Celtic

Design and Construct Remediation

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Merton Street Depot, Merton Street, Banbury

Site Investigation – Interpretative Report

Draft

Report: R1512/12/4293

June 2012

Client:	**Grundon Waste Management**
Report Number:	**R1512/12/4293**
Report Title:	**Merton Street Depot, Merton Street, Banbury** **Site Investigation - Interpretative Report**
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1.0 INTRODUCTION

Celtic Technologies Limited (Celtic) has been commissioned by Grundon Waste Management Limited (Grundon) to undertake site investigation works at their Merton Street Depot, located off Merton Street, Banbury, Oxfordshire.

The brief for the works was to undertake an additional ground investigation to collect further analytic data to infill data gaps identified in existing information.

The site has a significant legacy of past industrial use, including a gasworks, steel fabrication facility, waste transfer depot and scrap yard.

It is understood that the site is to be redeveloped for residential end-use. However, the finalised development plan was not available at the time of report preparation and so the assessment considers a generalised residential scheme. This includes high-density apartment dwellings, low density dwellings with gardens, communal soft & hard landscaping areas and associated parking & access roads.

The site investigation works have been carried out with reference to CLR11 – Model Procedures for the Management of Land Contamination[1] and BS10175[2]

This report should be read in conjunction with the following reports prepared previously for the site:

- Banbury Gasworks – Site Investigation Report – AEA Technology[3];
- Site Investigation of the Former Banbury Gasworks – Interpretative Report - Waterman Environmental[4]; and
- Merton Street Depot – Quantitative Risk Assessment Report – Celtic Technologies[5].

2.0 SITE AREA

2.1 Site Location and Description

2.1.1 Site Location

The site is located off Merton Street, approximately 1 km south-east of Banbury town centre. The site post code is OX16 4RN and OS coordinates SP 465402. The site location is presented in Appendix A; Drawing A1 and layout as Appendix A; Drawing A2.

2.1.2 Site Description

The site covers an area of approximately 2.5 hectares and is elongated in a north-west to south-east orientation. The site generally falls in a south-westerly direction with ground levels being approximately 90.5 m AOD along the eastern boundary to 89.8 m AOD along the western boundary.

The site can be divided into three main zones based on the historical industrial use, which include a gasworks, scrap yard and an area of minimal industrial use. The location of the zones are shown in Appendix A; Drawing A2.

- **Zone 1 (Historical Gasworks)** – The majority of Zone 1 comprises hard standing with many remnant building slabs and a disused railway line. The north-eastern section is densely vegetated with semi mature trees.
- **Zone 2 (Historical Scrap Yard)** – The eastern section is currently used by Grundon as a storage area for a large number of refuse trucks and tankers. There are offices and workshops located at the northern and western parts.
- **Zone 3 (Generally Disused)** – This area is located at the south east and is typically disused and comprises unimproved vegetation.

2.1.3 Adjacent Land Use

The site is surrounded by the following land uses:

North - Commercial properties, with residential properties beyond;
West - An active railway line, with commercial properties beyond;
South - Grassland, with commercial properties beyond; and
East - Residential properties and grassland.

2.2 Site History

Information relating to the site history has been obtained from the 1999 AEAT report and the 2002 Waterman report. A summary of the information is presented in Table 1, for further information direct reference should be made to the original reports.

Table 1 - Historical Site Activity

Date	Historical Activity
1880s to 1970s	The western and south-western areas of the site were originally developed as a gasworks before 1886, with the gasworks expanding during the 1930s and 1940s.
	Historical plans indicate that the gasworks had a rail link that crossed the central and western areas of the site.
	Although it is unclear when the gasworks was decommissioned, it is likely to have been after 1955.
	Historical maps indicate that prior to 1978 some of the gasworks structures had been removed, although one gasholderand other buildings remained. It is likely that demolition of above-ground structures was undertaken to ground level and that below-ground structures remain in place.
Post c. 1970s	
Identified site uses in 1999	Northern & eastern areas: storage of scrap metal and building materials.
	Central area: operational factory & offices and hardstanding storage area, with evidence of fly tipping and burning.
	Southern area: derelict land covered in vegetation.
Identified site uses in 2002	Northern & eastern area: Grundon waste transfer facility.
	Central area, southwest boundary: Friswell Blackbushe Steels Limited.
	Southern area: derelict land covered in vegetation.
Identified in 2011	Central area: commercial offices.
	Remainder of the site: disused and vacant.

In addition to the published information there was also evidence of historical activity observed during the intrusive investigations undertaken by AEA Technology and Waterman Environmental, this includes:

- Remnants of below ground gasworks structures and foundations in the former gasworks area, including the gasworks house, tar and liquor wells, retort house, CWG plant & purifier and miscellaneous storage tanks;
- A below ground fuel storage tank located in the northern part of the site in the area of the former waste transfer facility; and
- Scrap metal and asbestos have been recorded in the made ground in the former scrap metal storage area.

2.3 Review of Library Information

Prior to undertaking the intrusive site investigation a Celtic Engineer visited Banbury library to find any further information relating to historical activities undertaken at the site (specifically the gasworks).

Two pieces of information were found that provided further details on the gasworks, which were present at the site:

- The Banbury Guardian Press (1933). The Centenary of the Banbury Gas Company, 1833 – 1933; and
- Geoffrey C. Hartland (1986). A History of the Gas Industry in the Banbury and Chipping Norton Areas of North Oxfordshire.

A summary of the main points within the documents is given below with the relevant excerpts presented as Appendix B1.

The main points taken from "A History of the Gas Industry in the Banbury and Chipping Norton Area of North Oxfordshire" are:

- The gasworks were erected between 1833 and 1834;
- Clay retorts were installed in 1845, with more being added in 1848;
- A 12,000 cubic feet gasholderwas installed in 1850. The holder is thought to have been 22 feet diameter and 25 feet in depth at the sides;
- A new purifier building was erected in 1936; and
- The site was bombed by German bombers on the 3rd October 1940, with 6 500lb bombs being dropped on the gasworks. Two of the three main holders and coal-gas purifiers were completely destroyed.

The document also contains a number of sketch plans of the layout of the gasworks, which are also presented as Appendix B1.

The main points taken from the Banbury Guardian press are:

- A single lift gasholder was demolished in 1910 and replaced by a three lift telescopic holder; and
- There was an extension to the retort house around 1912.

3.0 PREVIOUS INVESTIGATIONS/ ASSESSMENTS

3.1 Banbury Gasworks – Site Investigation (AEA Technology), January 1999

AEA Technology conducted a desk study and site investigation at the former Banbury Gasworks site during November 1998, as part of a due diligence exercise. The intrusive investigation involved the excavation of 65 trial pits and the installation of 12 monitoring wells.

The investigation encountered made ground over much of the site, which mainly comprised building rubble, metal debris and other associated waste. Several trial pits encountered visual and olfactory evidence of coal tar and PAH contamination at the northern end of the site (within the vicinity of the historical gasworks).

Soil and water samples were forwarded to a laboratory for analysis which recorded significant organic contamination and to a lesser degree metal contamination of the soils. This was mainly noted in the northern part of the site. The report concluded that the underlying alluvial and river terrace deposits were impacted to a depth of up to 3 m below ground level.

AEA undertook a risk assessment and determined that due to the hydraulic continuity between the river terrace deposits and nearby river (River Cherwell) there was a high potential for contaminant migration via groundwater. The risk to the public was considered to be low due to the restricted access to the site.

3.2 Site Investigation of the Former Banbury Gasworks (Waterman), March 2002

Waterman Environmental undertook an intrusive site investigation and environmental assessment for Banbury Gasworks and immediate surrounds in January 2002. The investigation comprised the mechanical excavation of 9 trial pits, 1 cable percussive borehole and 12 window sample boreholes.

The trial pits were focused around the former gasworks and encountered underground tar pits & vessels, gasholder and tar & liquor wells. Extensive staining of the made and natural ground was noted in these areas.

Chemical analysis was scheduled on eighteen soil, twenty five leachate and six groundwater samples (all obtained from the trial pits). Chemical analysis of the soils encountered elevated concentrations of arsenic, nickel, zinc, boron and a range of organic substances. The elevated concentrations were found in both the made ground and the natural alluvium.

The leaching tests indicated that the identified contaminants were not present in a significantly leachable form.

Groundwater analysis revealed elevated concentrations of inorganic contaminants including sulphate, nitrite and ammonia along with a range of organic contaminants including creosols and benzene compounds.

The risk assessment undertaken by Waterman Environmental concluded that the site presents a medium risk to human health, controlled water and the environment.

3.3 Merton Street Depot, Quantitative Risk Assessment Report, March 2011

Celtic Technologies undertook a human health and groundwater risk assessment in March 2011 to develop soil remedial / verification criteria and groundwater monitoring criteria for use during the future remediation works. The risk assessments were based on the information contained within the site investigation reports prepared by AEA Technology and Waterman Environmental.

An extensive amount of modelling was undertaken during the preparation of the Risk Assessment report and a set of potential soil and groundwater remedial targets were developed.

4.0 GROUND INVESTIGATION

4.1 Scope of Investigation

The scope of the Celtic site investigation works was to fill in existing data gaps and provide sufficient information to allow further developments of the remedial strategy for the site. The site investigation works entailed:

- Purging, resampling and testing existing groundwater wells (2 rounds of sampling);
- Advancement of 5 boreholes to 10 m below ground level (bgl) with the installation of groundwater monitoring standpipes;
- Purging and sampling of the newly installed groundwater wells (2 rounds of sampling)
- 3 Days of trial pitting targeting the following areas:
    - Sampling to confirm the contaminant profile in the northern gasworks area;
    - Further investigation of potential hotspots in the gasworks and wider site areas
    - Exploration of basements/ foundations to identify significant obstructions; and
    - Investigation in southern site area to identify a potential source of 'clean' material for re-use onsite; and
- Recovery of 48 soils samples and submission for chemical analysis.

4.2 Intrusive Investigation

4.2.1 Boreholes

Six boreholes were installed at the site between Monday 30th April and Friday 4th May, 2012. All boreholes were completed using percussive dynamic sampling and rotary coring. All recovered samples were logged by an Engineer from Celtic in accordance with BS:5930 / Eurocode 7.

The boreholes were sunk between depths of 1.2 m and 10.4 mbgl. Samples were collected at varying depths depending on the ground conditions encountered. On completion of the borehole, groundwater monitoring standpipes were installed. BH102 refused at a shallow depth and so a groundwater monitoring standpipe was not installed.

The borehole logs are presented as Appendix C1.

4.2.2 Trial Pits

Twenty trial pits were undertaken at the site between Monday 14th and Thursday 17th May, 2012. All of the trial pits were excavated using a wheeled 180° excavator, and the soils logged by an Engineer from Celtic, in accordance with BS:5930 / Eurocode 7. Soil samples were collected from varying depths within the trial pits based on the ground conditions encountered.

The trial pit logs are presented as Appendix C2 and photographic plates as Appendix C3.

4.3 Laboratory Testing

All soil and water samples were collected within specific laboratory supplied containers and couriered to a UKAS accredited laboratory for analysis (ALcontrol).

4.3.1 Soils

A total of 48 soil samples were collected from within the boreholes and trial pits and scheduled for the following analysis:

- Water Soluble Boron;
- Free and Total Cyanide;
- Ammoniacal Nitrogen as NH3;
- Polycyclic Aromatic Hydrocarbons (US EPA 16);
- Phenols;
- Soil Organic Matter;
- Toxic 9 Metals; and
- Total Petroleum Hydrocarbons.

In addition to the above, a further twenty samples were scheduled for asbestos identification. Where asbestos identification was positive the samples were scheduled for full asbestos quantification.

4.3.2 Groundwater

A total of twenty six water samples were collected from existing and newly installed boreholes (two sampling occasions) and scheduled for the following analysis:

- Boron Dissolved;
- Free Cyanide;
- Polycyclic Aromatic Hydrocarbons (US EPA 16);
- Phenols Monohydric;
- Total Ammonia;
- Total Cyanide;
- Toxic 9 Metals;
- Total Petroleum Hydrocarbons.

5.0 GROUND CONDITIONS

5.1 Geology

The geological conditions identified to be underlying the site are shown in Table 2.

Table 2 - Summary of Geological Conditions

Geological Unit	Description	Depth to Top (m)	Thickness (m)
Made-ground	Variable across the site. Generally comprising gravelly silts and clays with abundant brick, concrete, metal, cables and railway sleepers. Automobile waste encountered along the eastern and southern boundaries. Reinforced concrete is present within much of the central part of the site.	Ground level	0.5 to 5.5 m* Typically approximately 1.5 m **5.5 m only in one location near historical gas holder*
Alluvium – Silt	Typically greenish grey slightly organic SILT.	0.8 to 1.9 m	0.3 to 2.05 m Typically approximately 1.2 m
Alluvium – Sand and Gravel	Typically orange brown interbedded SANDS and GRAVELS.	1.6 to 3.05 m	1.8 to 2.6 m Typically approximately 2.0 m
Charmouth Mudstone Formation	Firm to stiff medium grey CLAY.	2.7 to 5.5 m* **5.5 m only in one location near historical gas holder*	>4.5 m

The intrusive investigation identified several areas along the eastern and southern boundaries of the site with up to 2.1 m of made ground associated with automobile waste. This comprised fabric, rubber seals, cables, glass, plastics and engine parts. The locations and depths where these materials were encountered are shown on the trial pit logs presented as Appendix C2.

During the investigation, corrugated asbestos cement sheets were noted on the surface of the ground at several locations across the site but mainly within the southern (disused) section and near TP111. The sheets were typically found in poor condition and had been broken into many small fragments. The approximate location of this material is shown on Appendix A; Drawing A2.

5.2 Groundwater Conditions

Groundwater levels were recorded within the existing and newly installed boreholes along with the trial pits. Full details of groundwater strikes and standing levels are presented on the borehole and drilling logs presented as Appendix C1 and Appendix C2.

Groundwater was generally encountered within the granular alluvial deposits between 1.2 and 2.9 mbgl, although it was typically encountered between 2.2 and 2.7 mbgl.

The groundwater level within the existing boreholes was noted as being between 0.7 and 1.1 m lower than in the previous investigations. From discussions with representatives from Grundon during the site investigation works it is understood that a flood alleviation system has been installed within the Banbury area since the completion of the previous ground investigations. It is possible that the installation of this system has resulted in the lowering of the groundwater levels within the area.

Several shallow perched groundwater strikes were encountered at several locations across the site, typically within the northern section (in the vicinity of the historical gasworks).

6.0 ANALYTICAL RESULTS

6.1 Soil

Copies of the analytical certificates and geochemical results for all samples analysed from the current investigation is presented in Appendix D1. A summary of the results are presented in Table 3.

Table 3 - Summary of Soil Laboratory Analysis (mg/kg)

Analyte	No. of Samples	Max Concentration	Min Concentration	Mean Concentration
Soil Organic Matter (%)	48	69.7	0.281	6.00
Arsenic	48	223	10.1	53.49
Cadmium	48	11.8	0.02	1.71
Chromium	48	334	11.9	74.01
Copper	48	1,510	8.21	118.13
Lead	48	7,550	8.39	349.08
Mercury	48	5.01	0.14	0.53
Nickel	48	723	19.4	67.59
Selenium	48	20	1	3.94
Zinc	48	4,040	49.6	474.72
Boron	48	13.8	1	3.01
Total Cyanide	48	152	1	11.55
Free Cyanide	48	10	1	1.19
Ammoniacal Nitrogen	48	2,000	15	268.81
Phenols	48	2,680	0.035	56.45
TPH aliphatic >C5-C6	48	0.403	0.01	0.03
TPH aliphatic >C6-C8	48	24	0.01	0.59
TPH aliphatic >C8-C10	48	174	0.01	4.46
TPH aliphatic >C10-C12	48	331	0.01	9.52
TPH aliphatic >C12-C16	48	403	0.1	56.84
TPH aliphatic >C16-C21	48	593	0.1	95.94
TPH aliphatic >C21-C35	48	1,670	0.1	263.30
TPH aliphatic >C35-C44	48	493	0.1	57.39
TPH aromatic >C5-C7	48	177	0.01	3.82
TPH aromatic >C7-C8	48	242	0.01	4.91
TPH aromatic >C8-C10	48	386	0.01	9.28
TPH aromatic >C10-C12	48	221	0.01	6.35
TPH aromatic >C12-C16	48	3,200	0.1	161.43
TPH aromatic >C16-C21	48	1,400	1.59	184.57
TPH aromatic >C21-C35	48	2,410	0.1	341.31
TPH aromatic >C35-C44	48	1,300	0.1	101.90
Methyl tertiary butyl ether (MTBE)	48	0.1	0.005	0.01
Benzene	48	177	0.01	3.82
Toluene	48	242	0.002	4.90
Ethylbenzene	48	18.4	0.003	0.71
m, p – Xylene	48	190	0.006	4.17
o – Xylene	48	61.6	0.003	1.44
m, p, o - Xylene	48	252	0.009	5.61
Naphthalene	48	11,600	0.009	251.08
Acenaphthylene	48	1,760	0.012	39.00
Acenaphthene	48	213	0.008	7.51
Fluorene	48	1,080	0.01	26.39

Analyte	No. of Samples	Max Concentration	Min Concentration	Mean Concentration
Phenanthrene	48	3,490	0.015	83.33
Anthracene	48	1,170	0.016	28.49
Fluoranthene	48	2,210	0.017	57.43
Pyrene	48	1,680	0.015	44.11
Benzo(a)anthracene	48	732	0.014	20.84
Chrysene	48	546	0.01	15.52
Benzo(b)fluoranthene	48	654	0.015	19.23
Benzo(k)fluoranthene	48	278	0.014	8.02
Benzo(a)pyrene	48	645	0.015	18.43
Indeno(1,2,3-cd)pyrene	48	283	0.018	8.21
Dibenzo(a,h)anthracene	48	76.9	0.023	2.32
Benzo(g,h,i)perylene	48	315	0.024	8.98
PAH, Total Detected USEPA 16	48	26,800	0.118	640.18

Note: - Where recorded concentrations were below detection limits the detection limit value has been used as the minimum value.

6.2 Groundwater

Copies of the analytical certificates and geochemical results for all groundwater samples collected from existing and newly installed boreholes are presented in Appendix D2.

A summary of the results from the current investigation are presented in Table 4.

Table 4 - Summary of Groundwater Laboratory Analysis (mg/l)

Analyte	No. of Samples	Max Concentration	Min Concentration	Mean Concentration
Mercury	26	0.0000235	0.00001	0.00001
Arsenic	26	0.2	0.000872	0.01773
Boron	26	3.33	0.118	0.70196
Cadmium	26	0.000157	0.0001	0.00010
Chromium	26	0.0158	0.00118	0.00727
Copper	26	0.0163	0.00085	0.00252
Lead	26	0.00464	0.00002	0.00043
Nickel	26	0.0245	0.00124	0.00769
Selenium	26	0.00543	0.00071	0.00237
Zinc	26	0.017	0.00159	0.00586
Ammoniacal Nitrogen	26	197	0.2	61.71
Total Cyanide	26	0.328	0.05	0.11
Free Cyanide	26	0.05	0.05	0.05
Phenols	26	36.4	0.016	2.12
TPH aliphatic >C5-C6	26	0.02	0.01	0.01
TPH aliphatic >C6-C8	26	0.134	0.01	0.02
TPH aliphatic >C8-C10	26	0.831	0.01	0.11
TPH aliphatic >C10-C12	26	3.55	0.01	0.49
TPH aliphatic >C12-C16	26	5.19	0.01	0.33
TPH aliphatic >C16-C21	26	4.78	0.01	0.29
TPH aliphatic >C21-C35	26	1.05	0.01	0.07
TPH aromatic >C5-C7	26	4.59	0.01	0.38
TPH aromatic >C7-C8	26	1.42	0.01	0.10
TPH aromatic >C8-C10	26	2.46	0.01	0.27
TPH aromatic >C10-C12	26	2.36	0.01	0.33

Analyte	No. of Samples	Max Concentration	Min Concentration	Mean Concentration
TPH aromatic >C12-C16	26	25.7	0.01	1.43
TPH aromatic >C16-C21	26	20.1	0.01	1.05
TPH aromatic >C21-C35	26	10.9	0.01	0.57
Methyl tertiary butyl ether (MTBE)	26	0.003	0.003	0.003
Benzene	26	4.59	0.007	0.37
Toluene	26	1.42	0.004	0.09
Ethylbenzene	26	0.697	0.005	0.07
m, p – Xylene	26	0.781	0.008	0.08
o – Xylene	26	0.432	0.003	0.05
m, p, o - Xylene	26	1.21	0.011	0.13
Naphthalene	26	2.68	0.0001	0.15
Acenaphthene	26	1.35	0.000015	0.08
Acenaphthylene	26	0.409	0.000011	0.02
Fluoranthene	26	0.563	0.000017	0.03
Anthracene	26	0.751	0.000015	0.04
Phenanthrene	26	1.74	0.000022	0.09
Fluorene	26	1.21	0.000014	0.06
Chrysene	26	0.236	0.000013	0.01
Pyrene	26	0.757	0.000015	0.04
Benzo(a)anthracene	26	0.236	0.000017	0.01
Benzo(b)fluoranthene	26	0.0493	0.000023	0.003
Benzo(k)fluoranthene	26	0.0825	0.000027	0.004
Benzo(a)pyrene	26	0.138	0.000009	0.01
Dibenzo(a,h)anthracene	26	0.0133	0.000016	0.001
Benzo(g,h,i)perylene	26	0.0342	0.000016	0.002
Indeno(1,2,3-cd)pyrene	26	0.0354	0.000014	0.002
PAH, Total Detected USEPA 16	26	10.3	0.000247	0.54

Note: - Where recorded concentrations were below detection limits the detection limit value has been used as the minimum value.

6.3 Asbestos

During the excavation of the trial pits, twenty near surface soil samples were obtained for asbestos identification analysis. Asbestos fibres (typically a mixture of Chrysotile, Amosite and Crocidolite) were found within 7 samples, which were subsequently scheduled for full asbestos quantification. A summary of the full asbestos quantification analysis is presented in Table 5, with full test certificates presented as Appendix D1.

Table 5 - Summary of Asbestos Quantification Analysis (%)

Location	Depth (m)	Asbestos Quantification
TP102	0.40	0.0047
TP103	0.30	0.0014
TP106	0.20	0.0126
TP112	0.20	0.0668
TP113	0.30	0.0255
TP114	0.20	0.0072
TP115	0.30	0.8382

7.0 HUMAN HEALTH AND GROUNDWATER RISK ASSESSMENT

Celtic Technologies undertook a human health and groundwater risk assessment for the site in March 2011. The risk assessment included a qualitative human health and groundwater risk assessment, consideration of generic assessment criteria (GACs), quantitative human health and groundwater risk modelling and presentation of potential health and groundwater protective risk based soil and groundwater targets. The following depth profiles were considered:

- Transition zone: this depth profile is expected to extend to a depth of 1.5 m below final finished site levels (FFL). The transition zone may comprise in-situ soils, verified imported soils / materials, along with site-won and treated materials soils reused under a Materials Management Plan (MMP).
- Deep soils: this depth profile is present below the transition zone (i.e. at depths greater than 1.5 m below FFL. The transition zone may comprise in-situ soils, verified imported soils / materials, along with site-won soils and treated materials reused under the MMP.

Boundary zones have also been considered to address the risks associated with potential lateral migration of VOC vapours to adjacent land. Soils and groundwater in these zones are considered to represent potential sources for VOC vapours that could migrate to off-site receptors. The selected health protective targets used in these areas should also be protective of these potential off-site receptors.

Refer to Appendix A; Drawing A4 for a diagrammatic representation of the zones.

The potential remedial targets derived from the risk assessments are presented in Tables 6 to 9.

A summary of the human health and groundwater risk assessments is presented in the following sections.

7.1 Qualitative and Quantitative Human Health Risk Assessment

The Qualitative Risk Assessment identified the following substances of concern:

- Total Petroleum Hydrocarbons;
- BTEX;
- MTBE;
- Polycyclic Aromatic Hydrocarbons;
- Phenols;
- Arsenic, Cadmium, Chromium, Copper, Lead, Inorganic Mercury, Vanadium and Zinc;
- Free and total Cyanide; and
- Residual Light Non-Aqueous Phase Liquids (LNAPL).

A detailed quantitative risk assessment was then undertaken on the substances of concern. The outputs from the modelling indicated the level of contaminants allowable to be protective of human health and therefore may be considered as human health

based remedial targets for soils and waters. However, the requirement to also be protective of controlled waters means that these outputs are not proposed remedial targets in themselves. Proposed remedial targets will be generated based on the modelling outputs of the human health and groundwater risk assessments, pragmatism and professional experience. These will then be submitted to the regulatory authorities for approval.

Model outputs for the identified depth dependant sources and boundary zones for soils and groundwater is summarised in the following tables.

Table 6 - Summary of Human Health Model Outputs: Soils (mg/kg)

Substance	Residential Indoor air Transition Zone	Residential Indoor air Deep Soils (>1.5mbgl)	Residential Outdoor air Transition Zone	Residential Outdoor air Deep Soils (>1.5mbgl)	Commercial Indoor air Boundary Zone	Commercial Outdoor air Boundary Zone
TPH Aliphatics C5-C6	55	124	9,170	22,900	9,210	>100,000
TPH Aliphatics C6-C8	130	300	22,400	55,900	22,500	>100,000
TPH Aliphatics C8-C10	36	79	5,870	14,700	5,840	>100,000
TPH Aliphatics C10-C12	170	390	29,100	72,700	28,900	>100,000
TPH Aliphatics C12-C16	1,480	3,280	>100,000	>100,000	>100,000	>100,000
TPH Aromatics C5-C7	310	715	54,200	>100,000	41,700	>100,000
TPH Aromatics C7-C8	720	1,700	>100,000	>100,000	94,800	>100,000
TPH Aromatics C8-C10	45	100	7,540	18,900	9,780	>100,000
TPH Aromatics C10-C12	250	555	41,100	>100,000	53,400	>100,000
TPH Aromatics C12-C16	2,780	6,110	>100,000	>100,000	>100,000	>100,000
TPH Aromatics C16-C21	53,400	>100,000	>100,000	>100,000	>100,000	>100,000
Benzene	0.3	0.7	55	137	40	1,400
Toluene	720	1,700	>100,000	>100,000	94,800	>100,000
Ethylbenzene	190	460	36,300	90,800	25,100	>100,000
Xylenes	60	146	11,400	28,600	8,650	>100,000
MTBE	85	198	>100,000	>100,000	11,100	>100,000
Phenols	990	1,060	97,000	>100,000	>100,000	>100,000
Acenaphthene	4,110	9,280	>100,000	>100,000	>100,000	>100,000
Acenaphthylene	3,950	8,650	>100,000	>100,000	>100,000	>100,000
Benzo-a-anthracene	12	16	5,830	14,600	2,290	>100,000
Fluorene	5,310	11,400	>100,000	>100,000	>100,000	>100,000
Naphthalene	2	4	3,520	8,800	270	>100,000

Table 7 - Summary of Human Health Model Outputs: Groundwater (mg/l)

Substance	Residential on-site		Commercial off-site	
	Indoor air Groundwater	Outdoor air Groundwater	Indoor air Boundary Zone Groundwater	Outdoor air Boundary Zone Groundwater
TPH Aliphatics C5-C6	4	>10,000	510	>10,000
TPH Aliphatics C6-C8	3	7,920	390	>10,000
TPH Aliphatics C8-C10	0.1	300	15	9,450
TPH Aliphatics C10-C12	0.09	190	9	6,090
TPH Aliphatics C12-C16	0.03	70	3	2,290
TPH Aromatics C5-C7	300	>10,000	>10,000	>10,000
TPH Aromatics C7-C8	330	>10,000	>10,000	>10,000
TPH Aromatics C8-C10	3	6,880	440	>10,000
TPH Aromatics C10-C12	9	>10,000	1,340	>10,000
TPH Aromatics C12-C16	30	>10,000	4,610	>10,000
TPH Aromatics C16-C21	90	>10,000	>10,000	>10,000
Benzene	0.3	650	27	>10,000
Toluene	339	>10,000	>10,000	>10,000
Ethylbenzene	40	>10,000	4,360	>10,000
Xylenes	15	>10,000	1,400	>10,000
MTBE	760	>10,000	>10,000	>10,000
Phenols	1,340	>10,000	>10,000	>10,000
Acenaphthene	480	>10,000	>10,000	>10,000
Acenaphthylene	560	>10,000	>10,000	>10,000
Benzo[a]anthracene	0.03	18	5	470
Fluorene	470	>10,000	>10,000	>10,000
Naphthalene	1	2,810	150	>10,000

7.2 Qualitative and Quantitative Groundwater Risk Assessment

The Qualitative Risk Assessment identified the following substances of concern:

- Metals;
- BTEX Compounds;
- Other TPH Fractions;
- PAH Compounds;
- Phenols; and
- Cyanide and Ammonia.

The risk assessment considered the following potential receptors:

- Surface Water – River Cherwell which is located more than 200 m beyond the site boundary.
- Groundwater – River Terrace Gravels.

A detailed quantitative risk assessment was then undertaken to determine contaminant concentrations that would be allowable to be protective of the identified controlled water receptors. The outputs may therefore be considered as groundwater remedial targets for soils, leachates and waters. However, if groundwater remediation targets are

to be proposed the requirements to also be protective of human health means that the following outputs would not constitute proposed remedial targets in themselves.

The derived model outputs are summarised in Table 8 and 9.

Table 8 - Summary of Groundwater Model Outputs: 50 m to Compliance

Substance	RTM Remedial Target Concentrations		
	Level 3 Soil (mg/kg)	Level 3 Pore Water (mg/l)	Level 3 Groundwater (mg/l)
Benzene	0.528	0.605	0.296
Toluene	110	49.3	24.1
m-Xylene	ES	ES	176
o-Xylene	ES	ES	106
p-Xylene	ES	ES	125
Naphthalene	70.9	10.7	5.24
Acenaphthalene	3.87	0.153	0.0748
Acenaphthene	ES	ES	2
Phenol	4.96	10.9	5.35
TPH Aliphatic C5-C6	ES	ES	22.9
TPH Aromatic C8-C10	473	29.4	14.4
TPH Aromatic C10-C12	109	4.33	2.12
Arsenic	1,240	0.297	0.145
Cadmium	0.807	0.00148	0.000724
Copper	741	0.166	0.0813
Chromium	853	0.119	0.0581
Lead	392	0.0428	0.0209
Inorganic Mercury	0.127	0.000296	0.000145
Nickel	670	0.119	0.0581
Selenium	2.97	0.0592	0.029
Zinc	8,700	0.744	0.364
Water Soluble Boron	120	11.8	5.79
Easily Lib. Cyanide	6,840	339	166
Total Cyanide	3.61×10^{17}	2.4×10^{15}	1.18×10^{15}
Ammonia	24.6	30.1	14.7

ES – Target exceeds solubility

Table 9 - Summary of Groundwater Model Outputs: 200 m to Compliance

Substance	RTM Remedial Target Concentrations		
	Level 3 Soil (mg/kg)	Level 3 Pore Water (mg/l)	Level 3 Groundwater (mg/l)
Benzene	6.02	6.9	3.38
Acenaphthalene	45.5	1.8	0.881
Phenol	317	699	342
Arsenic	2,480	0.591	0.289
Cadmium	1.61	0.00294	0.00144
Copper	1,480	0.331	0.162
Chromium	1,700	0.237	0.116
Lead	782	0.0854	0.0418
Inorganic Mercury	0.253	0.000589	0.000288
Nickel	1330	0.237	0.116
Selenium	5.91	0.118	0.0576
Zinc	17,400	1.49	0.727

Substance	RTM Remedial Target Concentrations		
	Level 3 Soil (mg/kg)	Level 3 Pore Water (mg/l)	Level 3 Groundwater (mg/l)
Water Soluble Boron	239	23.5	11.5
Easily Lib. Cyanide	5,760,000	285,000	140,000
Total Cyanide	1.5×10^{21}	1.02×10^{19}	5×10^{18}
Ammonia	249	306	150

ES – Target exceeds solubility

7.3 Comparison to Measured Conditions

Following completion of the site investigation and filling of identified data gaps, a more comprehensive comparison between current site conditions and potential remedial target concentrations can be made.

7.3.1 Human Health

The data output from the quantitative human health risk assessment for the residential indoor air transition zone have been compared to the data collected from the current investigation. The comparison has identified a number of locations within the immediate vicinity of the former gasworks located at the north of the site showing soil concentrations in excess of the model outputs.

In the absence of a development plan the most stringent model outputs have been used for the assessment.

Table 10 presents a summary of contaminants that exceeded the model output.

Table 10 - Summary of Human Health Exceedences within Soils

Contaminant	Residential Indoor Transition Model Output (mg/kg)	No. of failures	Max Concentration	Average Concentration of Failures
Phenol	990	1	2,680	-
Benzene	0.3	4	177	47.6
Naphthalene	2	15	11,600	802.9
Xylenes	60	1	252	-
Benzo(a)anthracene	12	9	732	104.6
TPH aliphatic >C8-C10	36	1	174	-
TPH aliphatic >C10-C12	170	1	331	-
TPH aromatic >C8-C10	45	2	386	219
TPH aromatic >C12-C16	2780	1	3,200	-

The majority of the locations where contaminant concentrations exceed the model outputs highlighted in Table 10 are located at the north of the site within the immediate vicinity of the historical gasworks. All of the maximum values for phenol, BTEX compounds and PAHs were encountered at one exploratory location (TP119), again located within the central region of the former gasworks.

There were also several minor exceedences of PAH compounds noted at different areas of the site which include:

TP102:
- Naphthalene – 10.2 mg/kg.
- Benzo(a)anthracene – 16.9 mg/kg.

TP103:
- Benzo(a)anthracene – 14.0 mg/kg.

TP114:
- Benzo(a)anthracene – 13.9 mg/kg.

BH103:
- Benzo(a)anthracene – 14.3 mg/kg.
- Naphthalene – 4.57 mg/kg.

BH104:
- Naphthalene – 8.28 mg/kg.

Groundwater data collected as part of the current investigation have also been compared to the model outputs generated to be protective of residential indoor air. The comparison identified four locations within or immediately surrounding of the former gasworks with elevated concentrations of certain contaminants.

In the absence of a development plan the most stringent model outputs have been used for the assessment.

Table 11 and Table 12 presents a summary of contaminants that exceeded the model output from within the area of the former gasworks and immediately surrounding, respectively.

Table 11 - Summary of Human Health Exceedences of Groundwater within the area of the former Gasholder

Contaminant	Residential Indoor Transition Model Output (mg/kg)	No. of failures	No. of Boreholes failing	Max Concentration	Average Concentration of Failures
TPH aliphatic >C8-C10	0.1	4	2	0.0.831	0.653
TPH aliphatic >C10-C12	0.09	4	2	3.55	3.005
TPH aliphatic >C12-C16	0.03	4	2	5.19	2.047
Benzene	0.3	4	2	4.59	2.328
Naphthalene	1.0	2	1	2.68	1.95
Benzo(a)anthracene	0.03	2	1	0.236	0.144

Note: Number of failures takes into account two monitoring rounds

Table 12 - Summary of Human Health Exceedences of Groundwater immediately surrounding the Gasholder

Contaminant	Residential Indoor Transition Model Output (mg/kg)	No. of failures	No. of Boreholes failing	Max Concentration	Average Concentration of Failures
TPH aliphatic >C10-C12	0.09	2	2	0.279	0.199
TPH aliphatic >C12-C16	0.03	2	1	0.041	0.037

Note: Number of failures takes into account two monitoring rounds

The data presented in Table 11 and Table 12 indicates four locations where the dissolved phase groundwater concentrations may present a risk to human health. However, the impacted groundwater appears to generally be confined within the area of the former gasworks. Two boreholes immediately surrounding the gasworks have also encountered concentrations of two specific chains of petroleum hydrocarbons which are above the human health model output. As indicated in Table 12 the concentrations within these two locations are significantly below the concentrations within the gasholder and only marginally exceed the most stringent model output.

7.3.2 Groundwater

The data output from the quantitative groundwater risk assessment for a most stringent case (50 m to compliance point) have been compared to the data collected from the current site investigation. Even though the nearest compliance point is located over 200 m from the site boundary, in Celtic's experience it is unlikely that the regulators will approve risk assessments based on compliance points over 50 m.

Elevated concentrations of ammonia have been observed in the majority of groundwater samples across the entire site and so are considered more as a global issue rather than site wide. Leaving ammonia aside, the comparison has identified only two locations in the immediate vicinity of the former gasworks at the north of the site with groundwater concentrations of specific contaminants that exceed the more stringent model output. A summary of the exceedences is presented in Table 13.

Table 13 - Summary of Groundwater exceedences at a 50 m compliance zone

Contaminant	Groundwater Output – 50m to Compliance point	No. of failures	Max Concentration	Average Concentration of Failures
Benzene	0.296	4	4.59	2.31
Phenols	5.35	2	36.4	26.3
Acenaphthalene	0.0748	1	0.409	N/A only 1 exceedence
TPH aromatic C10 – C12	2.12	2	2.36	2.31
Arsenic	0.145	1	0.2	N/A only 1 exceedence

The exceedences are very localised and are only in the area of the historical gasholder, which is the main contaminant source. Therefore, it is not considered that these local

exceedences would merit a site wide ground water treatment scheme. Provided that any potential ongoing sources of groundwater contamination that are present above the water table are removed as part of the redevelopment works.

8.0 PROPOSED OUTLINE REMEDIAL STRATEGY

The comparison of data collected from previous and current ground investigations to the risk assessment model outputs indicates there to be a potential risk to both human receptors and controlled waters. These will need to be addressed as part of a remediation strategy for the redevelopment of the site.

As discussed in the previous sections, the site has been divided into three zones depending on previous uses and contaminant concentrations identified within the soils and groundwater. The proposed remedial strategy also adopts a zoned approach in order to provide the most cost effective solution, which will be suitable for the proposed end-use.

The Environment Agency flood map has been reviewed for the site and indicates that the majority of the site currently lies within an area liable to "Flooding from rivers or sea without flood defences". A section of the northern part of the site is categorised as "Extent of extreme flood". Celtic understands that a flood alleviation system has been installed within the Banbury area which may result in a reduction of flood risk to the site. However, it is recommended that liaison is undertaken with the appropriate regulators to ensure that it does not cause potential issues during the planning applications.

A number of potential constraints to the proposed remediation works have been identified, which include:

- Current operational status of the site (Grundon Waste Management)
- Presence of identified and non-identified services
- Presence of existing buildings, cabins and skip storage at the site. Our remediation strategy assumes that these will be removed prior to the remediation phase.

The overall redevelopment strategy for the site is likely to include measures typically employed in brownfield redevelopment such as certified clean cover in gardens and landscaped areas as well as certified clean service corridors.

It is likely that properties constructed at the site will require vapour protection measures commensurate with the level of risk posed by the substances remaining in the soil after remediation.

8.1 Zone 1 – Former Gasworks

The area of the former Gasworks has been identified to contain the most extensive contamination and so is likely to require the most extensive amount of remediation throughout the site.

The estimated area requiring remediation in this area is approximately 4,000m^2 and the remediation depth will be in the range of 1 to 5 m below existing ground level but is expected to be typically 2 to 3 m. These values should be used for indicative purposes only and are subject to change depending on the ground conditions encountered during the remediation phase.

A summary of the proposed remediation scheme for this is as follows:

- Removal of the semi mature tree's located along the northern boundary;
- Locating and emptying any existing underground tanks (including any connecting pipework);
- Excavation of soil to a depth of between 3.0 and 5.0 m below existing ground levels;
- Segregation and onsite biophysical treatment of the excavated soils to allow onsite re-use;
- Collection and removal of any Non Aqueous Phase Liquids (NAPL) identified for off-site disposal;
- Removal of underground structures; and
- Testing of all made-ground materials for the presence of asbestos.

Further details of rationale for the proposed remediation strategy within this area are discussed in the following paragraphs.

Due to the nature and depth of contamination identified within this zone, the most suitable remediation option for this area is considered to be the excavation of contaminated materials to a depth of between 3.0 and 5.0 m below existing ground levels. Excavated material will be segregated to remove any oversized and / or untreatable materials.

The treatable materials will be prepared for onsite biophysical remediation, which would enable an overall reduction in the organic contaminant concentrations within the soil to acceptable levels for the site. The treated materials will be verified against source dependant remedial targets and re-used at appropriate depths depending on their compliance with the depth dependant targets. A site Material Management Plan (MMP) will used to log the source, quantity, location, area and depth of re-use against the proposed redevelopment layout.

This process will optimise material re-use and so minimise the volume of material requiring off-site disposal.

It is possible that the contaminant concentrations in soils taken from certain areas (i.e. within tar pits) will be so significantly elevated that onsite treatment will not be suitable. Such soils should be managed through contingency measures such as offsite disposal or stabilisation. It is considered that only a minimal volume of material would fall into this category.

The biophysical remediation process will not reduce elevated inorganic contaminant concentrations (i.e. metals) within the soils. It is considered that this waste would be classified as hazardous and require disposal to a suitable offsite facility. However, the investigations undertaken to date indicates that a minimal volume of material is likely to fall into this category.

It is possible that underground storage tanks remain in place within this area, which may contain Non Aqueous Phase Liquids (NAPLs). These should be located during the initial phase of redevelopment and emptied with the contents being disposed of to a suitable

off-site facility. Once emptied, the tanks should be removed along with any residual contamination.

A large number of below ground structures have been identified during the previous and current site investigations. The remediation strategy proposed for this area will remove many of these structures. A watching brief should be maintained during the removal of any underground structures as it is possible that there may be NAPL perched within. It is likely that once removed the underground structures can be crushed and reused during the site development following testing and compliance with the specified reuse criteria. However, an offsite disposal contingency should be developed.

This remediation approach (removal, treatment and replacement of material), will also provide an improvement in the physical geotechnical properties of the soils, which will provide benefits during the redevelopment phase as no underground structures will remain.

Asbestos fibres have been identified within the made-ground in this area. Therefore, all made ground should be treated as potentially containing asbestos fibres. All made ground should be excavated and placed into stockpiles so that it can be tested. It is likely that following testing some of the material may be reused (at depth if asbestos fibres are identified). However, some material may need to be disposed offsite and the remediation strategy should include an allowance for this.

Due to the possible presence of asbestos fibres within the soils mitigation measures such as damping down during excavation and covering of the stockpiles should be undertaken during the course of the remediation and redevelopment works.

8.2 Zone 2 – Former Scrap Yard

The investigation undertaken within the area of the historical scrap yard indicates that contaminant concentrations within the underlying materials are typically below the risk assessment model outputs. Therefore, only a limited amount remediation is anticipated for this area.

The estimated area requiring excavation and turnover within this area is estimated to be around 8,000 to 9,000 m^2 and it is expected that the excavations will typically be between 1.0 to 2.0 m below existing ground level. These values should be used for indicative purposes only and are subject to change depending on the ground conditions encountered during the remediation phase. It should be noted that the majority of this material is unlikely to require on site remediation and can be directly used during redevelopment phase (depending on compliance with the specific remedial targets).

A summary of the proposed remediation scheme for this area is as follows:

- Removal of the reinforced concrete slab covering the majority of the area;
- Removal of identified asbestos cement sheets from the ground surface
- Excavation / turnover of all soils up to an anticipated depth of 2.0 m;
- Removal of remnant underground structures;

- Onsite biophysical treatment of any identified contamination;
- Removal of material associated with the former scrap yard identified along the eastern boundary of this area; and
- Testing of all made-ground materials for the presence of asbestos.

Further details of rationale for the proposed remediation strategy within this area are discussed in the following paragraphs.

A large number of remnant underground structures have been identified within this area and so it is possible that there are isolated pockets of contamination, including NAPL, associated with these. Therefore, a watching brief should be maintained during the removal of any underground structures and contingency measures put in place for the removal and treatment of any contaminants / contaminated material encountered.

It is likely that any contaminated materials identified will be similar in nature to the identified organic contamination in Zone 1 and materials from this zone would be included for treatment with these soils from Zone 1. As with Zone 1, any soils that are untreatable on site and not suitable for re-use would most likely be disposed of offsite as hazardous waste. However, the volume of material that will fall into this category is considered minimal.

Underground structures can be excavated and crushed onsite and reused during the redevelopment dependant on compliance with the relevant redevelopment remediation targets.

This remediation approach will also provide an improvement in the physical geotechnical properties of the soils, which will provide benefits during the redevelopment phase as no underground structures will remain.

As discussed in Section 6.3 asbestos fibres have been identified within the made-ground within this area. Therefore, all made-made ground should be treated as potentially containing asbestos fibres. It should be excavated and placed into controlled stockpiles so that it can be tested. It is likely that following testing some of the material may be reused (at depth if asbestos fibres are identified). However, some material may need to be disposed offsite and the remediation strategy to include an allowance for this.

Due to the possible presence of asbestos fibres within the soils mitigation measures such as damping down during excavation and covering of the stockpiles should be undertaken during the course of the remediation and redevelopment works.

In addition to the asbestos fibres identified within the near surface soils, asbestos cement sheets (broken) were identified near TP111. These should be removed before any redevelopment works commence and disposed offsite to a licensed facility.

Material along the eastern boundary of the site was found to contain a high proportion of automobile waste (cables, rubber, plastic, glass, engine parts, etc.). It is unlikely that this material will be suitable for reuse onsite during the redevelopment (even at depth) due to its unsuitability as geotechnical fill and so is likely to require offsite disposal.

8.3 Zone 3 – Generally disused

The investigation undertaken within Zone 3 indicated that it was generally disused and surfaced by unimproved vegetation. No above ground or underground structures were identified during the previous and current investigations undertaken within this area.

The estimated area requiring excavation and possible remediation (along the boundary of the current gasworks) is estimated to be between 700 and 800 m^2.

A summary of the proposed remediation scheme for this area is as follows:

- Excavation and onsite biophysical treatment of area of organic contamination encountered along the boundary of the current gas works;
- Removal of identified asbestos cement sheets from the ground surface;
- Removal of material associated with the former scrap yard identified along the southern boundary of this area; and
- Testing of all made-ground materials for the presence of asbestos.

Further details of rationale for the proposed remediation strategy within this area are discussed in the following paragraphs.

Exploratory holes completed encountered an area of elevated concentrations of organic contaminants along the south eastern boundary of the current gasworks site (location of TP102). The contamination has similar properties (albeit at lower concentrations) to the material encountered in Zone 1 and so it is considered likely to be associated with the adjacent gasworks.

The most suitable remedial option would be to excavate this material for onsite bioremediation. The treated materials will be verified against remedial targets and re-used at appropriate depths dependant on their compliance with the depth dependant targets. A site Materials Management Plan (MMP) will log the source, quantity, location, area and depth of re-use against the proposed redevelopment layout.

Material along the southern boundary of the site was found to contain a high proportion of automobile waste (cables, rubber, plastic, glass, engine parts, etc.). It is unlikely that this material will be suitable for reuse onsite during the redevelopment (even at depth) and so is likely to require offsite disposal.

As with the other Zones, asbestos fibres have been identified within the made-ground within this area. Therefore, all made-made ground should be treated as potentially containing asbestos fibres. It should be excavated and placed into controlled stockpiles so that it can be tested. It is likely that following testing some of the material may be reused (at depth if asbestos fibres are identified). However, some material may need to be disposed offsite and the remediation strategy to include an allowance for this.

Due to the possible presence of asbestos fibres within the soils mitigation measures such as damping down during excavation and covering of the stockpiles should be undertaken during the course of the remediation and redevelopment works.

In addition to the asbestos fibres identified within the near surface soils, asbestos cement sheets (broken) were identified at several areas at the surface. These should be removed before any redevelopment works commence and disposed offsite to a licensed facility.

8.4 Groundwater

The risk to groundwater has been proven to be minor and is not considered to be significant in the context of the site. The only exception to this is ammonia, where elevated concentrations have been seen at many locations across the site.

As risks to groundwater are generally minimal, it is not deemed necessary to implement a strict groundwater treatment system at the site. The proposed bioremediation technology will result in a reduction of ammonia concentrations within the soil as biological processes remove the ammoniacal nitrogen, particularly when combined with pH elevation at the end of treatment. Following a reduction in the source of ammonia within the shallow soils at the site, the potential risk presented by dissolved ammonia concentrations in groundwater will decrease over time and this betterment approach is considered appropriate in the context of the site.

Bioremediation will significantly reduce organic contaminant concentrations within the soil and mitigate risks to human health through this reduction and preferential placement of remediated materials at depth, however a potential risk remains with respect migration of volatile vapours from impacted groundwater into future dwellings.

Two boreholes installed within the area of the former gasworks and two immediately surrounded have identified exceedences of the groundwater model outputs to be protective of human health. The two boreholes surrounding the gasworks have only recorded marginal failures, within the highest concentrations being recorded near the former gasholder. This suggests that the impact to groundwater is isolated and unrepresentative of the wider context of the site.

The groundwater within the former gasworks is being continually impacted by the contamination present within the overlying materials and so it is likely that the removal and remediation of this material will result in a reduction of dissolved phase contaminants within the groundwater.

Vapour protection measures and provision of clean service corridors have been recommended as part of the future development and this would mitigate the risks to human health from volatile contaminants in groundwater based on the site investigation data. However, there is the potential for unidentified NAPL to be encountered around former below ground structures as previously discussed, and would be prudent to recover any encountered NAPL and shallow perched waters where encountered during soil remedial works. Any recovered perched water and free product (NAPL) will be treated on site and disposed of to foul sewer under an appropriate consent, with recovered free product disposed of off-site under relevant duty of care.

9.0 REFERENCES

1. Environment Agency/DEFRA Guidance Document (2004), Contaminated Land Report No.11 (CLR11), Model Procedures for the. Management of Contaminated Land.

2. British Standards Institute, Code of Practice for Investigation of Contaminated Land, BS 10175:2010.

3. AEA Technologies, Banbury Gasworks – Site Investigation Report (1999).

4. Waterman Environmental, Site Investigation of the Former Gasworks – Interpretative Report (2002).

5. Celtic Technologies, Merton Street Depot – Quantitative Risk Assessment Report (2011).

APPENDICES

APPENDIX A FIGURES

Drawing A1	**Site Location Plan**
Drawing A2	**Site Layout Plan**
Drawing A3	**Soil Remediation Area Plan**
Drawing A4	**Conceptual Model**

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Celtic Technologies Cardiff 2012.

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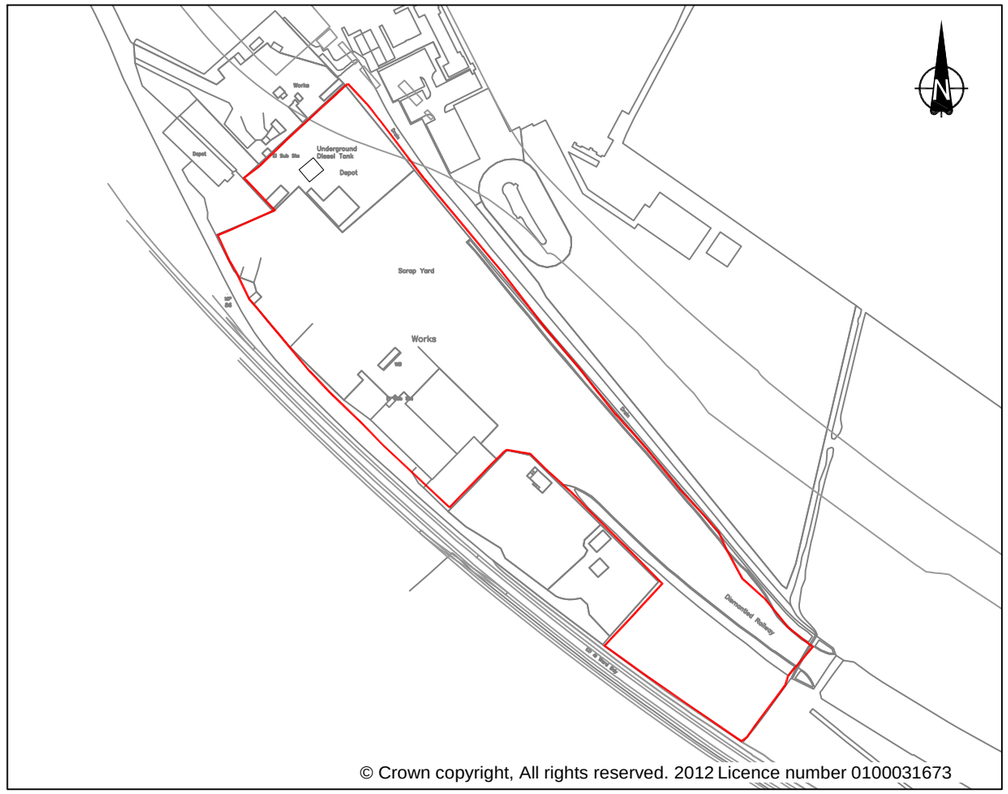

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Legend

Site Boundary

REV	COMMENT	DATE
0	ISSUED FOR COMMENT	

Celtic

Columbus House, Village Way, Cardiff, CF15 7NE, 029 2036 8636
Centrix House, Crow Lane East, Newton Le Willows, WA12 9UY, 01925 273222
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Client
Grundon Waste Management Services

Project
Banbury Gasworks

Title
Site Location Plan

Drawn by	Checked Date	Authorised Date
GEP	NH 25/06/12	

Original Scale	Date	Rev	Paper
1:1250	25/06/12	0	A3

Drawing Number
D1526/4293/A1

CAD REF:–

Legend

- Site Boundary
- Zone 1 — Main Area of Former Gasworks
- Zone 2 — Former Scrap Yard
- Zone 3 — Generally Disused
- Fragments of corrugated asbestos cement sheets at surface

REV	COMMENT	DATE
0	ISSUED FOR COMMENT	

Celtic

Columbus House, Village Way, Cardiff, CF15 7NE, 029 2036 8636
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www.celtic-ltd.com

Client: Grundon Waste Management Services

Project: Banbury Gasworks

Title: Site Layout Plan

Drawn by	Checked Date	Authorised Date
GEP	NH 25/06/12	

Original Scale	Date	Rev	Paper
1:1250	25/06/12	0	A3

Drawing Number: D1526/4293/A2

CAD REF:–

Legend

- Site Boundary
- Proposed Remediation Area A: Excavation of up to 5m depth and remediation of materials prior to re–use. Recovery of free product, where encountered.
- Proposed Remediation Area B: Excavation of up to 3m depth and remediation of materials prior to re–use.
- Proposed Remediation Area C: Turnover of area up to 2m depth and remove structures to confirm absence of contamination. Remediation of contaminated materials prior to re–use.
- Site investigation locations where asbestos fibres have been identified in made ground samples.

1. NOTE:

   Proposed Remediation Boundaries are approximate and for indicative use only. Precise boundaries will be defined during remediation works.

2. During all excavation works required for the site free product and contaminated perched waters should be recovered and discharged to a foul sewer / disposed of off–site following treatment.

REV	COMMENT	DATE
0	ISSUED FOR COMMENT	

Celtic

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Client: Grundon Waste Management Services

Project: Banbury Gasworks

Title: Proposed Remedial Areas

Drawn by	Checked	Date	Authorised	Date
GEP	NH			

Original Scale	Date	Rev	Paper
1:1250	26/04/12	0	A3

Drawing Number: D1526/4293/A3

CAD REF:–

South

North

10m Boundary Zone

10m Boundary Zone

Off-Site Commercial

Redeveloped Site (Residential Landuse)

Off-Site Open Space

Garden Areas

Vapour Barrier

Soft Landscaping

Vapour Barrier

Hardstanding

CL (0.6m)

(0.9m) TZ (1.5m)

~1.5m

Groundwater

Flow Direction

Deep Soils Beneath Tranzition Zone

Organic Substances in groundwater

Alluvium
(silty sandy clay & clayey flint gravel)

~4m

Charmouth Mudstone Formation
(laminated clay)

Legend

- Potential Soil Exposure Pathways
- Potential Groundwater Exposure Pathways
- Groundwater
- Cover Layer Below Gardens & Soft Landscaping
- Transition Zone
- Made Ground (Inferred)

The conceptual site model is not to scale. All depths/thicknesses shown are inferred and not taken from actual site data.

REV	COMMENT	DATE

Celtic
Design and Construct Remediation

Columbus House, Village Way, Cardiff, CF15 7NE, 029 2036 8636
Centrix House, Crow Lane East, Newton Le Willows, WA12 9UY, 01925 273222
enquiries@celtic-tech.co.uk, www.celtic-ltd.com

Client: Grundon Waste Management Services

Project: Banbury

Title: Conceptual Site Model

Drawn by	Checked	Date	Authorised	Date
CT	NH			

Original Scale	Date	Rev	Paper
NTS	26/04/12	0	A3

Drawing Number: D1526/4293/A4

CAD REF:-

APPENDIX B Library Information

A HISTORY OF THE [illegible] INDUSTRY

IN THE

BARNSLEY AND [illegible] AREAS OF

[illegible]

By

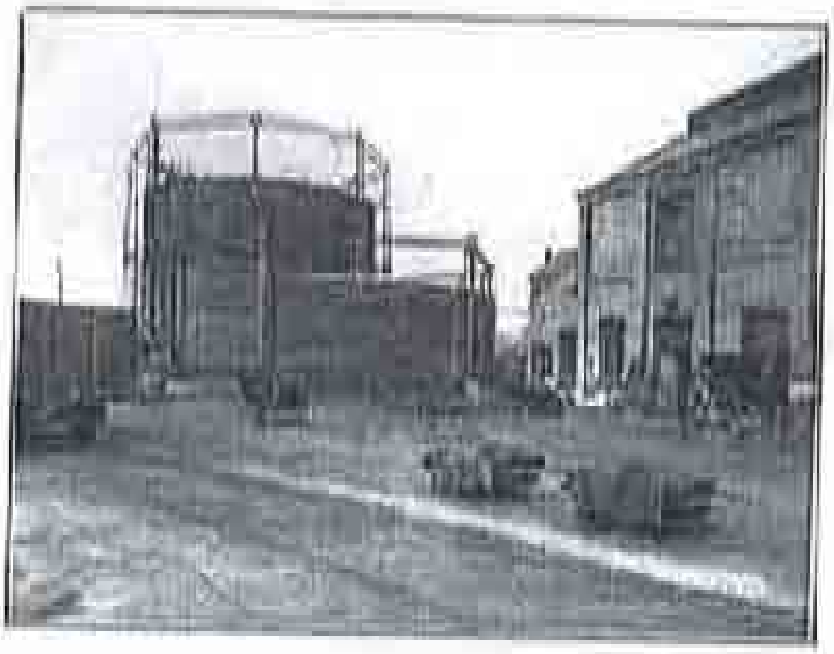
Geoffrey [illegible]

[illegible]

THE CENTENARY OF THE BANBURY GAS COMPANY

1833—1933

THE BANBURY GUARDIAN PRESS
1933



[illegible] WATER GAS RELIEF HOLDER.
WATER GAS PLANT BEHIND AND PAST.

In 1910 a single lift holder was demolished and replaced by a three lift telescopic holder in the existing brick tank, and two years later a further extension in the circumference was made by the erection of a further three lifts of eight sheets each.

After prolonged negotiations it was decided to supply gas in bulk to the Aylesbury works of the Counties Gas Company and steel mains were laid from the Brewery Company's works to their point and a connecting main taken to King's Sutton. A Walker boosting plant was installed at the works capable of developing a pressure up to 100 inches, the necessary authority being obtained at Aylesbury and King's Sutton by Bryan Donkin's diaphragm governors.

THE WORLD WAR II PERIOD

One of the major tasks to be dealt with at the outbreak of World War II was to ensure that all black-out regulations were complied with.

During the war period carburetted water gas plant was operated only during day-time with one twelve-hour shift, from 0600 hrs to 1800 hrs., but in the retort house work had to continue as normal twenty four hours daily. To ensure that no light should be visible during the black-out period heavy tarpaulin curtains were fixed at each end of the retort house, and all coke quenching done inside. A man was stationed at the exit to the retort house to draw the curtain sufficiently to allow the stoker to pull his barrow load of quenched coke into the yard, and again to let him back in. This method was later improved upon with the fitting of a sliding door, but the openings through which the coal wagons were admitted were still protected by the tarpaulin curtains. The task of opening and shutting the retort house door was carried out by one of the fire-watch team, who was also responsible for answering the phone and patrolling the works. One man was on duty from 1800 hrs to midnight when he would go home, having been relieved by two men who would be responsible for air-raid precautions from midnight till 0800 hrs. During these hours one man would sleep whilst the other carried out his duties on the works changing over at 0400 hrs. (6)

Other precautions on the works included the placing of fire buckets containing sand, water and clay, and stirrup-pumps at strategic positions throughout the works. Stirrup-pumps, fire buckets and a number of bricks, slates, and steel plates were also placed on top of the holders. The buckets on the holder crown contained moist clay and were intended to seal any small holes caused in an air-raid. The clay would be placed around the hole and a slate or steel plate placed on top and weighed down by one or two of the bricks.

The man whose job it was to make a weekly check of fire fighting equipment also had the task of climbing the holder every Friday to see that the clay in the buckets was kept moist and that the stirrup pump was in working order.

A Scammell portable fire-pump was purchased and the Company's lorry was loaded up at the end of each working day with all the necessary equipment to deal with damage to gas mains in the event of a raid during the night. Of course all this equipment had to be unloaded every morning to enable the lorry to be used for its normal duties of coke deliveries during the day.

At this period most lighting on the works was by gas, and in the event of an air raid warning at night the supply would be instantly turned off at the main tap at the meter in the engine room by the fire-watch man on duty at the time. The stokers would then have to ensure that all lamps were individually turned off. Hot water for the stokers washroom was provided by a primitive kind of gas geyser and following an air raid warning one night this geyser was overlooked with the result that when a stoker applied a match an explosion completely wrecked the geyser. The stoker luckily escaped with nothing more serious than a scorched hand.

The new purifier building erected in 1936 was provided with electric lights, supplied by a Lister vertical gas engine, but this system was not used during the war time period. One precaution that was not carried out at the outbreak of war, however, was the camouflaging of the holders and building but whether or not this would have prevented the damage which took place in October 1940 is debatable.

The raid occurred at 1425 hrs. on Thursday 3rd October. Ironically, the works had just been made spic and span for a director's inspection, and cleaning and tidying-up operations had occupied the whole of the previous week. The inspection had taken place at 1200 hrs on the day of the raid.

A total of fourteen 500lb. bombs were dropped by a Dornier 215 bomber during the raid: six bombs fell on the gas works and the remainder on the main G.W.R. line and goods sheds, causing extensive damage and casualties. There were also casualties on the railway, six of which were fatal. Luckily no one was hurt on the gas works. [7]

The first bomb to fall exploded in a field behind the 400,000 cubic feet holder. The other five bombs all hit the works, soaring directly into one of the three main holders which were demolished, and on the building housing the coal-gas purifiers. A small brick-built building housing the three inlet valves to the holders was totally blown away although the valves themselves were undamaged. The remaining holder was holed by fragments of one of the bombs which fell on the railway and by debris blasted against its plates. There were twenty six holes in this holder and they were all spouting jets of flame about ten feet long; some of these holes were large enough to insert a man's fist.

The total destruction of the 400,000 and 100,000 cubic feet holders by the bombs which burst inside them deprived the Company of 81 per cent of its effective gas storage capacity whilst 40% of the purification plant was definitely put out of action and most of the remaining purifying boxes were damaged. The coke inside the ovens burnt furiously for about two hours, giving off poisonous fumes.

Mr Day and his staff immediately took steps to save as much of the plant as possible from further destruction or damage by fire and water. One and a quarter million gallons of water were released in a few seconds by the bursting of the tank of the 400,000 cubic feet holder, flooding the works to a depth of almost two feet and dousing the furnaces in the retort house cellar. Gas to the burning holders was cut off and other vital precautions taken under the manager's directions. The retorts were in full production and it was fortunate that the bomb damage there was confined to the roof and windows, though there was considerable danger from the crude gas which was burning with alarming flames that leaped through the damaged retort house roof. The fires here continued until the evening when the retorts were shut down. Gas making had to cease until the one remaining holder could be made gas-tight and the mains from the works to the town repaired. The effect in the town of the damage to the gas works was immediate as all supply ceased with the destruction of the mains in the roadway in front of the manager's house and offices by the last bomb of the six directed at the works.

The manager's house and offices sustained considerable damage from blast and flying debris from the works and railway. All the windows and doors at the rear of the building were blown in and the front windows of the house were also smashed. The manager's office, in which he was working at the time of the raid, was practically turned inside out and a heavy roll-top desk was thrown from one side of the room to the other, being smashed in the process. Mr and Mrs Day and the members of the office staff were remarkably fortunate in escaping injury.

By working day and night in repairing and rearranging parts of the plant, the supply of gas was restored to the town in six days and the reinstating of damaged buildings proceeded with great speed. At a directors meeting held on 28th October 1940 the damage caused by the air raid was assessed and the cost of repairs to buildings and plant was estimated at £16,348. It was feared, however, that the Board of Trade would not grant permits for the steel needed to reconstruct the 400,00 cubic feet holder.

By April 1941 the 100,000 cubic foot single-lift holder had been completely repaired but work on the 400,000 cubic foot holder was further curtailed owing to labour shortage. This holder was eventually ready for service in December 1941, the tank filled with water and the holder purged with gas.

The bureau also cut the water supply and spoilt the works drainage system, which had never been one hundred per cent efficient at the best of times. Extensive modifications to this system were carried out following the said but occasional problems still arose, due mainly to the partial blocking of the culvert under the railway by rubbish washed through by water from the ruptured holder tank. This culvert carried all the waste water from the works into the river and a man was often sent across the railway lines to ensure that the outlet was clear.

In March 1941 the holders were belatedly camouflaged. The purification plant had been fully restored and all exposed pipe work and ancillary equipment around the washing and scrubbing plant, that might be vulnerable to blast should a further raid occur, was protected by sand-bags. One or two minor raids took place in and around Banbury during 1940 and 1941 but no serious damage was done and no further raid took place on the gasworks.

The stoking machine, which had been in service since 1933 was a cause for concern as it was frequently breaking down. Parts were exceedingly hard to obtain and when such breakdowns occurred hand-charging of the retorts had to be reverted to. This method of operating 'through' retorts was, of course entirely unsatisfactory and it was obvious that the purchase of a new machine would have to be considered. The directors discussed the problem at some length and considered the cost of a new machine too high. A second-hand machine was unobtainable at the time and nothing further was done, the company deciding to carry on as best it could for the time being.

Further problems arose due to faults in the steam raising plant and on a number of occasions a portable tank locomotive had to be hired from the G W R to supplement the works steam supply. A fireman was also sent with the locomotive and the total hire cost was £9 per day. On subsequent occasions a very elderly locomotive of the same type, but with all the motion removed, was made available by the G W R. This engine had been specially converted for use as a stationary boiler and was towed round to the works where it was positioned on the siding at the rear of the boiler house. The operation and daily maintenance of this "locomotive" was carried out by a gas company workman.

There was a period during 1940 and 1941 when both German and Italian Prisoners of War were employed at the Banbury Gasworks. They were put to work on unloading coal and emptying and filling purifier boxes. On the whole, they were reasonably well behaved, and there was only one disturbing incident, when some Germans refused to work in the purifiers. Apparently there had been some trouble with them in their camp at Bodicote on the previous night and as punishment their rubber boots, which they had been provided with for work in the purifier boxes, had been taken away. On arrival at the gasworks they flatly refused to carry out the work allotted to them. Tide was perhaps not entirely unreasonable as work in the purifiers was rather unpleasant and the oxide used as a purifying agent quickly rotted normal footwear. However, the authorities at the Bodicote P O W Camp had to be notified and guards were dispatched with a lorry to pick up the unruly P O Ws. They were returned to Bodicote and that particular party were never employed at the gasworks again./8/

1945 saw the end of hostilities in Europe and soon after D Day in June 1944, war-time restrictions were eased on the works. Black-out regulations were lifted and the G W R Plant resumed the three-shift system. The holders were repainted, the camouflage paint being replaced with battleship grey.

PART TWO

The Archaeology of The Gas Industry In and around Banbury

Chapter III

Banbury Gas Works

The Bridge Street Works.

There are no surviving official Gas Company plans of the Bridge Street Works, and the only known map showing the works at all is one dated c1850.(1) When compared with the O.S. 1/500 Plan (First Edition) 1881, however, it will be noted that the Gas Works, erected between 1833 and 1834, as shown on the 1850 map, (Fig.1) does not conform to its actual position in the old Stone Yard.

The gasworks formed part of the buildings which lie at an angle of 30 degrees to Bridge Street, and which between 1857 and 1869 were occupied by John Barford & Son, Corn, Coal, and Hay Dealers. (2) This part of the premises was later acquired by the old Banbury Corporation and used as part of their stores and workshops. The portion of the buildings nearest to Bridge Street were taken over during the 1930s by Messrs. H.O.White, Motor Engineers, the premises then being known as the Station Garage and Motor Works. (3) These buildings, which undoubtedly originally comprised the whole of the first Banbury Gasworks, are shown in more detail in the copy of the O.S. 1/500 Plan of 1881. (Fig.2)

A number of alterations and extensions to plant and buildings were carried out between 1833 and 1850, but the shaded area of the buildings in Fig.2 may well conform to the extent of the buildings referred to as the 'Gas Works' depicted on the 1850 map. Extensions and additions of recent years have, unfortunately, obscured much of the detail of the original buildings, but careful observations reveal differences in brickwork indicating the earlier additions, but features that might identify the building's former use as a gasworks can no longer be found.

There are no records as to the number of retorts initially installed at this works, nor is there any detail of other plant, apart from the gasholder erected in 1833. It may well be that the carbonising plant initially installed comprised one bed of three or four iron retorts, capable of producing sufficient gas for say, two to three hundred burners each consuming approx. 5 cubic feet per hour. It is also possible that the plant at this time was only in production during the daytime, enough gas being stored in the holder for use during the night.

It has been recorded in Part One that the construction of the works was an extremely slow process, and that the Gas Company had been hard pressed to provide enough gas for their official commencement of supply planned for March 1834. But the Company's records do not state the number of retorts capable of being put into commission at this date. It is conceivable that at least two or more beds of four or five retorts could have been installed by this time; although the problems referred to elsewhere, may infer that only about half of the carbonising plant was fully operational at any one time.

The exact number of iron retorts purchased from, and installed by James Gardner, of Banbury, is not recorded either, but assuming that by the end of 1835 there were ten retorts in use; the annual make of gas would have been in the region of 4,000,000 cubic feet.

Following the successful installation of clay retorts in 1845, more were added, and by 1848 there were two beds of three. Each retort was of D-section, 15 inches in width by 12 inches in depth, and 9 feet in length.

The retort house was enlarged in 1852, but again, it is not known how many retorts were added. It can only be conjectured that the carbonising plant at this period comprised the original bed, or beds, of iron retorts of 7 feet in length by 14 in. by 13 in.; the two original beds of clay retorts; and perhaps a further two beds of five retorts in the new section of the retort house. It is even possible that one of the original settings of iron retorts was reconstructed to accommodate two or more clay retorts, and used for experimental purposes. (4)

Details of the ancillary plant at Bridge Street are also unknown, but there may well have been a small booster installed in later years, and it is almost certain that when clay retorts were employed an exhauster would have been purchased. (5) The exhauster was a machine used to draw gas from the retorts as fast as it was made. There is no evidence of any steaming plant at this works, so any machinery such as a booster or exhauster would have been powered by gas engines.

The original gasworks building as depicted in Figs. 1&2 were 25 feet in width and approx. 100 feet in length. The portion of the building that was the retort house may have been about 70 to 75 feet in length, assuming that there was originally only one bed of retorts. Typical retort houses for small works at that period would be 25 to 30 feet in width, which allowing 12 feet or so for the width of the retort stack and the space normally left between it, and the wall, together with the mouthpieces, left 10 to 14 feet clear working space.

No rules were laid down as to dimensions of retort houses, other than ensuring a proper working space for the stoker with his rake, but this was reckoned to be at least, one half more than the length of the retort. There may have been just enough room in the original retort house for an additional bed, but it seems obvious that the extra retorts installed in later years would have required the whole 100 feet of the original buildings. Coal would have been off-loaded from the narrow boats onto the wharf and wheeled into the retort house as required. There are indications in the wall alongside the canal that there had been a form of landing stage, suggesting that room may have been made in the end of the retort house for a small coal store in later years.

Crude gas as it left the hydraulic main from the retorts, had a temperature of 130° - 140° F. and this had to be reduced to 50° - 60° F. and a certain amount of tar got rid of, before the gas was allowed to enter the purification plant.

This operation was effected in apparatus known as the condensers, of which there were a number of types. The type of condenser originally installed at the Bridge Street Works may have been the atmospheric, comprising a cast-iron bottom box with eight three-inch pipes, each nine feet high, connected to each other at their tops by arch-pipes. (Fig.4) These condensers would undoubtedly been replaced, or added to in later years by a new set comprising twenty five-inch pipes. Other essential apparatus for the removal of tar and ammonia included the washer and scrubber. A washer was a cast-iron rectangular vessel containing a number of trays over which the gas flowed, tar and liquor being run off from the bottom of the vessel. It is not known whether there was a washer installed initially at the Bridge Street Works, but it is possible that the bottom-box of the condenser may have been adapted to serve as a washer, as was the practice in some installations.

The original scrubber at this works may have been quite small, and comprised a cast-iron cylindrical chamber some three feet in diameter by nine feet in height, inside which would have been two tiers of cast-iron grids on which would be placed layers of coke or broken bricks through which the gas was passed. (Fig.5)

On leaving the scrubber the gas next entered the purifiers, where the remainder of the carbonic acid and sulphuretted hydrogen were removed. Purifier boxes were rectangular cast-iron vessels fitted with wooden sieves or grids on which dry lime or oxide of iron was placed, and through which the gas was passed. The type of purifier boxes used at Bridge Street, probably two in number, would have been of the water-sealed type. (Fig.6) The lids of the boxes were sealed by water in a trough running around the tops of the boxes. A lifting carriage would have been provided, with chain slings, for removing the lids.

No other buildings are shown in the Stone Yard, other than the gasworks and holder, on the 1839 map. On the O.S. 1/500 Plan of 1881 however, there are a number of buildings arranged around the wharf, including a weighbridge and office. There is also an extension about 30 feet by 15 feet to the north-east side of the main buildings, which may have been the new coal store that was erected in 1853. The other buildings shown include one on the S.E. side of the wharf, alongside the canal, approx. 50 feet by 15 feet; and a long narrow erection running the length of the rear of the premises in Bridge Street, which included the weighbridge office.

All the buildings referred to are indicated as being open-sided, the one alongside the canal may have been the purifying shed and lime store. The end of the main building nearest Bridge Street is clearly a later addition and may have formed part of the extensions of 1852 - 53. This could have housed the station meter and station governor. The station meter would been capable of passing perhaps about 1,500 cubic feet of gas per hour; a station governor may not have been installed until after the new gasholder was erected in 1850. Pressure on the district prior to this date being controlled by the weight of the holder bell, and by adding or removing weights on the supporting chains.

The Gas Company records make no reference to a weighbridge in their extensions, but it seems possible that one would have been installed, and subsequently used by the Darfords in connection with their coal and corn business. As already stated though, the buildings around the gasworks yard, as shown on the O.S. 1/500 1881 Plan, may or may not have housed some of the plant referred to above; but there are no signs on the site today which can confirm this, as the buildings have long since been demolished. Perhaps the future developments planned for this area of the town, involving necessary excavations, may bring something to light.

The original gasholder installed by Davison in 1833 appears to have been an extremely crude affair, but the statement in the Gas Company's records that the internal framework was of wood seems hardly likely, and the reference may have been to the guide-framing. The records also state that the crown of the holder was also of wood, but subsequently covered with zinc.

Fig.7. illustrates a typical gasholder of the counter-balance type with wrought-iron trussed columns and girders. The holder at Bridge Street would have been similar, but with the guide-framing possibly comprising three wooden columns approx. 15 feet in height with wooden beams connecting their tops. The new 17,000 cubic feet capacity holder installed in the existing tank in 1850 would have been of the same diameter as the old one, but it is almost certain that the brick tank would have had to be made deeper.

The holder is thought to have been about 22 feet in diameter by 25 (8). feet in depth at the sides. The brick tank would have been approx. 26 feet deep. The conjectured capacity of the holder was 12,000 cubic feet. It is recorded that the wooden guide-framing was replaced in 1843 with iron columns, with wrought-iron girders. The new holder would have been constructed of sheet-iron plates on a strong internal iron or steel framework.

Fig.3. shows a typical arrangement of a setting of these retorts, the construction of which would have been similar in the case of either iron or clay retorts. These, the simplest of settings, were adopted during many years as the most successful and economical. Had the importance of the exhauster been appreciated sooner however, these settings would have been utilised to a much higher degree and enormous quantities of coke would have been saved which were permitted to flow away uselessly in its gaseous form.

The type of setting illustrated would be similar to those employed at Bridge Street in 1833, and were of the open hearth type. Later settings were more complex with larger furnaces, and were known as regenerative settings. In the early days, coal was used as a fuel and fed to the furnace through the fire door below the centre retort. In later years coke was used as a fuel and fed direct from the retort. (9) Gas passed from the retort up the ascension pipes into the hydraulic main which would have been perhaps 10 inches in diameter, but in later settings employing clay retorts, 14 to 15 inches in diameter. Gas passed from the hydraulic main via a pipe known as the foul main, thence to the condensers etc.

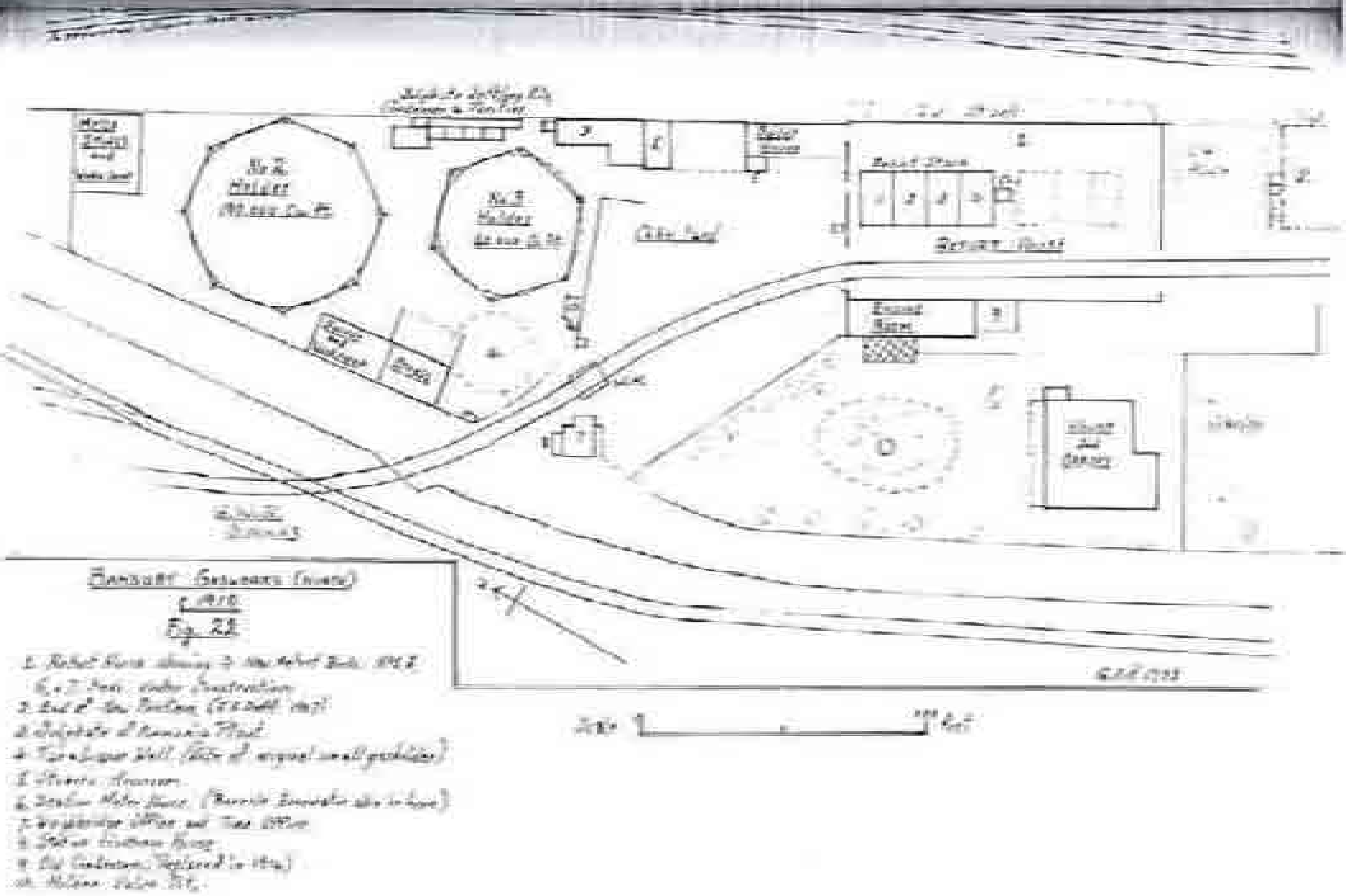
The insufficient supply and pressure of gas on the district, delivered from the Bridge Street Works, coupled with other problems including the pollution referred to earlier, that led to the agitations by leading inhabitants of Banbury for the erection of a more up-to-date gasworks - on a new site; subsequently brought about the closure of the works in favour of a new one erected in Grimsbury between 1954 and 1956.

Plates21. &22. show western and southern elevations of the building possibly erected in 1852 or 1865 as part of the Gas Company's extensions, and which during the 1930's was occupied by Messrs. H.O.White, Motor Engineers. Much of the details of the earlier building has been hidden by modern extensions.

Plate23. is a view of the old Gas Wharf, looking towards the canal. The buildings on the canal-side; and along the rear of the Bridge Street premises (extreme right of the photograph), as shown on the O.S. 1/500 1881 Plan, have long since been demolished. The view of the eastern side of the old gasworks buildings is taken from the south-east corner of the wharf.

Plate24. The area of concrete in the foreground marks the site of a building which was erected in the early 1900's, and which is shown on the O.S. 1/2500 1922 Map. Plate25. is a view of the western side of the gas-works building in the old Corporation Yard.

ooooooooooOOOOOoooooooooo


Retort House
Coke Yard
Engine Room
Banbury Gasworks

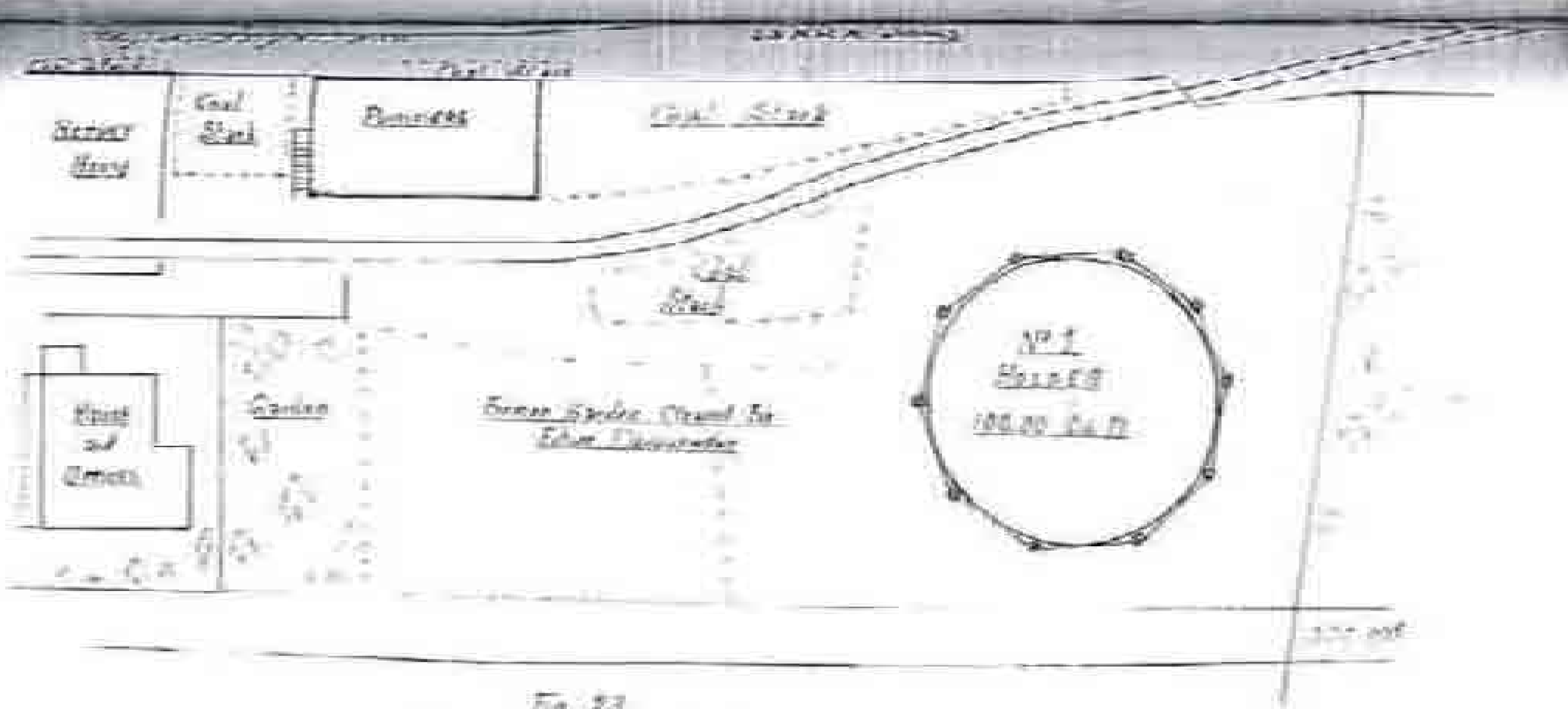


Fig 23
[illegible] Gasworks ([illegible])
[illegible]

Scale 0 — 100 feet

The [illegible] [illegible] [illegible] was [illegible] in [illegible] [illegible] purchased in [illegible]. The [illegible] [illegible] [illegible] on part of the [illegible] garden. [illegible] of this [illegible] not developed until the 1930s.

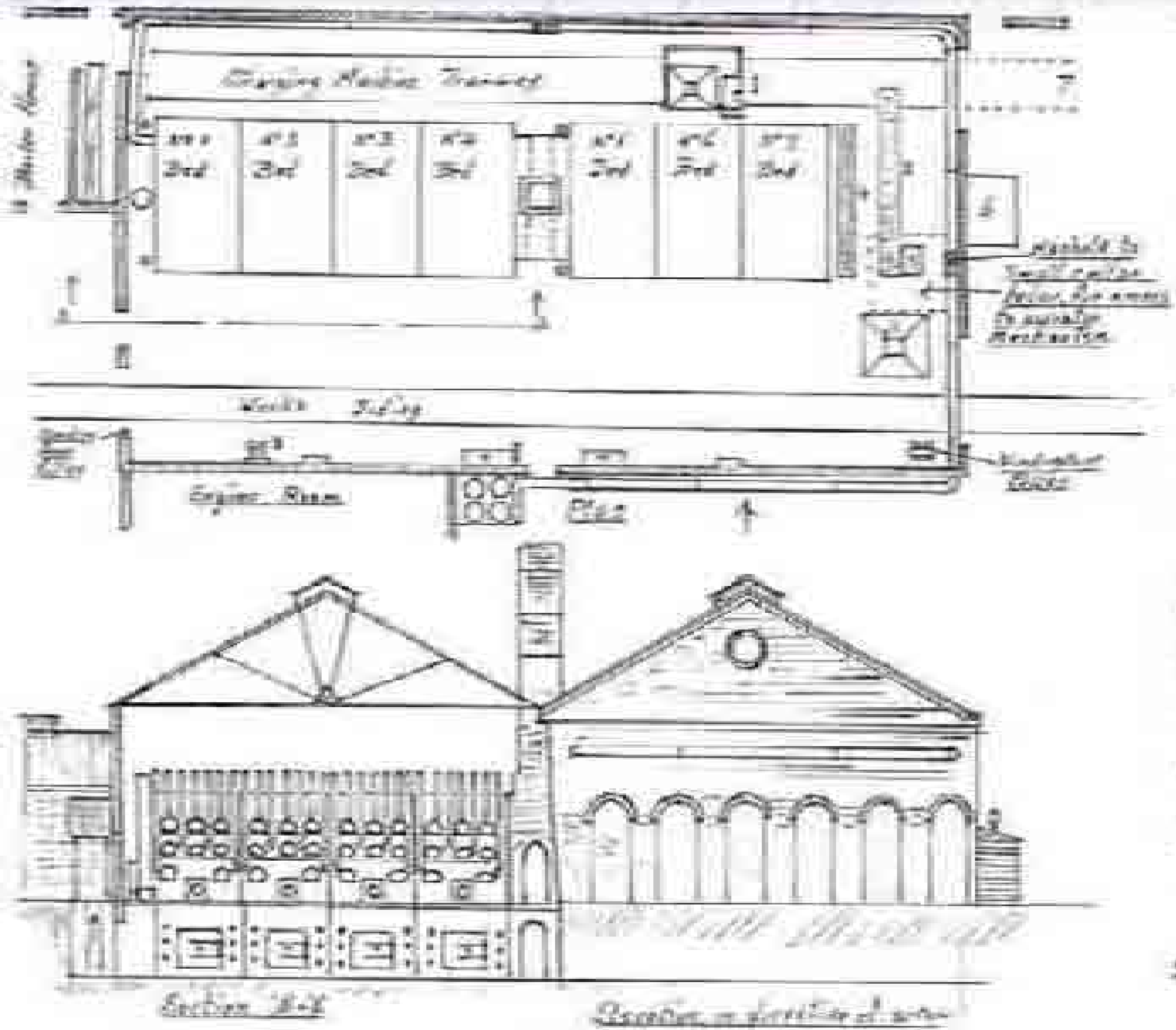


Fig 26.

Banbury Gasworks Retort House

Plan, Half-Section, & Half-Elevation

1940s

1. Fiddes Aldridge Multiple-Stoke Charging Machine (Installed 19[illegible])
2. Coal Elevator
3. Underground Coal Hopper. Coal to Charging Machine unloaded here.
4. Platform onto which charging box and chain could be run for maintenance.
5. Site of old Lampitt Engine
6. New horizontal engine shed } Coal Elevator
7. Tramway extended in 1950s to store old stoking machine following purchase of new one.
8. Stone Winding Drum (Coal Tub hauling Coal Hopper)
9 & 10. Waste Boiler (Site Remaining)

The Section 'A-A' shows both charging floor (No 1 - 4 Beds) and cellar. Ashes and clinker from furnaces was wheeled on planks out onto tip on [illegible].
The cellar was 10 feet deep by 8 feet wide and extended all around retort stacks, for access to flues and furnaces.

[illegible] 1990

Scale 0 ——— 20 feet

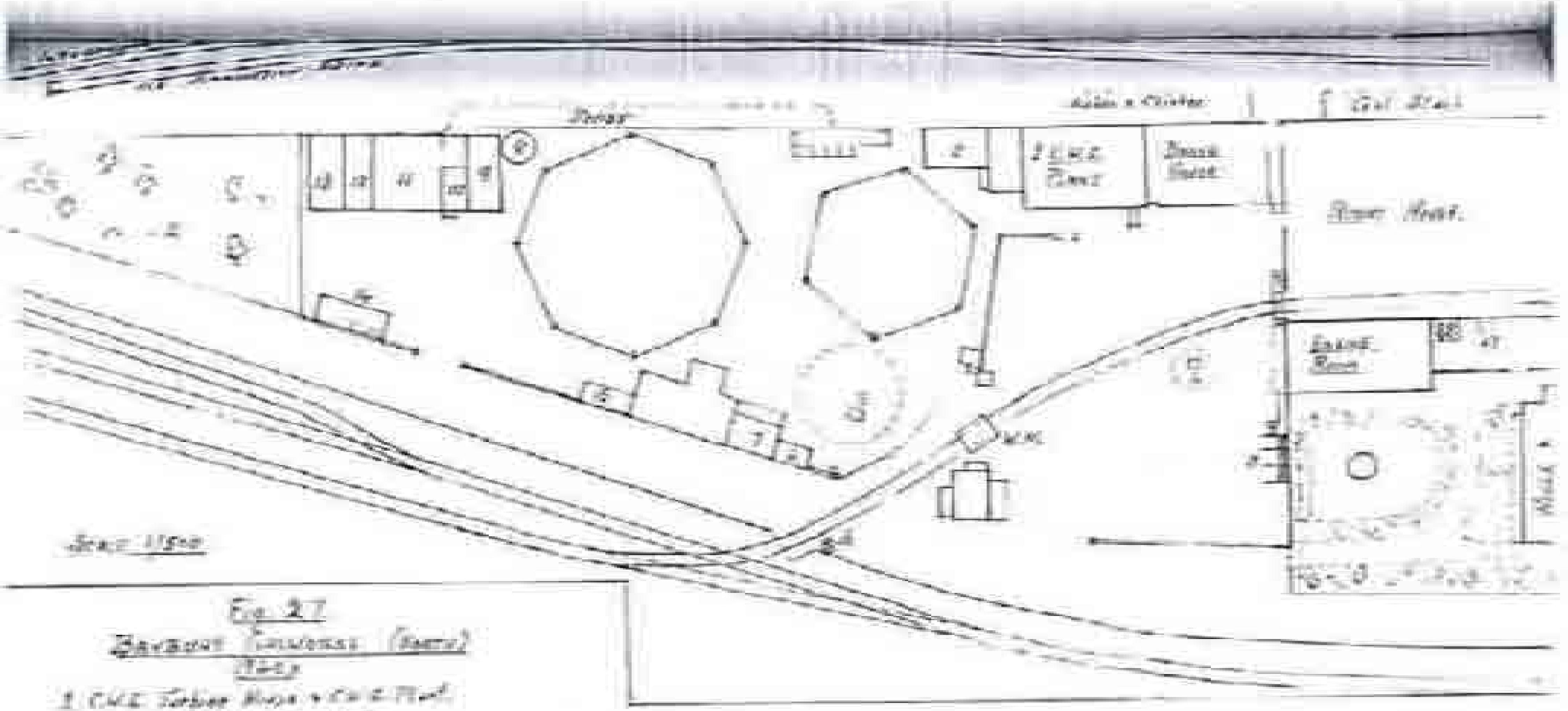
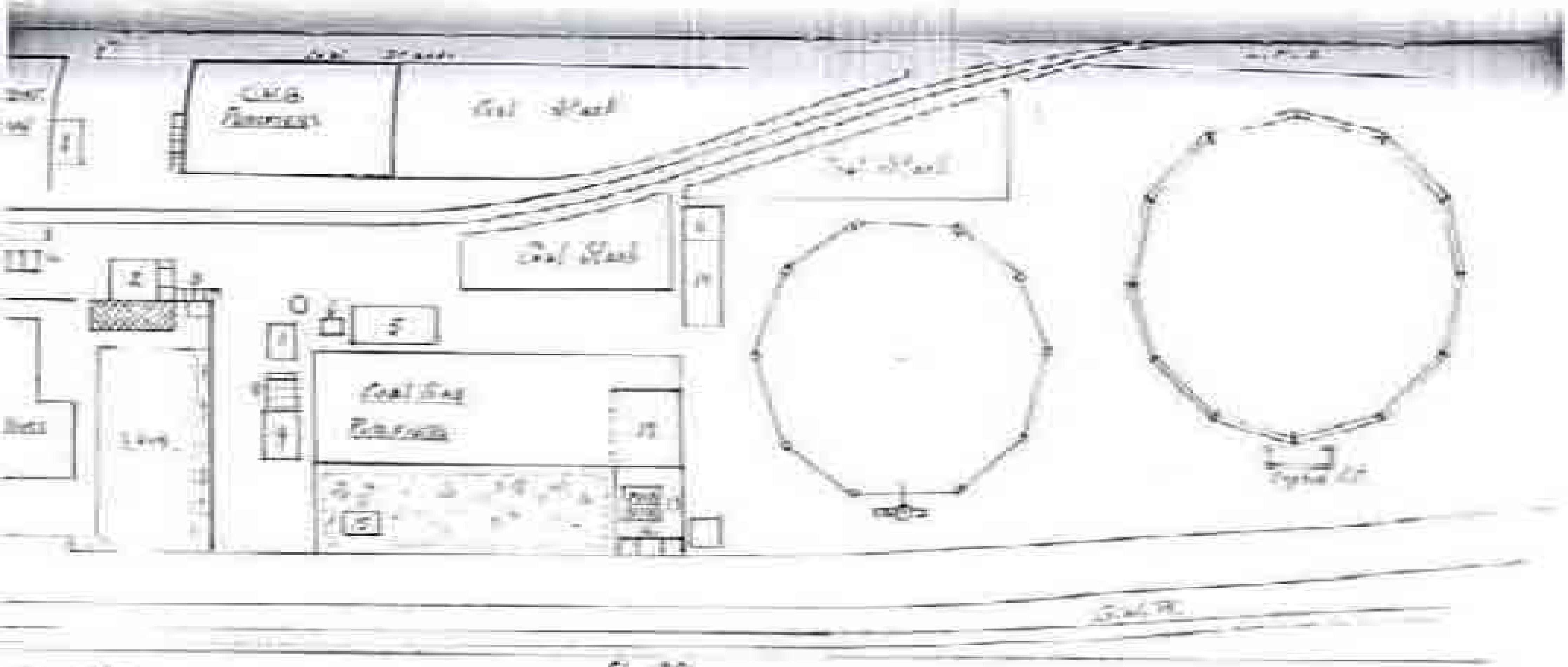


Fig. 27

[illegible] Gasworks (North)

Key

1 C.W.G. Turbine House + C.W.G. Plant
2 Sulphate Plant (Derelict)
3 Coke Grading Plant (G. Walter, [illegible], 1938)
4–5 Tar-liquor Wells
6 Works Foreman Office
7 [illegible] Room
8 Gas-oil Storage Tank
9 Garage
10 Gas Testing Room
11 Fitting and [illegible] Shop
12 Distribution Foreman's Office
13 Motor [illegible] Shed
14 Stores [illegible] Shed
15 Gas Engine [illegible]
16 [illegible]
17 Tar-liquor Well



Scale 1/500

Fig 28
Bangor Gasworks (South)
1930s

1. Coal [illegible] Power House
2. Stoker's Mess Room, Washroom - Kitchen
3. Three [illegible]
4. Old [illegible] Scrubber ([illegible])
5. [illegible] Exhauster House
6. C.W.G. [illegible] Washer
7. [illegible]
8. [illegible] Scrubber
9. Scrubber Engine House

13. [illegible] Meter House
14. [illegible] Test Room
15. Engine Room, in which were situated a small National [illegible] engine [illegible], and a [illegible] driven [illegible] generator [illegible] [illegible]
16. [illegible]

APPENDIX C

C1 Borehole Logs
C2 Trial Pit Logs
C3 Trial Pit Photographs

Borehole Number: BH101

Date: 30 Apr 2012 | Easting: 446405.000

Project No: C1526 | Engineer: Neil Hopkins | Northing: 240218.300

Site Location: Merton Street Depot, Banbury | Method: HD | Datum: 89.866m

Client: Grundon Waste Management | Hole Diameter: | Screen Position:

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
▽ 0.70m			D	BH101 / 0.50m	MADE GROUND: CONCRETE.	0.12		89.746
					MADE GROUND: firm dark grey / black slightly clayey slightly sandy gravelly SILT with extensive orange mottling. Gravel is fine to coarse sub angular to sub rounded of red brick, ash and clinker. Moderate Hydrocarbon/ Solvent odour throughout. Fragment of concrete pipe encountered (not connected).	1.20		88.666
					End of Borehole			

0 1 2 3 4 5 6 7 8 9

Comments: Steel pipe enountered within hand dug inspection pit at 1.20m (approximately 8 diameter). Borehole terminated and relocated (refer to BH101a)

Borehole Number: BH101A

Date: 30 Apr 2012 | Easting: 446406.200

Project No: C1526 | Engineer: Neil Hopkins | Northing: 240217.700

Site Location: Merton Street Depot, Banbury | Method: CP+RC | Datum: 89.882m

Client: Grundon Waste Management | Hole Diameter: | Screen Position: 3.00 - 4.50m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
0.70m					MADE GROUND: CONCRETE.	0.12		89.762
					MADE GROUND: medium dense dark grey / black slightly silty sandy GRAVEL. Gravel is fine to course sub angular to angular of ash, clinker and red brick. Occasional cobbles of ash.	0.35		89.532
						0.70		89.182
						0.75		89.132
			D	BH101A / 1.10m		0.90		88.982
					MADE GROUND: stiff medium grey slightly sandy friable SILT with extensive orange mottling.	1.50		88.382
			D	BH101A / 2.00m	MADE GROUND: loose black fine GRAVEL of ash and clinker. Becoming moist/ wet below 0.7 m.			
2.70m					MADE GROUND: stiff medium grey slightly sandy friable SILT with extensive orange mottling.	2.30		87.582
						2.50		87.382
					MADE GROUND: firm green grey slightly clayey SILT.	2.70		87.182
					MADE GROUND: soft to firm dark grey black slightly clayey gravelly SILT. Extensive hydrocarbon staining throughout.	3.60		86.282
			D	BH101A / 3.90m	MADE GROUND: loose to medium dense orange grey slightly sandy GRAVEL. Gravel is medium to coarse sub angular to sub rounded.	3.90		85.982
					MADE GROUND: black SILT.			
					Dark grey black slightly sandy GRAVEL. Gravel is fine to coarse sub rounded to rounded. Extensive hydrocarbon staining throughout.			
			D	BH101A / 5.60m	Firm to stiff medium grey brown gravelly CLAY with extensive orange mottling.			
					Firm to stiff medium grey CLAY. Becoming stiff to very stiff with rare bivalve fossils.			
			D	BH101A / 8.80m				

Continued next sheet

Comments: Hand dug inspection pit excavated to 1.20m

BH101A

Borehole Number: BH101A

Date: 30 Apr 2012 | Easting: 446406.200

Project No: C1526 | Engineer: Neil Hopkins | Northing: 240217.700

Site Location: Merton Street Depot, Banbury | Method: CP+RC | Datum: 89.882m

Client: Grundon Waste Management | Hole Diameter: | Screen Position: 3.00 - 4.50m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					Firm to stiff medium grey CLAY.			
					End of Borehole	10.30		79.582

9 10 11 12 13 14 15 16 17 18

Comments:

BH101A

Borehole Number: BH102

Date: 1 May 2012 | Easting: 446427.800

Project No: C1526 | Engineer: Neil Hopkins | Northing: 240192.400

Site Location: Merton Street Depot, Banbury | Method: CP+RC | Datum: 89.505m

Client: Grundon Waste Management | Hole Diameter: | Screen Position:

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
0.50m / 0.80m			D	BH102 / 0.50m	MADE GROUND: loose orange gravelly SAND. Gravel is fine to coarse sub rounded to rounded.			
					MADE GROUND: CONCRETE.	1.30		88.205
					End of Borehole	1.65		87.855

0 1 2 3 4 5 6 7 8 9

Comments: Hand dug inspection pit excavated to 1.20m. Obstruction encountered at 1.30m. Rotary cored to 1.65m but could not pass obstruction. Borehole teminated

Borehole Number: BH103

Date: 2 May 2012 | Easting: 446455.900

Project No: C1526 | Engineer: Neil Hopkins | Northing: 240151.800

Site Location: Merton Street Depot, Banbury | Method: CP+RC | Datum: 90.011m

Client: Grundon Waste Management | Hole Diameter: | Screen Position: 1.30 - 4.30m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
1.35m			D	BH103 / 0.50m	MADE GROUND: CONCRETE.	0.16		89.851
					MADE GROUND: dark grey / black sandy gravelly SILT. Gravel is fine to course sub angular to angular of brick.	0.35		89.661
			D	BH103 / 1.20m	MADE GROUND: medium dense orange brown slightly gravelly SAND.	0.70		89.311
					MADE GROUND: orange brown clayey slightly sandy SILT with orange / red mottling.	1.10		88.911
2.20m			D	BH103 / 1.90m	Firm grey / black organic SILT. Pockets of black silt throughout. Moderate Hydrocarbon odour.	1.60		88.411
			D	BH103 / 3.10m	Medium dense orange brown slightly gravelly slightly silty SAND. Gravel is medium to coarse sub rounded to rounded.	2.90		87.111
			D	BH103 / 3.70m	Dense orange brown sandy GRAVEL. Gravel is fine to coarse sub angular to rounded. Minor Hydrocarbon odour.	3.90		86.111
			D	BH103 / 4.60m	Medium dense grey brown slightly clayey sandy GRAVEL. Gravel is fine to coarse sub angular to rounded. Minor Hydrocarbon odour.	4.20		85.811
			D	BH103 / 7.50m	Firm to stiff medium grey CLAY. Becoming stiff to very stiff with rare bivalve fossils.			

Continued next sheet

Comments: Hand dug inspection pit excavated to 1.30m

Borehole Number: BH103

Date: 2 May 2012 | Easting: 446455.900

Project No: C1526 | Engineer: Neil Hopkins | Northing: 240151.800

Site Location: Merton Street Depot, Banbury | Method: CP+RC | Datum: 90.011m

Client: Grundon Waste Management | Hole Diameter: | Screen Position: 1.30 - 4.30m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					Firm to stiff medium grey CLAY.			
					End of Borehole	10.05		79.961

9 10 11 12 13 14 15 16 17 18

Comments:

Borehole Number: BH104

Date: 2 May 2012 | Easting: 446504.900

Project No: C1526 | Engineer: Neil Hopkins | Northing: 240186.400

Site Location: Merton Street Depot, Banbury | Method: CP+RC | Datum: 90.754m

Client: Grundon Waste Management | Hole Diameter: | Screen Position: 1.80 - 4.80m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
0.30m			D	BH104 / 0.40m	MADE GROUND: medium to dark brown silty sandy GRAVEL. Gravel is fine to coarse sub angular to sub rounded of brick, tarmac, concrete and metal.	0.30		90.454
						0.65		90.104
					MADE GROUND: dense orange brown clayey sandy GRAVEL.	0.80		89.954
			D	BH104 / 1.30m	MADE GROUND: loose orange brown gravelly SAND. Gravel is fine to coarse sub angular to rounded. Occasionally fine to medium gravel of brick.			
2.05m			D	BH104 / 2.50m	Firm medium to dark grey slightly organic SILT. Decomposing organic odour	2.40		88.354
					Soft to firm dark grey slightly gravelly sandy SILT with extensive black mottling. Moderate Hydrocarbon odour.	3.05		87.704
						3.25		87.504
			D	BH104 / 3.50m	Loose dark grey / black slightly silty SAND. Moderate Hydrocarbon odour.			
			D	BH104 / 3.80m		3.70		87.054
					Loose orange brown silty slightly gravelly SAND. Minor Hydrocarbon odour.	3.95		86.804
						4.15		86.604
					Loose dark grey / black SAND and GRAVEL. Moderate Hydrocarbon odour.	4.30		86.454
					Loose medium brown slightly gravelly silty SAND with pockets of black silt. Minor Hydrocarbon odour. Becoming gravelly.	4.80		85.954
						5.15		85.604
			D	BH104 / 6.10m	Medium orange brown slightly sandy slightly organic SILT with occasional pockets of black silt. Minor Hydrocarbon odour.			
					Orange brown silty GRAVEL with extensive black staining. Moderate Hydrocarbon odour.			
					Firm to stiff grey brown slightly gravelly CLAY. Minor Hydrocarbon odour.			
					Firm to stiff medium grey CLAY.			
			D	BH104 / 8.70m				
					Continued next sheet			

Comments: Hand dug inspection pit excavated to 1.40m

Borehole Number: BH104

Date: 2 May 2012 | Easting: 446504.900

Project No: C1526 | Engineer: Neil Hopkins | Northing: 240186.400

Site Location: Merton Street Depot, Banbury | Method: CP+RC | Datum: 90.754m

Client: Grundon Waste Management | Hole Diameter: | Screen Position: 1.80 - 4.80m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					Firm to stiff medium grey CLAY.			
					End of Borehole	10.30		80.454

9 10 11 12 13 14 15 16 17 18

Comments:

Borehole Number: BH105

Date: 3 May 2012 | Easting: 446498.500

Project No: C1526 | Engineer: Neil Hopkins | Northing: 240232.100

Site Location: Merton Street Depot, Banbury | Method: CP+RC | Datum: 90.685m

Client: Grundon Waste Management | Hole Diameter: | Screen Position: 2.60 - 4.90m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					MADE GROUND: CONCRETE.	0.13		90.555
			D	BH105 / 0.50m	MADE GROUND: black slightly sandy GRAVEL. Gravel is fine to medium angular to sub angular ash and clinker. Abundant fragments of metal and brick.	0.50		90.185
			D	BH105 / 1.30m	MADE GROUND: dark grey/ black slightly sandy slightly gravelly SILT. Occasional gravel and cobbles of brick. Moderate Hydrocarbon odour.	0.80		89.885
2.20m			D	BH105 / 2.20m	Light orange brown SILT with extensive orange mottling.	1.95		88.735
			D	BH105 / 2.70m	Soft to firm green grey organic SILT.	2.50		88.185
					Loose orange brown silty gravelly SAND with grey mottling.			
					Medium dense orange brown sandy GRAVEL.	4.00		86.685
			D	BH105 / 4.60m	Medium dense orange brown sandy GRAVEL with frequent rounded cobbles.	4.40		86.285
					Firm to stiff medium grey CLAY.	4.85		85.835

Continued next sheet

Comments: Hand dug inspection pit excavated to 1.40m

BH105

Borehole Number: BH105

Date: 3 May 2012 | Easting: 446498.500

Project No: C1526 | Engineer: Neil Hopkins | Northing: 240232.100

Site Location: Merton Street Depot, Banbury | Method: CP+RC | Datum: 90.685m

Client: Grundon Waste Management | Hole Diameter: | Screen Position: 2.60 - 4.90m

WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
					Firm to stiff medium grey CLAY.			
					End of Borehole	10.40		80.285

9 10 11 12 13 14 15 16 17 18

Comments:

BH105

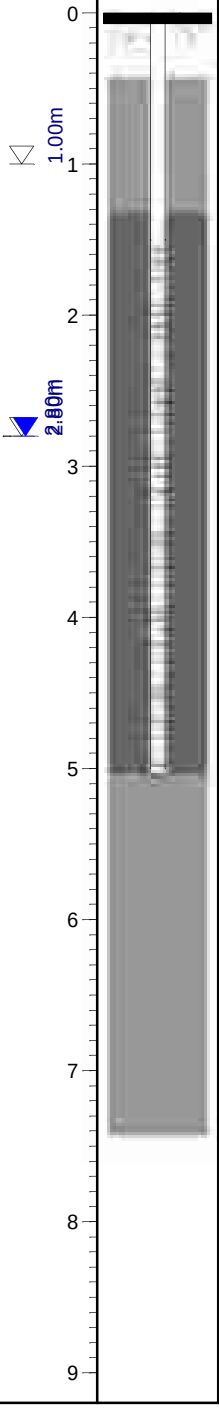
Borehole Number: BH106

Date: 4 May 2012 | Easting: 446408.600

Project No: C1526 | Engineer: Neil Hopkins | Northing: 240251.600

Site Location: Merton Street Depot, Banbury | Method: CP+RC | Datum: 90.907m

Client: Grundon Waste Management | Hole Diameter: | Screen Position: 1.50 - 5.00m



WATER	WELL	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	Well Data	N Value	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
			D	BH106 / 0.50m	MADE GROUND: coarse multi-coloured landscaping GRAVEL.	0.05		90.857
					MADE GROUND: loose grey black gravelly SILT. Gravel is fine to coarse angular to sub rounded of brick, glass, ash, clinker, ceramic, metal and plastic.			
			D	BH106 / 2.30m	MADE GROUND: dark grey / black slightly gravelly SILT. Frequent glass and metal.	2.30		88.607
			D	BH106 / 3.50m	MADE GROUND: firm green grey SILT.	3.40		87.507
			D	BH106 / 4.20m	MADE GROUND: firm green grey SILT.	4.10		86.807
			D	BH106 / 4.70m	MADE GROUND: firm green grey SILT.	4.40		86.507
			D	BH106 / 5.70m	Firm to stiff medium grey CLAY.	5.50		85.407
					End of Borehole	7.40		83.507

Comments: Hand dug inspection pit excavated to 1.30m

BH106

Trial Pit Number: TP101

Date: 14 May 2012

Project No: C1526 | Engineer: NH | Easting: 446629.220

Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240029.890

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 89.939m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
				MADE GROUND: dark Brown slightly sandy slightly clayey SILT with abundant rootlets. Occasional gravel and cobbles of brick, concrete and asphalt	0.20		89.739
	0.0	ES	TP101 / 0.30m	MADE GROUND: medium brown slightly gravelly slightly clayey SILT with red/brown mottling.	0.45		89.489
	0.0			MADE GROUND: dark brown slightly sandy SILT. Abundant amount of metal, plastic, glass, fabric and foam (old motor car parts).			
	0.0	ES	TP101 / 1.50m				
	0.0	ES	TP101 / 1.90m	Grey green slightly clayey slightly organic SILT with occasional fine to medium gravel.	1.85		88.089
	0.0			Light grey brown silty slightly gravelly SAND. Gravel is fine to coarse angular to subrounded.	2.15		87.789
3.09m	0.0	ES	TP101 / 3.10m				
				End of Trial Pit	3.30		86.639

Comments: Surface of the ground vegetated. Debris of brick and concrete present at the surface.Evidence of broken corrugated asbestos cement sheets within immediate vicinity.

Width: 0.80m

Length: 2.50m

Sheet 1 of 1

Side Stability: Unstable below 2.15m

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Trial Pit Number: TP102

Date: 14 May 2012

Project No: C1526 | Engineer: NH | Easting: 446585.010

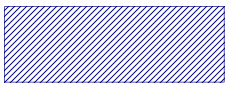
Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240052.420

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 89.498m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
		ES	TP102 / 0.40m	MADE GROUND: medium brown gravelly silty SAND. Abundant brick, ash, clinker and concrete.			
	0.0						
0.80m					0.90		88.598
	0.0			MADE GROUND: medium brown slightly sandy GRAVEL. Gravel is medium to coarse subangular to angular.	1.10		88.398
		ES	TP102 / 1.20m	MADE GROUND: dark grey/ black slightly sandy Gravel of ash and clinker. Frequent gravel of brick.	1.40		88.098
	0.0	ES	TP102 / 1.50m	Greenish grey organic SILT with abundant black mottling.			
				Medium brown silty slightly gravelly SAND with orange mottling.	1.85		87.648
	0.0			End of Trial Pit	2.10		87.398

0 1 2 3 4

Comments: Surface of ground sparsely vegetated. Minor Hydrocarbon sheen noted on inflow.Very hard digging between 0.0 and 0.9m.Evidence of broken corrugated asbestos cement sheets within immediate vicinity.



Width: 0.70m

Length: 2.50m

Side Stability: Stable

Trial Pit Number: TP103

Date: 14 May 2012

Project No: C1526 | Engineer: NH | Easting: 446610.940

Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240062.160

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 89.569m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
				MADE GROUND: dark brown slightly sandy slightly gravelly SILT with abundant rootlets. Occasional gravel of red brick.	0.15		89.419
	0.0	ES	TP103 / 0.30m	MADE GROUND: pale orange brown slightly clayey SILT. Frequent gravel and cobbles of red brick, and pieces of metal and plastic bags.			
1.30m	0.0						
1.60m	0.0	ES	TP103 / 1.60m				
1.80m							
	0.0						
		ES	TP103 / 2.20m	Orange brown silty slightly gravelly SAND.	2.10		87.469
	0.0			End of Trial Pit	2.50		87.069

0 1 2 3 4

Comments: Surface of ground vegetated. Steel pipe (approximately 10 inch) noted running across the pit at 1.8m in a East-West Direction.Evidence of broken corrugated asbestos cement sheets within immediate vicinity.Trial Pit terminated due to presence of pipe.

Width: 2.40m

Length: 1.10m

Sheet 1 of 1

Side Stability: Stable

Trial Pit Number: TP104

Date: 14 May 2012

Project No: C1526 | Engineer: NH | Easting: 446643.570

Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240052.180

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 90.203m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
		ES	TP104 / 0.20m	MADE GROUND: dark brown sandy SILT with abundant roots and rootlets.	0.20		90.003
	0.0	ES	TP104 / 0.60m	MADE GROUND: pale orange brown sandy gravelly SILT.	0.55		89.653
	0.0			Medium orange brown CLAY / SILT with grey mottling.	1.80		88.403
		ES	TP104 / 2.00m	Soft orange brown sandy SILT.	2.60		87.603
2.60m 2.70				Pale orange brown slightly silty SAND.	2.80		87.403
				End of Trial Pit			

0 1 2 3 4

Comments: Surface densely vegetated.

Width: 0.60m

Length: 2.30m

Sheet 1 of 1 | Side Stability: Stable | www.celtic-ltd.com

Trial Pit Number: TP105

Date: 14 May 2012

Project No: C1526 | Engineer: NH | Easting: 446586.620

Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240115.040

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 90.450m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
				MADE GROUND: dark grey black slightly sandy SILT with abundant rootlets. Frequent fragments of glass, wire and brick.	0.07		90.380
		ES	TP105 / 0.30m				
	0.0			MADE GROUND: orange brown slightly silty gravelly SAND. Rare coarse gravel of black clinker, ash and light grey chalk.	0.75		89.700
	0.0	ES	TP105 / 1.00m	MADE GROUND: medium grey slightly silty slightly gravelly CLAY with extensive orange mottling [possible re-worked natural material].			
	0.0						
				Greenish grey slightly clayey SILT with extensive orange mottling.	1.60		88.850
				Dark grey / black very organic SILT.	1.90		88.550
	0.0			Greenish grey slightly organic SILT. Occasional coarse gravel size pockets of black silt.	2.10		88.350
		ES	TP105 / 2.20m				
27.06m				Greenish grey slightly silty slightly gravelly SAND.	2.70		87.750
				End of Trial Pit	3.00		87.450

Comments: Surface sparsely vegetated. Large amount of wood debris.

Width: 0.70m

Length: 2.40m

Sheet 1 of 1

Side Stability: Stable

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Trial Pit Number: TP106

Date: 15 May 2012

Project No: C1526 | Engineer: NH | Easting: 446547.220

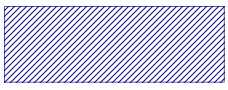
Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240155.420

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 90.711m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
0.60m	0.0			MADE GROUND: dark brown sandy SILT with abundant rootlets.	0.05		90.661
		ES	TP106 / 0.20m	MADE GROUND: dark brown sandy SILT. Abundant cobbles and boulders of brick and reinforced concrete. Occasional fragments of plastic and fabric (old motor car parts).			
1.00m	0.0				1.00		89.711
	0.0			MADE GROUND: recovered as Gravel and Boulders of brick and concrete with abundant fragments of metal.			
	0.0				1.90		88.811
	0.0	ES	TP106 / 2.00m	Greenish grey slightly organic SILT. Occasional coarse gravel size pockets of black silt.			
				End of Trial Pit	2.30		88.411

0 1 2 3 4

Comments: Surface sparsely vegetated.



Width: 0.80m

Length: 2.30m

Sheet 1 of 1

Side Stability: Unstable below 1.80m

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Trial Pit Number: TP107

Date: 15 May 2012

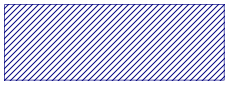
Project No: C1526 | Engineer: NH | Easting: 446515.350

Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240162.830

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 90.632m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	PID Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
				MADE GROUND: CONCRETE.			
		ES	TP107 / 0.30m	MADE GROUND: orange brown sandy COBBLES.	0.25 0.30		90.382 90.332
	0.0	ES	TP107 / 0.50m	MADE GROUND: black fine to coarse GRAVEL of ash and clinker. Extensive Hydrocarbon staining and free product on surface of gravel.	0.40		90.232
	0.0			MADE GROUND: orange brown slightly sandy gravelly SILT. Becoming slightly gravelly below 0.50m.			
		ES	TP107 / 1.30m	MADE GROUND: dark greenish grey SILT with abundant coarse gravel size pockets of black silt. Moderate Hydrocarbon odour. Cobble of brick encountered at 1.8m.	1.20		89.432
	0.0						
	0.0			Greenish grey slightly organic SILT with abundant gravel size pockets of coarse black silt. Becoming sandy below 3.0m.	1.80		88.832
		ES	TP107 / 2.60m				
3.20m		ES	TP107 / 3.20m	Black silty SAND. Moderate Hydrocarbon odour.	3.20 3.30		87.432 87.332
		ES	TP107 / 3.50m	Orange brown SILT with frequent gravel size pockets of black silt. Moderate Hydrocarbon odour.	3.60		87.032
				End of Trial Pit			

Comments: Concrete at surface. Broken out using mechanical breaker.
Trial pit terminated due to instability of sands.



Width: 0.70m

Length: 2.60m

Sheet 1 of 1

Side Stability: Unstable below 3.2m

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Celtic

Trial Pit Number: TP108

Date: 15 May 2012

Project No: C1526 | Engineer: NH | Easting: 446529.430

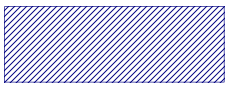
Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240179.950

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 90.573m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
0.55m	0.0			MADE GROUND: CONCRETE.	0.25		90.323
				MADE GROUND: dark grey/ black slightly clayey gravelly SILT. Frequent cobbles of brick and occasional fragments of metal.	0.35		90.223
				MADE GROUND: orange brown sandy COBBLES.	0.80		89.773
	0.0	ES	TP108 / 1.20m	MADE GROUND: dark greenish grey SILT with abundant coarse gravel size pockets of black silt. Moderate Hydrocarbon odour. Cobble of brick encountered at 1.8m.			
	0.0	ES	TP108 / 1.80m	Greenish grey slightly organic SILT.	1.60		88.973
	0.0	ES	TP108 / 2.50m	Greenish grey sandy slightly clayey organic SILT with extensive black mottling. Becoming very sandy below 2.7m.	2.30		88.273
				End of Trial Pit	2.95		87.623

0 1 2 3 4

Comments: Concrete at surface. Broken out using mechanical breaker. Historical building foundation encountered in northern half of trial pit, extended from Ground level to 2.1m.Trial pit terminated at 2.9m due to historical foundation preventing extension of excavator arm.



Width: 0.80m

Length: 2.50m

Side Stability: Stable

Trial Pit Number: TP109

Date: 16 May 2012

Project No: C1526 | Engineer: NH | Easting: 446506.590

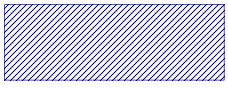
Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240204.890

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 90.699m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
0.60m	0.0	ES	TP109 / 0.70m	MADE GROUND: reinforced CONCRETE.	0.30		90.399
				MADE GROUND: medium brown rounded cobbles and boulders.	0.60		90.099
0.90m				MADE GROUND: greenish grey SILT with frequent orange mottling. Occasional fine to medium gravel. Brick encountered at 0.95m.	0.95		89.749
	0.0	ES	TP109 / 1.60m	Greenish grey slightly clayey slightly organic SILT.	2.80		87.899
				Orange silty sandy GRAVEL.	3.50		87.199
				End of Trial Pit			

0 1 2 3 4

Comments: Reinforced Concrete at surface. Broken out using mechanical breaker. Trial pit terminated at 3.5m due to instability of sands.



Width: 0.70m

Length: 2.30m

Sheet 1 of 1

Side Stability: Stable

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Trial Pit Number: TP110

Date: 16 May 2012

Project No: C1526 | Engineer: NH | Easting: 446488.880

Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240188.380

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 90.739m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
				MADE GROUND: reinforced CONCRETE.			
					0.25		90.489
		ES	TP110 / 0.35m	MADE GROUND: black sandy GRAVEL of ash and clinker. Hydrocarbon residue of surface of gravel. Moderate Hydrocarbon odour.			
	0.0				0.55		90.189
		ES	TP110 / 0.65m	MADE GROUND: greenish grey slightly sandy slightly gravelly SILT with occasional orange mottling. Frequent coarse gravel size pockets of black silt. Occasional gravel of red brick. Minor Hydrocarbon odour.			
	0.0				1.00		89.739
				MADE GROUND: orange brown slightly silty slightly gravelly SAND.	1.10		89.639
	0.0			Greenish grey slightly sandy slightly gravelly slightly organic SILT with occasional orange mottling. Frequent coarse gravel size pockets of black silt.			
		ES	TP110 / 1.80m				
				Greenish grey slightly clayey slightly organic SILT with black mottling. Becoming sandy below 2.50m.	2.05		88.689
				Orange brown silty slightly gravelly SAND.	2.80		87.939
3.10m				End of Trial Pit	3.50		87.239

Comments: Reinforced Concrete at surface. Broken out using mechanical breaker. Trial pit terminated at 3.5m due to instability of sands.

Width: 0.80m

Length: 2.60m

Sheet 1 of 1

Side Stability: Stable

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Trial Pit Number: TP111

Date: 16 May 2012

Project No: C1526 | Engineer: NH | Easting: 446494.680

Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240135.910

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 90.096m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
				MADE GROUND: medium brown silty sandy GRAVEL. Frequent fragments of asbestos cement on the surface.	0.05		90.046
					0.15		89.946
		ES	TP111 / 0.30m		0.20		89.896
				MADE GROUND: cobbles of concrete.	0.35		89.746
	0.0			MADE GROUND: black sandy GRAVEL of ash and clinker.			
				MADE GROUND: medium brown sandy silty GRAVEL.			
	0.0			MADE GROUND: greenish grey slightly gravelly SILT. Occasional gravel of red brick.			
	0.0						
					1.90		88.196
	0.0			Orange brown slightly silty gravelly SAND.	2.00		88.096
				Greenish grey slightly gravelly organic SILT with black mottling. Becoming sandy below 2.6m.			
					3.00		87.096
▽ 3.40m				Medium brown silty gravelly SAND.			
					3.90		86.196
				End of Trial Pit			

0 1 2 3 4

Comments: Large amount of asbestos cement corrugated sheets within immediate vicinity.Historical building foundation encountered along the eastern edge of pit from ground level to 1.8m.Trial pit terminated at 3.5m due to instability of sands.

Width: 0.80m

Length: 2.50m

Sheet 1 of 1

Side Stability: Unstable below 2.8m

Trial Pit Number: TP112

Date: 16 May 2012

Project No: C1526 | Engineer: NH | Easting: 446476.270

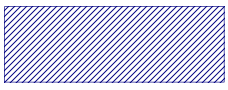
Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240226.500

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 90.708m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
				MADE GROUND: reinforced CONCRETE.			
		ES	TP112 / 0.20m	MADE GROUND: dark grey / black silty gravelly SAND. Occasional fragments of metal.	0.15		90.558
		ES	TP112 / 0.40m		0.30		90.408
	0.0			MADE GROUND: orange brown slightly gravelly SAND.			
					0.80		89.908
	0.0			Medium grey slightly clayey slightly organic SILT with extensive orange mottling. Occasional coarse gravel size pockets of black silt.			
		ES	TP112 / 1.30m				
				Dark greenish grey slightly organic SILT.	2.00		88.708
2.80m				Orange brown silty gravelly SAND with greenish grey mottling.	2.70		88.008
3.05m				Orange brown slightly sandy silty GRAVEL.	3.20		87.508
				End of Trial Pit	3.50		87.208

0 1 2 3 4

Comments: Reinforced Concrete at surface. Broken out using mechanical breaker. Trial pit terminated at 3.5m due to instability of sands.



Width: 0.80m

Length: 2.60m

Sheet 1 of 1 | Side Stability: Stable | www.celtic-ltd.com

Trial Pit Number: TP113

Date: 16 May 2012

Project No: C1526 | Engineer: NH | Easting: 446487.270

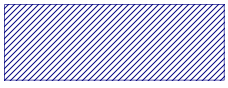
Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240247.420

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 90.823m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
		ES	TP113 / 0.30m	MADE GROUND: comprising dark brown silty sandy rubber, cables, fabric, glass, brick [old motor car parts].			
	0.0						
					0.90		89.923
	0.0			Greenish grey slightly clayey organic SILT. Frequent coarse gravel size pockets of black silt.			
		ES	TP113 / 1.20m				
				End of Trial Pit	1.40		89.423
▽ 2.80m							

0 1 2 3 4

Comments: Surface of the ground hard standing.Trial pit excavated to attempt to identify location of possible underground storage tank. Large diameter pipe (approximately 12 inch) encountered crossing the trial pit at 0.9m in an East-West direction. Trial pit terminated on encountering



Width: 3.00m

Length: 3.20m

Sheet 1 of 1

Side Stability: Stable

Trial Pit Number: TP114

Date: 16 May 2012

Project No: C1526

Engineer: NH

Easting: 446468.070

Site Location: Merton Street Depot, Banbury

Contractor: David Beecroft

Northing: 240270.590

Client: Grundon Waste Management

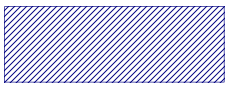
Plant: JCB 3CX

Datum: 90.694m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
		ES	TP114 / 0.20m	MADE GROUND: comprising dark brown silty sandy rubber, cables, fabric, glass, brick [old motor car parts].			
				End of Trial Pit	0.50		90.194

0
1
2
2.80m
3
4

Comments: Surface of the ground hard standing.Trial pit excavated to attempt to identify location of possible underground storage tank. During excavation historical borehole standpipe encountered. Trial pit terminated at 0.5m to prevent damage to standpipe.



Width: 2.60m

Length: 2.10m

Side Stability: Stable

Trial Pit Number: TP115

Date: 17 May 2012

Project No: C1526 | Engineer: NH | Easting: 446435.800

Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240179.370

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 89.801m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
				MADE GROUND: dark brown sandy SILT. Abundant roots and rootlets.	0.01		89.791
		ES	TP115 / 0.30m	MADE GROUND: silty COBBLES of red brick.			
	0.0						
	0.0						
				MADE GROUND: CONCRETE.	1.10		88.701
					1.20		88.601
		ES	TP115 / 1.30m	Medium orange brown slightly sandy slightly clayey SILT.			
1.56m	0.0						
				Orange slightly silty SAND.	2.10		87.701
				End of Trial Pit	2.60		87.201

0 1 2 3 4

Comments: Surface of the ground sparsely vegetated.Trial pit terminated at 2.6m due to instability.

Width: 1.20m

Length: 2.40m

Sheet 1 of 1

Side Stability: Unstable below 2.1m

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Trial Pit Number: TP116

Date: 17 May 2012

Project No: C1526 | Engineer: NH | Easting: 446431.770

Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240206.960

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 89.823m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
				MADE GROUND: dark grey black sandy gravelly SILT. Abundant gravel of brick.	0.05		89.773
	0.0	ES	TP116 / 0.30m	MADE GROUND: grey slightly clayey slightly gravelly sandy SILT with orange/black/white mottling. Occasional metal pipes.			
	0.0						
1.45m	0.0	ES	TP116 / 1.40m		1.40		88.423
				MADE GROUND: grey brown slightly gravelly silty SAND. Extensive coarse gravel size pockets of black silt. Moderate Hydrocarbon odour.	1.65		88.173
				MADE GROUND: CONCRETE.	1.70		88.123
	2.3	ES	TP116 / 2.00m	Dark brown slightly silty gravelly SAND with extensive black hydrocarbon staining. Strong hydrocarbon odour.			
2.60m	0.5	ES	TP116 / 2.70m	Greenish grey slightly silty sandy GRAVEL. Moderate Hydrocarbon odour.	2.60		87.223
				End of Trial Pit	2.80		87.023

Comments: Surface of the ground comprises debris of concrete, brick and tiles.Trial pit terminated at 2.8m due to instability of gravel.

Width: 0.80m

Length: 2.30m

Sheet 1 of 1

Side Stability: Stable

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Trial Pit Number: TP117

Date: 17 May 2012

Project No: C1526 | Engineer: NH | Easting: 446422.380

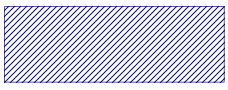
Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240221.330

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 89.809m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
				MADE GROUND: hard-standing.	0.05		89.759
				MADE GROUND: COBBLES of brick.	0.20		89.609
		ES	TP117 / 0.35m	MADE GROUND: ASPHALT.	0.25		89.559
	0.0	ES	TP117 / 0.50m	MADE GROUND: GRAVEL and COBBLES of brick, ash and clinker.	0.40		89.409
				MADE GROUND: medium brown slightly silty slightly gravelly SAND.	0.50		89.309
	0.0			Greenish grey slightly sandy slightly organic SILT. Extensive coarse gravel size pockets of black silt. Becomes sandy below 1.9m.			
	0.0						
2.10m	0.0	ES	TP117 / 2.10m		2.10		87.709
				Orange brown silty SAND and GRAVEL. Cobble size pockets of black silt. Moderate Hydrocarbon odour.			
2.50m	0.1	ES	TP117 / 2.60m				
				End of Trial Pit	3.00		86.809

0 1 2 3 4

Comments: Surface of ground hard standing. Trial pit terminated at 3.0m due to instability.



Width: 0.80m

Length: 2.30m

Sheet 1 of 1

Side Stability: Stable

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Trial Pit Number: TP118

Date: 17 May 2012

Project No: C1526 | Engineer: NH | Easting: 446403.390

Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240229.060

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 89.866m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
				MADE GROUND: dark brown slightly gravelly SILT. Abundant rootlets.	0.05		89.816
				MADE GROUND: orange brown silty COBBLES and BOULDERS.	0.30		89.566
	0.0	ES	TP118 / 0.70m	MADE GROUND: orange grey slightly gravelly sandy SILT. Frequent pockets of black ash and gravel of brick.	0.60		89.266
0.85m	0.3			MADE GROUND: greenish brown SILT. Extensive coarse gravel size pockets of black silt. Moderate Hydrocarbon odour.			
	0.3						
				Greenish brown sandy SILT. Frequent coarse gravel size pockets of black silt.	1.70		88.166
2.10m	0.0	ES	TP118 / 2.20m				
				End of Trial Pit	2.50		87.366

0 1 2 3 4

Comments: Surface of ground sparsely vegetated. Large amount of pipework throughout trial pit. Trial pit terminated at 2.5m due to significant water inflow from 0.8m.

Width: 0.90m

Length: 3.00m

Side Stability: Unstable below 1.7m

Trial Pit Number: TP119

Date: 17 May 2012

Project No: C1526 | Engineer: NH | Easting: 446415.370

Site Location: Merton Street Depot, Banbury | Contractor: David Beecroft | Northing: 240210.960

Client: Grundon Waste Management | Plant: JCB 3CX | Datum: 89.876m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
				MADE GROUND: dark grey slightly gravelly sandy SILT. Gravel of tile, brick, concrete and ash.	0.02		89.861
	17.2	ES	TP119 / 0.20m	MADE GROUND: dark grey black sandy SILT. Frequent whole bricks. Physical properties of the silt is viscous (Coal tar). Strong hydrocarbon odour.			
0.85m	17.2						
	0.2	ES	TP119 / 1.50m	MADE GROUND: dark greenish grey slightly sandy slightly SILT with black mottling. Minor Hydrocarbon odour.	1.30		88.576
	0.0			End of Trial Pit	1.65		88.226

0 1 2 3 4

Comments: Unvegetated soil surface.Coal tar oozing into the trial pit at 0.5m.Large amount of pipes encountered at 1.65m. Trial pit terminated as it was not possible to safely pass the pipes.

Width: 0.75m

Length: 2.10m

Sheet 1 of 1 | Side Stability: Stable | www.celtic-ltd.com

Trial Pit Number: TP120

Date: 17 May 2012

Project No: C1526

Engineer: NH

Easting: 446408.490

Site Location: Merton Street Depot, Banbury

Contractor: David Beecroft

Northing: 240236.120

Client: Grundon Waste Management

Plant: JCB 3CX

Datum: 90.191m

WATER	SAMPLING/TESTING			SUBSURFACE PROFILE			
Water Strike	P I D Results	Sample Type	Sample Ref	DESCRIPTION OF STRATA	Depth (m bgl)	Legend	Level (m AOD)
1.40m				MADE GROUND: medium brown sandy SILT.	0.10		90.091
				MADE GROUND: COBBLES and BOULDERS of brick and concrete with fragments of metal.			
				End of Trial Pit	1.50		88.691

0 1 2 3 4

Comments: Surface of ground sparsely vegetated with large amount of metal debris. Large inflow of oil at 1.4m (standing at 1.4m). Possible presence of tank.Trial pit terminated at 1.5m due to continual inflow of oil.

Width: 0.70m

Length: 2.00m

Sheet 1 of 1

Side Stability: Stable

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Plate No.: 1	Title: **TP101**

Plate No.: 2	Title: **TP101 – Spoil**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.: 3	Title: **TP102**

Plate No.: 4	Title: **TP102 – Spoil**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.: 5	Title: **TP103**

Plate No.: 6	Title: **TP103 – Spoil**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.: 7	Title: **TP104**

Plate No.: 8	Title: **TP104 – Spoil**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.: 9	Title: **TP105**

Plate No.: 10	Title: **TP105 – Spoil**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.: 11	Title: **TP106**

Plate No.: 12	Title: **TP106 – Spoil**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.: 13 Title: **TP107**

Plate No.: 14 Title: **TP107 – Spoil**

Celtic

Client: **Grundon Waste Management**

Project Name: **Merton Street Depot, Banbury**

Project No.: **C1526** Date: **June 2012**

Plate No.: 15	Title: **TP108**

Plate No.: 16	Title: **TP108 – Spoil**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.: 17	Title: **TP109**

Plate No.: 18	Title: **TP109 – Spoil**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.: 19	Title: **TP110**

Plate No.: 20	Title: **TP110 – Spoil**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.: 21	Title: **TP111**

Plate No.: 22	Title: **TP111 – Spoil**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.:23	Title: **TP112**

Plate No.: 24	Title: **TP112 – Spoil**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.: 25	Title: **TP113**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.: 26	Title: **TP114**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.: 27	Title: **TP115**

Plate No.: 28	Title: **TP115 – Spoil**

Celtic

Client: **Grundon Waste Management**	
Project Name: **Merton Street Depot, Banbury**	
Project No.: **C1526**	Date: **June 2012**

Plate No.: 29	Title: **TP116**

Plate No.: 30	Title: **TP116 – Spoil**

Celtic

Client: **Grundon Waste Management**	
Project Name: **Merton Street Depot, Banbury**	
Project No.: **C1526**	Date: **June 2012**

Plate No.: 31	Title: **TP117**

Plate No.: 32	Title: **TP117 – Spoil**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.: 33	Title: **TP118**

Plate No.: 34	Title: **TP118 – Spoil**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.: 35	Title: **TP119**

Plate No.: 36	Title: **TP119 – Spoil**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

Plate No.: 37	Title: **TP120**

Plate No.: 38	Title: **TP120 – Spoil**

Celtic	Client: **Grundon Waste Management**	
	Project Name: **Merton Street Depot, Banbury**	
	Project No.: **C1526**	Date: **June 2012**

APPENDIX D

D1 Soil Analysis Results (including Asbestos)

D2 Groundwater Analysis Results

ALcontrol Laboratories

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

Celtic Technologies
1210 Park View
Arlington Business Park
Theale
Reading
Berkshire
RG7 4TY

Attention: Neil Hopkins

CERTIFICATE OF ANALYSIS

Date:	11 May 2012
Customer:	H_CELTIC_REA
Sample Delivery Group (SDG):	120503-97
Your Reference:	C1526
Location:	Banbury
Report No:	180758

We received 16 samples on Thursday May 03, 2012 and 10 of these samples were scheduled for analysis which was completed on Friday May 11, 2012. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

Approved By:

[redacted]

Sonia McWhan

Operations Manager

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Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	120503-97	**Location:**	Banbury	**Order Number:**	66083
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180758
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
5536166	BH101		0.50	30/04/2012
5536171	BH101a		1.20	30/04/2012
5536172	BH101a		2.00	30/04/2012
5536173	BH101a		3.90	30/04/2012
5536174	BH101a		5.60	01/05/2012
5536175	BH101a		8.80	01/05/2012
5536176	BH102		0.50	01/05/2012
5536177	BH103		0.50	02/05/2012
5536178	BH103		1.20	02/05/2012
5536179	BH103		1.90	02/05/2012
5536180	BH103		3.10	02/05/2012
5536182	BH103		3.70	02/05/2012
5536188	BH103		4.60	02/05/2012
5536189	BH103		7.50	02/05/2012
5536190	BH104		0.40	02/05/2012
5536191	BH104		1.30	02/05/2012

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

ALcontrol Laboratories

CERTIFICATE OF ANALYSIS

Validated

SDG:	120503-97	**Location:**	Banbury	**Order Number:**	66083
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180758
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			5536166			5536171			5536172			5536173			5536176			5536177			5536178			5536182			5536190			5536191		
Customer Sample Reference			BH101			BH101a			BH101a			BH101a			BH102			BH103			BH103			BH103			BH104			BH104		
AGS Reference																																
Depth (m)			0.50			1.20			2.00			3.90			0.50			0.50			1.20			3.70			0.40			1.30		
Container			250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)
Ammonium Soil by Titration	All	NDPs: 0 Tests: 10		X			X			X			X			X			X			X			X			X			X	
Boron Water Soluble	All	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 10		X			X			X			X			X			X			X			X			X			X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 10			X			X			X			X			X			X			X			X			X			X
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		
	Cadmium	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		
	Chromium	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		
	Copper	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		
	Lead	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		
	Mercury	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		
	Nickel	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		
	Selenium	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		
	Zinc	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		

15:05:14 11/05/2012

CERTIFICATE OF ANALYSIS

Validated

SDG:	120503-97	**Location:**	Banbury	**Order Number:** 66083
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:** 180758
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**

SOLID

Results Legend

- **X** Test
- **N** No Determination Possible

Lab Sample No(s)			5536166			5536171			5536172			5536173			5536176			5536177			5536178			5536182			5536190			5536191		
Customer Sample Reference			BH101			BH101a			BH101a			BH101a			BH102			BH103			BH103			BH103			BH104			BH104		
AGS Reference																																
Depth (m)			0.50			1.20			2.00			3.90			0.50			0.50			1.20			3.70			0.40			1.30		
Container			250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)
PAH by GCMS	All	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 10		X			X			X			X			X			X			X			X			X			X	
Sample description	All	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 10	X			X			X			X			X			X			X			X			X			X		

CERTIFICATE OF ANALYSIS

SDG:	120503-97	**Location:**	Banbury	**Order Number:**	66083
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180758
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
5536166	BH101	0.50	Dark Brown	Sandy Silt Loam	0.1 - 2 mm	Stones	None
5536176	BH102	0.50	Light Brown	Sandy Loam	0.1 - 2 mm	Stones	None
5536177	BH103	0.50	Light Brown	Sand	0.1 - 2 mm	Stones	None
5536178	BH103	1.20	Dark Brown	Silty Clay Loam	0.063 - 0.1 mm	None	None
5536182	BH103	3.70	Light Brown	Sand	0.1 - 2 mm	Stones	None
5536190	BH104	0.40	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
5536191	BH104	1.30	Dark Brown	Silty Clay	0.063 - 0.1 mm	Stones	None
5536171	BH101a	1.20	Dark Brown	Silt Loam	0.063 - 0.1 mm	Stones	None
5536172	BH101a	2.00	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	N/A
5536173	BH101a	3.90	Dark Brown	Silty Clay	0.063 - 0.1 mm	None	None

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

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

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

CERTIFICATE OF ANALYSIS

SDG:	120503-97	**Location:**	Banbury	**Order Number:**	66083
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180758
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH101	BH102	BH103	BH103	BH103	BH104
			Depth (m)	0.50	0.50	0.50	1.20	3.70	0.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	30/04/2012	01/05/2012	02/05/2012	02/05/2012	02/05/2012	02/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	03/05/2012	03/05/2012	03/05/2012	03/05/2012	03/05/2012	03/05/2012
			SDG Ref	120503-97	120503-97	120503-97	120503-97	120503-97	120503-97
			Lab Sample No.(s)	5536166	5536176	5536177	5536178	5536182	5536190
			AGS Reference						
Ammoniacal Nitrogen as N	<15 mg/kg	TM024		<15	<15	<15	2000	582	<15
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		0.096 M	<0.035 M	<0.035 M	0.261 M	<0.035 M	<0.035 M
Soil Organic Matter (SOM)	<0.35 %	TM132		16.2 #	1.3 #	1.25 #	11.7 #	1.14 #	5.64 #
Cyanide, Total	<1 mg/kg	TM153		4.37 M	<1 M	1.41 M	6.01 M	2.38 M	1.2 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Arsenic	<0.6 mg/kg	TM181		36.7 M	146 M	70.5 M	24.7 M	92.5 M	30.4 M
Cadmium	<0.02 mg/kg	TM181		0.688 M	1.24 M	1.07 M	<0.02 M	1.45 M	4.7 M
Chromium	<0.9 mg/kg	TM181		37.8 M	83.8 M	55.6 M	62.8 M	64.9 M	225 M
Copper	<1.4 mg/kg	TM181		16.5 M	21 M	8.91 M	33.4 M	13.1 M	262 M
Lead	<0.7 mg/kg	TM181		109 M	102 M	18.2 M	54.1 M	23.8 M	1260 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	0.991 M
Nickel	<0.2 mg/kg	TM181		27.6 M	60.3 M	41.7 M	34.3 M	62.1 M	83.7 M
Selenium	<1 mg/kg	TM181		<10 #	<1 #	<1 #	<1 #	3.76 #	1.68 #
Zinc	<1.9 mg/kg	TM181		147 M	161 M	90.4 M	111 M	141 M	1480 M
Boron, water soluble	<1 mg/kg	TM222		1.54 M	<1 M	<1 M	1.99 M	<1 M	4.15 M

CERTIFICATE OF ANALYSIS

SDG:	120503-97	**Location:**	Banbury	**Order Number:**	66083
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180758
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH104	BH101a	BH101a	BH101a		
			Depth (m)	1.30	1.20	2.00	3.90		
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
			Date Sampled	02/05/2012	30/04/2012	30/04/2012	30/04/2012		
			Sample Time	.	.	.	.		
			Date Received	03/05/2012	03/05/2012	03/05/2012	03/05/2012		
			SDG Ref	120503-97	120503-97	120503-97	120503-97		
			Lab Sample No.(s)	5536191	5536171	5536172	5536173		
			AGS Reference						
Ammoniacal Nitrogen as N	<15 mg/kg	TM024		44.2	339	152	607		
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	0.168 M	0.472 M	<0.035 M		
Soil Organic Matter (SOM)	<0.35 %	TM132		0.983 #	5.05 #	0.95 #	1.78 #		
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M		
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M		
Arsenic	<0.6 mg/kg	TM181		13.8 M	22.4 M	84.6 M	10.1 M		
Cadmium	<0.02 mg/kg	TM181		0.112 M	0.343 M	1.82 M	0.0296 M		
Chromium	<0.9 mg/kg	TM181		49.1 M	38.4 M	110 M	51.4 M		
Copper	<1.4 mg/kg	TM181		21.5 M	10.9 M	11 M	24.6 M		
Lead	<0.7 mg/kg	TM181		22.6 M	28.2 M	19.3 M	17.6 M		
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	<0.14 M		
Nickel	<0.2 mg/kg	TM181		35.3 M	24.8 M	63.2 M	48.2 M		
Selenium	<1 mg/kg	TM181		<1 #	1.59 #	1.43 #	<1 #		
Zinc	<1.9 mg/kg	TM181		101 M	62.4 M	147 M	94.2 M		
Boron, water soluble	<1 mg/kg	TM222		<1 M	2.74 M	2.22 M	1.87 M		

CERTIFICATE OF ANALYSIS

SDG:	120503-97	**Location:**	Banbury	**Order Number:**	66083
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180758
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH101	BH102	BH103	BH103	BH103	BH104
			Depth (m)	0.50	0.50	0.50	1.20	3.70	0.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	30/04/2012	01/05/2012	02/05/2012	02/05/2012	02/05/2012	02/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	03/05/2012	03/05/2012	03/05/2012	03/05/2012	03/05/2012	03/05/2012
			SDG Ref	120503-97	120503-97	120503-97	120503-97	120503-97	120503-97
			Lab Sample No.(s)	5536166	5536176	5536177	5536178	5536182	5536190
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		97.1	99	95.5	94	95	92.4
Acenaphthene-d10 % recovery**	%	TM218		94.6	99.2	95.6	96.1	96.2	93.6
Phenanthrene-d10 % recovery**	%	TM218		95.3	101	95.7	96.3	96	92.5
Chrysene-d12 % recovery**	%	TM218		102	96.7	90.8	97.5	92.7	94.4
Perylene-d12 % recovery**	%	TM218		98.9	101	95.6	99.1	96	97.3
Naphthalene	<9 µg/kg	TM218		7760 M	<45 M	12.4 M	836 M	4570 M	8280 M
Acenaphthylene	<12 µg/kg	TM218		13700 M	280 M	22.1 M	1620 M	617 M	809 M
Acenaphthene	<8 µg/kg	TM218		2200 M	790 M	<8 M	332 M	84.3 M	137 M
Fluorene	<10 µg/kg	TM218		11000 M	744 M	<10 M	1470 M	125 M	158 M
Phenanthrene	<15 µg/kg	TM218		53900 M	18500 M	73.9 M	12200 M	28.6 M	1450 M
Anthracene	<16 µg/kg	TM218		27200 M	5970 M	25.4 M	4680 M	<16 M	1200 M
Fluoranthene	<17 µg/kg	TM218		107000 M	31100 M	256 M	22900 M	<17 M	3880 M
Pyrene	<15 µg/kg	TM218		82800 M	23000 M	261 M	17000 M	<15 M	3950 M
Benz(a)anthracene	<14 µg/kg	TM218		60400 M	10200 M	153 M	14300 M	<14 M	2650 M
Chrysene	<10 µg/kg	TM218		40500 M	7160 M	111 M	9940 M	<10 M	2280 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		55500 M	9650 M	183 M	12100 M	<15 M	7870 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		26100 M	3280 M	78.9 M	4430 M	<14 M	2360 M
Benzo(a)pyrene	<15 µg/kg	TM218		56800 M	8450 M	161 M	11000 M	<15 M	6730 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		22400 M	3930 M	89.2 M	4470 M	<18 M	4590 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		6890 M	863 M	<23 M	1440 M	<23 M	1130 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		22300 M	4520 M	106 M	4260 M	<24 M	5290 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		596000	128000	1530	123000	5430	52800

CERTIFICATE OF ANALYSIS

SDG:	120503-97	**Location:**	Banbury	**Order Number:**	66083
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180758
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH104	BH101a	BH101a	BH101a		
			Depth (m)	1.30	1.20	2.00	3.90		
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
			Date Sampled	02/05/2012	30/04/2012	30/04/2012	30/04/2012		
			Sample Time	.	.	.	.		
			Date Received	03/05/2012	03/05/2012	03/05/2012	03/05/2012		
			SDG Ref	120503-97	120503-97	120503-97	120503-97		
			Lab Sample No.(s)	5536191	5536171	5536172	5536173		
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		92	101	93.4	94.4		
Acenaphthene-d10 % recovery**	%	TM218		93.3	99.1	98.8	95.7		
Phenanthrene-d10 % recovery**	%	TM218		90.8	100	95.1	95.4		
Chrysene-d12 % recovery**	%	TM218		86.6	98.6	88.1	90.3		
Perylene-d12 % recovery**	%	TM218		88.2	99.6	87.7	94.1		
Naphthalene	<9 µg/kg	TM218		12 M	28400 M	126000 M	1420 M		
Acenaphthylene	<12 µg/kg	TM218		<12 M	1780 M	9230 M	250 M		
Acenaphthene	<8 µg/kg	TM218		<8 M	3050 M	36000 M	1130 M		
Fluorene	<10 µg/kg	TM218		<10 M	1710 M	23300 M	610 M		
Phenanthrene	<15 µg/kg	TM218		<15 M	4930 M	51100 M	2130 M		
Anthracene	<16 µg/kg	TM218		<16 M	1350 M	14700 M	582 M		
Fluoranthene	<17 µg/kg	TM218		<17 M	3110 M	10700 M	436 M		
Pyrene	<15 µg/kg	TM218		<15 M	2290 M	11100 M	596 M		
Benz(a)anthracene	<14 µg/kg	TM218		<14 M	1100 M	4420 M	224 M		
Chrysene	<10 µg/kg	TM218		<10 M	755 M	3280 M	161 M		
Benzo(b)fluoranthene	<15 µg/kg	TM218		<15 M	907 M	1960 M	85 M		
Benzo(k)fluoranthene	<14 µg/kg	TM218		<14 M	353 M	810 M	33.3 M		
Benzo(a)pyrene	<15 µg/kg	TM218		<15 M	939 M	2090 M	114 M		
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<18 M	404 M	605 M	30 M		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	107 M	221 M	<23 M		
Benzo(g,h,i)perylene	<24 µg/kg	TM218		<24 M	451 M	644 M	44.5 M		
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		<118	51600	296000	7850		

CERTIFICATE OF ANALYSIS

SDG:	120503-97	**Location:**	Banbury	**Order Number:**	66083
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180758
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH101	BH102	BH103	BH103	BH103	BH104
			Depth (m)	0.50	0.50	0.50	1.20	3.70	0.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	30/04/2012	01/05/2012	02/05/2012	02/05/2012	02/05/2012	02/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	03/05/2012	03/05/2012	03/05/2012	03/05/2012	03/05/2012	03/05/2012
			SDG Ref	120503-97	120503-97	120503-97	120503-97	120503-97	120503-97
			Lab Sample No.(s)	5536166	5536176	5536177	5536178	5536182	5536190
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		74	120	126	77	142	31
GRO >C5-C12	<44 µg/kg	TM089		2610	112	<44	122	3110	778
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
Benzene	<10 µg/kg	TM089		56.4 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<2 µg/kg	TM089		16.8 M	<2 M	<2 M	2.9 M	<2 M	<2 M
Ethylbenzene	<3 µg/kg	TM089		13.2 M	<3 M	<3 M	<3 M	11.3 M	<3 M
m,p-Xylene	<6 µg/kg	TM089		19.2 M	<6 M	<6 M	<6 M	15.8 M	<6 M
o-Xylene	<3 µg/kg	TM089		22.8 M	3.42 M	<3 M	<3 M	17 M	<3 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089		42	<9	<9	<9	32.8	<9
sum of detected BTEX by GC	<24 µg/kg	TM089		128	<24	<24	<24	44.1	<24
Aliphatics >C5-C6	<10 µg/kg	TM089		18	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		69.6	12.5	<10	21.8	40.7	452
Aliphatics >C8-C10	<10 µg/kg	TM089		241	19.4	<10	29	249	70.2
Aliphatics >C10-C12	<10 µg/kg	TM089		1190	33.1	<10	11.6	1560	116
Aliphatics >C12-C16	<100 µg/kg	TM173		25200	5520	7490	10500	4780	20500
Aliphatics >C16-C21	<100 µg/kg	TM173		34000	7040	5300	9030	3740	199000
Aliphatics >C21-C35	<100 µg/kg	TM173		45500	21900	3290	10600	5240	1670000
Aliphatics >C35-C44	<100 µg/kg	TM173		6340	<100	<100	<100	<100	317000
Total Aliphatics >C12-C44	<100 µg/kg	TM173		111000	34400	16100	30100	13800	2210000
Aromatics >EC5-EC7	<10 µg/kg	TM089		56.4	<10	<10	11.6	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		16.8	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		217	21.7	<10	29	211	51.5
Aromatics >EC10-EC12	<10 µg/kg	TM089		796	21.7	<10	<10	1040	77.2
Aromatics >EC12-EC16	<100 µg/kg	TM173		173000	10900	13000	42300	16200	24900
Aromatics >EC16-EC21	<100 µg/kg	TM173		857000	45300	11300	115000	6160	161000
Aromatics >EC21-EC35	<100 µg/kg	TM173		1730000	106000	21500	301000	10100	1240000
Aromatics >EC35-EC44	<100 µg/kg	TM173		406000	27000	7360	74700	3600	487000
Aromatics >EC40-EC44	<100 µg/kg	TM173		116000	9060	2580	23600	1480	188000
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		3160000	189000	53100	532000	36000	1920000
Total Aliphatics >C5-35	<100 µg/kg	TM173		106000	34500	16100	30200	15600	1890000
Total Aromatics >C5-35	<100 µg/kg	TM173		2760000	162000	45800	457000	33600	1430000
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173		2870000	197000	61800	488000	49200	3320000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		3280000	224000	69200	562000	52800	4130000

CERTIFICATE OF ANALYSIS

SDG:	120503-97	**Location:**	Banbury	**Order Number:**	66083
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180758
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH104	BH101a	BH101a	BH101a		
			Depth (m)	1.30	1.20	2.00	3.90		
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
			Date Sampled	02/05/2012	30/04/2012	30/04/2012	30/04/2012		
			Sample Time	.	.	.	.		
			Date Received	03/05/2012	03/05/2012	03/05/2012	03/05/2012		
			SDG Ref	120503-97	120503-97	120503-97	120503-97		
			Lab Sample No.(s)	5536191	5536171	5536172	5536173		
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		96	100	20	59		
GRO >C5-C12	<44 µg/kg	TM089		<44	6440	24600	817		
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 #	<5 #	<5 #	<5 #		
Benzene	<10 µg/kg	TM089		<10 M	23.8 M	<10 M	12.1 M		
Toluene	<2 µg/kg	TM089		<2 M	7 M	39.9 M	6.05 M		
Ethylbenzene	<3 µg/kg	TM089		<3 M	71.4 M	598 M	46 M		
m,p-Xylene	<6 µg/kg	TM089		<6 M	109 M	955 M	38.7 M		
o-Xylene	<3 µg/kg	TM089		<3 M	86.8 M	584 M	23 M		
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9	196	1540	61.7		
sum of detected BTEX by GC	<24 µg/kg	TM089		<24	298	2180	126		
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	16.8	<10	<10		
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	35	100	14.5		
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	606	3400	104		
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	3050	10000	299		
Aliphatics >C12-C16	<100 µg/kg	TM173		10600	9800	274000	7940		
Aliphatics >C16-C21	<100 µg/kg	TM173		10100	8620	513000	5640		
Aliphatics >C21-C35	<100 µg/kg	TM173		23200	17500	110000	16500		
Aliphatics >C35-C44	<100 µg/kg	TM173		5930	<100	2950	1680		
Total Aliphatics >C12-C44	<100 µg/kg	TM173		49800	35900	900000	31800		
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	23.8	<10	12.1		
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	39.9	<10		
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	673	4400	178		
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	2030	6670	200		
Aromatics >EC12-EC16	<100 µg/kg	TM173		23600	34500	495000	12000		
Aromatics >EC16-EC21	<100 µg/kg	TM173		9670	20700	750000	4950		
Aromatics >EC21-EC35	<100 µg/kg	TM173		31200	57900	355000	7930		
Aromatics >EC35-EC44	<100 µg/kg	TM173		13000	<100	62200	2170		
Aromatics >EC40-EC44	<100 µg/kg	TM173		5430	<100	22500	<100		
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		77500	113000	1660000	27000		
Total Aliphatics >C5-35	<100 µg/kg	TM173		43900	39600	910000	30500		
Total Aromatics >C5-35	<100 µg/kg	TM173		64600	116000	1610000	25300		
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173		108000	155000	2520000	55800		
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		127000	155000	2590000	59600		

CERTIFICATE OF ANALYSIS

SDG:	120503-97	**Location:**	Banbury	**Order Number:**	66083
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180758
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids		
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer		

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

CERTIFICATE OF ANALYSIS

SDG:	120503-97	**Location:**	Banbury	**Order Number:**	66083
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180758
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	5536166	5536176	5536177	5536178	5536182	5536190	5536191	5536171	5536172	5536173
Customer Sample Ref.	BH101	BH102	BH103	BH103	BH103	BH104	BH104	BH101a	BH101a	BH101a
AGS Ref.										
Depth	0.50	0.50	0.50	1.20	3.70	0.40	1.30	1.20	2.00	3.90
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Ammonium Soil by Titration	09-May-2012	10-May-2012	10-May-2012	11-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012
Boron Water Soluble	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012
Cyanide Comp/Free/Total/Thiocyanate	09-May-2012	08-May-2012	08-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	08-May-2012	09-May-2012
EPH CWG (Aliphatic) GC (S)	10-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012
EPH CWG (Aromatic) GC (S)	10-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012
GRO by GC-FID (S)	09-May-2012	09-May-2012	11-May-2012	09-May-2012	11-May-2012	11-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012
Metals by iCap-OES (Soil)	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012
PAH by GCMS	08-May-2012	08-May-2012	08-May-2012	08-May-2012	08-May-2012	11-May-2012	11-May-2012	08-May-2012	08-May-2012	08-May-2012
Phenols by HPLC (S)	10-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012	11-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012
Sample description	04-May-2012	04-May-2012	04-May-2012	04-May-2012	04-May-2012	04-May-2012	04-May-2012	04-May-2012	04-May-2012	04-May-2012
Total Organic Carbon	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012
TPH CWG GC (S)	10-May-2012	10-May-2012	11-May-2012	10-May-2012	11-May-2012	11-May-2012	10-May-2012	10-May-2012	10-May-2012	10-May-2012

SDG:	120503-97	**Location:**	Banbury	**Order Number:**	66083
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180758
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Appendix

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

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

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

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

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

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

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

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

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

11. Results relate only to the items tested.

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

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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

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

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

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

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

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

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

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

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

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

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D&C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB AROCLOR 1254 / PCB CON	D&C	HEXANE:ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE:ACETONE	MICROWAVE TM218.	GC-MS
>C6-C40	WET	HEXANE:ACETONE	SHAKER	GC-FID
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE:ACETONE	SHAKER	GC-FID
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB AROCLOR 1254	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PESTOCPOPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	ACETONE	SOLID PHASE EXTRACTION	GC MS
TPH by INFRARED (IR)	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
MINERAL OIL by IR	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
GLYCOLS	NONE	DIRECT INJECTION	GC FID

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

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

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

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Reading
Berkshire
RG7 4TY

Attention: Neil Hopkins

CERTIFICATE OF ANALYSIS

Date:	16 May 2012
Customer:	H_CELTIC_REA
Sample Delivery Group (SDG):	120508-14
Your Reference:	C1526
Location:	Banbury
Report No:	181178

We received 16 samples on Saturday May 05, 2012 and 8 of these samples were scheduled for analysis which was completed on Wednesday May 16, 2012. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

Approved By:

[redacted]

Operations Manager

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CERTIFICATE OF ANALYSIS

SDG:	120508-14	**Location:**	Banbury	**Order Number:**	66804
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181178
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
5551099	BH104		2.50	02/05/2012
5551100	BH104		3.50	02/05/2012
5551101	BH104		3.80	02/05/2012
5551102	BH104		6.10	02/05/2012
5551104	BH104		8.70	03/05/2012
5551105	BH105		0.50	03/05/2012
5551106	BH105		1.30	03/05/2012
5551107	BH105		2.20	03/05/2012
5551108	BH105		2.70	03/05/2012
5551109	BH105		4.60	03/05/2012
5551110	BH106		0.50	04/05/2012
5551111	BH106		2.30	04/05/2012
5551112	BH106		3.50	04/05/2012
5551113	BH106		4.20	04/05/2012
5551114	BH106		4.70	04/05/2012
5551115	BH106		5.70	04/05/2012

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

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Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			5551101	BH104		3.80	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
			5551105	BH105		0.50	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
			5551107	BH105		2.20	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
			5551109	BH105		4.60	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
			5551110	BH106		0.50	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
			5551111	BH106		2.30	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
			5551114	BH106		4.70	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
			5551115	BH106		5.70	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
Ammonium Soil by Titration	All	NDPs: 0 Tests: 8		X			X		X		X		X		X		X		X
Boron Water Soluble	All	NDPs: 0 Tests: 8	X		X		X		X		X		X		X		X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 8		X		X		X		X		X		X		X		X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 8	X		X		X		X		X		X		X		X		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 8	X		X		X		X		X		X		X		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 8		X		X		X		X		X		X		X		X	X
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 8	X		X		X		X		X		X		X		X		
	Cadmium	NDPs: 0 Tests: 8	X		X		X		X		X		X		X		X		
	Chromium	NDPs: 0 Tests: 8	X		X		X		X		X		X		X		X		
	Copper	NDPs: 0 Tests: 8	X		X		X		X		X		X		X		X		
	Lead	NDPs: 0 Tests: 8	X		X		X		X		X		X		X		X		
	Mercury	NDPs: 0 Tests: 8	X		X		X		X		X		X		X		X		
	Nickel	NDPs: 0 Tests: 8	X		X		X		X		X		X		X		X		
	Selenium	NDPs: 0 Tests: 8	X		X		X		X		X		X		X		X		
	Zinc	NDPs: 0 Tests: 8	X		X		X		X		X		X		X		X		

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SOLID

Results Legend

- X — **Test**
- N — **No Determination Possible**

Lab Sample No(s)			5551101			5551105			5551107			5551109			5551110			5551111			5551114			5551115		
Customer Sample Reference			BH104			BH105			BH105			BH105			BH106			BH106			BH106			BH106		
AGS Reference																										
Depth (m)			3.80			0.50			2.20			4.60			0.50			2.30			4.70			5.70		
Container			250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)
PAH by GCMS	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X			X			X	
Sample description	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X			X		

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Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
5551101	BH104	3.80	Dark Brown	Sand	0.1 - 2 mm	Stones	None
5551105	BH105	0.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
5551107	BH105	2.20	Light Brown	Silty Clay Loam	0.063 - 0.1 mm	None	None
5551109	BH105	4.60	Light Brown	Sand	0.1 - 2 mm	Stones	None
5551110	BH106	0.50	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	None
5551111	BH106	2.30	Dark Brown	Sandy Silt Loam	0.1 - 2 mm	Stones	None
5551114	BH106	4.70	Dark Brown	Silty Clay Loam	0.063 - 0.1 mm	None	None
5551115	BH106	5.70	Dark Brown	Silty Clay	0.063 - 0.1 mm	Stones	None

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

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

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

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Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH104	BH105	BH105	BH105	BH106	BH106
			Depth (m)	3.80	0.50	2.20	4.60	0.50	2.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	02/05/2012	03/05/2012	03/05/2012	03/05/2012	04/05/2012	04/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	05/05/2012	05/05/2012	05/05/2012	05/05/2012	05/05/2012	05/05/2012
			SDG Ref	120508-14	120508-14	120508-14	120508-14	120508-14	120508-14
			Lab Sample No.(s)	5551101	5551105	5551107	5551109	5551110	5551111
			AGS Reference						
Ammoniacal Nitrogen as N	<15 mg/kg	TM024		180	80.3	85.5	122	61.2	105
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	2.93 M
Soil Organic Matter (SOM)	<0.35 %	TM132		1.14 #	29.7 #	1.42 #	1.09 #	7.93 #	4.33 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	13.7 M	<1 M	<1 M	38.4 M	110 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Arsenic	<0.6 mg/kg	TM181		152 M	41.8 M	19.9 M	113 M	194 M	223 M
Cadmium	<0.02 mg/kg	TM181		1.02 M	2.11 M	0.353 M	0.73 M	5.82 M	2.33 M
Chromium	<0.9 mg/kg	TM181		106 M	42.9 M	62.2 M	92 M	162 M	75 M
Copper	<1.4 mg/kg	TM181		<14 M	1510 M	15 M	16.1 M	264 M	72.5 M
Lead	<0.7 mg/kg	TM181		27.1 M	573 M	20.7 M	26.8 M	775 M	226 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	1.11 M	<0.14 M	<0.14 M	1.49 M	<2.8 M
Nickel	<0.2 mg/kg	TM181		69 M	204 M	30.8 M	87.3 M	115 M	73.2 M
Selenium	<1 mg/kg	TM181		<10 #	1.62 #	<1 #	<10 #	<10 #	<20 #
Zinc	<1.9 mg/kg	TM181		178 M	1830 M	89.2 M	217 M	3550 M	443 M
Boron, water soluble	<1 mg/kg	TM222		2.46 M	6.02 M	1.63 M	<1 M	8.16 M	4.28 M

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Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH106	BH106
			Depth (m)	4.70	5.70
			Sample Type	Soil/Solid	Soil/Solid
			Date Sampled	04/05/2012	04/05/2012
			Sample Time	.	.
			Date Received	05/05/2012	05/05/2012
			SDG Ref	120508-14	120508-14
			Lab Sample No.(s)	5551114	5551115
			AGS Reference		
Ammoniacal Nitrogen as N	<15 mg/kg	TM024		937	360
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		4.68 M	1.9 M
Soil Organic Matter (SOM)	<0.35 %	TM132		2.48 #	1.67 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M
Arsenic	<0.6 mg/kg	TM181		18.3 M	11.7 M
Cadmium	<0.02 mg/kg	TM181		0.397 M	0.387 M
Chromium	<0.9 mg/kg	TM181		52 M	52.4 M
Copper	<1.4 mg/kg	TM181		31.1 M	25.6 M
Lead	<0.7 mg/kg	TM181		21.8 M	19.7 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		46.8 M	47.2 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		109 M	91 M
Boron, water soluble	<1 mg/kg	TM222		2.22 M	2.76 M

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Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH104	BH105	BH105	BH105	BH106	BH106
			Depth (m)	3.80	0.50	2.20	4.60	0.50	2.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	02/05/2012	03/05/2012	03/05/2012	03/05/2012	04/05/2012	04/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	05/05/2012	05/05/2012	05/05/2012	05/05/2012	05/05/2012	05/05/2012
			SDG Ref	120508-14	120508-14	120508-14	120508-14	120508-14	120508-14
			Lab Sample No.(s)	5551101	5551105	5551107	5551109	5551110	5551111
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		104	103	103	102	102	104
Acenaphthene-d10 % recovery**	%	TM218		105	105	104	104	105	106
Phenanthrene-d10 % recovery**	%	TM218		105	103	103	103	104	105
Chrysene-d12 % recovery**	%	TM218		92.9	100	91.7	93	102	98.5
Perylene-d12 % recovery**	%	TM218		89.6	104	90.7	92.9	108	111
Naphthalene	<9 µg/kg	TM218		<9 M	612 M	<9 M	<9 M	932 M	4330 M
Acenaphthylene	<12 µg/kg	TM218		37.9 M	878 M	<12 M	<12 M	5040 M	15200 M
Acenaphthene	<8 µg/kg	TM218		21.2 M	353 M	<8 M	<8 M	510 M	17500 M
Fluorene	<10 µg/kg	TM218		<10 M	797 M	<10 M	<10 M	2010 M	18200 M
Phenanthrene	<15 µg/kg	TM218		<15 M	5360 M	<15 M	<15 M	14900 M	42500 M
Anthracene	<16 µg/kg	TM218		<16 M	1420 M	<16 M	<16 M	4410 M	11500 M
Fluoranthene	<17 µg/kg	TM218		<17 M	8150 M	<17 M	<17 M	18900 M	16700 M
Pyrene	<15 µg/kg	TM218		<15 M	6930 M	<15 M	<15 M	15400 M	17300 M
Benz(a)anthracene	<14 µg/kg	TM218		<14 M	3860 M	<14 M	<14 M	10300 M	7170 M
Chrysene	<10 µg/kg	TM218		<10 M	3700 M	<10 M	<10 M	8390 M	5570 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		<15 M	5800 M	<15 M	<15 M	13600 M	7670 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		<14 M	2000 M	<14 M	<14 M	5480 M	2550 M
Benzo(a)pyrene	<15 µg/kg	TM218		<15 M	4130 M	<15 M	<15 M	12000 M	6320 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<18 M	2580 M	<18 M	<18 M	8290 M	3350 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	755 M	<23 M	<23 M	2670 M	1130 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		<24 M	2870 M	<24 M	<24 M	8670 M	3340 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		<118	50200	<118	<118	131000	180000

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Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH106	BH106
			Depth (m)	4.70	5.70
			Sample Type	Soil/Solid	Soil/Solid
			Date Sampled	04/05/2012	04/05/2012
			Sample Time	.	.
			Date Received	05/05/2012	05/05/2012
			SDG Ref	120508-14	120508-14
			Lab Sample No.(s)	5551114	5551115
			AGS Reference		
Naphthalene-d8 % recovery**	%	TM218		97.4	104
Acenaphthene-d10 % recovery**	%	TM218		98.9	107
Phenanthrene-d10 % recovery**	%	TM218		95.7	106
Chrysene-d12 % recovery**	%	TM218		103	100
Perylene-d12 % recovery**	%	TM218		83.9	104
Naphthalene	<9 µg/kg	TM218		179000 M	10200 M
Acenaphthylene	<12 µg/kg	TM218		6890 M	2250 M
Acenaphthene	<8 µg/kg	TM218		50600 M	849 M
Fluorene	<10 µg/kg	TM218		25900 M	1710 M
Phenanthrene	<15 µg/kg	TM218		59600 M	4610 M
Anthracene	<16 µg/kg	TM218		17800 M	1330 M
Fluoranthene	<17 µg/kg	TM218		10600 M	777 M
Pyrene	<15 µg/kg	TM218		14900 M	1070 M
Benz(a)anthracene	<14 µg/kg	TM218		4920 M	344 M
Chrysene	<10 µg/kg	TM218		4290 M	294 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		1970 M	143 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		744 M	55.7 M
Benzo(a)pyrene	<15 µg/kg	TM218		2430 M	194 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		616 M	56.5 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		296 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		720 M	64.6 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		382000	23900

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TPH CWG (S)

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tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH104	BH105	BH105	BH105	BH106	BH106
			Depth (m)	3.80	0.50	2.20	4.60	0.50	2.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	02/05/2012	03/05/2012	03/05/2012	03/05/2012	04/05/2012	04/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	05/05/2012	05/05/2012	05/05/2012	05/05/2012	05/05/2012	05/05/2012
			SDG Ref	120508-14	120508-14	120508-14	120508-14	120508-14	120508-14
			Lab Sample No.(s)	5551101	5551105	5551107	5551109	5551110	5551111
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		162	37	107	110	54	41
GRO >C5-C12	<44 µg/kg	TM089		83.8	471	<44	<44	449	25500
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
Benzene	<10 µg/kg	TM089		<10 M	<10 M	<10 M	<10 M	61.2 M	307 M
Toluene	<2 µg/kg	TM089		<2 M	5.2 M	<2 M	<2 M	6 M	19.4 M
Ethylbenzene	<3 µg/kg	TM089		<3 M	<3 M	<3 M	<3 M	19.2 M	382 M
m,p-Xylene	<6 µg/kg	TM089		<6 M	9.1 M	<6 M	<6 M	19.2 M	159 M
o-Xylene	<3 µg/kg	TM089		<3 M	<3 M	<3 M	<3 M	10.8 M	171 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9	9.1	<9	<9	30	330
sum of detected BTEX by GC	<24 µg/kg	TM089		<24	<24	<24	<24	116	1040
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	37.7	<10	<10	19.2	403
Aliphatics >C6-C8	<10 µg/kg	TM089		13.4	84.5	<10	<10	62.4	1280
Aliphatics >C8-C10	<10 µg/kg	TM089		17	65	<10	<10	79.2	3380
Aliphatics >C10-C12	<10 µg/kg	TM089		20.7	127	<10	<10	70.8	10300
Aliphatics >C12-C16	<100 µg/kg	TM173		6780	62900	12100	4660	56800	360000
Aliphatics >C16-C21	<100 µg/kg	TM173		4970	345000	5660	<100	159000	593000
Aliphatics >C21-C35	<100 µg/kg	TM173		<100	565000	2490	<100	472000	362000
Aliphatics >C35-C44	<100 µg/kg	TM173		<100	90900	<100	<100	113000	36000
Total Aliphatics >C12-C44	<100 µg/kg	TM173		11800	1060000	20300	4660	802000	1350000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	10.4	<10	<10	61.2	307
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	19.4
Aromatics >EC8-EC10	<10 µg/kg	TM089		12.2	57.2	<10	<10	102	2970
Aromatics >EC10-EC12	<10 µg/kg	TM089		13.4	84.5	<10	<10	46.8	6870
Aromatics >EC12-EC16	<100 µg/kg	TM173		11900	44400	29400	11300	74100	78300
Aromatics >EC16-EC21	<100 µg/kg	TM173		3150	147000	4710	2530	173000	106000
Aromatics >EC21-EC35	<100 µg/kg	TM173		<100	375000	11100	<100	534000	90000
Aromatics >EC35-EC44	<100 µg/kg	TM173		<100	89600	1270	<100	174000	20000
Aromatics >EC40-EC44	<100 µg/kg	TM173		<100	28300	<100	<100	56600	6470
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		15100	657000	46500	13800	956000	295000
Total Aliphatics >C5-35	<100 µg/kg	TM173		11800	974000	20300	4670	689000	1330000
Total Aromatics >C5-35	<100 µg/kg	TM173		15100	567000	45200	13800	782000	285000
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173		26900	1540000	65500	18500	1470000	1620000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		26900	1720000	66700	18500	1760000	1670000

CERTIFICATE OF ANALYSIS

SDG:	120508-14	**Location:**	Banbury	**Order Number:**	66804
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181178
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH106	BH106
			Depth (m)	4.70	5.70
			Sample Type	Soil/Solid	Soil/Solid
			Date Sampled	04/05/2012	04/05/2012
			Sample Time	.	.
			Date Received	05/05/2012	05/05/2012
			SDG Ref	120508-14	120508-14
			Lab Sample No.(s)	5551114	5551115
			AGS Reference		
GRO Surrogate % recovery**	%	TM089		105	107
GRO >C5-C12	<44 µg/kg	TM089		220000	26100
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<50 #	<50 #
Benzene	<10 µg/kg	TM089		6280 M	6820 M
Toluene	<2 µg/kg	TM089		2310 M	427 M
Ethylbenzene	<3 µg/kg	TM089		13000 M	2250 M
m,p-Xylene	<6 µg/kg	TM089		13800 M	2300 M
o-Xylene	<3 µg/kg	TM089		7150 M	1150 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089		21000	3450
sum of detected BTEX by GC	<24 µg/kg	TM089		42600	12900
Aliphatics >C5-C6	<10 µg/kg	TM089		<100	<100
Aliphatics >C6-C8	<10 µg/kg	TM089		675	373
Aliphatics >C8-C10	<10 µg/kg	TM089		26900	2380
Aliphatics >C10-C12	<10 µg/kg	TM089		79000	5290
Aliphatics >C12-C16	<100 µg/kg	TM173		197000	24300
Aliphatics >C16-C21	<100 µg/kg	TM173		292000	12300
Aliphatics >C21-C35	<100 µg/kg	TM173		95600	16100
Aliphatics >C35-C44	<100 µg/kg	TM173		4830	923
Total Aliphatics >C12-C44	<100 µg/kg	TM173		589000	53600
Aromatics >EC5-EC7	<10 µg/kg	TM089		6280	6820
Aromatics >EC7-EC8	<10 µg/kg	TM089		2310	427
Aromatics >EC8-EC10	<10 µg/kg	TM089		51900	7280
Aromatics >EC10-EC12	<10 µg/kg	TM089		52700	3520
Aromatics >EC12-EC16	<100 µg/kg	TM173		166000	48600
Aromatics >EC16-EC21	<100 µg/kg	TM173		188000	36200
Aromatics >EC21-EC35	<100 µg/kg	TM173		110000	25200
Aromatics >EC35-EC44	<100 µg/kg	TM173		20300	6650
Aromatics >EC40-EC44	<100 µg/kg	TM173		6620	2040
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		484000	117000
Total Aliphatics >C5-35	<100 µg/kg	TM173		691000	60800
Total Aromatics >C5-35	<100 µg/kg	TM173		577000	128000
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173		1270000	189000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		1290000	196000

CERTIFICATE OF ANALYSIS

SDG:	120508-14	**Location:**	Banbury	**Order Number:**	66804
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181178
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids		
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer		

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

CERTIFICATE OF ANALYSIS

SDG:	120508-14	**Location:**	Banbury	**Order Number:**	66804
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181178
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	5551101	5551105	5551107	5551109	5551110	5551111	5551114	5551115
Customer Sample Ref.	BH104	BH105	BH105	BH105	BH106	BH106	BH106	BH106
AGS Ref.								
Depth	3.80	0.50	2.20	4.60	0.50	2.30	4.70	5.70
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Ammonium Soil by Titration	10-May-2012	11-May-2012	11-May-2012	11-May-2012	10-May-2012	11-May-2012	11-May-2012	11-May-2012
Boron Water Soluble	15-May-2012	11-May-2012	11-May-2012	11-May-2012	11-May-2012	11-May-2012	11-May-2012	15-May-2012
Cyanide Comp/Free/Total/Thiocyanate	14-May-2012	14-May-2012	14-May-2012	14-May-2012	14-May-2012	14-May-2012	14-May-2012	14-May-2012
EPH CWG (Aliphatic) GC (S)	15-May-2012	15-May-2012	15-May-2012	15-May-2012	15-May-2012	15-May-2012	15-May-2012	15-May-2012
EPH CWG (Aromatic) GC (S)	15-May-2012	15-May-2012	15-May-2012	15-May-2012	15-May-2012	15-May-2012	15-May-2012	15-May-2012
GRO by GC-FID (S)	16-May-2012	16-May-2012	15-May-2012	15-May-2012	16-May-2012	16-May-2012	16-May-2012	16-May-2012
Metals by iCap-OES (Soil)	14-May-2012	11-May-2012	14-May-2012	14-May-2012	14-May-2012	14-May-2012	14-May-2012	11-May-2012
PAH by GCMS	14-May-2012	14-May-2012	14-May-2012	14-May-2012	14-May-2012	14-May-2012	15-May-2012	14-May-2012
Phenols by HPLC (S)	15-May-2012	15-May-2012	15-May-2012	15-May-2012	15-May-2012	14-May-2012	14-May-2012	14-May-2012
Sample description	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012	09-May-2012
Total Organic Carbon	14-May-2012	14-May-2012	14-May-2012	14-May-2012	14-May-2012	14-May-2012	14-May-2012	14-May-2012
TPH CWG GC (S)	16-May-2012	16-May-2012	15-May-2012	15-May-2012	16-May-2012	16-May-2012	16-May-2012	16-May-2012

SDG:	120508-14	**Location:**	Banbury	**Order Number:**	66804
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181178
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Appendix

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

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

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

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

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

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

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

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

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

11. Results relate only to the items tested.

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

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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

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

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

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

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

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

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

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

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

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

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D&C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB AROCLOR 1254 / PCB CON	D&C	HEXANE:ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE:ACETONE	MICROWAVE TM218.	GC-MS
>C6-C40	WET	HEXANE:ACETONE	SHAKER	GC-FID
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE:ACETONE	SHAKER	GC-FID
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB AROCLOR 1254	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PESTOCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	ACETONE	SOLID PHASE EXTRACTION	GC MS
TPH by INFRARED (IR)	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
MINERAL OIL by IR	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
GLYCOLS	NONE	DIRECT INJECTION	GC FID

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

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

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

ALcontrol Laboratories

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RG7 4TY

Attention: Neil Hopkins

CERTIFICATE OF ANALYSIS

Date:	13 June 2012
Customer:	H_CELTIC_REA
Sample Delivery Group (SDG):	120517-60
Your Reference:	C1526
Location:	Banbury
Report No:	184051

We received 23 samples on Wednesday May 16, 2012 and 14 of these samples were scheduled for analysis which was completed on Wednesday June 13, 2012. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	120517-60	**Location:**	Banbury	**Order Number:**	66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
5596282	NO ID			
5596254	TP102		0.40	14/05/2012
5596255	TP102		1.20	14/05/2012
5596257	TP103		0.30	14/05/2012
5596258	TP103		1.60	14/05/2012
5596259	TP103		2.20	14/05/2012
5596260	TP104		0.20	14/05/2012
5596262	TP104		0.60	14/05/2012
5596263	TP104		2.00	14/05/2012
5596264	TP105		0.30	14/05/2012
5596265	TP105		1.00	14/05/2012
5596266	TP105		2.20	14/05/2012
5596268	TP106		0.20	15/05/2012
5596269	TP106		2.00	15/05/2012
5596270	TP107		0.30	15/05/2012
5596271	TP107		0.50	15/05/2012
5596273	TP107		1.30	15/05/2012
5596274	TP107		2.60	15/05/2012
5596276	TP107		3.20	15/05/2012
5596277	TP107		3.50	15/05/2012
5596279	TP108		1.20	15/05/2012
5596280	TP108		1.80	15/05/2012
5596281	TP108		2.50	15/05/2012

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

CERTIFICATE OF ANALYSIS

SDG:	120517-60	**Location:**	Banbury	**Order Number:**	66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
Ammonium Soil by Titration	All	NDPs: 0 Tests: 11	5596254	TP102		0.40	1kg TUB
			5596255	TP102		1.20	1kg TUB
			5596257	TP103		0.30	400g Tub (ALE214)
			5596258	TP103		1.60	250g Amber Jar (AL
			5596260	TP104		0.20	400g Tub (ALE214)
			5596262	TP104		0.60	400g Tub (ALE214)
			5596264	TP105		0.30	250g Amber Jar (AL
			5596268	TP106		0.20	400g Tub (ALE214)
			5596269	TP106		2.00	60g VOC (ALE215)
			5596271	TP107		0.50	250g Amber Jar (AL
			5596273	TP107		1.30	400g Tub (ALE214)
			5596277	TP107		3.50	60g VOC (ALE215)
			5596279	TP108		1.20	250g Amber Jar (AL
			5596280	TP108		1.80	400g Tub (ALE214)
							60g VOC (ALE215)
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 6	5596254	TP102		0.40	1kg TUB
			5596257	TP103		0.30	400g Tub (ALE214)
			5596260	TP104		0.20	400g Tub (ALE214)
			5596264	TP105		0.30	400g Tub (ALE214)
			5596268	TP106		0.20	400g Tub (ALE214)
			5596271	TP107		0.50	400g Tub (ALE214)
Asbestos Quantification - Full	All	NDPs: 0 Tests: 3	5596254	TP102		0.40	1kg TUB
			5596257	TP103		0.30	400g Tub (ALE214)
			5596268	TP106		0.20	400g Tub (ALE214)
Boron Water Soluble	All	NDPs: 0 Tests: 11	5596254	TP102		0.40	1kg TUB
			5596255	TP102		1.20	1kg TUB
			5596257	TP103		0.30	400g Tub (ALE214)
			5596258	TP103		1.60	250g Amber Jar (AL
			5596260	TP104		0.20	400g Tub (ALE214)
			5596262	TP104		0.60	400g Tub (ALE214)
			5596264	TP105		0.30	250g Amber Jar (AL
			5596268	TP106		0.20	400g Tub (ALE214)
			5596269	TP106		2.00	60g VOC (ALE215)
			5596271	TP107		0.50	250g Amber Jar (AL
			5596273	TP107		1.30	400g Tub (ALE214)
			5596277	TP107		3.50	60g VOC (ALE215)
			5596279	TP108		1.20	250g Amber Jar (AL
			5596280	TP108		1.80	400g Tub (ALE214)
							60g VOC (ALE215)
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 11	5596254	TP102		0.40	1kg TUB
			5596255	TP102		1.20	1kg TUB
			5596257	TP103		0.30	400g Tub (ALE214)
			5596258	TP103		1.60	250g Amber Jar (AL
			5596260	TP104		0.20	400g Tub (ALE214)
			5596262	TP104		0.60	400g Tub (ALE214)
			5596264	TP105		0.30	250g Amber Jar (AL
			5596268	TP106		0.20	400g Tub (ALE214)
			5596269	TP106		2.00	60g VOC (ALE215)
			5596271	TP107		0.50	250g Amber Jar (AL
			5596273	TP107		1.30	400g Tub (ALE214)
			5596277	TP107		3.50	60g VOC (ALE215)
			5596279	TP108		1.20	250g Amber Jar (AL
			5596280	TP108		1.80	400g Tub (ALE214)
							60g VOC (ALE215)
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 11	5596254	TP102		0.40	1kg TUB
			5596255	TP102		1.20	1kg TUB
			5596257	TP103		0.30	400g Tub (ALE214)
			5596258	TP103		1.60	250g Amber Jar (AL
			5596260	TP104		0.20	400g Tub (ALE214)
			5596262	TP104		0.60	400g Tub (ALE214)
			5596264	TP105		0.30	250g Amber Jar (AL
			5596268	TP106		0.20	400g Tub (ALE214)
			5596269	TP106		2.00	60g VOC (ALE215)
			5596271	TP107		0.50	250g Amber Jar (AL
			5596273	TP107		1.30	400g Tub (ALE214)
			5596277	TP107		3.50	60g VOC (ALE215)
			5596279	TP108		1.20	250g Amber Jar (AL
			5596280	TP108		1.80	400g Tub (ALE214)
							60g VOC (ALE215)
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 11	5596254	TP102		0.40	1kg TUB
			5596255	TP102		1.20	1kg TUB
			5596257	TP103		0.30	400g Tub (ALE214)
			5596258	TP103		1.60	250g Amber Jar (AL
			5596260	TP104		0.20	400g Tub (ALE214)
			5596262	TP104		0.60	400g Tub (ALE214)
			5596264	TP105		0.30	250g Amber Jar (AL
			5596268	TP106		0.20	400g Tub (ALE214)
			5596269	TP106		2.00	60g VOC (ALE215)
			5596271	TP107		0.50	250g Amber Jar (AL
			5596273	TP107		1.30	400g Tub (ALE214)
			5596277	TP107		3.50	60g VOC (ALE215)
			5596279	TP108		1.20	250g Amber Jar (AL
			5596280	TP108		1.80	400g Tub (ALE214)
							60g VOC (ALE215)
GRO by GC-FID (S)	All	NDPs: 0 Tests: 11	5596254	TP102		0.40	1kg TUB
			5596255	TP102		1.20	1kg TUB
			5596257	TP103		0.30	400g Tub (ALE214)
			5596258	TP103		1.60	250g Amber Jar (AL
			5596260	TP104		0.20	400g Tub (ALE214)
			5596262	TP104		0.60	400g Tub (ALE214)
			5596264	TP105		0.30	250g Amber Jar (AL
			5596268	TP106		0.20	400g Tub (ALE214)
			5596269	TP106		2.00	60g VOC (ALE215)
			5596271	TP107		0.50	250g Amber Jar (AL
			5596273	TP107		1.30	400g Tub (ALE214)
			5596277	TP107		3.50	60g VOC (ALE215)
			5596279	TP108		1.20	250g Amber Jar (AL
			5596280	TP108		1.80	400g Tub (ALE214)
							60g VOC (ALE215)
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 11	5596254	TP102		0.40	1kg TUB
			5596255	TP102		1.20	1kg TUB
			5596257	TP103		0.30	400g Tub (ALE214)
			5596258	TP103		1.60	250g Amber Jar (AL
			5596260	TP104		0.20	400g Tub (ALE214)
			5596262	TP104		0.60	400g Tub (ALE214)
			5596264	TP105		0.30	250g Amber Jar (AL
			5596268	TP106		0.20	400g Tub (ALE214)
			5596269	TP106		2.00	60g VOC (ALE215)
			5596271	TP107		0.50	250g Amber Jar (AL
			5596273	TP107		1.30	400g Tub (ALE214)
			5596277	TP107		3.50	60g VOC (ALE215)
			5596279	TP108		1.20	250g Amber Jar (AL
			5596280	TP108		1.80	400g Tub (ALE214)
							60g VOC (ALE215)
	Cadmium	NDPs: 0 Tests: 11	5596254	TP102		0.40	1kg TUB
			5596255	TP102		1.20	1kg TUB
			5596257	TP103		0.30	400g Tub (ALE214)
			5596258	TP103		1.60	250g Amber Jar (AL
			5596260	TP104		0.20	400g Tub (ALE214)
			5596262	TP104		0.60	400g Tub (ALE214)
			5596264	TP105		0.30	250g Amber Jar (AL
			5596268	TP106		0.20	400g Tub (ALE214)
			5596269	TP106		2.00	60g VOC (ALE215)
			5596271	TP107		0.50	250g Amber Jar (AL
			5596273	TP107		1.30	400g Tub (ALE214)
			5596277	TP107		3.50	60g VOC (ALE215)
			5596279	TP108		1.20	250g Amber Jar (AL
			5596280	TP108		1.80	400g Tub (ALE214)
							60g VOC (ALE215)
	Chromium	NDPs: 0 Tests: 11	5596254	TP102		0.40	1kg TUB
			5596255	TP102		1.20	1kg TUB
			5596257	TP103		0.30	400g Tub (ALE214)
			5596258	TP103		1.60	250g Amber Jar (AL
			5596260	TP104		0.20	400g Tub (ALE214)
			5596262	TP104		0.60	400g Tub (ALE214)
			5596264	TP105		0.30	250g Amber Jar (AL
			5596268	TP106		0.20	400g Tub (ALE214)
			5596269	TP106		2.00	60g VOC (ALE215)
			5596271	TP107		0.50	250g Amber Jar (AL
			5596273	TP107		1.30	400g Tub (ALE214)
			5596277	TP107		3.50	60g VOC (ALE215)
			5596279	TP108		1.20	250g Amber Jar (AL
			5596280	TP108		1.80	400g Tub (ALE214)
							60g VOC (ALE215)
	Copper	NDPs: 0 Tests: 11	5596254	TP102		0.40	1kg TUB
			5596255	TP102		1.20	1kg TUB
			5596257	TP103		0.30	400g Tub (ALE214)
			5596258	TP103		1.60	250g Amber Jar (AL
			5596260	TP104		0.20	400g Tub (ALE214)
			5596262	TP104		0.60	400g Tub (ALE214)
			5596264	TP105		0.30	250g Amber Jar (AL
			5596268	TP106		0.20	400g Tub (ALE214)
			5596269	TP106		2.00	60g VOC (ALE215)
			5596271	TP107		0.50	250g Amber Jar (AL
			5596273	TP107		1.30	400g Tub (ALE214)
			5596277	TP107		3.50	60g VOC (ALE215)
			5596279	TP108		1.20	250g Amber Jar (AL
			5596280	TP108		1.80	400g Tub (ALE214)
							60g VOC (ALE215)
	Lead	NDPs: 0 Tests: 11	5596254	TP102		0.40	1kg TUB
			5596255	TP102		1.20	1kg TUB
			5596257	TP103		0.30	400g Tub (ALE214)
			5596258	TP103		1.60	250g Amber Jar (AL
			5596260	TP104		0.20	400g Tub (ALE214)
			5596262	TP104		0.60	400g Tub (ALE214)
			5596264	TP105		0.30	250g Amber Jar (AL
			5596268	TP106		0.20	400g Tub (ALE214)
			5596269	TP106		2.00	60g VOC (ALE215)
			5596271	TP107		0.50	250g Amber Jar (AL
			5596273	TP107		1.30	400g Tub (ALE214)
			5596277	TP107		3.50	60g VOC (ALE215)
			5596279	TP108		1.20	250g Amber Jar (AL
			5596280	TP108		1.80	400g Tub (ALE214)
							60g VOC (ALE215)
	Mercury	NDPs: 0 Tests: 11	5596254	TP102		0.40	1kg TUB
			5596255	TP102		1.20	1kg TUB
			5596257	TP103		0.30	400g Tub (ALE214)
			5596258	TP103		1.60	250g Amber Jar (AL
			5596260	TP104		0.20	400g Tub (ALE214)
			5596262	TP104		0.60	400g Tub (ALE214)
			5596264	TP105		0.30	250g Amber Jar (AL
			5596268	TP106		0.20	400g Tub (ALE214)
			5596269	TP106		2.00	60g VOC (ALE215)
			5596271	TP107		0.50	250g Amber Jar (AL
			5596273	TP107		1.30	400g Tub (ALE214)
			5596277	TP107		3.50	60g VOC (ALE215)
			5596279	TP108		1.20	250g Amber Jar (AL
			5596280	TP108		1.80	400g Tub (ALE214)
							60g VOC (ALE215)
	Nickel	NDPs: 0 Tests: 11	5596254	TP102		0.40	1kg TUB
			5596255	TP102		1.20	1kg TUB
			5596257	TP103		0.30	400g Tub (ALE214)
			5596258	TP103		1.60	250g Amber Jar (AL
			5596260	TP104		0.20	400g Tub (ALE214)
			5596262	TP104		0.60	400g Tub (ALE214)
			5596264	TP105		0.30	250g Amber Jar (AL
			5596268	TP106		0.20	400g Tub (ALE214)
			5596269	TP106		2.00	60g VOC (ALE215)
			5596271	TP107		0.50	250g Amber Jar (AL
			5596273	TP107		1.30	400g Tub (ALE214)
			5596277	TP107		3.50	60g VOC (ALE215)
			5596279	TP108		1.20	250g Amber Jar (AL
			5596280	TP108		1.80	400g Tub (ALE214)
							60g VOC (ALE215)

SDG:	120517-60	**Location:**	Banbury	**Order Number:** 66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:** 184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**

SOLID

Results Legend

- **X** – Test
- **N** – No Determination Possible

	Lab Sample No(s)		5596254	5596255	5596257			5596258	5596260			5596262			5596264			5596268			5596269	5596271			5596273			5596277			5596279			5596280
	Customer Sample Reference		TP102	TP102	TP103			TP103	TP104			TP104			TP105			TP106			TP106	TP107			TP107			TP107			TP108			TP108
	AGS Reference																																	
	Depth (m)		0.40	1.20	0.30			1.60	0.20			0.60			0.30			0.20			2.00	0.50			1.30			3.50			1.20			1.80
	Container		1kg TUB	1kg TUB	400g Tub (ALE214)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	400g Tub (ALE214)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	400g Tub (ALE214)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)
Metals by iCap-OES (Soil)	Selenium	NDPs: 0 Tests: 11	X	X		X				X			X			X			X				X			X			X			X		
	Zinc	NDPs: 0 Tests: 11	X	X		X				X			X			X			X				X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 11	X	X		X				X			X			X			X				X			X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 11	X	X			X				X			X			X			X				X			X			X			X	
Sample description	All	NDPs: 0 Tests: 11	X	X		X				X			X			X			X				X			X			X			X		
Total Organic Carbon	All	NDPs: 2 Tests: 9	N	X		X				X			X			N			X				X			X			X			X		
Total Organic Carbon (Asb)	All	NDPs: 0 Tests: 2	X													X																		
TPH CWG GC (S)	All	NDPs: 0 Tests: 11	X	X		X				X			X			X			X				X			X			X			X		

CERTIFICATE OF ANALYSIS

SDG:	120517-60	**Location:**	Banbury	**Order Number:**	66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
5596254	TP102	0.40	Dark Brown	Sand	0.1 - 2 mm	Glass & Stones	N/A
5596255	TP102	1.20	Dark Brown	Silty Sand	0.063 - 0.1 mm	Stones	N/A
5596258	TP103	1.60	Dark Brown	Silty Clay	0.063 - 0.1 mm	Stones	Vegetation
5596262	TP104	0.60	Light Brown	Clay	<0.063 mm	None	None
5596264	TP105	0.30	Light Brown	Sand	0.1 - 2 mm	Stones	None
5596268	TP106	0.20	Dark Brown	Loamy Sand	0.063 - 0.1 mm	Stones	N/A
5596269	TP106	2.00	Grey	Clay	<0.063 mm	N/A	N/A
5596273	TP107	1.30	Grey	Silty Clay	0.063 - 0.1 mm	N/A	N/A
5596277	TP107	3.50	Light Brown	Silty Sand	0.063 - 0.1 mm	N/A	Stones
5596279	TP108	1.20	Dark Brown	Clay	<0.063 mm	N/A	N/A
5596280	TP108	1.80	Dark Brown	Silty Clay	0.063 - 0.1 mm	N/A	N/A

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

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

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

CERTIFICATE OF ANALYSIS

SDG:	120517-60	**Location:**	Banbury	**Order Number:**	66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP102	TP102	TP103	TP104	TP105	TP106
			Depth (m)	0.40	1.20	1.60	0.60	0.30	0.20
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	14/05/2012	14/05/2012	14/05/2012	14/05/2012	14/05/2012	15/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	16/05/2012	16/05/2012	16/05/2012	16/05/2012	16/05/2012	16/05/2012
			SDG Ref	120517-60	120517-60	120517-60	120517-60	120517-60	120517-60
			Lab Sample No.(s)	5596254	5596255	5596258	5596262	5596264	5596268
			AGS Reference						
Ammoniacal Nitrogen as N	<15 mg/kg	TM024		<15	68.5	<15	<15	<15	<15
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	0.119 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Soil Organic Matter (SOM)	<0.35 %	TM132			67.9 #	8.6 #	1.36 #	<0.35 #	
Cyanide, Total	<1 mg/kg	TM153		1.22 M	152 M	5.4 M	<1 M	<1 M	2.54 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Arsenic	<0.6 mg/kg	TM181		25.3 M	29.4 M	47.5 M	21.7 M	20.1 M	41.9 M
Cadmium	<0.02 mg/kg	TM181		6.58 M	1.06 M	5.85 M	0.49 M	0.586 M	11.8 M
Chromium	<0.9 mg/kg	TM181		189 M	41.4 M	71.1 M	57.1 M	11.9 M	344 M
Copper	<1.4 mg/kg	TM181		427 M	70.2 M	449 M	27.8 M	9.06 M	751 M
Lead	<0.7 mg/kg	TM181		1050 M	206 M	7550 M	43.9 M	8.39 M	1580 M
Mercury	<0.14 mg/kg	TM181		2.21 M	<0.14 M	5.01 M	<0.14 M	<0.14 M	1.42 M
Nickel	<0.2 mg/kg	TM181		161 M	35.2 M	68.2 M	38.2 M	19.4 M	723 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<10 #
Zinc	<1.9 mg/kg	TM181		813 M	632 M	1520 M	112 M	89.8 M	4040 M
Boron, water soluble	<1 mg/kg	TM222		5.98 M	13.8 M	4.48 M	<1 M	<1 M	1.33 M
Soil Organic Matter (SOM)	<0.1 %	TM321		1.57 #					1.37 #

CERTIFICATE OF ANALYSIS

SDG:	120517-60	**Location:**	Banbury	**Order Number:**	66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP106	TP107	TP107	TP108	TP108
			Depth (m)	2.00	1.30	3.50	1.20	1.80
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	15/05/2012	15/05/2012	15/05/2012	15/05/2012	15/05/2012
			Sample Time	.	.	.	.	.
			Date Received	16/05/2012	16/05/2012	16/05/2012	16/05/2012	16/05/2012
			SDG Ref	120517-60	120517-60	120517-60	120517-60	120517-60
			Lab Sample No.(s)	5596269	5596273	5596277	5596279	5596280
			AGS Reference					
Ammoniacal Nitrogen as N	<15 mg/kg	TM024		44.6	1740	596	56.3	229
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	0.693 M	0.188 M	<0.035 M	<0.035 M
Soil Organic Matter (SOM)	<0.35 %	TM132		3.03 #	1.06 #	<0.35 #	1.48 #	3.71 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	34.6 M	14.4 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M
Arsenic	<0.6 mg/kg	TM181		13.8 M	13.4 M	71.8 M	14.3 M	20.1 M
Cadmium	<0.02 mg/kg	TM181		0.372 M	0.308 M	2.03 M	0.348 M	0.438 M
Chromium	<0.9 mg/kg	TM181		52 M	51.1 M	63.1 M	49.8 M	61.9 M
Copper	<1.4 mg/kg	TM181		31.4 M	23.6 M	17.2 M	21 M	15.2 M
Lead	<0.7 mg/kg	TM181		41.5 M	15 M	18.6 M	20.6 M	69.8 M
Mercury	<0.14 mg/kg	TM181		0.999 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		41.3 M	40.2 M	56.8 M	37.4 M	30.6 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<10 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		151 M	95.8 M	122 M	91.9 M	96.1 M
Boron, water soluble	<1 mg/kg	TM222		3.64 M	1.92 M	1.34 M	2.13 M	1.98 M

CERTIFICATE OF ANALYSIS

SDG:	120517-60	**Location:**	Banbury	**Order Number:**	66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP102	TP102	TP103	TP104	TP105	TP106
			Depth (m)	0.40	1.20	1.60	0.60	0.30	0.20
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	14/05/2012	14/05/2012	14/05/2012	14/05/2012	14/05/2012	15/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	16/05/2012	16/05/2012	16/05/2012	16/05/2012	16/05/2012	16/05/2012
			SDG Ref	120517-60	120517-60	120517-60	120517-60	120517-60	120517-60
			Lab Sample No.(s)	5596254	5596255	5596258	5596262	5596264	5596268
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		101	91.2	107	98.2	100	96
Acenaphthene-d10 % recovery**	%	TM218		102	93.2	106	97.3	101	95.3
Phenanthrene-d10 % recovery**	%	TM218		103	91.1	107	93.5	102	96.4
Chrysene-d12 % recovery**	%	TM218		91.9	86.1	107	88.3	85.8	96.1
Perylene-d12 % recovery**	%	TM218		92.8	84.5	116	89.2	86.6	101
Naphthalene	<9 µg/kg	TM218		144 M	11300 M	834 M	<9 M	<9 M	458 M
Acenaphthylene	<12 µg/kg	TM218		156 M	5370 M	1040 M	<12 M	<12 M	162 M
Acenaphthene	<8 µg/kg	TM218		18.8 M	2160 M	783 M	<8 M	<8 M	252 M
Fluorene	<10 µg/kg	TM218		25.7 M	6600 M	869 M	<10 M	<10 M	397 M
Phenanthrene	<15 µg/kg	TM218		432 M	22500 M	12700 M	<15 M	<15 M	6050 M
Anthracene	<16 µg/kg	TM218		192 M	8990 M	4010 M	<16 M	<16 M	2360 M
Fluoranthene	<17 µg/kg	TM218		1170 M	35900 M	28700 M	<17 M	<17 M	10200 M
Pyrene	<15 µg/kg	TM218		1110 M	30300 M	23900 M	<15 M	<15 M	7660 M
Benz(a)anthracene	<14 µg/kg	TM218		668 M	16900 M	14000 M	<14 M	<14 M	3950 M
Chrysene	<10 µg/kg	TM218		575 M	14900 M	10800 M	<10 M	<10 M	3260 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		1140 M	21200 M	18100 M	<15 M	<15 M	4240 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		373 M	7600 M	6370 M	<14 M	<14 M	1550 M
Benzo(a)pyrene	<15 µg/kg	TM218		774 M	17100 M	15000 M	<15 M	<15 M	3240 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		606 M	8470 M	8450 M	<18 M	<18 M	2040 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		149 M	2670 M	2310 M	<23 M	<23 M	560 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		726 M	9420 M	9480 M	<24 M	<24 M	2510 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		8250	221000	157000	<118	<118	48900

CERTIFICATE OF ANALYSIS

SDG:	120517-60	**Location:**	Banbury	**Order Number:**	66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP106	TP107	TP107	TP108	TP108
			Depth (m)	2.00	1.30	3.50	1.20	1.80
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	15/05/2012	15/05/2012	15/05/2012	15/05/2012	15/05/2012
			Sample Time	.	.	.	.	.
			Date Received	16/05/2012	16/05/2012	16/05/2012	16/05/2012	16/05/2012
			SDG Ref	120517-60	120517-60	120517-60	120517-60	120517-60
			Lab Sample No.(s)	5596269	5596273	5596277	5596279	5596280
			AGS Reference					
Naphthalene-d8 % recovery**	%	TM218		108	102	102	95.2	96.4
Acenaphthene-d10 % recovery**	%	TM218		111	101	104	94.7	95.1
Phenanthrene-d10 % recovery**	%	TM218		107	102	104	92.5	92.1
Chrysene-d12 % recovery**	%	TM218		104	90.1	98.8	91.4	91
Perylene-d12 % recovery**	%	TM218		102	90.4	107	96.9	96.9
Naphthalene	<9 µg/kg	TM218		367 M	504 M	294 M	107 M	87.8 M
Acenaphthylene	<12 µg/kg	TM218		37.4 M	26.1 M	36.3 M	17.3 M	<12 M
Acenaphthene	<8 µg/kg	TM218		216 M	80.6 M	16.5 M	72 M	<8 M
Fluorene	<10 µg/kg	TM218		91.5 M	69.5 M	25.8 M	51.4 M	<10 M
Phenanthrene	<15 µg/kg	TM218		164 M	170 M	69.5 M	80.4 M	<15 M
Anthracene	<16 µg/kg	TM218		156 M	57.1 M	<16 M	26.5 M	<16 M
Fluoranthene	<17 µg/kg	TM218		119 M	43.4 M	30.8 M	35.1 M	<17 M
Pyrene	<15 µg/kg	TM218		139 M	29.7 M	23.5 M	26.3 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218		43.8 M	<14 M	17.7 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218		39.5 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		51.4 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		18.5 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218		35.7 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		24.7 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		33.2 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		1540	980	514	416	<118

CERTIFICATE OF ANALYSIS

SDG:	120517-60	**Location:**	Banbury	**Order Number:**	66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP102	TP102	TP103	TP104	TP105	TP106
			Depth (m)	0.40	1.20	1.60	0.60	0.30	0.20
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	14/05/2012	14/05/2012	14/05/2012	14/05/2012	14/05/2012	15/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	16/05/2012	16/05/2012	16/05/2012	16/05/2012	16/05/2012	16/05/2012
			SDG Ref	120517-60	120517-60	120517-60	120517-60	120517-60	120517-60
			Lab Sample No.(s)	5596254	5596255	5596258	5596262	5596264	5596268
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		83	42	45	95	126	45
GRO >C5-C12	<44 µg/kg	TM089		<44	4030	<44	80.6	<44	<44
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
Benzene	<10 µg/kg	TM089		<10 M	77.9 M	<10 M	<10 M	<10 M	<10 M
Toluene	<2 µg/kg	TM089		<2 M	35.6 M	<2 M	<2 M	<2 M	<2 M
Ethylbenzene	<3 µg/kg	TM089		<3 M	33 M	<3 M	<3 M	<3 M	<3 M
m,p-Xylene	<6 µg/kg	TM089		<6 M	51.5 M	<6 M	<6 M	<6 M	<6 M
o-Xylene	<3 µg/kg	TM089		<3 M	43.6 M	3.93 M	<3 M	<3 M	<3 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9	95.1	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089		<24	242	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	67.3	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	202	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	615	<10	11.3	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	1500	<10	31.5	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173		6070	53100	15600	<100	15700	15500
Aliphatics >C16-C21	<100 µg/kg	TM173		36300	135000	100000	<100	<100	91900
Aliphatics >C21-C35	<100 µg/kg	TM173		342000	644000	536000	<100	<100	504000
Aliphatics >C35-C44	<100 µg/kg	TM173		105000	155000	148000	<100	<100	149000
Total Aliphatics >C12-C44	<100 µg/kg	TM173		489000	987000	800000	<100	15700	761000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	77.9	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	35.6	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	539	11.8	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	999	<10	21.4	<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		3010	135000	14800	7310	14500	6510
Aromatics >EC16-EC21	<100 µg/kg	TM173		18900	541000	138000	5590	2400	35200
Aromatics >EC21-EC35	<100 µg/kg	TM173		159000	1040000	525000	12100	<100	238000
Aromatics >EC35-EC44	<100 µg/kg	TM173		109000	177000	184000	1650	<100	142000
Aromatics >EC40-EC44	<100 µg/kg	TM173		62900	54500	64100	<100	<100	77300
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		289000	1900000	862000	26600	16900	421000
Total Aliphatics >C5-35	<100 µg/kg	TM173		384000	835000	652000	<100	15700	612000
Total Aromatics >C5-35	<100 µg/kg	TM173		181000	1720000	678000	25000	16900	279000
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173		565000	2560000	1330000	25000	32600	891000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		779000	2890000	1660000	26600	32600	1180000

CERTIFICATE OF ANALYSIS

SDG:	120517-60	**Location:**	Banbury	**Order Number:**	66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP106	TP107	TP107	TP108	TP108
			Depth (m)	2.00	1.30	3.50	1.20	1.80
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	15/05/2012	15/05/2012	15/05/2012	15/05/2012	15/05/2012
			Sample Time	.	.	.	.	.
			Date Received	16/05/2012	16/05/2012	16/05/2012	16/05/2012	16/05/2012
			SDG Ref	120517-60	120517-60	120517-60	120517-60	120517-60
			Lab Sample No.(s)	5596269	5596273	5596277	5596279	5596280
			AGS Reference					
GRO Surrogate % recovery**	%	TM089		90	121	145	118	107
GRO >C5-C12	<44 µg/kg	TM089		2490	384	123	422	143
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 #	<5 #	<5 #	<5 #	<5 #
Benzene	<10 µg/kg	TM089		<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<2 µg/kg	TM089		<2 M	<2 M	<2 M	<2 M	<2 M
Ethylbenzene	<3 µg/kg	TM089		<3 M	<3 M	<3 M	<3 M	<3 M
m,p-Xylene	<6 µg/kg	TM089		<6 M	<6 M	<6 M	<6 M	<6 M
o-Xylene	<3 µg/kg	TM089		<3 M	6.3 M	<3 M	<3 M	<3 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089		<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089		10.5	<10	<10	<10	13.1
Aliphatics >C6-C8	<10 µg/kg	TM089		44.5	13.9	<10	21	26.3
Aliphatics >C8-C10	<10 µg/kg	TM089		253	44.1	25	70.7	35
Aliphatics >C10-C12	<10 µg/kg	TM089		1200	165	40	160	26.3
Aliphatics >C12-C16	<100 µg/kg	TM173		127000	17900	18600	21500	15600
Aliphatics >C16-C21	<100 µg/kg	TM173		302000	12500	25000	41800	38300
Aliphatics >C21-C35	<100 µg/kg	TM173		281000	10700	16200	48400	40000
Aliphatics >C35-C44	<100 µg/kg	TM173		52800	<100	<100	7080	3800
Total Aliphatics >C12-C44	<100 µg/kg	TM173		763000	41100	59900	119000	97700
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		169	42.8	20	53.7	24.8
Aromatics >EC10-EC12	<10 µg/kg	TM089		803	110	26.3	106	17.5
Aromatics >EC12-EC16	<100 µg/kg	TM173		3200000	286000	148000	811000	668000
Aromatics >EC16-EC21	<100 µg/kg	TM173		1400000	12500	16400	303000	242000
Aromatics >EC21-EC35	<100 µg/kg	TM173		785000	<100	2810	204000	187000
Aromatics >EC35-EC44	<100 µg/kg	TM173		104000	<100	<100	50200	43800
Aromatics >EC40-EC44	<100 µg/kg	TM173		26700	<100	<100	16300	14100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		5480000	299000	167000	1370000	1140000
Total Aliphatics >C5-35	<100 µg/kg	TM173		711000	41300	60000	112000	94000
Total Aromatics >C5-35	<100 µg/kg	TM173		5380000	299000	167000	1320000	1100000
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173		6090000	340000	227000	1430000	1190000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		6250000	340000	227000	1490000	1240000

CERTIFICATE OF ANALYSIS

SDG:	120517-60	**Location:**	Banbury	**Order Number:**	66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP102 0.40 SOLID 14/05/2012 00:00:00 120517-60 5596254 TM048	22/05/12	Martin Cotterell	loose fibres in soil	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP103 0.30 SOLID 14/05/2012 00:00:00 120517-60 5596257 TM048	22/05/12	Martin Cotterell	loose fibres in soil	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP104 0.20 SOLID 14/05/2012 00:00:00 120517-60 5596260 TM048	22/05/12	Martin Cotterell	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP105 0.30 SOLID 14/05/2012 00:00:00 120517-60 5596264 TM048	22/05/12	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP106 0.20 SOLID 15/05/2012 00:00:00 120517-60 5596268 TM048	22/05/12	Martin Cotterell	loose fibres and ACM debris in soil	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	120517-60	**Location:**	Banbury	**Order Number:**	66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP107 0.50 SOLID 15/05/2012 00:00:00 120517-60 5596271 TM048	22/05/12	Martin Cotterell	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Asbestos Quantification - Full

		Additional Asbestos Components (Using TM048)	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation - %	Asbestos Quantification - Total - %
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP102 0.40 SOLID 14/05/2012 00:00:00 120517-60 5596254 TM 304	- (#)	-	0.0039 (#)	<0.001 (#)	0.0047 (#)
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP103 0.30 SOLID 14/05/2012 00:00:00 120517-60 5596257 TM 304	- (#)	some loose fibres found during gravimetric analysis but to small/few to acurately wiegh	<0.001 (#)	0.0014 (#)	0.0014 (#)
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP106 0.20 SOLID 15/05/2012 00:00:00 120517-60 5596268 TM 304	- (#)	-	0.0112 (#)	0.0014 (#)	0.0126 (#)

CERTIFICATE OF ANALYSIS

SDG:	120517-60	**Location:**	Banbury	**Order Number:**	66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Notification of NDPs (No determination possible)

Date Received : 17/05/2012 11:41:55

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
5596254	TP102	0.40	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos
5596268	TP106	0.20	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos

CERTIFICATE OF ANALYSIS

SDG:	120517-60	**Location:**	Banbury	**Order Number:**	66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM 304				
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer		
TM321		Organic matter Content of Soil By Titration		

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

CERTIFICATE OF ANALYSIS

SDG:	120517-60	**Location:**	Banbury	**Order Number:**	66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	5596254	5596255	5596257	5596258	5596260	5596262	5596264	5596268	5596269	5596271
Customer Sample Ref.	TP102	TP102	TP103	TP103	TP104	TP104	TP105	TP106	TP106	TP107
AGS Ref.										
Depth	0.40	1.20	0.30	1.60	0.20	0.60	0.30	0.20	2.00	0.50
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Ammonium Soil by Titration	24-May-2012	22-May-2012		24-May-2012		24-May-2012	24-May-2012	24-May-2012	22-May-2012	
Asbestos Identification (Soil)	22-May-2012		22-May-2012		22-May-2012		22-May-2012	22-May-2012		22-May-2012
Asbestos Quantification - Full	13-Jun-2012		13-Jun-2012					13-Jun-2012		
Boron Water Soluble	25-May-2012	21-May-2012		25-May-2012		25-May-2012	25-May-2012	25-May-2012	22-May-2012	
Cyanide Comp/Free/Total/Thiocyanate	24-May-2012	22-May-2012		24-May-2012		24-May-2012	24-May-2012	25-May-2012	23-May-2012	
EPH CWG (Aliphatic) GC (S)	28-May-2012	22-May-2012		28-May-2012		28-May-2012	28-May-2012	28-May-2012	23-May-2012	
EPH CWG (Aromatic) GC (S)	28-May-2012	22-May-2012		28-May-2012		28-May-2012	28-May-2012	28-May-2012	23-May-2012	
GRO by GC-FID (S)	28-May-2012	23-May-2012		25-May-2012		27-May-2012	25-May-2012	25-May-2012	23-May-2012	
Metals by iCap-OES (Soil)	25-May-2012	22-May-2012		28-May-2012		25-May-2012	25-May-2012	28-May-2012	22-May-2012	
PAH by GCMS	25-May-2012	24-May-2012		25-May-2012		24-May-2012	25-May-2012	25-May-2012	23-May-2012	
Phenols by HPLC (S)	26-May-2012	24-May-2012		26-May-2012		26-May-2012	26-May-2012	26-May-2012	24-May-2012	
Sample description	23-May-2012	19-May-2012		23-May-2012		22-May-2012	23-May-2012	23-May-2012	19-May-2012	
Total Organic Carbon		23-May-2012		25-May-2012		25-May-2012	25-May-2012		23-May-2012	
Total Organic Carbon (Asb)	28-May-2012							28-May-2012		
TPH CWG GC (S)	28-May-2012	23-May-2012		28-May-2012		28-May-2012	28-May-2012	28-May-2012	23-May-2012	

Lab Sample No(s)	5596273	5596277	5596279	5596280
Customer Sample Ref.	TP107	TP107	TP108	TP108
AGS Ref.				
Depth	1.30	3.50	1.20	1.80
Type	SOLID	SOLID	SOLID	SOLID
Ammonium Soil by Titration	24-May-2012	22-May-2012	22-May-2012	22-May-2012
Boron Water Soluble	22-May-2012	22-May-2012	22-May-2012	22-May-2012
Cyanide Comp/Free/Total/Thiocyanate	22-May-2012	23-May-2012	22-May-2012	22-May-2012
EPH CWG (Aliphatic) GC (S)	23-May-2012	23-May-2012	23-May-2012	23-May-2012
EPH CWG (Aromatic) GC (S)	23-May-2012	23-May-2012	23-May-2012	23-May-2012
GRO by GC-FID (S)	23-May-2012	22-May-2012	22-May-2012	22-May-2012
Metals by iCap-OES (Soil)	23-May-2012	23-May-2012	23-May-2012	23-May-2012
PAH by GCMS	22-May-2012	23-May-2012	22-May-2012	22-May-2012
Phenols by HPLC (S)	24-May-2012	24-May-2012	24-May-2012	24-May-2012
Sample description	19-May-2012	19-May-2012	19-May-2012	19-May-2012
Total Organic Carbon	23-May-2012	23-May-2012	23-May-2012	23-May-2012
TPH CWG GC (S)	23-May-2012	23-May-2012	23-May-2012	23-May-2012

SDG:	120517-60	**Location:**	Banbury	**Order Number:**	66137
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184051
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Appendix

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

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

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

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

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

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

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

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

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

11. Results relate only to the items tested.

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

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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

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

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

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

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

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

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

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

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

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

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D&C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB AROCLOR 1254 / PCB CON	D&C	HEXANE:ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE:ACETONE	MICROWAVE TM218.	GC-MS
>C6-C40	WET	HEXANE:ACETONE	SHAKER	GC-FID
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE:ACETONE	SHAKER	GC-FID
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB AROCLOR 1254	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PESTOCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	ACETONE	SOLID PHASE EXTRACTION	GC MS
TPH by INFRARED (IR)	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
MINERAL OIL by IR	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
GLYCOLS	NONE	DIRECT INJECTION	GC FID

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

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

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

ALcontrol Laboratories

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Attention: Neil Hopkins

CERTIFICATE OF ANALYSIS

Date:	11 June 2012
Customer:	H_CELTIC_REA
Sample Delivery Group (SDG):	120517-117
Your Reference:	C1526
Location:	Banbury
Report No:	183773

This report has been revised and directly supersedes 183769 in its entirety.

We received 15 samples on Thursday May 17, 2012 and 10 of these samples were scheduled for analysis which was completed on Monday June 11, 2012. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

[redacted]

Sonia McWhan
Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	120517-117	**Location:**	Banbury	**Order Number:**	66236
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183773
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	183769

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
5599044	TP101		0.30	14/05/2012
5599045	TP101		1.50	14/05/2012
5599047	TP101		1.90	14/05/2012
5599048	TP101		3.10	14/05/2012
5599049	TP102		0.40	14/05/2012
5599050	TP102		1.20	14/05/2012
5599054	TP102		1.50	14/05/2012
5599056	TP109		0.70	16/05/2012
5599057	TP109		1.60	16/05/2012
5599058	TP112		0.20	16/05/2012
5599059	TP112		0.40	16/05/2012
5599060	TP112		1.30	16/05/2012
5599062	TP113		0.30	16/05/2012
5599066	TP113		1.20	16/05/2012
5599068	TP114		0.20	16/05/2012

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

SDG:	120517-117	**Location:**	Banbury	**Order Number:**	66236
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183773
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	183769

SOLID

Results Legend

- **X** Test
- **N** No Determination Possible

Lab Sample No(s)			5599045			5599049		5599050			5599056			5599057	5599058			5599059	5599062			5599066			5599068
Customer Sample Reference			TP101			TP102		TP102			TP109			TP109	TP112			TP112	TP113			TP113			TP114
AGS Reference																									
Depth (m)			1.50			0.40		1.20			0.70			1.60	0.20			0.40	0.30			1.20			0.20
Container			400g Tub (ALE214)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	400g Tub (ALE214)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	400g Tub (ALE214)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)
Ammonium Soil by Titration	All	NDPs: 0 Tests: 6	X							X			X				X				X			X	
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 6	X		X					X					X				X					X	
Asbestos Quantification - Full	All	NDPs: 0 Tests: 3													X				X					X	
Boron Water Soluble	All	NDPs: 0 Tests: 6	X						X			X				X				X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6	X							X			X				X				X			X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 8	X	X			X		X			X				X				X			X		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 8	X	X			X		X			X				X				X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 8	X			X		X			X			X				X				X			X
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 6	X						X			X				X				X			X		
	Cadmium	NDPs: 0 Tests: 6	X						X			X				X				X			X		
	Chromium	NDPs: 0 Tests: 6	X						X			X				X				X			X		
	Copper	NDPs: 0 Tests: 6	X						X			X				X				X			X		
	Lead	NDPs: 0 Tests: 6	X						X			X				X				X			X		
	Mercury	NDPs: 0 Tests: 6	X						X			X				X				X			X		
	Nickel	NDPs: 0 Tests: 6	X						X			X				X				X			X		

CERTIFICATE OF ANALYSIS

SDG:	120517-117	**Location:**	Banbury	**Order Number:**	66236
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183773
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	183769

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			5599045	TP101		1.50	400g Tub (ALE214)
			5599049	TP102		0.40	250g Amber Jar (AL
							400g Tub (ALE214)
							60g VOC (ALE215)
			5599050	TP102		1.20	250g Amber Jar (AL
							60g VOC (ALE215)
			5599056	TP109		0.70	250g Amber Jar (AL
							400g Tub (ALE214)
							60g VOC (ALE215)
			5599057	TP109		1.60	250g Amber Jar (AL
							400g Tub (ALE214)
							60g VOC (ALE215)
			5599058	TP112		0.20	400g Tub (ALE214)
			5599059	TP112		0.40	250g Amber Jar (AL
							400g Tub (ALE214)
							60g VOC (ALE215)
			5599062	TP113		0.30	400g Tub (ALE214)
			5599066	TP113		1.20	250g Amber Jar (AL
							400g Tub (ALE214)
							60g VOC (ALE215)
			5599068	TP114		0.20	250g Amber Jar (AL
							400g Tub (ALE214)
							60g VOC (ALE215)
Metals by iCap-OES (Soil)	Selenium	NDPs: 0 Tests: 6	X				X
							X
							X
							X
							X
							X
	Zinc	NDPs: 0 Tests: 6	X				X
							X
							X
							X
							X
							X
PAH by GCMS	All	NDPs: 0 Tests: 6	X				X
							X
							X
							X
							X
							X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 6	X				X
							X
							X
							X
							X
							X
Sample description	All	NDPs: 0 Tests: 8	X	X			X
							X
							X
							X
							X
							X
Total Organic Carbon	All	NDPs: 1 Tests: 5	X				X
							X
							X
							X
							N
Total Organic Carbon (Asb)	All	NDPs: 0 Tests: 1					X
TPH CWG GC (S)	All	NDPs: 0 Tests: 8	X	X			X
							X
							X
							X
							X
							X

CERTIFICATE OF ANALYSIS

SDG:	120517-117	**Location:**	Banbury	**Order Number:**	66236
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183773
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	183769

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
5599045	TP101	1.50	Dark Brown	Sandy Clay Loam	<0.063 mm	N/A	N/A
5599049	TP102	0.40	Light Brown	Sand	0.1 - 2 mm	Stones	Crushed Brick
5599050	TP102	1.20	Black	Sand	0.1 - 2 mm	Stones	None
5599056	TP109	0.70	Light Brown	Silt Loam	0.063 - 0.1 mm	N/A	N/A
5599057	TP109	1.60	Grey	Silty Clay	0.063 - 0.1 mm	None	None
5599059	TP112	0.40	Light Brown	Sand	0.1 - 2 mm	Stones	None
5599066	TP113	1.20	Grey	Silty Clay	0.063 - 0.1 mm	None	None
5599068	TP114	0.20	Dark Brown	Loamy Sand	0.063 - 0.1 mm	Fibres	Stones

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

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

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

CERTIFICATE OF ANALYSIS

SDG:	120517-117	**Location:**	Banbury	**Order Number:**	66236
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183773
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	183769

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP101	TP109	TP109	TP112	TP113	TP114
			Depth (m)	1.50	0.70	1.60	0.40	1.20	0.20
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	14/05/2012	16/05/2012	16/05/2012	16/05/2012	16/05/2012	16/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	17/05/2012	17/05/2012	17/05/2012	17/05/2012	17/05/2012	17/05/2012
			SDG Ref	120517-117	120517-117	120517-117	120517-117	120517-117	120517-117
			Lab Sample No.(s)	5599045	5599056	5599057	5599059	5599066	5599068
			AGS Reference						
Ammoniacal Nitrogen as N	<15 mg/kg	TM024		454	<15	22.2	<15	66.3	<15
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Soil Organic Matter (SOM)	<0.35 %	TM132		2.71 #	0.896 #	1.24 #	<0.35 #	1.91 #	
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Arsenic	<0.6 mg/kg	TM181		18.8 M	17 M	11.9 M	22 M	13 M	16.3 M
Cadmium	<0.02 mg/kg	TM181		<0.02 M	0.406 M	0.344 M	0.595 M	0.345 M	3.26 M
Chromium	<0.9 mg/kg	TM181		61.8 M	47.5 M	59.2 M	16.6 M	50.4 M	61.2 M
Copper	<1.4 mg/kg	TM181		16.1 M	21 M	20.1 M	25.1 M	27.2 M	162 M
Lead	<0.7 mg/kg	TM181		27.4 M	25 M	18.7 M	9.8 M	34.2 M	272 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	0.773 M
Nickel	<0.2 mg/kg	TM181		29.3 M	35.1 M	40.5 M	21.7 M	41.6 M	40.8 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	1.24 #	<1 #
Zinc	<1.9 mg/kg	TM181		98.2 M	108 M	105 M	87.9 M	162 M	1190 M
Boron, water soluble	<1 mg/kg	TM222		8.5 M	1.26 M	2.06 M	1.34 M	9.82 M	6.12 M
Soil Organic Matter (SOM)	<0.1 %	TM321							1.15 #

CERTIFICATE OF ANALYSIS

SDG:	120517-117	**Location:**	Banbury	**Order Number:**	66236
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183773
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	183769

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP101	TP109	TP109	TP112	TP113	TP114
			Depth (m)	1.50	0.70	1.60	0.40	1.20	0.20
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	14/05/2012	16/05/2012	16/05/2012	16/05/2012	16/05/2012	16/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	17/05/2012	17/05/2012	17/05/2012	17/05/2012	17/05/2012	17/05/2012
			SDG Ref	120517-117	120517-117	120517-117	120517-117	120517-117	120517-117
			Lab Sample No.(s)	5599045	5599056	5599057	5599059	5599066	5599068
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		104	99.5	95.8	98.6	103	105
Acenaphthene-d10 % recovery**	%	TM218		104	97.7	96.6	101	105	103
Phenanthrene-d10 % recovery**	%	TM218		104	94	93.4	97.8	102	101
Chrysene-d12 % recovery**	%	TM218		102	93.8	85	87.6	93.4	105
Perylene-d12 % recovery**	%	TM218		106	97.5	82.8	83.2	94.7	111
Naphthalene	<9 µg/kg	TM218		42.5 M	<9 M	14.3 M	<9 M	97 M	326 M
Acenaphthylene	<12 µg/kg	TM218		<12 M	<12 M	<12 M	<12 M	<12 M	358 M
Acenaphthene	<8 µg/kg	TM218		<8 M	<8 M	<8 M	<8 M	45.4 M	616 M
Fluorene	<10 µg/kg	TM218		<10 M	<10 M	<10 M	<10 M	193 M	678 M
Phenanthrene	<15 µg/kg	TM218		28.3 M	<15 M	<15 M	<15 M	336 M	13200 M
Anthracene	<16 µg/kg	TM218		<16 M	<16 M	<16 M	<16 M	70.3 M	4190 M
Fluoranthene	<17 µg/kg	TM218		29.5 M	<17 M	<17 M	<17 M	62.5 M	29000 M
Pyrene	<15 µg/kg	TM218		22.4 M	<15 M	<15 M	<15 M	71.5 M	25600 M
Benz(a)anthracene	<14 µg/kg	TM218		31.6 M	<14 M	<14 M	<14 M	21 M	13900 M
Chrysene	<10 µg/kg	TM218		<10 M	<10 M	<10 M	<10 M	19.5 M	11400 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M	25.8 M	17600 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		<14 M	<14 M	<14 M	<14 M	<14 M	6460 M
Benzo(a)pyrene	<15 µg/kg	TM218		22.3 M	<15 M	<15 M	<15 M	<15 M	14400 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<18 M	<18 M	<18 M	<18 M	<18 M	7610 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	<23 M	<23 M	<23 M	<23 M	2070 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		<24 M	<24 M	<24 M	<24 M	<24 M	8510 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		177	<118	<118	<118	942	156000

CERTIFICATE OF ANALYSIS

SDG:	120517-117	**Location:**	Banbury	**Order Number:**	66236
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183773
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	183769

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP101	TP102	TP102	TP109	TP109	TP112
			Depth (m)	1.50	0.40	1.20	0.70	1.60	0.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	14/05/2012	14/05/2012	14/05/2012	16/05/2012	16/05/2012	16/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	17/05/2012	17/05/2012	17/05/2012	17/05/2012	17/05/2012	17/05/2012
			SDG Ref	120517-117	120517-117	120517-117	120517-117	120517-117	120517-117
			Lab Sample No.(s)	5599045	5599049	5599050	5599056	5599057	5599059
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		95 §	71	30	105	87	124
GRO >C5-C12	<44 µg/kg	TM089		<44 §	<44	4690	277	221	51
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 § #	<5 #	<5 #	<5 #	<5 #	<5 #
Benzene	<10 µg/kg	TM089		<10 § M	<10 M	99.1 M	<10 M	<10 M	<10 M
Toluene	<2 µg/kg	TM089		<2 § M	<2 M	38.1 M	<2 M	<2 M	<2 M
Ethylbenzene	<3 µg/kg	TM089		<3 § M	<3 M	48.3 M	<3 M	<3 M	<3 M
m,p-Xylene	<6 µg/kg	TM089		<6 § M	<6 M	76.2 M	<6 M	<6 M	<6 M
o-Xylene	<3 µg/kg	TM089		<3 § M	<3 M	67.3 M	<3 M	<3 M	<3 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9 §	<9	144	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089		<24 §	<24	330	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089		<10 §	<10	90.2	11.1	16.8	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10 §	<10	269	84.9	64.5	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10 §	<10	582	36.9	28.4	12.8
Aliphatics >C10-C12	<10 µg/kg	TM089		<10 §	<10	1820	71.3	54.2	11.6
Aliphatics >C12-C16	<100 µg/kg	TM173		<100	10600	205000	1860	24400	<100
Aliphatics >C16-C21	<100 µg/kg	TM173		5230	35200	305000	7140	44600	<100
Aliphatics >C21-C35	<100 µg/kg	TM173		15900	223000	1660000	67900	537000	<100
Aliphatics >C35-C44	<100 µg/kg	TM173		5320	73600	301000	9440	58300	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173		26400	342000	2470000	86400	665000	<100
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10 §	<10	99.1	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10 §	<10	38.1	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10 §	<10	579	24.6	19.4	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10 §	<10	1210	48	36.1	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		<100	2320	389000	1530	12800	5610
Aromatics >EC16-EC21	<100 µg/kg	TM173		4840	17000	1230000	7020	20900	1590
Aromatics >EC21-EC35	<100 µg/kg	TM173		35100	135000	2410000	39900	194000	<100
Aromatics >EC35-EC44	<100 µg/kg	TM173		15600	110000	577000	14500	27100	<100
Aromatics >EC40-EC44	<100 µg/kg	TM173		6230	50800	185000	4720	5230	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		55500	265000	4610000	63000	255000	7200
Total Aliphatics >C5-35	<100 µg/kg	TM173		21100	268000	2170000	77100	606000	<100
Total Aromatics >C5-35	<100 µg/kg	TM173		39900	154000	4030000	48500	228000	7210
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173		61000	423000	6210000	126000	835000	7210
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		81900	607000	7080000	150000	920000	7210

CERTIFICATE OF ANALYSIS

SDG:	120517-117	**Location:**	Banbury	**Order Number:**	66236
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183773
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	183769

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP113	TP114				
			Depth (m)	1.20	0.20				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	16/05/2012	16/05/2012				
			Sample Time	.	.				
			Date Received	17/05/2012	17/05/2012				
			SDG Ref	120517-117	120517-117				
			Lab Sample No.(s)	5599066	5599068				
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		93	25				
GRO >C5-C12	<44 µg/kg	TM089		1370	<44				
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 #	<5 #				
Benzene	<10 µg/kg	TM089		<10 M	<10 M				
Toluene	<2 µg/kg	TM089		<2 M	<2 M				
Ethylbenzene	<3 µg/kg	TM089		<3 M	<3 M				
m,p-Xylene	<6 µg/kg	TM089		<6 M	<6 M				
o-Xylene	<3 µg/kg	TM089		7.68 M	<3 M				
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9	<9				
sum of detected BTEX by GC	<24 µg/kg	TM089		<24	<24				
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10				
Aliphatics >C6-C8	<10 µg/kg	TM089		30.7	<10				
Aliphatics >C8-C10	<10 µg/kg	TM089		170	<10				
Aliphatics >C10-C12	<10 µg/kg	TM089		623	<10				
Aliphatics >C12-C16	<100 µg/kg	TM173		65300	10400				
Aliphatics >C16-C21	<100 µg/kg	TM173		136000	60600				
Aliphatics >C21-C35	<100 µg/kg	TM173		665000	968000				
Aliphatics >C35-C44	<100 µg/kg	TM173		202000	493000				
Total Aliphatics >C12-C44	<100 µg/kg	TM173		1070000	1530000				
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10				
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10				
Aromatics >EC8-EC10	<10 µg/kg	TM089		125	<10				
Aromatics >EC10-EC12	<10 µg/kg	TM089		416	<10				
Aromatics >EC12-EC16	<100 µg/kg	TM173		20600	17100				
Aromatics >EC16-EC21	<100 µg/kg	TM173		47900	258000				
Aromatics >EC21-EC35	<100 µg/kg	TM173		103000	1710000				
Aromatics >EC35-EC44	<100 µg/kg	TM173		33100	1300000				
Aromatics >EC40-EC44	<100 µg/kg	TM173		7490	530000				
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		205000	3290000				
Total Aliphatics >C5-35	<100 µg/kg	TM173		867000	1040000				
Total Aromatics >C5-35	<100 µg/kg	TM173		172000	1990000				
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173		1040000	3030000				
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		1270000	4820000				

CERTIFICATE OF ANALYSIS

SDG:	120517-117	**Location:**	Banbury	**Order Number:**	66236
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183773
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	183769

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP101 1.50 SOLID 14/05/2012 00:00:00 120517-117 5599045 TM048	23/05/12	Lauren Sargeant	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP102 0.40 SOLID 14/05/2012 00:00:00 120517-117 5599049 TM048	07/06/12	Kevin Bowron	Soil Containing ACM Debris & Loose Fibres	Detected (#)	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP109 0.70 SOLID 16/05/2012 00:00:00 120517-117 5599056 TM048	23/05/12	Lauren Sargeant	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP112 0.20 SOLID 16/05/2012 00:00:00 120517-117 5599058 TM048	23/05/12	Lauren Sargeant	Loose fibres and ACM debris in soil	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP113 0.30 SOLID 16/05/2012 00:00:00 120517-117 5599062 TM048	23/05/12	Lauren Sargeant	Loose fibres and ACM debris in soil	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected

CERTIFICATE OF ANALYSIS

SDG:	120517-117	**Location:**	Banbury	**Order Number:**	66236
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183773
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	183769

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP114 0.20 SOLID 16/05/2012 00:00:00 120517-117 5599068 TM048	23/05/12	Lauren Sargeant	Loose fibres in soil	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected

Asbestos Quantification - Full

		Additional Asbestos Components (Using TM048)	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation - %	Asbestos Quantification - Total - %
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP112 0.20 SOLID 16/05/2012 00:00:00 120517-117 5599058 TM 304	None (#)	-	0.0643 (#)	0.0025 (#)	0.0668 (#)
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP113 0.30 SOLID 16/05/2012 00:00:00 120517-117 5599062 TM 304	Amosite (#)	None	0.0247 (#)	<0.001 (#)	0.0255 (#)
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP114 0.20 SOLID 16/05/2012 00:00:00 120517-117 5599068 TM 304	None (#)	-	0.0071 (#)	<0.001 (#)	0.0072 (#)

CERTIFICATE OF ANALYSIS

SDG:	120517-117	**Location:**	Banbury	**Order Number:**	66236
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183773
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	183769

Notification of Deviating Samples

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	Aliphatics >C10-C12	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	Aliphatics >C5-C6	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	Aliphatics >C6-C8	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	Aliphatics >C8-C10	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	Aromatics >EC10-EC12	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	Aromatics >EC5-EC7	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	Aromatics >EC7-EC8	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	Aromatics >EC8-EC10	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	Benzene	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	Ethylbenzene	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	GRO >C5-C12	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	GRO Surrogate % recovery**	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	m,p-Xylene	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	o-Xylene	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	sum of detected BTEX by GC	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	sum of detected mpo xylene by GC	Volatile container not received
5635233	TP101	1.50	SOLID	GRO by GC-FID (S)	Toluene	Volatile container not received

Note : Test results may be compromised

CERTIFICATE OF ANALYSIS

SDG:	120517-117	**Location:**	Banbury	**Order Number:**	66236
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183773
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	183769

Notification of NDPs (No determination possible)

Date Received : 17/05/2012 16:21:31

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
5599068	TP114	0.20	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos

CERTIFICATE OF ANALYSIS

SDG:	120517-117	**Location:**	Banbury	**Order Number:**	66236
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183773
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	183769

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM 304				
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer		
TM321		Organic matter Content of Soil By Titration		

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

CERTIFICATE OF ANALYSIS

SDG:	120517-117	**Location:**	Banbury	**Order Number:**	66236
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183773
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	183769

Test Completion Dates

Lab Sample No(s)	5599045	5599049	5599050	5599056	5599057	5599058	5599059	5599062	5599066	5599068
Customer Sample Ref.	TP101	TP102	TP102	TP109	TP109	TP112	TP112	TP113	TP113	TP114
AGS Ref.										
Depth	1.50	0.40	1.20	0.70	1.60	0.20	0.40	0.30	1.20	0.20
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Ammonium Soil by Titration	24-May-2012			23-May-2012	24-May-2012		24-May-2012		24-May-2012	23-May-2012
Asbestos Identification (Soil)	23-May-2012	07-Jun-2012		23-May-2012		23-May-2012		23-May-2012		23-May-2012
Asbestos Quantification - Full						11-Jun-2012		11-Jun-2012		11-Jun-2012
Boron Water Soluble	25-May-2012			24-May-2012	22-May-2012		22-May-2012		22-May-2012	24-May-2012
Cyanide Comp/Free/Total/Thiocyanate	24-May-2012			24-May-2012	24-May-2012		24-May-2012		24-May-2012	24-May-2012
EPH CWG (Aliphatic) GC (S)	25-May-2012	08-Jun-2012	08-Jun-2012	23-May-2012	23-May-2012		23-May-2012		23-May-2012	24-May-2012
EPH CWG (Aromatic) GC (S)	25-May-2012	08-Jun-2012	08-Jun-2012	23-May-2012	23-May-2012		23-May-2012		23-May-2012	24-May-2012
GRO by GC-FID (S)	25-May-2012	08-Jun-2012	08-Jun-2012	24-May-2012	24-May-2012		25-May-2012		24-May-2012	24-May-2012
Metals by iCap-OES (Soil)	24-May-2012			23-May-2012	23-May-2012		23-May-2012		22-May-2012	23-May-2012
PAH by GCMS	24-May-2012			23-May-2012	23-May-2012		23-May-2012		23-May-2012	23-May-2012
Phenols by HPLC (S)	24-May-2012			24-May-2012	25-May-2012		25-May-2012		25-May-2012	24-May-2012
Sample description	21-May-2012	01-Jun-2012	31-May-2012	21-May-2012	21-May-2012		21-May-2012		21-May-2012	21-May-2012
Total Organic Carbon	24-May-2012			24-May-2012	24-May-2012		24-May-2012		24-May-2012	
Total Organic Carbon (Asb)										23-May-2012
TPH CWG GC (S)	25-May-2012	08-Jun-2012	08-Jun-2012	24-May-2012	24-May-2012		25-May-2012		24-May-2012	24-May-2012

SDG:	120517-117	**Location:**	Banbury	**Order Number:**	66236
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183773
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	183769

Appendix

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

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

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

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

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

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

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

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

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

11. Results relate only to the items tested.

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

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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

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

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

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

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

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

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

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

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

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

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D&C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB AROCLOR 1254 / PCB CON	D&C	HEXANE:ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE:ACETONE	MICROWAVE TM218.	GC-MS
>C6-C40	WET	HEXANE:ACETONE	SHAKER	GC-FID
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE:ACETONE	SHAKER	GC-FID
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB AROCLOR 1254	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PESTOC PROPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	ACETONE	SOLID PHASE EXTRACTION	GC MS
TPH by INFRARED (IR)	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
MINERAL OIL by IR	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
GLYCOLS	NONE	DIRECT INJECTION	GC FID

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

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

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

ALcontrol Laboratories

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Attention: Neil Hopkins

CERTIFICATE OF ANALYSIS

Date:	13 June 2012
Customer:	H_CELTIC_REA
Sample Delivery Group (SDG):	120518-110
Your Reference:	C1526
Location:	Banbury
Report No:	184070

This report has been revised and directly supersedes 182385 in its entirety.

We received 18 samples on Friday May 18, 2012 and 13 of these samples were scheduled for analysis which was completed on Wednesday June 13, 2012. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

Approved By:

[redacted]

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
5606761	TP110		0.35	16/05/2012
5606762	TP110		0.65	16/05/2012
5606763	TP110		1.80	16/05/2012
5606764	TP111		0.30	16/05/2012
5606765	TP115		0.30	17/05/2012
5606767	TP115		1.30	17/05/2012
5606768	TP116		0.30	17/05/2012
5606769	TP116		1.40	17/05/2012
5606770	TP116		2.00	17/05/2012
5606771	TP116		2.70	17/05/2012
5606772	TP117		0.35	17/05/2012
5606773	TP117		0.50	17/05/2012
5606774	TP117		2.10	17/05/2012
5606775	TP117		2.60	17/05/2012
5606777	TP118		0.70	17/05/2012
5606778	TP118		2.20	17/05/2012
5606779	TP119		0.20	17/05/2012
5606780	TP119		1.50	17/05/2012

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

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
Ammonium Soil by Titration	All	NDPs: 0 Tests: 13	5606761	TP110		0.35	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 9	5606762	TP110		0.65	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
Asbestos Quantification - Full	All	NDPs: 0 Tests: 1	5606764	TP111		0.30	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
Boron Water Soluble	All	NDPs: 0 Tests: 13	5606765	TP115		0.30	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 13	5606768	TP116		0.30	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 13	5606769	TP116		1.40	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 13	5606771	TP116		2.70	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
GRO by GC-FID (S)	All	NDPs: 0 Tests: 13	5606773	TP117		0.50	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 13	5606774	TP117		2.10	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
	Cadmium	NDPs: 0 Tests: 13	5606777	TP118		0.70	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
	Chromium	NDPs: 0 Tests: 13	5606778	TP118		2.20	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
	Copper	NDPs: 0 Tests: 13	5606779	TP119		0.20	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
	Lead	NDPs: 0 Tests: 13	5606780	TP119		1.50	250g Amber Jar (AL)
							400g Tub (ALE214)
							60g VOC (ALE215)
	Mercury	NDPs: 0 Tests: 13					
	Nickel	NDPs: 0 Tests: 13					

SDG: 120518-110	**Location:** Banbury	**Order Number:** 66237
Job: H_CELTIC_REA-12	**Customer:** Celtic Technologies	**Report Number:** 184070
Client Reference: C1526	**Attention:** Neil Hopkins	**Superseded Report:** 182385

SOLID

Results Legend

- X Test
- N No Determination Possible

Lab Sample No(s)			5606761			5606762			5606764			5606765			5606768			5606769			5606771			5606773			5606774			5606777			5606778			5606779			5606780		
Customer Sample Reference			TP110			TP110			TP111			TP115			TP116			TP116			TP116			TP117			TP117			TP118			TP118			TP119			TP119		
AGS Reference																																										
Depth (m)			0.35			0.65			0.30			0.30			0.30			1.40			2.70			0.50			2.10			0.70			2.20			0.20			1.50		
Container			250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)
Metals by iCap-OES (Soil)	Selenium	NDPs: 0 Tests: 13	X			X			X			X			X			X			X			X			X			X			X			X			X		
	Zinc	NDPs: 0 Tests: 13	X			X			X			X			X			X			X			X			X			X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 13	X			X			X			X			X			X			X			X			X			X			X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 13		X			X			X			X			X			X			X			X			X			X			X			X			X	
Sample description	All	NDPs: 0 Tests: 13	X			X			X			X			X			X			X			X			X			X			X			X			X		
Total Organic Carbon	All	NDPs: 1 Tests: 12	X			X			X			N			X			X			X			X			X			X			X			X			X		
Total Organic Carbon (Asb)	All	NDPs: 0 Tests: 1										X																														
TPH CWG GC (S)	All	NDPs: 0 Tests: 13	X			X			X			X			X			X			X			X			X			X			X			X			X		

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
5606761	TP110	0.35	Black	Sand	0.1 - 2 mm	Stones	N/A
5606762	TP110	0.65	Dark Brown	Loamy Sand	0.063 - 0.1 mm	Stones	N/A
5606764	TP111	0.30	Light Brown	Loamy Sand	0.063 - 0.1 mm	Stones	N/A
5606765	TP115	0.30	Light Brown	Sand	0.1 - 2 mm	Stones	N/A
5606768	TP116	0.30	Dark Brown	Loamy Sand	0.063 - 0.1 mm	Stones	N/A
5606769	TP116	1.40	Dark Brown	Sandy Silt Loam	0.1 - 2 mm	Stones	N/A
5606771	TP116	2.70	Light Brown	Silty Sand	0.1 - 2 mm	Stones	N/A
5606773	TP117	0.50	Dark Brown	Clay Loam	0.063 - 0.1 mm	None	None
5606774	TP117	2.10	Dark Brown	Loamy Sand	0.1 - 2 mm	Oil/Petroleum	Stones
5606777	TP118	0.70	Dark Brown	Clay	<0.063 mm	N/A	N/A
5606778	TP118	2.20	Dark Brown	Silty Clay	0.063 - 0.1 mm	Stones	None
5606779	TP119	0.20	Black	Loamy Sand	0.063 - 0.1 mm	Oil/Petroleum	Stones
5606780	TP119	1.50	Dark Brown	Silty Clay	0.063 - 0.1 mm	Oil/Petroleum	None

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

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

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

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP110	TP110	TP111	TP115	TP116	TP116
			Depth (m)	0.35	0.65	0.30	0.30	0.30	1.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/05/2012	16/05/2012	16/05/2012	17/05/2012	17/05/2012	17/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	18/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012
			SDG Ref	120518-110	120518-110	120518-110	120518-110	120518-110	120518-110
			Lab Sample No.(s)	5606761	5606762	5606764	5606765	5606768	5606769
			AGS Reference						
Ammoniacal Nitrogen as N	<15 mg/kg	TM024		<15	22.4	<15	<15	<15	79.5
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	0.209 M
Soil Organic Matter (SOM)	<0.35 %	TM132		41.7 #	9.22 #	0.643 #		4.05 #	2.6 #
Cyanide, Total	<1 mg/kg	TM153		9.7 M	<1 M	<1 M	<1 M	<1 M	40.1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Arsenic	<0.6 mg/kg	TM181		12.7 M	29.6 M	74.7 M	97.5 M	217 M	63.1 M
Cadmium	<0.02 mg/kg	TM181		0.441 M	1.26 M	2.54 M	2.45 M	2.24 M	1.97 M
Chromium	<0.9 mg/kg	TM181		19 M	33.8 M	91.1 M	80.2 M	70.9 M	118 M
Copper	<1.4 mg/kg	TM181		59.3 M	108 M	<14 M	40.8 M	22.7 M	<14 M
Lead	<0.7 mg/kg	TM181		19.4 M	96.7 M	30.2 M	331 M	98.8 M	27.1 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	0.144 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		28.6 M	38.8 M	59.3 M	70 M	72.1 M	63.9 M
Selenium	<1 mg/kg	TM181		<1 #	<10 #	<10 #	<10 #	<10 #	<10 #
Zinc	<1.9 mg/kg	TM181		49.6 M	187 M	143 M	303 M	156 M	143 M
Boron, water soluble	<1 mg/kg	TM222		1.48 M	3.27 M	<1 M	<1 M	<1 M	<1 M
Soil Organic Matter (SOM)	<0.1 %	TM321					0.281 #		

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP116	TP117	TP117	TP118	TP118	TP119
			Depth (m)	2.70	0.50	2.10	0.70	2.20	0.20
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	17/05/2012	17/05/2012	17/05/2012	17/05/2012	17/05/2012	17/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	18/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012
			SDG Ref	120518-110	120518-110	120518-110	120518-110	120518-110	120518-110
			Lab Sample No.(s)	5606771	5606773	5606774	5606777	5606778	5606779
			AGS Reference						
Ammoniacal Nitrogen as N	<15 mg/kg	TM024		297	212	184	692	654	400
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		0.239 M	0.062 M	<0.035 M	0.0931 M	0.333 M	2680 M
Soil Organic Matter (SOM)	<0.35 %	TM132		0.721 #	1.26 #	0.767 #	2.45 #	1.45 #	25.2 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	85.9 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<10 M
Arsenic	<0.6 mg/kg	TM181		99.3 M	26.9 M	96 M	28.5 M	43.3 M	32.6 M
Cadmium	<0.02 mg/kg	TM181		<0.2 M	0.251 M	1.32 M	<0.02 M	0.211 M	9.26 M
Chromium	<0.9 mg/kg	TM181		76.5 M	49.6 M	90.1 M	51.5 M	57.4 M	35.5 M
Copper	<1.4 mg/kg	TM181		17.3 M	8.21 M	18.4 M	36.3 M	8.96 M	819 M
Lead	<0.7 mg/kg	TM181		41.7 M	18.8 M	22 M	69.8 M	20.4 M	1530 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	3.17 M
Nickel	<0.2 mg/kg	TM181		70.7 M	24.3 M	73.9 M	29.2 M	26.8 M	37 M
Selenium	<1 mg/kg	TM181		<10 #	<1 #	<10 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		174 M	74.3 M	169 M	80.1 M	73.3 M	2510 M
Boron, water soluble	<1 mg/kg	TM222		<1 M	1.41 M	1.03 M	6.36 M	3.81 M	5.03 M

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP119
			Depth (m)	1.50
			Sample Type	Soil/Solid
			Date Sampled	17/05/2012
			Sample Time	.
			Date Received	18/05/2012
			SDG Ref	120518-110
			Lab Sample No.(s)	5606780
			AGS Reference	
Ammoniacal Nitrogen as N	<15 mg/kg	TM024		1190
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		16 M
Soil Organic Matter (SOM)	<0.35 %	TM132		3.05 #
Cyanide, Total	<1 mg/kg	TM153		<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M
Arsenic	<0.6 mg/kg	TM181		22.7 M
Cadmium	<0.02 mg/kg	TM181		0.385 M
Chromium	<0.9 mg/kg	TM181		66.3 M
Copper	<1.4 mg/kg	TM181		18 M
Lead	<0.7 mg/kg	TM181		114 M
Mercury	<0.14 mg/kg	TM181		<0.14 M
Nickel	<0.2 mg/kg	TM181		35.1 M
Selenium	<1 mg/kg	TM181		<1 #
Zinc	<1.9 mg/kg	TM181		167 M
Boron, water soluble	<1 mg/kg	TM222		2.52 M

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP110	TP110	TP111	TP115	TP116	TP116
			Depth (m)	0.35	0.65	0.30	0.30	0.30	1.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/05/2012	16/05/2012	16/05/2012	17/05/2012	17/05/2012	17/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	18/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012
			SDG Ref	120518-110	120518-110	120518-110	120518-110	120518-110	120518-110
			Lab Sample No.(s)	5606761	5606762	5606764	5606765	5606768	5606769
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		98.7	98.8	98.9	104	108	98.8
Acenaphthene-d10 % recovery**	%	TM218		98.1	97.2	99	104	106	98.4
Phenanthrene-d10 % recovery**	%	TM218		94.9	94.8	95.7	101	102	96.8
Chrysene-d12 % recovery**	%	TM218		92.1	94.3	96.7	101	107	98.9
Perylene-d12 % recovery**	%	TM218		95.4	97	101	106	112	106
Naphthalene	<9 µg/kg	TM218		256 M	274 M	<9 M	37.1 M	640 M	4190 M
Acenaphthylene	<12 µg/kg	TM218		155 M	274 M	<12 M	98.2 M	2230 M	18500 M
Acenaphthene	<8 µg/kg	TM218		96.8 M	56.4 M	<8 M	<8 M	85.5 M	10200 M
Fluorene	<10 µg/kg	TM218		142 M	141 M	<10 M	36.4 M	254 M	51700 M
Phenanthrene	<15 µg/kg	TM218		1760 M	1650 M	21 M	499 M	4850 M	104000 M
Anthracene	<16 µg/kg	TM218		549 M	591 M	<16 M	124 M	2280 M	54400 M
Fluoranthene	<17 µg/kg	TM218		3630 M	3310 M	39.8 M	776 M	26700 M	126000 M
Pyrene	<15 µg/kg	TM218		3090 M	2560 M	35.5 M	599 M	23300 M	86100 M
Benz(a)anthracene	<14 µg/kg	TM218		2470 M	1940 M	33.2 M	424 M	19400 M	55500 M
Chrysene	<10 µg/kg	TM218		2090 M	1540 M	13.9 M	338 M	14200 M	39500 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		4270 M	2240 M	38.2 M	489 M	24700 M	43500 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		1440 M	859 M	17.9 M	200 M	9200 M	18100 M
Benzo(a)pyrene	<15 µg/kg	TM218		3750 M	1630 M	31.9 M	390 M	19100 M	39100 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		2500 M	778 M	19.8 M	199 M	9530 M	14500 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		653 M	280 M	<23 M	62.2 M	3110 M	5080 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		2880 M	794 M	<24 M	214 M	9670 M	13400 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		29700	18900	251	4490	169000	684000

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP116	TP117	TP117	TP118	TP118	TP119
			Depth (m)	2.70	0.50	2.10	0.70	2.20	0.20
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	17/05/2012	17/05/2012	17/05/2012	17/05/2012	17/05/2012	17/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	18/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012
			SDG Ref	120518-110	120518-110	120518-110	120518-110	120518-110	120518-110
			Lab Sample No.(s)	5606771	5606773	5606774	5606777	5606778	5606779
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		99.6	86.6	97.9	98.3	96.7	90
Acenaphthene-d10 % recovery**	%	TM218		98.1	87.8	103	97.9	98.5	126
Phenanthrene-d10 % recovery**	%	TM218		96.5	85.7	101	98.1	98.8	112
Chrysene-d12 % recovery**	%	TM218		97	74.4	97.1	98.4	94.4	120
Perylene-d12 % recovery**	%	TM218		101	69.8	100	104	96.6	110
Naphthalene	<9 µg/kg	TM218		12600 M	12.3 M	197 M	5320 M	13300 M	11600000 M
Acenaphthylene	<12 µg/kg	TM218		12600 M	61.7 M	6880 M	1760 M	1830 M	1760000 M
Acenaphthene	<8 µg/kg	TM218		3760 M	409 M	6280 M	827 M	7090 M	213000 M
Fluorene	<10 µg/kg	TM218		23100 M	237 M	7180 M	1760 M	3790 M	1080000 M
Phenanthrene	<15 µg/kg	TM218		37800 M	152 M	17000 M	4950 M	8590 M	3490000 M
Anthracene	<16 µg/kg	TM218		18000 M	148 M	4990 M	1500 M	2180 M	1170000 M
Fluoranthene	<17 µg/kg	TM218		36200 M	224 M	4490 M	3280 M	1470 M	2210000 M
Pyrene	<15 µg/kg	TM218		24600 M	215 M	5510 M	3410 M	1800 M	1680000 M
Benz(a)anthracene	<14 µg/kg	TM218		14600 M	97.3 M	2120 M	1180 M	559 M	732000 M
Chrysene	<10 µg/kg	TM218		10300 M	82.9 M	1670 M	935 M	478 M	546000 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		11200 M	91.1 M	1210 M	804 M	235 M	654000 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		5500 M	35.5 M	539 M	253 M	87.3 M	278000 M
Benzo(a)pyrene	<15 µg/kg	TM218		10800 M	75 M	1330 M	723 M	230 M	645000 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		3710 M	38.4 M	452 M	245 M	74.8 M	283000 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		1300 M	<23 M	167 M	97.4 M	33.2 M	76900 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		3600 M	39.6 M	473 M	229 M	80.7 M	315000 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		230000	1920	60500	27300	41800	26800000

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	
			Depth (m)	TP119 1.50
			Sample Type	Soil/Solid
			Date Sampled	17/05/2012
			Sample Time	.
			Date Received	18/05/2012
			SDG Ref	120518-110
			Lab Sample No.(s)	5606780
			AGS Reference	
Naphthalene-d8 % recovery**	%	TM218	94.7	
Acenaphthene-d10 % recovery**	%	TM218	94.8	
Phenanthrene-d10 % recovery**	%	TM218	97.2	
Chrysene-d12 % recovery**	%	TM218	89.6	
Perylene-d12 % recovery**	%	TM218	92	
Naphthalene	<9 µg/kg	TM218	27900 M	
Acenaphthylene	<12 µg/kg	TM218	1720 M	
Acenaphthene	<8 µg/kg	TM218	596 M	
Fluorene	<10 µg/kg	TM218	1390 M	
Phenanthrene	<15 µg/kg	TM218	1590 M	
Anthracene	<16 µg/kg	TM218	292 M	
Fluoranthene	<17 µg/kg	TM218	349 M	
Pyrene	<15 µg/kg	TM218	256 M	
Benz(a)anthracene	<14 µg/kg	TM218	129 M	
Chrysene	<10 µg/kg	TM218	91 M	
Benzo(b)fluoranthene	<15 µg/kg	TM218	110 M	
Benzo(k)fluoranthene	<14 µg/kg	TM218	40.7 M	
Benzo(a)pyrene	<15 µg/kg	TM218	91.6 M	
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	51.4 M	
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	
Benzo(g,h,i)perylene	<24 µg/kg	TM218	59.7 M	
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	34600	

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP110	TP110	TP111	TP115	TP116	TP116
			Depth (m)	0.35	0.65	0.30	0.30	0.30	1.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/05/2012	16/05/2012	16/05/2012	17/05/2012	17/05/2012	17/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	18/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012
			SDG Ref	120518-110	120518-110	120518-110	120518-110	120518-110	120518-110
			Lab Sample No.(s)	5606761	5606762	5606764	5606765	5606768	5606769
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		34	43	107	95	79	54
GRO >C5-C12	<44 µg/kg	TM089		271	160	<44	<44	<44	1890
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
Benzene	<10 µg/kg	TM089		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<2 µg/kg	TM089		4.72 M	2.4 M	3.3 M	<2 M	<2 M	6.15 M
Ethylbenzene	<3 µg/kg	TM089		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
m,p-Xylene	<6 µg/kg	TM089		<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
o-Xylene	<3 µg/kg	TM089		<3 M	<3 M	<3 M	<3 M	<3 M	17.2 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9	<9	<9	<9	<9	17.2
sum of detected BTEX by GC	<24 µg/kg	TM089		<24	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	10.8	<10	<10	<10	11.1
Aliphatics >C6-C8	<10 µg/kg	TM089		28.3	37.2	<10	<10	<10	81.2
Aliphatics >C8-C10	<10 µg/kg	TM089		33	28.8	<10	<10	<10	306
Aliphatics >C10-C12	<10 µg/kg	TM089		95.6	32.4	<10	<10	<10	749
Aliphatics >C12-C16	<100 µg/kg	TM173		5830	7150	<100	3190	3960	20900
Aliphatics >C16-C21	<100 µg/kg	TM173		10000	26200	<100	11100	8090	83600
Aliphatics >C21-C35	<100 µg/kg	TM173		185000	688000	<100	26300	53100	1340000
Aliphatics >C35-C44	<100 µg/kg	TM173		61300	86400	<100	<100	4690	228000
Total Aliphatics >C12-C44	<100 µg/kg	TM173		262000	808000	<100	40700	69900	1670000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		27.1	22.8	<10	<10	<10	229
Aromatics >EC10-EC12	<10 µg/kg	TM089		63.7	21.6	<10	<10	<10	499
Aromatics >EC12-EC16	<100 µg/kg	TM173		4700	22500	2520	3260	12300	238000
Aromatics >EC16-EC21	<100 µg/kg	TM173		10800	101000	4770	12400	132000	793000
Aromatics >EC21-EC35	<100 µg/kg	TM173		64300	361000	14500	35000	511000	2080000
Aromatics >EC35-EC44	<100 µg/kg	TM173		25300	73200	2080	7950	110000	364000
Aromatics >EC40-EC44	<100 µg/kg	TM173		11600	28700	417	2940	53200	142000
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		105000	557000	23900	58600	766000	3480000
Total Aliphatics >C5-35	<100 µg/kg	TM173		201000	722000	<100	40700	65200	1450000
Total Aromatics >C5-35	<100 µg/kg	TM173		79900	484000	21800	50600	656000	3110000
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173		281000	1210000	21800	91300	721000	4560000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		367000	1370000	23900	99300	836000	5150000

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
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*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP116	TP117	TP117	TP118	TP118	TP119
			Depth (m)	2.70	0.50	2.10	0.70	2.20	0.20
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	17/05/2012	17/05/2012	17/05/2012	17/05/2012	17/05/2012	17/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	18/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012
			SDG Ref	120518-110	120518-110	120518-110	120518-110	120518-110	120518-110
			Lab Sample No.(s)	5606771	5606773	5606774	5606777	5606778	5606779
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		130	113	101	67	106	62
GRO >C5-C12	<44 µg/kg	TM089		6320	691	17900	19500	15200	1560000
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 #	<5 #	<5 #	<5 #	<5 #	<100 #
Benzene	<10 µg/kg	TM089		23.9 M	<10 M	<10 M	50.5 M	12.8 M	177000 M
Toluene	<2 µg/kg	TM089		4.56 M	<2 M	<2 M	2.66 M	7.68 M	242000 M
Ethylbenzene	<3 µg/kg	TM089		258 M	<3 M	317 M	22.6 M	101 M	18400 M
m,p-Xylene	<6 µg/kg	TM089		210 M	<6 M	<6 M	198 M	229 M	190000 M
o-Xylene	<3 µg/kg	TM089		203 M	<3 M	125 M	202 M	154 M	61600 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089		413	<9	125	400	383	252000
sum of detected BTEX by GC	<24 µg/kg	TM089		699	<24	442	476	504	689000
Aliphatics >C5-C6	<10 µg/kg	TM089		12.5	<10	21.6	34.6	15.4	380
Aliphatics >C6-C8	<10 µg/kg	TM089		98	21.1	568	231	105	24000
Aliphatics >C8-C10	<10 µg/kg	TM089		872	42.2	3020	2690	2100	174000
Aliphatics >C10-C12	<10 µg/kg	TM089		2440	351	7110	8580	6660	331000
Aliphatics >C12-C16	<100 µg/kg	TM173		4510	21900	347000	158000	112000	403000
Aliphatics >C16-C21	<100 µg/kg	TM173		4850	17600	476000	237000	140000	158000
Aliphatics >C21-C35	<100 µg/kg	TM173		15900	25900	187000	114000	30400	386000
Aliphatics >C35-C44	<100 µg/kg	TM173		<100	1640	5270	10200	<100	108000
Total Aliphatics >C12-C44	<100 µg/kg	TM173		25300	67100	1020000	520000	283000	1060000
Aromatics >EC5-EC7	<10 µg/kg	TM089		23.9	<10	<10	50.5	12.8	177000
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	242000
Aromatics >EC8-EC10	<10 µg/kg	TM089		1250	29.8	2460	2220	1890	386000
Aromatics >EC10-EC12	<10 µg/kg	TM089		1620	234	4740	5720	4440	221000
Aromatics >EC12-EC16	<100 µg/kg	TM173		109000	13000	234000	122000	107000	125000
Aromatics >EC16-EC21	<100 µg/kg	TM173		277000	10300	370000	204000	123000	228000
Aromatics >EC21-EC35	<100 µg/kg	TM173		431000	15000	205000	197000	64900	241000
Aromatics >EC35-EC44	<100 µg/kg	TM173		89900	2950	26300	34900	9900	48100
Aromatics >EC40-EC44	<100 µg/kg	TM173		39800	689	8080	12100	2340	17100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		908000	41300	835000	558000	305000	642000
Total Aliphatics >C5-35	<100 µg/kg	TM173		28700	65900	1020000	522000	291000	1480000
Total Aromatics >C5-35	<100 µg/kg	TM173		821000	38600	816000	531000	301000	1620000
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173		849000	104000	1840000	1050000	592000	3100000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		939000	109000	1870000	1100000	602000	3250000

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	TP119
			Depth (m)	1.50
			Sample Type	Soil/Solid
			Date Sampled	17/05/2012
			Sample Time	.
			Date Received	18/05/2012
			SDG Ref	120518-110
			Lab Sample No.(s)	5606780
			AGS Reference	
GRO Surrogate % recovery**	%	TM089		121
GRO >C5-C12	<44 µg/kg	TM089		3580
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 #
Benzene	<10 µg/kg	TM089		18.9 M
Toluene	<2 µg/kg	TM089		9.45 M
Ethylbenzene	<3 µg/kg	TM089		10.8 M
m,p-Xylene	<6 µg/kg	TM089		50 M
o-Xylene	<3 µg/kg	TM089		41.9 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089		91.9
sum of detected BTEX by GC	<24 µg/kg	TM089		131
Aliphatics >C5-C6	<10 µg/kg	TM089		12.2
Aliphatics >C6-C8	<10 µg/kg	TM089		24.3
Aliphatics >C8-C10	<10 µg/kg	TM089		220
Aliphatics >C10-C12	<10 µg/kg	TM089		1830
Aliphatics >C12-C16	<100 µg/kg	TM173		29300
Aliphatics >C16-C21	<100 µg/kg	TM173		40200
Aliphatics >C21-C35	<100 µg/kg	TM173		117000
Aliphatics >C35-C44	<100 µg/kg	TM173		19600
Total Aliphatics >C12-C44	<100 µg/kg	TM173		206000
Aromatics >EC5-EC7	<10 µg/kg	TM089		18.9
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		248
Aromatics >EC10-EC12	<10 µg/kg	TM089		1220
Aromatics >EC12-EC16	<100 µg/kg	TM173		25400
Aromatics >EC16-EC21	<100 µg/kg	TM173		18500
Aromatics >EC21-EC35	<100 µg/kg	TM173		59500
Aromatics >EC35-EC44	<100 µg/kg	TM173		15900
Aromatics >EC40-EC44	<100 µg/kg	TM173		5370
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		119000
Total Aliphatics >C5-35	<100 µg/kg	TM173		189000
Total Aromatics >C5-35	<100 µg/kg	TM173		105000
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173		294000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		329000

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP110 0.35 SOLID 16/05/2012 00:00:00 120518-110 5606761 TM048	23/05/12	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP110 0.65 SOLID 16/05/2012 00:00:00 120518-110 5606762 TM048	23/05/12	Lauren Sargeant	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP111 0.30 SOLID 16/05/2012 00:00:00 120518-110 5606764 TM048	23/05/12	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP115 0.30 SOLID 17/05/2012 00:00:00 120518-110 5606765 TM048	23/05/12	Chris Swindells	loose fibres in soil	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP116 0.30 SOLID 17/05/2012 00:00:00 120518-110 5606768 TM048	23/05/12	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP116 1.40 SOLID 17/05/2012 00:00:00 120518-110 5606769 TM048	23/05/12	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP116 2.70 SOLID 17/05/2012 00:00:00 120518-110 5606771 TM048	23/05/12	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP118 0.70 SOLID 17/05/2012 00:00:00 120518-110 5606777 TM048	23/05/12	Lauren Sargeant	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP119 0.20 SOLID 17/05/2012 00:00:00 120518-110 5606779 TM048	23/05/12	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Asbestos Quantification - Full

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

		Additional Asbestos Components (Using TM048)	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation - %	Asbestos Quantification - Total - %
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP115 0.30 SOLID 17/05/2012 00:00:00 120518-110 5606765 TM 304	- (#)	-	0.8377 (#)	<0.001 (#)	0.8382 (#)

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

Notification of NDPs (No determination possible)

Date Received : 18/05/2012 18:25:06

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
5606765	TP115	0.30	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM 304				
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer		
TM321		Organic matter Content of Soil By Titration		

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

CERTIFICATE OF ANALYSIS

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

Test Completion Dates

Lab Sample No(s)	5606761	5606762	5606764	5606765	5606768	5606769	5606771	5606773	5606774	5606777
Customer Sample Ref.	TP110	TP110	TP111	TP115	TP116	TP116	TP116	TP117	TP117	TP118
AGS Ref.										
Depth	0.35	0.65	0.30	0.30	0.30	1.40	2.70	0.50	2.10	0.70
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Ammonium Soil by Titration	23-May-2012	24-May-2012	23-May-2012	24-May-2012	24-May-2012	24-May-2012	23-May-2012	24-May-2012	24-May-2012	23-May-2012
Asbestos Identification (Soil)	23-May-2012	23-May-2012	23-May-2012	23-May-2012	23-May-2012	23-May-2012	23-May-2012			23-May-2012
Asbestos Quantification - Full				13-Jun-2012						
Boron Water Soluble	24-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012	22-May-2012	22-May-2012	24-May-2012
Cyanide Comp/Free/Total/Thiocyanate	24-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012	25-May-2012
EPH CWG (Aliphatic) GC (S)	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012	23-May-2012	23-May-2012	25-May-2012
EPH CWG (Aromatic) GC (S)	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012	23-May-2012	23-May-2012	25-May-2012
GRO by GC-FID (S)	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012	24-May-2012	25-May-2012
Metals by iCap-OES (Soil)	23-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012	22-May-2012	23-May-2012	24-May-2012
PAH by GCMS	23-May-2012	23-May-2012	23-May-2012	23-May-2012	23-May-2012	23-May-2012	23-May-2012	23-May-2012	23-May-2012	23-May-2012
Phenols by HPLC (S)	24-May-2012	25-May-2012	24-May-2012	25-May-2012	25-May-2012	24-May-2012	25-May-2012	24-May-2012	23-May-2012	25-May-2012
Sample description	22-May-2012	22-May-2012	22-May-2012	22-May-2012	22-May-2012	22-May-2012	22-May-2012	21-May-2012	21-May-2012	22-May-2012
Total Organic Carbon	24-May-2012	24-May-2012	24-May-2012		24-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012
Total Organic Carbon (Asb)				24-May-2012						
TPH CWG GC (S)	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012	24-May-2012	25-May-2012

Lab Sample No(s)	5606778	5606779	5606780
Customer Sample Ref.	TP118	TP119	TP119
AGS Ref.			
Depth	2.20	0.20	1.50
Type	SOLID	SOLID	SOLID
Ammonium Soil by Titration	24-May-2012	23-May-2012	24-May-2012
Asbestos Identification (Soil)		23-May-2012	
Boron Water Soluble	22-May-2012	24-May-2012	22-May-2012
Cyanide Comp/Free/Total/Thiocyanate	24-May-2012	25-May-2012	24-May-2012
EPH CWG (Aliphatic) GC (S)	23-May-2012	25-May-2012	23-May-2012
EPH CWG (Aromatic) GC (S)	23-May-2012	25-May-2012	23-May-2012
GRO by GC-FID (S)	24-May-2012	25-May-2012	24-May-2012
Metals by iCap-OES (Soil)	22-May-2012	24-May-2012	22-May-2012
PAH by GCMS	24-May-2012	23-May-2012	25-May-2012
Phenols by HPLC (S)	24-May-2012	25-May-2012	25-May-2012
Sample description	21-May-2012	22-May-2012	21-May-2012
Total Organic Carbon	24-May-2012	24-May-2012	24-May-2012
TPH CWG GC (S)	24-May-2012	25-May-2012	24-May-2012

SDG:	120518-110	**Location:**	Banbury	**Order Number:**	66237
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	184070
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	182385

Appendix

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

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

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

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

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

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

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

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

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

11. Results relate only to the items tested.

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

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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

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

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

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

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

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

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

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

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

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

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D&C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB AROCLOR 1254 / PCB CON	D&C	HEXANE:ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE:ACETONE	MICROWAVE TM218.	GC-MS
>C6-C40	WET	HEXANE:ACETONE	SHAKER	GC-FID
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE:ACETONE	SHAKER	GC-FID
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB AROCLOR 1254	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PESTOCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	ACETONE	SOLID PHASE EXTRACTION	GC MS
TPH by INFRARED (IR)	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
MINERAL OIL by IR	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
GLYCOLS	NONE	DIRECT INJECTION	GC FID

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

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

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

ALcontrol Laboratories

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Celtic Technologies
1210 Park View
Arlington Business Park
Theale
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Berkshire
RG7 4TY

Attention: Neil Hopkins

CERTIFICATE OF ANALYSIS

Date:	03 May 2012
Customer:	H_CELTIC_REA
Sample Delivery Group (SDG):	120427-22
Your Reference:	C1526
Location:	Banbury
Report No:	180043

We received 5 samples on Friday April 27, 2012 and 5 of these samples were scheduled for analysis which was completed on Thursday May 03, 2012. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

[redacted]

Sonia McWhan
Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	120427-22	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180043
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
5507566	MW04			25/04/2012
5507568	MW10			26/04/2012
5507570	MW11			26/04/2012
5507574	MW12			26/04/2012
5507567	MW39			26/04/2012

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

CERTIFICATE OF ANALYSIS

SDG:	120427-22	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180043
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

LIQUID

Results Legend

- **X** Test
- **N** No Determination Possible

Lab Sample No(s)			5507566					5507568					5507570					5507574					5507567				
Customer Sample Reference			MW04					MW10					MW11					MW12					MW39				
AGS Reference																											
Depth (m)																											
Container			1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 5		X					X					X					X					X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5				X					X					X					X					X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5			X					X					X					X					X		
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5	X					X					X					X					X				
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5	X					X					X					X					X				
GRO by GC-FID (W)	All	NDPs: 0 Tests: 5					X					X					X					X					X
Mercury Dissolved	All	NDPs: 0 Tests: 5	X					X					X					X					X				
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 5	X					X					X					X					X				
Phenols by HPLC (W)	All	NDPs: 0 Tests: 5		X					X					X					X					X			
TPH CWG (W)	All	NDPs: 0 Tests: 5	X					X					X					X					X				

CERTIFICATE OF ANALYSIS

SDG:	120427-22	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180043
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	MW04	MW10	MW11	MW12	MW39
			Depth (m)	.	.	.	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	25/04/2012	26/04/2012	26/04/2012	26/04/2012	26/04/2012
			Sample Time	.	.	.	.	.
			Date Received	27/04/2012	27/04/2012	27/04/2012	27/04/2012	27/04/2012
			SDG Ref	120427-22	120427-22	120427-22	120427-22	120427-22
			Lab Sample No.(s)	5507566	5507568	5507570	5507574	5507567
			AGS Reference					
Ammoniacal Nitrogen as NH3	<0.2 mg/l	TM099		1.28 #	17 #	174 #	37.9 #	<0.2 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		2.36 #	2.92 #	4.86 #	1.62 #	1.15 #
Boron (diss.filt)	<9.4 µg/l	TM152		436 #	537 #	118 #	1770 #	829 #
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	<0.1 #	<0.1 #	0.127 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152		1.18 #	2.99 #	3.53 #	7.72 #	8.61 #
Copper (diss.filt)	<0.85 µg/l	TM152		1.5 #	1.71 #	1.27 #	4.55 #	16.3 #
Lead (diss.filt)	<0.02 µg/l	TM152		0.082 #	<0.02 #	0.04 #	0.036 #	1.23 #
Nickel (diss.filt)	<0.15 µg/l	TM152		8.27 #	5.48 #	4.91 #	20.2 #	18.1 #
Selenium (diss.filt)	<0.39 µg/l	TM152		1.83 #	1.28 #	2.12 #	2.11 #	3.82 #
Zinc (diss.filt)	<0.41 µg/l	TM152		3.07 #	1.94 #	2.31 #	3.51 #	8.19 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	0.243 #	<0.05 #	0.077 #	<0.05 #
Cyanide, Free	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #

CERTIFICATE OF ANALYSIS

SDG:	120427-22	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180043
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	MW04	MW10	MW11	MW12	MW39
			Depth (m)	.	.	.	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	25/04/2012	26/04/2012	26/04/2012	26/04/2012	26/04/2012
			Sample Time	.	.	.	.	.
			Date Received	27/04/2012	27/04/2012	27/04/2012	27/04/2012	27/04/2012
			SDG Ref	120427-22	120427-22	120427-22	120427-22	120427-22
			Lab Sample No.(s)	5507566	5507568	5507570	5507574	5507567
			AGS Reference					
Naphthalene (aq)	<0.1 µg/l	TM178		<0.1 #	0.112 #	0.109 #	<0.1 #	<0.1 #
Acenaphthene (aq)	<0.015 µg/l	TM178		<0.015 #	0.0774 #	0.174 #	<0.015 #	0.0163 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		<0.011 #	0.813 #	3.3 #	0.0158 #	<0.011 #
Fluoranthene (aq)	<0.017 µg/l	TM178		<0.017 #	0.0311 #	<0.017 #	<0.017 #	0.245 #
Anthracene (aq)	<0.015 µg/l	TM178		<0.015 #	<0.015 #	<0.015 #	<0.015 #	0.0256 #
Phenanthrene (aq)	<0.022 µg/l	TM178		<0.022 #	<0.022 #	<0.022 #	<0.022 #	0.0394 #
Fluorene (aq)	<0.014 µg/l	TM178		<0.014 #	0.0229 #	0.062 #	<0.014 #	<0.014 #
Chrysene (aq)	<0.013 µg/l	TM178		<0.013 #	0.0251 #	<0.013 #	<0.013 #	0.248 #
Pyrene (aq)	<0.015 µg/l	TM178		0.0333 #	0.0316 #	<0.015 #	<0.015 #	0.284 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		<0.017 #	<0.017 #	<0.017 #	<0.017 #	0.136 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		<0.023 #	<0.023 #	<0.023 #	<0.023 #	0.223 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		<0.027 #	<0.027 #	<0.027 #	<0.027 #	0.369 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		0.0136 #	0.0136 #	<0.009 #	<0.009 #	0.238 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.016 #	<0.016 #	<0.016 #	0.0507 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.016 #	<0.016 #	<0.016 #	0.255 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		<0.014 #	<0.014 #	<0.014 #	<0.014 #	0.155 #
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		<0.247	1.13	3.64	<0.247	2.29

CERTIFICATE OF ANALYSIS

SDG:	120427-22	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180043
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	MW04	MW10	MW11	MW12	MW39
			Depth (m)	.	.	.	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	25/04/2012	26/04/2012	26/04/2012	26/04/2012	26/04/2012
			Sample Time	.	.	.	.	.
			Date Received	27/04/2012	27/04/2012	27/04/2012	27/04/2012	27/04/2012
			SDG Ref	120427-22	120427-22	120427-22	120427-22	120427-22
			Lab Sample No.(s)	5507566	5507568	5507570	5507574	5507567
			AGS Reference					
GRO Surrogate % recovery**	%	TM245		98	100	95	97	99
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		86	<10	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		86	<10	<10	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		89	<10	10	<10	<10

CERTIFICATE OF ANALYSIS

SDG:	120427-22	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180043
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

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

CERTIFICATE OF ANALYSIS

SDG:	120427-22	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180043
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	5507566	5507568	5507570	5507574	5507567
Customer Sample Ref.	MW04	MW10	MW11	MW12	MW39
AGS Ref.					
Depth					
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	01-May-2012	30-Apr-2012	30-Apr-2012	30-Apr-2012	30-Apr-2012
Cyanide Comp/Free/Total/Thiocyanate	01-May-2012	01-May-2012	01-May-2012	01-May-2012	01-May-2012
Dissolved Metals by ICP-MS	30-Apr-2012	30-Apr-2012	30-Apr-2012	30-Apr-2012	30-Apr-2012
EPH CWG (Aliphatic) Aqueous GC (W)	01-May-2012	01-May-2012	01-May-2012	02-May-2012	01-May-2012
EPH CWG (Aromatic) Aqueous GC (W)	01-May-2012	01-May-2012	01-May-2012	02-May-2012	01-May-2012
GRO by GC-FID (W)	28-Apr-2012	28-Apr-2012	28-Apr-2012	28-Apr-2012	28-Apr-2012
Mercury Dissolved	02-May-2012	02-May-2012	02-May-2012	02-May-2012	02-May-2012
PAH Spec MS - Aqueous (W)	03-May-2012	02-May-2012	03-May-2012	02-May-2012	02-May-2012
Phenols by HPLC (W)	02-May-2012	02-May-2012	01-May-2012	02-May-2012	02-May-2012
TPH CWG (W)	01-May-2012	01-May-2012	01-May-2012	02-May-2012	01-May-2012

SDG:	120427-22	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	180043
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Appendix

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

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

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

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

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

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

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

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

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

11. Results relate only to the items tested.

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

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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

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

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

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

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

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

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

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

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

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

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D&C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB AROCLOR 1254 / PCB CON	D&C	HEXANE:ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE:ACETONE	MICROWAVE TM218.	GC-MS
>C6-C40	WET	HEXANE:ACETONE	SHAKER	GC-FID
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE:ACETONE	SHAKER	GC-FID
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB AROCLOR 1254	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PESTOCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	ACETONE	SOLID PHASE EXTRACTION	GC MS
TPH by INFRARED (IR)	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
MINERAL OIL by IR	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
GLYCOLS	NONE	DIRECT INJECTION	GC FID

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

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

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

ALcontrol Laboratories

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1210 Park View
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Theale
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Berkshire
RG7 4TY

Attention: Neil Hopkins

CERTIFICATE OF ANALYSIS

Date:	07 June 2012
Customer:	H_CELTIC_REA
Sample Delivery Group (SDG):	120528-36
Your Reference:	C1526
Location:	Banbury
Report No:	183482

We received 8 samples on Saturday May 26, 2012 and 8 of these samples were scheduled for analysis which was completed on Thursday June 07, 2012. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

Approved By:

[redacted]

Sonia McWhan

Operations Manager

Alcontrol Laboratories is a trading division of ALcontrol UK Limited
Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.

CERTIFICATE OF ANALYSIS

SDG:	120528-36	**Location:**	Banbury	**Order Number:**	66230
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183482
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
5653959	BH101a			25/05/2012
5653956	BH103			24/05/2012
5653958	BH104			24/05/2012
5653957	BH105			24/05/2012
5653960	BH106			25/05/2012
5653955	MW01			24/05/2012
5653962	MW07			25/05/2012
5653961	MW28			25/05/2012

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

ALcontrol Laboratories

CERTIFICATE OF ANALYSIS

Validated

SDG:	120528-36	**Location:**	Banbury	**Order Number:**	66230
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183482
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

LIQUID

Results Legend

- X Test
- N No Determination Possible

Lab Sample No(s)			5653955					5653962					5653961					5653959					5653956					5653958					5653957					5653960				
Customer Sample Reference			MW01					MW07					MW28					BH101a					BH103					BH104					BH105					BH106				
AGS Reference																																										
Depth (m)																																										
Container			1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered	NaOH (ALE245)	Vial (ALE297)
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 8		X					X					X					X					X					X					X					X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 8				X					X					X					X					X					X					X					X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 8			X					X					X					X					X					X					X					X		
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 8	X					X					X					X					X					X					X					X				
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 8	X					X					X					X					X					X					X					X				
GRO by GC-FID (W)	All	NDPs: 0 Tests: 8					X					X					X					X					X					X					X					X
Mercury Dissolved	All	NDPs: 0 Tests: 8	X					X					X					X					X					X					X					X				
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 8	X					X					X					X					X					X					X					X				
Phenols by HPLC (W)	All	NDPs: 0 Tests: 8		X					X					X					X					X					X					X					X			
TPH CWG (W)	All	NDPs: 0 Tests: 8	X					X					X					X					X					X					X					X				

16:23:05 07/06/2012

CERTIFICATE OF ANALYSIS

SDG:	120528-36	**Location:**	Banbury	**Order Number:**	66230
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183482
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH103	.	Water(GW/SW)	24/05/2012	.	26/05/2012	120528-36	5653956	
			BH104	.	Water(GW/SW)	24/05/2012	.	26/05/2012	120528-36	5653958	
			BH105	.	Water(GW/SW)	24/05/2012	.	26/05/2012	120528-36	5653957	
			BH106	.	Water(GW/SW)	25/05/2012	.	26/05/2012	120528-36	5653960	
			BH101a	.	Water(GW/SW)	25/05/2012	.	26/05/2012	120528-36	5653959	
			MW01	.	Water(GW/SW)	24/05/2012	.	26/05/2012	120528-36	5653955	
Ammoniacal Nitrogen as NH3	<0.2 mg/l	TM099	46.7 #	92.1 #	18.9 #	28.3 #	168 #	1.56 #			
Arsenic (diss.filt)	<0.12 µg/l	TM152	2.31 #	7.29 #	5.62 #	102 #	25 #	1.02 #			
Boron (diss.filt)	<9.4 µg/l	TM152	134 #	563 #	595 #	2010 #	319 #	255 #			
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #			
Chromium (diss.filt)	<0.22 µg/l	TM152	6.28 #	2.99 #	4.94 #	12.2 #	4.46 #	9.24 #			
Copper (diss.filt)	<0.85 µg/l	TM152	1.29 #	1.33 #	1.41 #	1.52 #	<0.85 #	3 #			
Lead (diss.filt)	<0.02 µg/l	TM152	0.465 #	0.07 #	0.185 #	0.29 #	0.366 #	0.097 #			
Nickel (diss.filt)	<0.15 µg/l	TM152	5.34 #	6.62 #	10.3 #	11.3 #	1.28 #	4.9 #			
Selenium (diss.filt)	<0.39 µg/l	TM152	0.71 #	2.95 #	2.74 #	5.43 #	3.2 #	4.64 #			
Zinc (diss.filt)	<0.41 µg/l	TM152	5.84 #	3.78 #	8.27 #	8.48 #	3.32 #	10.8 #			
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	0.0235 #	0.0113 #	<0.01 #			
Cyanide, Total	<0.05 mg/l	TM227	0.276 #	0.21 #	<0.05 #	0.065 #	0.09 #	<0.05 #			
Cyanide, Free	<0.05 mg/l	TM227	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #			
Phenols, Total Detected monohydric	<0.016 mg/l	TM259	<0.016 #	<0.016 #	<0.016 #	16.2 #	<0.016 #	<0.016 #			

CERTIFICATE OF ANALYSIS

SDG:	120528-36	**Location:**	Banbury	**Order Number:**	66230
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183482
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample Ref.	MW07	MW28
			Depth (m)	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)
			Date Sampled	25/05/2012	25/05/2012
			Sample Time	.	.
			Date Received	26/05/2012	26/05/2012
			SDG Ref	120528-36	120528-36
			Lab Sample No.(s)	5653962	5653961
			AGS Reference		
Ammoniacal Nitrogen as NH3	<0.2 mg/l	TM099		197 #	34.5 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		8.67 #	21.7 #
Boron (diss.filt)	<9.4 µg/l	TM152		349 #	279 #
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152		11.8 #	3.61 #
Copper (diss.filt)	<0.85 µg/l	TM152		0.947 #	<0.85 #
Lead (diss.filt)	<0.02 µg/l	TM152		0.054 #	0.06 #
Nickel (diss.filt)	<0.15 µg/l	TM152		4.4 #	2.62 #
Selenium (diss.filt)	<0.39 µg/l	TM152		2.35 #	2.97 #
Zinc (diss.filt)	<0.41 µg/l	TM152		2.08 #	2.99 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #
Cyanide, Total	<0.05 mg/l	TM227		0.067 #	<0.05 #
Cyanide, Free	<0.05 mg/l	TM227		<0.05 #	<0.05 #
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		0.9 #	<0.016 #

CERTIFICATE OF ANALYSIS

SDG:	120528-36	**Location:**	Banbury	**Order Number:**	66230
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183482
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample Ref.	BH103	BH104	BH105	BH106	BH101a	MW01
			Depth (m)	.	.	.	.	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	24/05/2012	24/05/2012	24/05/2012	25/05/2012	25/05/2012	24/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	26/05/2012	26/05/2012	26/05/2012	26/05/2012	26/05/2012	26/05/2012
			SDG Ref	120528-36	120528-36	120528-36	120528-36	120528-36	120528-36
			Lab Sample No.(s)	5653956	5653958	5653957	5653960	5653959	5653955
			AGS Reference						
Naphthalene (aq)	<0.1 µg/l	TM178		<0.1 #	0.119 #	0.255 #	2680 #	2.28 #	<0.1 #
Acenaphthene (aq)	<0.015 µg/l	TM178		0.0995 #	0.22 #	0.0386 #	1350 #	376 #	<0.015 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		0.098 #	0.371 #	0.0383 #	409 #	50.5 #	<0.011 #
Fluoranthene (aq)	<0.017 µg/l	TM178		0.0424 #	0.0687 #	0.045 #	563 #	182 #	0.0264 #
Anthracene (aq)	<0.015 µg/l	TM178		0.0152 #	0.041 #	0.0201 #	751 #	230 #	<0.015 #
Phenanthrene (aq)	<0.022 µg/l	TM178		0.0227 #	<0.022 #	0.0549 #	1740 #	372 #	<0.022 #
Fluorene (aq)	<0.014 µg/l	TM178		0.0291 #	0.093 #	0.0399 #	1210 #	192 #	<0.014 #
Chrysene (aq)	<0.013 µg/l	TM178		0.0141 #	0.0287 #	0.016 #	236 #	47.8 #	0.0163 #
Pyrene (aq)	<0.015 µg/l	TM178		0.0285 #	0.0625 #	0.0429 #	757 #	238 #	0.0287 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		<0.017 #	0.018 #	<0.017 #	236 #	51.1 #	<0.017 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		<0.023 #	0.095 #	<0.023 #	49.3 #	15 #	<0.023 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		<0.027 #	0.0701 #	<0.027 #	82.5 #	17.9 #	<0.027 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		0.0159 #	0.1 #	0.0128 #	138 #	30.1 #	0.0177 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<0.016 #	0.0295 #	<0.016 #	13.3 #	3.48 #	<0.016 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		<0.016 #	0.0853 #	<0.016 #	34.2 #	8.87 #	<0.016 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		<0.014 #	0.0749 #	<0.014 #	35.4 #	8.77 #	<0.014 #
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		0.365	1.48	0.563	10300	1830	<0.247

CERTIFICATE OF ANALYSIS

SDG:	120528-36	**Location:**	Banbury	**Order Number:**	66230
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183482
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample Ref.	MW07	MW28			
			Depth (m)	.	.			
			Sample Type	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	25/05/2012	25/05/2012			
			Sample Time	.	.			
			Date Received	26/05/2012	26/05/2012			
			SDG Ref	120528-36	120528-36			
			Lab Sample No.(s)	5653962	5653961			
			AGS Reference					
Naphthalene (aq)	<0.1 µg/l	TM178		<0.1 #	0.236 #			
Acenaphthene (aq)	<0.015 µg/l	TM178		<0.015 #	2.47 #			
Acenaphthylene (aq)	<0.011 µg/l	TM178		0.0367 #	1.09 #			
Fluoranthene (aq)	<0.017 µg/l	TM178		<0.017 #	2.61 #			
Anthracene (aq)	<0.015 µg/l	TM178		<0.015 #	1.2 #			
Phenanthrene (aq)	<0.022 µg/l	TM178		<0.022 #	1.17 #			
Fluorene (aq)	<0.014 µg/l	TM178		<0.014 #	0.692 #			
Chrysene (aq)	<0.013 µg/l	TM178		<0.013 #	1.27 #			
Pyrene (aq)	<0.015 µg/l	TM178		<0.015 #	4.6 #			
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		<0.017 #	1.19 #			
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		<0.023 #	0.343 #			
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		<0.027 #	0.504 #			
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		<0.009 #	0.871 #			
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<0.016 #	0.0954 #			
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		<0.016 #	0.269 #			
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		<0.014 #	0.254 #			
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		<0.247	18.9			

CERTIFICATE OF ANALYSIS

SDG:	120528-36	**Location:**	Banbury	**Order Number:**	66230
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183482
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample Ref.	BH103	BH104	BH105	BH106	BH101a	MW01
			Depth (m)	.	.	.	.	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	24/05/2012	24/05/2012	24/05/2012	25/05/2012	25/05/2012	24/05/2012
			Sample Time	.	.	.	.	.	.
			Date Received	26/05/2012	26/05/2012	26/05/2012	26/05/2012	26/05/2012	26/05/2012
			SDG Ref	120528-36	120528-36	120528-36	120528-36	120528-36	120528-36
			Lab Sample No.(s)	5653956	5653958	5653957	5653960	5653959	5653955
			AGS Reference						
GRO Surrogate % recovery**	%	TM245		81	110	105	95	100	109
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	15400 #	9910 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	4590 #	1800 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	1420 #	189 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	697 #	257 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	781 #	411 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	432 #	310 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	1210	721	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	7920	2970	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	20	19	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	134	61	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	831	749	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	3550	3370	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	5190	2630	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	4780	2110	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	1050	462	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	11000	5200	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	4590	1800	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	1420	189	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	2460	1480	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	2360	2250	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	55	<10	25700	5710	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	33	<10	20100	5250	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	46	<10	10900	2900	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	134	<10	56800	13800	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	137	<10	83200	29000	<10

CERTIFICATE OF ANALYSIS

SDG:	120528-36	**Location:**	Banbury	**Order Number:**	66230
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183482
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample Ref.	MW07	MW28				
			Depth (m)	.	.				
			Sample Type	Water(GW/SW)	Water(GW/SW)				
			Date Sampled	25/05/2012	25/05/2012				
			Sample Time	.	.				
			Date Received	26/05/2012	26/05/2012				
			SDG Ref	120528-36	120528-36				
			Lab Sample No.(s)	5653962	5653961				
			AGS Reference						
GRO Surrogate % recovery**	%	TM245		100	104				
GRO >C5-C12	<50 µg/l	TM245		244 #	766 #				
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #				
Benzene	<7 µg/l	TM245		<7 #	107 #				
Toluene	<4 µg/l	TM245		<4 #	11 #				
Ethylbenzene	<5 µg/l	TM245		<5 #	27 #				
m,p-Xylene	<8 µg/l	TM245		14 #	18 #				
o-Xylene	<3 µg/l	TM245		26 #	24 #				
Sum of detected Xylenes	<11 µg/l	TM245		40	42				
Sum of detected BTEX	<28 µg/l	TM245		40	187				
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10				
Aliphatics >C6-C8	<10 µg/l	TM245		13	15				
Aliphatics >C8-C10	<10 µg/l	TM245		34	55				
Aliphatics >C10-C12	<10 µg/l	TM245		77	279				
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	41				
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	58				
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	12				
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	111				
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	107				
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	11				
Aromatics >EC8-EC10	<10 µg/l	TM245		63	106				
Aromatics >EC10-EC12	<10 µg/l	TM245		51	186				
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		46	61				
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	55				
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10				
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		46	116				
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		291	993				

CERTIFICATE OF ANALYSIS

SDG:	120528-36	**Location:**	Banbury	**Order Number:**	66230
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183482
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

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

CERTIFICATE OF ANALYSIS

SDG:	120528-36	**Location:**	Banbury	**Order Number:**	66230
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183482
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	5653956	5653958	5653957	5653960	5653959	5653955	5653962	5653961
Customer Sample Ref.	BH103	BH104	BH105	BH106	BH101a	MW01	MW07	MW28
AGS Ref.								
Depth								
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012
Cyanide Comp/Free/Total/Thiocyanate	30-May-2012	30-May-2012	30-May-2012	30-May-2012	30-May-2012	30-May-2012	30-May-2012	30-May-2012
Dissolved Metals by ICP-MS	30-May-2012	30-May-2012	30-May-2012	30-May-2012	30-May-2012	30-May-2012	30-May-2012	30-May-2012
EPH CWG (Aliphatic) Aqueous GC (W)	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012
EPH CWG (Aromatic) Aqueous GC (W)	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012
GRO by GC-FID (W)	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012
Mercury Dissolved	30-May-2012	30-May-2012	30-May-2012	30-May-2012	30-May-2012	30-May-2012	30-May-2012	30-May-2012
PAH Spec MS - Aqueous (W)	06-Jun-2012	06-Jun-2012	06-Jun-2012	06-Jun-2012	06-Jun-2012	06-Jun-2012	06-Jun-2012	06-Jun-2012
Phenols by HPLC (W)	31-May-2012	31-May-2012	31-May-2012	31-May-2012	31-May-2012	31-May-2012	31-May-2012	06-Jun-2012
TPH CWG (W)	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012	07-Jun-2012

SDG:	120528-36	**Location:**	Banbury	**Order Number:**	66230
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	183482
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Appendix

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

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

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

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

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

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

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

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

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

11. Results relate only to the items tested.

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

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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

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

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

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

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

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

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

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

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

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

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D&C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE: ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE: ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE: ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE: ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE: ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE: ACETONE	END OVER END	GC-FID
PCB AROCLOR 1254 / PCB CON	D&C	HEXANE: ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE: ACETONE	MICROWAVE TM218.	GC-MS
>C6-C40	WET	HEXANE: ACETONE	SHAKER	GC-FID
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE: ACETONE	SHAKER	GC-FID
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB AROCLOR 1254	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	ACETONE	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
MINERAL OIL by IR	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
GLYCOLS	NONE	DIRECT INJECTION	GC FID

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

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

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

ALcontrol Laboratories

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RG7 4TY

Attention: Neil Hopkins

CERTIFICATE OF ANALYSIS

Date:	25 May 2012
Customer:	H_CELTIC_REA
Sample Delivery Group (SDG):	120519-90
Your Reference:	C1526
Location:	Banbury
Report No:	182368

We received 5 samples on Saturday May 19, 2012 and 5 of these samples were scheduled for analysis which was completed on Friday May 25, 2012. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

Approved By:

[redacted]

Sonia McWhan

Operations Manager

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Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	120519-90	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	182368
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
5610523	MW04			18/05/2012
5610524	MW10			18/05/2012
5610525	MW11			18/05/2012
5610526	MW12			18/05/2012
5610533	MW39			18/05/2012

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

CERTIFICATE OF ANALYSIS

SDG:	120519-90	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	182368
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

LIQUID

Results Legend

X **Test**

N **No Determination Possible**

Lab Sample No(s)	5610523	5610524	5610525	5610526	5610533
Customer Sample Reference	MW04	MW10	MW11	MW12	MW39
AGS Reference					
Depth (m)					

Container	5610523	5610524	5610525	5610526	5610533
1l green glass bottle					
H2SO4 (ALE244)	X	X	X	X	X
HNO3 Filtered (ALE					
NaOH (ALE245)					
Vial (ALE297)					
1l green glass bottle					
H2SO4 (ALE244)					
HNO3 Filtered (ALE					
NaOH (ALE245)					
Vial (ALE297)					
1l green glass bottle					
H2SO4 (ALE244)					
HNO3 Filtered (ALE					
NaOH (ALE245)					
Vial (ALE297)					
1l green glass bottle					
H2SO4 (ALE244)					
HNO3 Filtered (ALE					
NaOH (ALE245)					
Vial (ALE297)					

			5610523	5610524	5610525	5610526	5610533
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 5	X	X	X	X	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5	X	X	X	X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5	X	X	X	X	X
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
Mercury Dissolved	All	NDPs: 0 Tests: 5	X	X	X	X	X
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
TPH CWG (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X

CERTIFICATE OF ANALYSIS

SDG:	120519-90	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	182368
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	MW04	MW10	MW11	MW12	MW39
			Depth (m)	.	.	.	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	18/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012
			Sample Time	.	.	.	.	.
			Date Received	19/05/2012	19/05/2012	19/05/2012	19/05/2012	19/05/2012
			SDG Ref	120519-90	120519-90	120519-90	120519-90	120519-90
			Lab Sample No.(s)	5610523	5610524	5610525	5610526	5610533
			AGS Reference					
Ammoniacal Nitrogen as NH3	<0.2 mg/l	TM099		0.76 #	20.1 #	165 #	45.5 #	<0.2 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		1.22 #	2.65 #	2.59 #	2.15 #	0.872 #
Boron (diss.filt)	<9.4 µg/l	TM152		481 #	625 #	138 #	1320 #	732 #
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	<0.1 #	<0.1 #	0.157 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152		6.17 #	3.62 #	11.6 #	9.36 #	13.5 #
Copper (diss.filt)	<0.85 µg/l	TM152		2.79 #	1.84 #	2.37 #	5.52 #	4.9 #
Lead (diss.filt)	<0.02 µg/l	TM152		0.882 #	<0.02 #	<0.02 #	<0.02 #	0.067 #
Nickel (diss.filt)	<0.15 µg/l	TM152		7.98 #	5.35 #	4.3 #	24.5 #	12.6 #
Selenium (diss.filt)	<0.39 µg/l	TM152		1.13 #	0.846 #	1.34 #	1.41 #	2.66 #
Zinc (diss.filt)	<0.41 µg/l	TM152		2.86 #	7.34 #	2.7 #	7.12 #	2.89 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	0.301 #	<0.05 #	0.119 #	<0.05 #
Cyanide, Free	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #

CERTIFICATE OF ANALYSIS

SDG:	120519-90	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	182368
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	MW04	MW10	MW11	MW12	MW39
			Depth (m)	.	.	.	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	18/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012
			Sample Time	.	.	.	.	.
			Date Received	19/05/2012	19/05/2012	19/05/2012	19/05/2012	19/05/2012
			SDG Ref	120519-90	120519-90	120519-90	120519-90	120519-90
			Lab Sample No.(s)	5610523	5610524	5610525	5610526	5610533
			AGS Reference					
Naphthalene (aq)	<0.1 µg/l	TM178		<0.1 #	0.139 #	0.263 #	0.129 #	<0.1 #
Acenaphthene (aq)	<0.015 µg/l	TM178		<0.015 #	0.125 #	0.194 #	0.0163 #	<0.015 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		<0.011 #	0.746 #	2.22 #	0.0129 #	<0.011 #
Fluoranthene (aq)	<0.017 µg/l	TM178		<0.017 #	0.0626 #	0.0564 #	0.0284 #	0.217 #
Anthracene (aq)	<0.015 µg/l	TM178		<0.015 #	<0.015 #	0.019 #	<0.015 #	0.023 #
Phenanthrene (aq)	<0.022 µg/l	TM178		<0.022 #	0.045 #	0.0964 #	0.0475 #	0.0513 #
Fluorene (aq)	<0.014 µg/l	TM178		<0.014 #	<0.014 #	0.0656 #	<0.014 #	<0.014 #
Chrysene (aq)	<0.013 µg/l	TM178		<0.013 #	0.039 #	0.0324 #	<0.013 #	0.147 #
Pyrene (aq)	<0.015 µg/l	TM178		0.0168 #	0.0731 #	0.0731 #	0.0357 #	0.22 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		<0.017 #	0.0241 #	0.0184 #	<0.017 #	0.0989 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		<0.023 #	0.0234 #	<0.023 #	<0.023 #	0.16 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		<0.027 #	<0.027 #	<0.027 #	<0.027 #	0.141 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		<0.009 #	0.0193 #	<0.009 #	<0.009 #	0.15 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.016 #	<0.016 #	<0.016 #	0.042 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		<0.016 #	0.0162 #	<0.016 #	<0.016 #	0.211 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		<0.014 #	<0.014 #	<0.014 #	<0.014 #	0.143 #
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		<0.247	1.31	3.04	0.27	1.6

CERTIFICATE OF ANALYSIS

SDG:	120519-90	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	182368
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	MW04	MW10	MW11	MW12	MW39
			Depth (m)	.	.	.	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	18/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012
			Sample Time	.	.	.	.	.
			Date Received	19/05/2012	19/05/2012	19/05/2012	19/05/2012	19/05/2012
			SDG Ref	120519-90	120519-90	120519-90	120519-90	120519-90
			Lab Sample No.(s)	5610523	5610524	5610525	5610526	5610533
			AGS Reference					
GRO Surrogate % recovery**	%	TM245		109	102	118	106	109
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG:	120519-90	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	182368
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

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

CERTIFICATE OF ANALYSIS

SDG:	120519-90	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	182368
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	5610523	5610524	5610525	5610526	5610533
Customer Sample Ref.	MW04	MW10	MW11	MW12	MW39
AGS Ref.					
Depth					
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	24-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012
Cyanide Comp/Free/Total/Thiocyanate	23-May-2012	23-May-2012	23-May-2012	23-May-2012	23-May-2012
Dissolved Metals by ICP-MS	24-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012
EPH CWG (Aliphatic) Aqueous GC (W)	25-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012
EPH CWG (Aromatic) Aqueous GC (W)	25-May-2012	24-May-2012	24-May-2012	24-May-2012	24-May-2012
GRO by GC-FID (W)	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012
Mercury Dissolved	22-May-2012	22-May-2012	22-May-2012	22-May-2012	22-May-2012
PAH Spec MS - Aqueous (W)	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012
Phenols by HPLC (W)	23-May-2012	23-May-2012	23-May-2012	23-May-2012	23-May-2012
TPH CWG (W)	25-May-2012	25-May-2012	25-May-2012	25-May-2012	25-May-2012

SDG:	120519-90	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	182368
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Appendix

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

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

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

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

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

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

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

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

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

11. Results relate only to the items tested.

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

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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

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

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

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

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

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

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

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

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

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

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D&C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB AROCLOR 1254 / PCB CON	D&C	HEXANE:ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE:ACETONE	MICROWAVE TM218.	GC-MS
>C6-C40	WET	HEXANE:ACETONE	SHAKER	GC-FID
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE:ACETONE	SHAKER	GC-FID
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB AROCLOR 1254	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PESTOCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	ACETONE	SOLID PHASE EXTRACTION	GC MS
TPH by INFRARED (IR)	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
MINERAL OIL by IR	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
GLYCOLS	NONE	DIRECT INJECTION	GC FID

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

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

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

ALcontrol Laboratories

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Attention: Neil Hopkins

CERTIFICATE OF ANALYSIS

Date:	21 May 2012
Customer:	H_CELTIC_REA
Sample Delivery Group (SDG):	120512-56
Your Reference:	C1526
Location:	Banbury
Report No:	181669

This report has been revised and directly supersedes 181636 in its entirety.

We received 5 samples on Saturday May 12, 2012 and 5 of these samples were scheduled for analysis which was completed on Monday May 21, 2012. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

Approved By:

[redacted]

Sonia McWhan

Operations Manager

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Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	120512-56	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181669
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	181636

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
5577377	BH101a			10/05/2012
5577376	BH103			10/05/2012
5577378	BH106			10/05/2012
5577375	MW7			10/05/2012
5577379	SW1			10/05/2012

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

CERTIFICATE OF ANALYSIS

SDG:	120512-56	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181669
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	181636

LIQUID

Results Legend

- X — **Test**
- N — **No Determination Possible**

Lab Sample No(s)			5577379					5577375					5577377					5577376					5577378				
Customer Sample Reference			SW1					MW7					BH101a					BH103					BH106				
AGS Reference																											
Depth (m)																											
Container			1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 5		X					X					X					X					X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5				X					X					X					X					X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5			X					X					X					X					X		
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5	X					X					X					X					X				
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5	X					X					X					X					X				
GRO by GC-FID (W)	All	NDPs: 0 Tests: 5					X					X					X					X					X
Mercury Dissolved	All	NDPs: 0 Tests: 5	X					X					X					X					X				
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 5	X					X					X					X					X				
Phenols by HPLC (W)	All	NDPs: 0 Tests: 5		X					X					X					X					X			
TPH CWG (W)	All	NDPs: 0 Tests: 5	X					X					X					X					X				

CERTIFICATE OF ANALYSIS

SDG:	120512-56	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181669
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	181636

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH103	BH106	BH101a	MW7	SW1
			Depth (m)	.	.	.	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	10/05/2012	10/05/2012	10/05/2012	10/05/2012	10/05/2012
			Sample Time	.	.	.	.	.
			Date Received	12/05/2012	12/05/2012	12/05/2012	12/05/2012	12/05/2012
			SDG Ref	120512-56	120512-56	120512-56	120512-56	120512-56
			Lab Sample No.(s)	5577376	5577378	5577377	5577375	5577379
			AGS Reference					
Ammoniacal Nitrogen as NH3	<0.2 mg/l	TM099		50.8 #	17 #	168 #	148 #	16.7 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		2.17 #	200 #	23.2 #	7.99 #	1.34 #
Boron (diss.filt)	<9.4 µg/l	TM152		164 #	3330 #	407 #	538 #	349 #
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152		1.51 #	4.96 #	3.59 #	6.94 #	7.33 #
Copper (diss.filt)	<0.85 µg/l	TM152		1.12 #	0.917 #	<0.85 #	1.23 #	2.61 #
Lead (diss.filt)	<0.02 µg/l	TM152		0.968 #	0.541 #	0.1 #	4.64 #	0.192 #
Nickel (diss.filt)	<0.15 µg/l	TM152		4.87 #	9.69 #	1.24 #	4.76 #	4.81 #
Selenium (diss.filt)	<0.39 µg/l	TM152		1.4 #	4.6 #	2.2 #	1.62 #	1.48 #
Zinc (diss.filt)	<0.41 µg/l	TM152		17 #	14.5 #	1.59 #	7.42 #	10.2 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Cyanide, Total	<0.05 mg/l	TM227		0.328 #	0.072 #	0.051 #	0.058 #	<0.05 #
Cyanide, Free	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	36.4 #	0.77 #	0.62 #	<0.016 #

CERTIFICATE OF ANALYSIS

SDG:	120512-56	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181669
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	181636

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH103	BH106	BH101a	MW7	SW1
			Depth (m)	.	.	.	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	10/05/2012	10/05/2012	10/05/2012	10/05/2012	10/05/2012
			Sample Time	.	.	.	.	.
			Date Received	12/05/2012	12/05/2012	12/05/2012	12/05/2012	12/05/2012
			SDG Ref	120512-56	120512-56	120512-56	120512-56	120512-56
			Lab Sample No.(s)	5577376	5577378	5577377	5577375	5577379
			AGS Reference					
Naphthalene (aq)	<0.1 µg/l	TM178		<0.1 #	1220 #	0.786 #	0.128 #	0.362 #
Acenaphthene (aq)	<0.015 µg/l	TM178		0.376 #	99.6 #	144 #	2.77 #	0.261 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		1.49 #	58.9 #	18.2 #	1.88 #	0.139 #
Fluoranthene (aq)	<0.017 µg/l	TM178		0.168 #	5.94 #	19.5 #	0.765 #	0.0837 #
Anthracene (aq)	<0.015 µg/l	TM178		0.0277 #	13 #	28.2 #	0.682 #	0.141 #
Phenanthrene (aq)	<0.022 µg/l	TM178		0.085 #	57.4 #	40.4 #	0.0256 #	0.612 #
Fluorene (aq)	<0.014 µg/l	TM178		0.0359 #	64.2 #	87.6 #	1.45 #	0.337 #
Chrysene (aq)	<0.013 µg/l	TM178		0.0814 #	2.18 #	6.73 #	0.3 #	0.0436 #
Pyrene (aq)	<0.015 µg/l	TM178		0.143 #	7.14 #	24.3 #	0.978 #	0.101 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		0.0826 #	2.14 #	6.44 #	0.287 #	0.0544 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		0.0603 #	2.69 #	2.65 #	0.0943 #	0.0688 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		0.0828 #	1.82 #	3.45 #	0.116 #	0.053 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		0.0757 #	1.99 #	4.85 #	0.16 #	0.044 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.0165 #	1.13 #	0.485 #	0.0327 #	0.0328 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		0.049 #	1.91 #	1.41 #	0.0826 #	0.0427 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		0.046 #	2.05 #	1.34 #	0.0674 #	0.0467 #
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		2.82	1540	390	9.81	2.42

CERTIFICATE OF ANALYSIS

SDG:	120512-56	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181669
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	181636

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH103	BH106	BH101a	MW7	SW1
			Depth (m)	.	.	.	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	10/05/2012	10/05/2012	10/05/2012	10/05/2012	10/05/2012
			Sample Time	.	.	.	.	.
			Date Received	12/05/2012	12/05/2012	12/05/2012	12/05/2012	12/05/2012
			SDG Ref	120512-56	120512-56	120512-56	120512-56	120512-56
			Lab Sample No.(s)	5577376	5577378	5577377	5577375	5577379
			AGS Reference					
GRO Surrogate % recovery**	%	TM245		108 §	99	107	101	107
GRO >C5-C12	<50 µg/l	TM245		<50 § #	6520 #	9180 #	630 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 § #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 § #	1020 #	1820 #	150 #	<7 #
Toluene	<4 µg/l	TM245		<4 § #	444 #	191 #	36 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 § #	280 #	403 #	5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 § #	273 #	372 #	64 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 § #	155 #	289 #	45 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11 §	428	661	109	<11
Sum of detected BTEX	<28 µg/l	TM245		<28 §	2170	3080	300	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10 §	<10	16	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10 §	130	85	18	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10 §	419	612	67	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10 §	2110	2990	118	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	80	286	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	78	264	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	76	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	158	626	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10 §	1020	1820	150	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10 §	444	191	36	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10 §	989	1470	159	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10 §	1410	1990	78	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		10	2280	2990	187	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	544	1080	49	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	184	460	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		10	3000	4540	236	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		11	9680	14300	866	<10

CERTIFICATE OF ANALYSIS

SDG:	120512-56	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181669
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	181636

Notification of Deviating Samples

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
5584959	BH103		LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	Benzene	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	Ethylbenzene	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	GRO >C5-C12	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	m,p-Xylene	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	Methyl tertiary butyl ether (MTBE)	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	o-Xylene	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	Sum of detected BTEX	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	Sum of detected Xylenes	Container with Headspace provided for volatiles analysis
5584959	BH103		LIQUID	GRO by GC-FID (W)	Toluene	Container with Headspace provided for volatiles analysis

Note : Test results may be compromised

CERTIFICATE OF ANALYSIS

SDG:	120512-56	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181669
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	181636

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

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

CERTIFICATE OF ANALYSIS

SDG:	120512-56	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181669
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	181636

Test Completion Dates

Lab Sample No(s)	5577376	5577378	5577377	5577375	5577379
Customer Sample Ref.	BH103	BH106	BH101a	MW7	SW1
AGS Ref.					
Depth					
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	17-May-2012	17-May-2012	17-May-2012	17-May-2012	17-May-2012
Cyanide Comp/Free/Total/Thiocyanate	16-May-2012	16-May-2012	16-May-2012	16-May-2012	16-May-2012
Dissolved Metals by ICP-MS	16-May-2012	16-May-2012	16-May-2012	16-May-2012	16-May-2012
EPH CWG (Aliphatic) Aqueous GC (W)	16-May-2012	16-May-2012	16-May-2012	16-May-2012	16-May-2012
EPH CWG (Aromatic) Aqueous GC (W)	16-May-2012	16-May-2012	16-May-2012	16-May-2012	16-May-2012
GRO by GC-FID (W)	15-May-2012	15-May-2012	15-May-2012	15-May-2012	15-May-2012
Mercury Dissolved	16-May-2012	16-May-2012	16-May-2012	16-May-2012	16-May-2012
PAH Spec MS - Aqueous (W)	18-May-2012	18-May-2012	18-May-2012	18-May-2012	18-May-2012
Phenols by HPLC (W)	18-May-2012	18-May-2012	18-May-2012	17-May-2012	18-May-2012
TPH CWG (W)	16-May-2012	16-May-2012	16-May-2012	16-May-2012	16-May-2012

SDG:	120512-56	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181669
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	181636

Appendix

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

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

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

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

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

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

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

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

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

11. Results relate only to the items tested.

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

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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

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

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

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

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

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

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

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

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

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

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D&C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB AROCLOR 1254 / PCB CON	D&C	HEXANE:ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE:ACETONE	MICROWAVE TM218.	GC-MS
>C6-C40	WET	HEXANE:ACETONE	SHAKER	GC-FID
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE:ACETONE	SHAKER	GC-FID
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB AROCLOR 1254	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PESTOCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	ACETONE	SOLID PHASE EXTRACTION	GC MS
TPH by INFRARED (IR)	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
MINERAL OIL by IR	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
GLYCOLS	NONE	DIRECT INJECTION	GC FID

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

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

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

ALcontrol Laboratories

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Celtic Technologies
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Theale
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RG7 4TY

Attention: Neil Hopkins

CERTIFICATE OF ANALYSIS

Date:	16 May 2012
Customer:	H_CELTIC_REA
Sample Delivery Group (SDG):	120510-11
Your Reference:	C1526
Location:	Banbury
Report No:	181231

We received 4 samples on Thursday May 10, 2012 and 4 of these samples were scheduled for analysis which was completed on Wednesday May 16, 2012. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

Approved By:

[redacted]

Sonia McWhan

Operations Manager

Alcontrol Laboratories is a trading division of ALcontrol UK Limited
Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	120510-11	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181231
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

LIQUID

Results Legend

X **Test**

N **No Determination Possible**

Lab Sample No(s)			5560557				5560561				5560559				5560560			
Customer Sample Reference			MW1				MW28				BH104				BH105			
AGS Reference																		
Depth (m)																		
Container			1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)	1l green glass bottle	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 4		X					X					X					X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4				X					X					X					X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 4			X					X					X					X		
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 4	X					X					X					X					
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 4	X					X					X					X					
GRO by GC-FID (W)	All	NDPs: 0 Tests: 4					X					X					X						X
Mercury Dissolved	All	NDPs: 0 Tests: 4	X					X					X					X					
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 4	X					X					X					X					
Phenols by HPLC (W)	All	NDPs: 0 Tests: 4		X					X					X					X				
TPH CWG (W)	All	NDPs: 0 Tests: 4	X					X					X					X					

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	120510-11	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181231
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH104	BH105	MW1	MW28		
			Depth (m)	.	.	.	.		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	09/05/2012	09/05/2012	09/05/2012	09/05/2012		
			Sample Time	.	.	.	.		
			Date Received	10/05/2012	10/05/2012	10/05/2012	10/05/2012		
			SDG Ref	120510-11	120510-11	120510-11	120510-11		
			Lab Sample No.(s)	5560559	5560560	5560557	5560561		
			AGS Reference						
Ammoniacal Nitrogen as NH3	<0.2 mg/l	TM099		93.1 #	14.6 #	<0.2 #	63.8 #		
Arsenic (diss.filt)	<0.12 µg/l	TM152		6.95 #	2.81 #	2.53 #	19.4 #		
Boron (diss.filt)	<9.4 µg/l	TM152		693 #	836 #	394 #	399 #		
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	<0.1 #	<0.1 #	<0.1 #		
Chromium (diss.filt)	<0.22 µg/l	TM152		9.13 #	11.4 #	15.8 #	11.8 #		
Copper (diss.filt)	<0.85 µg/l	TM152		<0.85 #	<0.85 #	4.79 #	<0.85 #		
Lead (diss.filt)	<0.02 µg/l	TM152		0.287 #	0.233 #	0.376 #	0.109 #		
Nickel (diss.filt)	<0.15 µg/l	TM152		5.21 #	9.65 #	4.22 #	1.84 #		
Selenium (diss.filt)	<0.39 µg/l	TM152		2.1 #	1.06 #	4.11 #	1.01 #		
Zinc (diss.filt)	<0.41 µg/l	TM152		4.23 #	9.69 #	8.52 #	1.95 #		
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #		
Cyanide, Total	<0.05 mg/l	TM227		0.241 #	<0.05 #	<0.05 #	<0.05 #		
Cyanide, Free	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #		
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		0.02 #	<0.016 #	<0.016 #	<0.016 #		

CERTIFICATE OF ANALYSIS

SDG:	120510-11	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181231
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH104	BH105	MW1	MW28		
			Depth (m)	.	.	.	.		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	09/05/2012	09/05/2012	09/05/2012	09/05/2012		
			Sample Time	.	.	.	.		
			Date Received	10/05/2012	10/05/2012	10/05/2012	10/05/2012		
			SDG Ref	120510-11	120510-11	120510-11	120510-11		
			Lab Sample No.(s)	5560559	5560560	5560557	5560561		
			AGS Reference						
Naphthalene (aq)	<0.1 µg/l	TM178		4.07 #	0.235 #	0.159 #	4.59 #		
Acenaphthene (aq)	<0.015 µg/l	TM178		0.148 #	0.0589 #	<0.015 #	4.73 #		
Acenaphthylene (aq)	<0.011 µg/l	TM178		0.388 #	0.0255 #	0.0154 #	2.85 #		
Fluoranthene (aq)	<0.017 µg/l	TM178		0.131 #	0.061 #	0.0868 #	0.162 #		
Anthracene (aq)	<0.015 µg/l	TM178		0.0396 #	0.0203 #	0.0153 #	0.2 #		
Phenanthrene (aq)	<0.022 µg/l	TM178		0.0883 #	0.104 #	0.0778 #	0.53 #		
Fluorene (aq)	<0.014 µg/l	TM178		0.0872 #	0.0444 #	0.0157 #	1.28 #		
Chrysene (aq)	<0.013 µg/l	TM178		0.0879 #	0.0279 #	0.0545 #	0.038 #		
Pyrene (aq)	<0.015 µg/l	TM178		0.137 #	0.0614 #	0.0862 #	0.156 #		
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		0.0653 #	0.0204 #	0.0431 #	<0.034 #		
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		0.198 #	<0.023 #	0.0487 #	<0.046 #		
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		0.194 #	<0.027 #	0.0568 #	<0.054 #		
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		0.22 #	0.0233 #	0.0517 #	<0.018 #		
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.0507 #	<0.016 #	<0.016 #	<0.032 #		
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		0.187 #	0.0165 #	0.0395 #	<0.032 #		
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		0.175 #	<0.014 #	0.0348 #	<0.028 #		
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		6.27	0.699	0.785	14.6		

CERTIFICATE OF ANALYSIS

SDG:	120510-11	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181231
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	BH104	BH105	MW1	MW28		
			Depth (m)	.	.	.	.		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	09/05/2012	09/05/2012	09/05/2012	09/05/2012		
			Sample Time	.	.	.	.		
			Date Received	10/05/2012	10/05/2012	10/05/2012	10/05/2012		
			SDG Ref	120510-11	120510-11	120510-11	120510-11		
			Lab Sample No.(s)	5560559	5560560	5560557	5560561		
			AGS Reference						
GRO Surrogate % recovery**	%	TM245		102	102	109	107		
GRO >C5-C12	<50 µg/l	TM245		111 #	<50 #	<50 #	212 #		
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #		
Benzene	<7 µg/l	TM245		66 #	<7 #	<7 #	69 #		
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #		
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	6 #		
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #		
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #		
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11		
Sum of detected BTEX	<28 µg/l	TM245		66	<28	<28	75		
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10		
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	11		
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	19		
Aliphatics >C10-C12	<10 µg/l	TM245		15	<10	<10	53		
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	33		
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	49		
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	11		
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	93		
Aromatics >EC5-EC7	<10 µg/l	TM245		66	<10	<10	69		
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10		
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	21		
Aromatics >EC10-EC12	<10 µg/l	TM245		10	<10	<10	35		
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	92		
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	37		
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10		
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	129		
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		112	<10	<10	434		

CERTIFICATE OF ANALYSIS

SDG:	120510-11	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181231
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

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

CERTIFICATE OF ANALYSIS

SDG:	120510-11	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181231
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	5560559	5560560	5560557	5560561
Customer Sample Ref.	BH104	BH105	MW1	MW28
AGS Ref.				
Depth				
Type	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	16-May-2012	16-May-2012	16-May-2012	16-May-2012
Cyanide Comp/Free/Total/Thiocyanate	15-May-2012	15-May-2012	15-May-2012	11-May-2012
Dissolved Metals by ICP-MS	11-May-2012	11-May-2012	11-May-2012	11-May-2012
EPH CWG (Aliphatic) Aqueous GC (W)	14-May-2012	14-May-2012	14-May-2012	14-May-2012
EPH CWG (Aromatic) Aqueous GC (W)	14-May-2012	14-May-2012	14-May-2012	14-May-2012
GRO by GC-FID (W)	12-May-2012	12-May-2012	12-May-2012	12-May-2012
Mercury Dissolved	15-May-2012	15-May-2012	15-May-2012	15-May-2012
PAH Spec MS - Aqueous (W)	14-May-2012	14-May-2012	14-May-2012	14-May-2012
Phenols by HPLC (W)	14-May-2012	14-May-2012	14-May-2012	14-May-2012
TPH CWG (W)	14-May-2012	14-May-2012	14-May-2012	14-May-2012

SDG:	120510-11	**Location:**	Banbury	**Order Number:**	
Job:	H_CELTIC_REA-12	**Customer:**	Celtic Technologies	**Report Number:**	181231
Client Reference:	C1526	**Attention:**	Neil Hopkins	**Superseded Report:**	

Appendix

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

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

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

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

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

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

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

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

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

11. Results relate only to the items tested.

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

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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

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

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

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

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

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

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

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

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

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

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D&C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB AROCLOR 1254 / PCB CON	D&C	HEXANE:ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE:ACETONE	MICROWAVE TM218.	GC-MS
>C6-C40	WET	HEXANE:ACETONE	SHAKER	GC-FID
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE:ACETONE	SHAKER	GC-FID
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB AROCLOR 1254	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PESTOCPOPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	ACETONE	SOLID PHASE EXTRACTION	GC MS
TPH by INFRARED (IR)	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
MINERAL OIL by IR	TCE	STIRRED EXTRACTION (STIR-BAR)	IR
GLYCOLS	NONE	DIRECT INJECTION	GC FID

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

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

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

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