOTAL
Lead	5.2E-01	2.3E-02	0.0E+00	0.0E+00	5.5E-01
TOTAL	5.2E-01	2.3E-02	0.0E+00	0.0E+00	5.5E-01

NOTE: A zero hazard index may indicate that a RfD was not entered for that chemical.

Title:
KC709 Ewenny Road Industrial Estate
03/05/10 11:36

Scenarios:
Child Resident - Typical
Adult Resident - Typical

Routes:
INGESTION OF SOIL
DERMAL CONTACT WITH SOIL
INGESTION OF ROOT VEGETABLES
INGESTION OF ABOVE GROUND VEGETABLES

Chemicals:
Cyanide
Lead
Tetrachloroethylene (PCE)
Trichloroethylene (TCE)

SUMMARY OF INPUT PARAMETERS	SCENARIO: 1	2
LIFETIME AND BODY WEIGHT		
Body Weight (kg)	15.	70.
Lifetime (years)	6.0	43.
INGESTION OF SOIL		
Soil Ingestion Rate (mg/day)	1.00E+02	60.
Exp. Frequency Soil (events/year)	3.65E+02	3.65E+02
Exp. Duration Soil (years)	6.0	43.
Absorption Adjustment Factor for Ingestion of Soil (-)		
Cyanide	1.0	1.0
Lead	1.0	1.0
Tetrachloroethylene (PCE)	1.0	1.0
Trichloroethylene (TCE)	1.0	1.0
Soil Bioavailability (-)		
Cyanide	1.0	1.0
Lead	1.0	1.0
Tetrachloroethylene (PCE)	1.0	1.0
Trichloroethylene (TCE)	1.0	1.0
DERMAL CONTACT WITH SOIL		
Total Skin Surface Area (cm^2)	6.70E+03	1.76E+04
Fraction Skin Exposed to Soil (-)	0.23	5.00E-02
Adherence Factor for Soil (mg/cm^2)	1.0	0.30
Exposure Freq. Soil (events/year)	3.65E+02	3.65E+02
Exposure Duration Soil (years)	6.0	43.
Absorption Adjustment Factor for Dermal Exposure to Soil (-)		
Cyanide	1.00E-02	1.00E-02
Lead	1.00E-02	1.00E-02
Tetrachloroethylene (PCE)	0.10	0.10
Trichloroethylene (TCE)	0.10	0.10
Soil Bioavailability (-)		
Cyanide	1.0	1.0
Lead	1.0	1.0
Tetrachloroethylene (PCE)	1.0	1.0
Trichloroethylene (TCE)	1.0	1.0
INGESTION OF ROOT VEGETABLES		
INGESTION OF ABOVE GROUND VEGETABLES		
Root Veg. Ingestion Rate (g/day)	69.	1.25E+02
Above Ground Veg. Ing. Rate(g/day)	18.	12.
Fraction Organic Carbon in Soil g/g	1.20E-02	1.20E-02
Exp. Frequency Veg. (events/year)	3.65E+02	3.65E+02
Exp. Duration Veg. Intake (years)	6.0	43.
Fraction grown in home garden (-)	0.39	0.39
Koc [(mg/l)/mg/l)]		
Cyanide	ND	ND

Lead	ND	ND
Tetrachloroethylene (PCE)	1.60E+02	1.60E+02
Trichloroethylene (TCE)	1.70E+02	1.70E+02

log Kow

Cyanide	ND	ND
Lead	ND	ND
Tetrachloroethylene (PCE)	2.7	2.7
Trichloroethylene (TCE)	2.7	2.7

Vegetable Uptake Factor [-] (from chemical database)

Cyanide	ND	ND
Lead	ND	ND
Tetrachloroethylene (PCE)	ND	ND
Trichloroethylene (TCE)	ND	ND

Kd [(mg/L)/(mg/kg)] (from chemical database)

Cyanide	9.9	9.9
Lead	9.9	9.9
Tetrachloroethylene (PCE)	ND	ND
Trichloroethylene (TCE)	ND	ND

MEDIA CONCENTRATIONS

Concentration in Surficial Soil (mg/kg)
Used in calculating carcinogenic risk and hazard index

Cyanide	0.50	0.50
Lead	4.00E+02	4.00E+02
Tetrachloroethylene (PCE)	8.00E-02	8.00E-02
Trichloroethylene (TCE)	55.	55.

Conc. in Garden Soil (mg/kg)
This will be the same as surficial soil conc.
Used in calculating carcinogenic risk and hazard index

Cyanide	0.50	0.50
Lead	4.00E+02	4.00E+02
Tetrachloroethylene (PCE)	8.00E-02	8.00E-02
Trichloroethylene (TCE)	55.	55.

SLOPE FACTORS AND REFERENCE DOSES

Ingestion Slope Factor [1/(mg/kg-day)]

Cyanide	ND	ND
Lead	ND	ND
Tetrachloroethylene (PCE)	5.20E-02	5.20E-02
Trichloroethylene (TCE)	1.10E-02	1.10E-02

Ingestion Reference Dose (mg/kg-day)

Cyanide	4.00E-02	4.00E-02
Lead	3.60E-03	3.60E-03
Tetrachloroethylene (PCE)	1.00E-02	1.00E-02
Trichloroethylene (TCE)	6.00E-03	6.00E-03

Dermal Slope Factor [1/(mg/kg-day)]

Cyanide	ND	ND
Lead	ND	ND
Tetrachloroethylene (PCE)	5.20E-02	5.20E-02
Trichloroethylene (TCE)	1.10E-02	1.10E-02

Dermal Reference Dose (mg/kg-day)

Cyanide	4.00E-02	4.00E-02
Lead	3.60E-03	3.60E-03
Tetrachloroethylene (PCE)	1.00E-02	1.00E-02
Trichloroethylene (TCE)	6.00E-03	6.00E-03

SUMMARY OF RESULTS	SCENARIO: 1	2

INGESTION OF SOIL

Daily Doses and Risk for : Cyanide

CADD (mg/kg-day)	3.33E-06	4.29E-07
LADD (mg/kg-day)	3.33E-06	4.29E-07
Cancer Risk (-)	0.00E+00	0.00E+00
Hazard Index (-)	8.33E-05	1.07E-05

Daily Doses and Risk for : Lead

CADD (mg/kg-day)	2.67E-03	3.43E-04
LADD (mg/kg-day)	2.67E-03	3.43E-04
Cancer Risk (-)	0.00E+00	0.00E+00
Hazard Index (-)	7.41E-01	9.52E-02

Daily Doses and Risk for : Tetrachloroethylene (PCE)

CADD (mg/kg-day)	5.33E-07	6.86E-08
LADD (mg/kg-day)	5.33E-07	6.86E-08
Cancer Risk (-)	2.77E-08	3.57E-09
Hazard Index (-)	5.33E-05	6.86E-06

Daily Doses and Risk for : Trichloroethylene (TCE)

CADD (mg/kg-day)	3.67E-04	4.71E-05
LADD (mg/kg-day)	3.67E-04	4.71E-05
Cancer Risk (-)	4.03E-06	5.19E-07
Hazard Index (-)	6.11E-02	7.86E-03

DERMAL CONTACT WITH SOIL

Daily Doses and Risk for : Cyanide

CADD (mg/kg-day)	5.14E-07	1.89E-08
LADD (mg/kg-day)	5.14E-07	1.89E-08
Cancer Risk (-)	0.00E+00	0.00E+00
Hazard Index (-)	1.28E-05	4.71E-07

Daily Doses and Risk for : Lead

CADD (mg/kg-day)	4.11E-04	1.51E-05
LADD (mg/kg-day)	4.11E-04	1.51E-05
Cancer Risk (-)	0.00E+00	0.00E+00
Hazard Index (-)	1.14E-01	4.19E-03

Daily Doses and Risk for : Tetrachloroethylene (PCE)

CADD (mg/kg-day)	8.22E-07	3.02E-08
LADD (mg/kg-day)	8.22E-07	3.02E-08
Cancer Risk (-)	4.27E-08	1.57E-09
Hazard Index (-)	8.22E-05	3.02E-06

Daily Doses and Risk for : Trichloroethylene (TCE)

CADD (mg/kg-day)	5.65E-04	2.07E-05
LADD (mg/kg-day)	5.65E-04	2.07E-05
Cancer Risk (-)	6.22E-06	2.28E-07
Hazard Index (-)	9.42E-02	3.46E-03

INGESTION OF ROOT VEGETABLES

Soil-to-root Concentration Factor, Bvr (mg/mg)

Cyanide	0.0	0.0
Lead	0.0	0.0
Tetrachloroethylene (PCE)	2.41E-02	2.41E-02
Trichloroethylene (TCE)	2.27E-02	2.27E-02

Daily Doses and Risk for : Cyanide

CADD (mg/kg-day)	0.00E+00	0.00E+00
LADD (mg/kg-day)	0.00E+00	0.00E+00
Cancer Risk (-)	0.00E+00	0.00E+00
Hazard Index (-)	0.00E+00	0.00E+00

Daily Doses and Risk for : Lead

CADD (mg/kg-day)	0.00E+00	0.00E+00
LADD (mg/kg-day)	0.00E+00	0.00E+00
Cancer Risk (-)	0.00E+00	0.00E+00
Hazard Index (-)	0.00E+00	0.00E+00

Daily Doses and Risk for : Tetrachloroethylene (PCE)

CADD (mg/kg-day)	3.44E-06	1.34E-06
LADD (mg/kg-day)	3.44E-06	1.34E-06

Cancer Risk (-)	1.79E-07	6.99E-08
Hazard Index (-)	3.44E-04	1.34E-04

Daily Doses and Risk for : Trichloroethylene (TCE)

CADD (mg/kg-day)	2.23E-03	8.70E-04
LADD (mg/kg-day)	2.23E-03	8.70E-04
Cancer Risk (-)	2.45E-05	9.57E-06
Hazard Index (-)	3.71E-01	1.45E-01

INGESTION OF ABOVE GROUND VEGETABLES

Soil-to-above-ground Concentration Factor, Bva (mg/mg)

Cyanide	0.0	0.0
Lead	0.0	0.0
Tetrachloroethylene (PCE)	0.16	0.16
Trichloroethylene (TCE)	0.16	0.16

Daily Doses and Risk for : Cyanide

CADD (mg/kg-day)	0.00E+00	0.00E+00
LADD (mg/kg-day)	0.00E+00	0.00E+00
Cancer Risk (-)	0.00E+00	0.00E+00
Hazard Index (-)	0.00E+00	0.00E+00

Daily Doses and Risk for : Lead

CADD (mg/kg-day)	0.00E+00	0.00E+00
LADD (mg/kg-day)	0.00E+00	0.00E+00
Cancer Risk (-)	0.00E+00	0.00E+00
Hazard Index (-)	0.00E+00	0.00E+00

Daily Doses and Risk for : Tetrachloroethylene (PCE)

CADD (mg/kg-day)	6.08E-06	8.21E-07
LADD (mg/kg-day)	6.08E-06	8.21E-07
Cancer Risk (-)	3.16E-07	4.27E-08
Hazard Index (-)	6.08E-04	8.21E-05

Daily Doses and Risk for : Trichloroethylene (TCE)

CADD (mg/kg-day)	4.18E-03	5.64E-04
LADD (mg/kg-day)	4.18E-03	5.64E-04
Cancer Risk (-)	4.60E-05	6.21E-06
Hazard Index (-)	6.97E-01	9.41E-02

SUMMARY OF HAZARD QUOTIENTS
For Surface Soil

CASE 1:
Child Resident - Typical

	Ingestion of Soil	Dermal Contact Soil	Ingestion of Root Vegetables	Ingestion AboveGround Vegetables	TOTAL
Cyanide	8.3E-05	1.3E-05	0.0E+00	0.0E+00	9.6E-05
Lead	7.4E-01	1.1E-01	0.0E+00	0.0E+00	8.5E-01
Tetrachloroethylene (PCE)	5.3E-05	8.2E-05	3.4E-04	6.1E-04	1.1E-03
Trichloroethylene (TCE)	6.1E-02	9.4E-02	3.7E-01	7.0E-01	1.2E+00
TOTAL	8.0E-01	2.1E-01	3.7E-01	7.0E-01	2.1E+00

CASE 2:
Adult Resident - Typical

	Ingestion of Soil	Dermal Contact Soil	Ingestion of Root Vegetables	Ingestion AboveGround Vegetables	TOTAL
Cyanide	1.1E-05	4.7E-07	0.0E+00	0.0E+00	1.1E-05
Lead	9.5E-02	4.2E-03	0.0E+00	0.0E+00	9.9E-02
Tetrachloroethylene (PCE)	6.9E-06	3.0E-06	1.3E-04	8.2E-05	2.3E-04
Trichloroethylene (TCE)	7.9E-03	3.5E-03	1.4E-01	9.4E-02	2.5E-01
TOTAL	1.0E-01	7.7E-03	1.5E-01	9.4E-02	3.5E-01

NOTE: A zero hazard index may indicate that a RfD was not entered for that chemical.

STEP 2: BASIC SETTINGS

Apply Settings to Model

Back to Guide

SELECT LAND USE Residential with homegrown produce

RATIO MODE ☐

LAND USE OPTIONS

RECEPTOR Female (res)

BUILDING Small terraced house

START AC 1

END AC 6

SOIL TYPE Sandy silt loam

pH 9.3

SOM (%) 8.2

EXPOSURE PATHWAYS

ORAL ROUTES		DERMAL ROUTES		INHALATION ROUTES	
direct soil and dust ingestion	☑	indoor	☑	indoor dust	☑
consumption of homegrown produce	☑	outdoor	☑	outdoor dust	☑
soil attached to homegrown produce	☑			indoor vapour	☑
				outdoor vapour	☑

STEP 5: RESULTS

Find AC | Print Reports | Back to Guide

		Ratio of ADE to relevant Health Criteria Value			Soil Assessment Criteria			Soil Saturation Limit	Pathway Contributions (%)											
		oral HCV	inhal HCV	Combined	oral HCV	inhal HCV	Combined		direct soil ingestion	sum of consumption of homegrown produce and attached soil	dermal contact (indoor)	dermal contact (outdoor)	inhalation of dust (indoor)	inhalation of dust (outdoor)	inhalation of vapour (indoor)	inhalation of vapour (outdoor)	oral background	inhalation background	Total
Number	Chemical	(dimensionless)	(dimensionless)	(dimensionless)	mg kg^{-1}	mg kg^{-1}	mg kg^{-1}	mg kg^{-1}	%	%	%	%	%	%	%	%	%	%	%
1	Arsenic	1.00	0.38	NR	32.40	84.98	NR	NR	79.89	7.54	0.45	11.86	0.25	0.00	0.00	0.00	0.00	0.00	100.00
2	Cadmium	0.91	0.10	1.00	5.45	29.73	5.17	NR	11.21	38.70	0.00	0.06	0.04	0.00	0.00	0.00	49.96	0.04	100.00
3	Chromium JPB	0.14	0.86	1.00	230.44	42.49	36.68	NR	37.62	12.32	0.00	0.00	0.12	0.00	0.00	0.00	49.94	0.00	100.00
4	Selenium	1.00	NR	NR	350.24	NR	NR	NR	40.59	28.46	0.00	0.00	0.13	0.00	0.00	0.00	30.82	0.00	100.00
5	Nickel	0.14	1.00	NR	531.39	127.44	NR	NR	32.77	16.18	0.03	0.81	0.10	0.00	0.00	0.00	49.90	0.10	99.90
6	Zinc JPB	1.00	0.00	1.00	3745.70	25488019.95	3745.43	NR	4.63	45.36	0.00	0.00	0.01	0.00	0.00	0.00	49.99	0.01	100.00
7	Phenol	0.17	0.83	1.00	2740.17	549.35	457.61	2.35E+05	2.39	77.60	0.13	3.55	0.01	0.00	0.75	0.00	13.86	1.71	100.00
8	Benzo(a)pyrene JPB	0.65	0.35	1.00	1.54	2.91	1.01	7.47E+00	57.13	4.54	1.39	36.76	0.18	0.00	0.00	0.00	0.00	0.00	100.00
9	Anthracene JPB	0.98	0.02	1.00	11167.47	729340.43	10999.06	9.51E+00	27.19	53.14	0.66	17.50	0.09	0.00	1.42	0.00	0.00	0.00	100.00
10	Phenanthrene JPB	0.99	0.01	1.00	456.46	33440.28	450.32	2.93E+02	26.65	53.27	0.65	17.15	0.08	0.00	1.25	0.00	0.69	0.25	100.00
11	Fluorene JPB	0.97	0.03	1.00	1002.02	34568.22	973.79	2.50E+02	18.05	66.98	0.44	11.62	0.06	0.00	2.76	0.00	0.08	0.01	100.00
12	Acenaphthene JPB	0.96	0.04	1.00	1339.20	32720.10	1286.55	4.60E+02	15.90	69.45	0.39	10.23	0.05	0.00	3.88	0.00	0.09	0.00	100.00
13	Acenaphthylene JPB	0.96	0.04	1.00	1139.10	28160.99	1094.82	6.91E+02	13.53	73.53	0.33	8.71	0.04	0.00	3.84	0.00	0.01	0.00	100.00
14	Benzo(a)anthracene JPB	0.59	0.41	1.00	10.34	14.90	6.10	1.40E+01	55.46	7.26	1.35	35.69	0.18	0.00	0.06	0.00	0.00	0.00	100.00
15	Chrysene JPB	0.66	0.34	1.00	14.54	27.73	9.54	3.60E+00	53.84	10.02	1.31	34.65	0.17	0.00	0.01	0.00	0.00	0.00	100.00
16	Benzo(b)fluoranthene JPB	0.66	0.34	1.00	10.85	20.65	7.11	9.96E+00	56.58	5.45	1.38	36.41	0.18	0.00	0.00	0.00	0.00	0.00	100.00
17	Benzo(k)fluoranthene JPB	0.65	0.35	1.00	15.52	29.18	10.13	5.63E+00	57.45	4.00	1.40	36.97	0.18	0.00	0.00	0.00	0.00	0.00	100.00
18	Indeno(1,2,3-c,d)pyrene JPB	0.65	0.35	1.00	6.50	12.33	4.26	5.03E-01	55.98	6.45	1.36	36.03	0.18	0.00	0.00	0.00	0.00	0.00	100.00
19	Benzo(g,h,i)perylene JPB	0.65	0.35	1.00	72.16	134.51	46.97	1.26E-01	58.77	1.79	1.43	37.82	0.19	0.00	0.00	0.00	0.00	0.00	100.00
20	Fluoranthene JPB	0.99	0.01	1.00	742.34	145319.44	738.57	1.55E+02	43.80	26.24	1.07	28.19	0.14	0.00	0.37	0.00	0.16	0.04	100.00
21	Naphthalene JPB	0.13	0.87	1.00	189.12	27.88	24.30	5.90E+02	4.89	60.22	0.12	3.15	0.02	0.00	16.31	0.00	10.69	4.61	100.00
22	Pyrene JPB	0.99	0.01	1.00	1725.66	338645.31	1716.91	1.80E+01	42.44	28.63	1.03	27.31	0.13	0.00	0.37	0.00	0.07	0.01	100.00
23	Dibenzo(a,h)anthracene JPB	0.65	0.35	1.00	1.41	2.58	0.91	3.22E-02	57.89	3.25	1.41	37.26	0.18	0.00	0.01	0.00	0.00	0.00	100.00
24	Hexavalent Chromium JPB	0.20	0.80	1.00	12.41	4.25	3.38	NR	7.39	42.60	0.00	0.00	0.02	0.00	0.00	0.00	49.99	0.00	100.00
25	Mercury, inorganic	0.93	0.07	1.00	180.64	2549.42	168.68	NR	66.71	30.08	0.00	0.00	0.21	0.00	0.00	0.00	3.00	0.00	100.00
26	Copper JPB	0.78	0.22	1.00	2663.17	10400.86	2326.55	NR	12.34	37.63	0.00	0.00	0.04	0.00	0.00	0.00	49.97	0.03	100.00
27																			
28																			
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STEP 5: RESULTS

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		Ratio of ADE to relevant Health Criteria Value			Soil Assessment Criteria			Soil Saturation Limit	Pathway Contributions (%)										
		oral HCV	inhal HCV	Combined	oral HCV	inhal HCV	Combined		direct soil ingestion	sum of consumption of homegrown produce and attached soil	dermal contact (indoor)	dermal contact (outdoor)	inhalation of dust (indoor)	inhalation of dust (outdoor)	inhalation of vapour (indoor)	inhalation of vapour (outdoor)	oral background	inhalation background	Total
Number	Chemical	(dimensionless)	(dimensionless)	(dimensionless)	mg kg^{-1}	mg kg^{-1}	mg kg^{-1}	mg kg^{-1}	%	%	%	%	%	%	%	%	%	%	%
1																			
2	Benzene	0.85	0.15	1.00	0.66	3.61	0.56	6.32E+03	0.89	51.91	0.02	0.44	0.00	0.00	46.73	0.01	0.00	0.00	100.00
3	Toluene	0.92	0.08	1.00	1020.47	11226.03	935.43	5.92E+03	1.98	55.25	0.04	0.98	0.01	0.00	32.56	0.01	0.16	9.01	100.00
4	Ethylbenzene	0.82	0.18	1.00	760.36	3399.38	621.37	3.88E+03	3.59	58.02	0.07	1.78	0.01	0.00	30.17	0.01	0.22	6.14	100.00
5	Xylene, m-	0.44	0.56	1.00	1453.27	1119.25	632.29	4.72E+03	4.03	61.03	0.08	2.00	0.01	0.00	25.01	0.01	0.53	7.30	100.00
6	Xylene, o-	0.47	0.53	1.00	1329.92	1187.71	627.40	3.57E+03	3.85	64.15	0.07	1.90	0.01	0.00	22.48	0.01	0.51	7.02	100.00
7	Xylene, p-	0.44	0.56	1.00	1367.72	1067.71	599.62	4.32E+03	3.81	61.63	0.07	1.89	0.01	0.00	24.77	0.01	0.53	7.27	100.00
8	aliphatic C5-C6 JPB	0.01	0.99	1.00	30527.45	375.55	374.38	1.49E+03	0.06	0.52	0.00	0.03	0.00	0.00	49.39	0.00	0.61	49.39	100.00
9	aliphatic C6-C8 JPB	0.01	0.99	1.00	78638.16	1285.59	1280.20	9.91E+02	0.19	0.52	0.00	0.09	0.00	0.00	49.19	0.00	0.80	49.20	100.00
10	Aliphatic C8-C10 JPB	0.06	0.94	1.00	3539.56	383.32	372.38	6.15E+02	0.95	0.37	0.02	0.47	0.00	0.00	48.19	0.01	1.80	48.20	100.00
11	Aliphatic C10-C12 JPB	0.24	0.76	1.00	4285.62	1955.49	1683.41	3.88E+02	4.32	0.26	0.08	2.14	0.01	0.00	43.17	0.02	6.80	43.20	100.00
12	Aromatic C12-C16 JPB	0.99	0.01	1.00	730.97	35153.11	727.14	1.37E+03	13.14	28.59	0.25	6.51	0.04	0.00	1.47	0.01	48.49	1.51	100.00
13	Aliphatic C16-C35 JPB	1.00	NR	NR	88395.99	NR	NR	6.96E+01	32.78	0.38	0.61	16.23	0.00	0.00	0.00	0.00	50.00	0.00	100.00
14	Aliphatic C35-C44 JPB	1.00	NR	NR	88395.99	NR	NR	6.96E+01	32.78	0.38	0.61	16.23	0.00	0.00	0.00	0.00	50.00	0.00	100.00
15	Aromatic C5-C7 JPB	0.88	0.12	1.00	503.98	3577.36	441.75	6.32E+03	0.86	50.23	0.02	0.43	0.00	0.00	45.21	0.01	0.04	3.20	100.00
16	Aromatic C7-C8 JPB	0.92	0.08	1.00	1020.47	11226.03	935.43	5.92E+03	1.98	55.25	0.04	0.98	0.01	0.00	32.56	0.01	0.16	9.01	100.00
17	Aromatic C8-C10 JPB	0.71	0.29	1.00	366.88	676.29	304.53	4.89E+03	3.75	21.89	0.07	1.86	0.01	0.00	22.41	0.01	27.57	22.43	100.00
18	Aromatic C10-C12 JPB	0.93	0.07	1.00	490.50	3649.19	472.81	2.94E+03	7.57	30.15	0.14	3.75	0.02	0.00	8.36	0.01	41.61	8.39	100.00
19	Aromatic C12-C16 JPB	0.99	0.01	1.00	730.97	35153.11	727.14	1.37E+03	13.14	28.59	0.25	6.51	0.04	0.00	1.47	0.01	48.49	1.51	100.00
20	Aromatic C16-C21 JPB	1.00	NR	NR	867.64	NR	NR	4.40E+02	21.45	17.53	0.40	10.62	0.00	0.00	0.00	0.00	50.00	0.00	100.00
21	Aromatic C21-C35 JPB	1.00	NR	NR	1251.56	NR	NR	3.96E+01	30.93	3.18	0.58	15.31	0.00	0.00	0.00	0.00	50.00	0.00	100.00
22	Aromatic C35-C44 JPB	1.00	NR	NR	1251.56	NR	NR	3.96E+01	30.93	3.18	0.58	15.31	0.00	0.00	0.00	0.00	50.00	0.00	100.00
23	Aliphatic C12-C16 JPB	0.86	0.14	1.00	4413.85	16422.97	4076.87	1.94E+02	18.40	0.25	0.34	9.11	0.06	0.00	21.82	0.02	28.10	21.90	100.00
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