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Moorwell Waste Management Site, St Mary's, Isles of Scilly

Waste Material Reuse Feasibility Study  
And Risk Assessment

July 2013

Council of the Isles of Scilly



Version: Rev 2

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## 1.0 INTRODUCTION

### 1.1 Terms of Reference

This report describes a site investigation undertaken in relation to materials currently stockpiled at the Moorwell Waste Management Site (WMS) as part of an assessment to determine the feasibility of reuse of part, or all, of the material within future development at the Site.

The assessment has been carried out by SLR Consulting Limited (SLR) on behalf of the Council of the Isles of Scilly (CioS).

### 1.2 Background

#### 1.2.1 Existing Stockpiled Waste Materials

Prior to seeking Planning Consent for, and ultimately developing, a new waste facility at Moorwell there is a requirement to address existing site legacy waste issues.

For a number of years waste materials have been accepted to the site. In some cases waste materials (e.g. domestic waste, cardboard, certain bulky wastes) are used as feedstock for an incinerator. Other wastes (e.g. glass, metal and other recyclables) are temporarily stored on site and sent for mainland disposal/recycling on a campaign basis.

Waste materials such as soil/green waste and construction and demolition (C&D) waste have historically had no onwards disposal route and have increased in volume on an annual basis as a result. Incinerator bottom ash (IBA) has also accumulated at the site.

In 2011 a survey of the site indicated the following volumes of material to be present at the site:

**Table 1 – Waste Stockpile Volumes 2011**

| Waste Type       | Estimated Volume |
|------------------|------------------|
| Glass            | 108m3            |
| Soil Waste       | 1,580m3          |
| C&D Waste        | 2,206m3          |
| Domestic Waste   | 2,336m3          |
| Bulky waste      | 3,283m3          |
| Soil/Green Waste | 6,069m3          |
| Ash Waste        | 14,664m3         |
| Metals           | Unknown          |

In early 2013 a revised survey of the site was undertaken. This survey had difficulty in distinguishing some of the above specific waste types (due to a back-log of domestic and bulky waste) and indicated an overall increase in waste volumes as shown in Table 2.

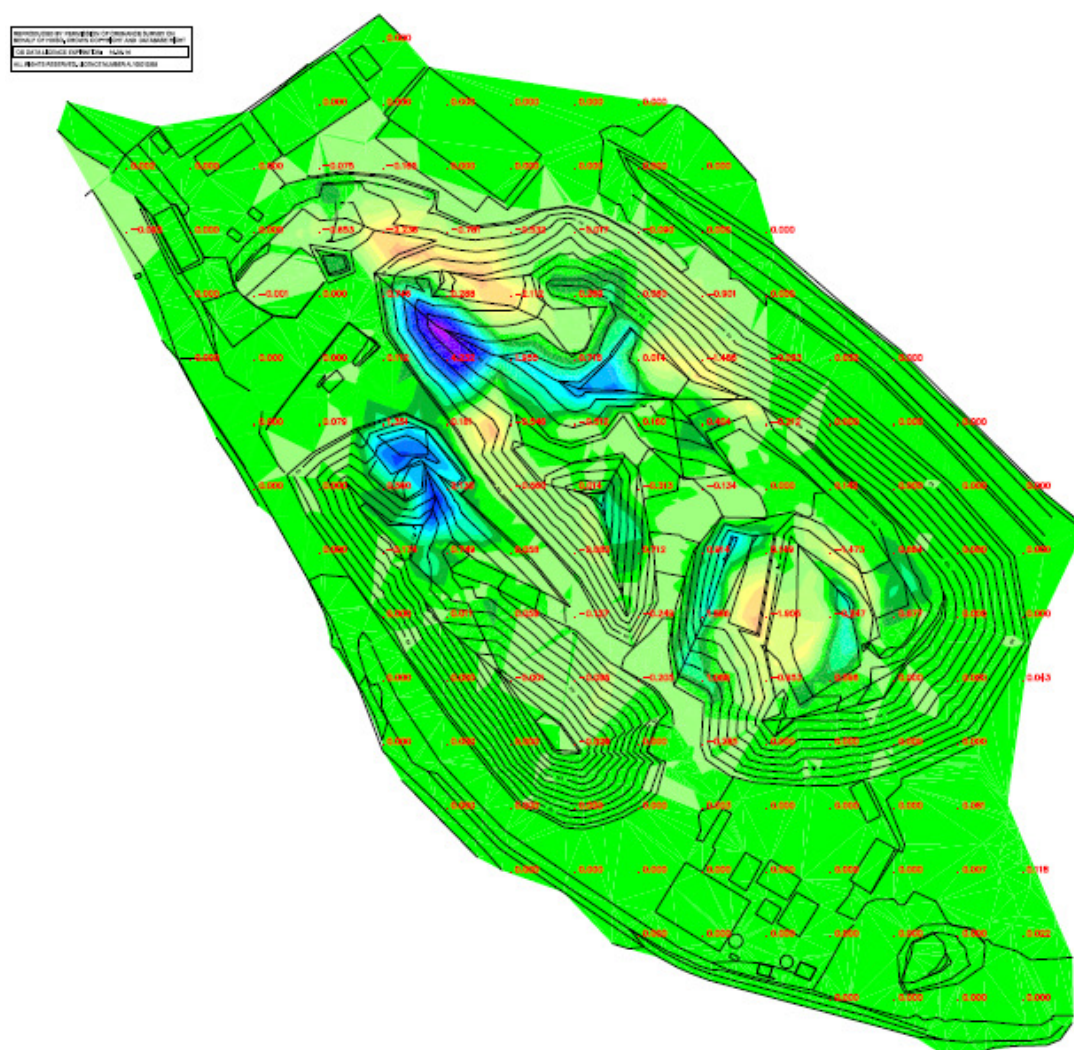


**Table 2 – Waste Stockpile Volumes 2013**

| Waste Type            | Estimated Volume     |
|-----------------------|----------------------|
| Ash and General Waste | 23,205m <sup>3</sup> |
| Soil/Green Waste      | 6,303m <sup>3</sup>  |
| Loose Vegetation 1    | 173m <sup>3</sup>    |
| Loose Vegetation 2    | 12m <sup>3</sup>     |
| Hardcore Stockpile    | 100m <sup>3</sup>    |

Notwithstanding the above, the overall increase in waste material volumes was estimated at less than 1000m<sup>3</sup> in a two-year period. In terms of the height of material stockpiles this meant that only materials coloured blue in Figure 1 below were above that observed in 2011. The relatively small increase in waste material volumes within this period of time is due to continued operation of the incinerator for suitable materials, the removal of recyclable materials to the mainland and the processing and off-site reuse of some C&D waste.

**Figure 1 – Comparison of 2011 and 2013 Waste Volumes**



### **1.2.2 Waste Material Reuse Options**

A variety of on and off-site reuse/recovery options are likely to be available for waste materials currently stockpiled at Moorwell. We note however, that any future development of the Moorwell WMS will result in a requirement for visual screening bunds. On this basis, prior to consideration of off-site (or off-island) reuse options, consideration has been given to which materials might be suitable for bund construction or other engineering tasks. The reuse of materials already located at Moorwell will reduce the requirement for the import of raw resources to the site and will ultimately result in a lower landfill burden.

Currently it is believed that, subject to proving “suitability for use” on an environmental and geotechnical basis, the following reuse options may be available at Moorwell as part of future development subject to Planning Consent and a suitable Environmental Permit:

- Incinerator bottom ash – could be suitable for the construction of bunds. A re-grading of existing bunds may also be possible in some areas to prevent unnecessary excavation;
- Soil/green waste – could be suitable to form a growing medium over the ash bund; and
- C&D waste – hard materials could be suitable for production of secondary aggregates for use in site construction projects. Fine (soil) material could be suitable as soil forming materials over ash bunds.

The purpose of this assessment is to provide evidence in support of the reuse of the above materials by proving that the material will not result in harm to human health or the environment if it was to be retained at the site in the long-term. Materials with existing disposal routes (recyclable materials, bulky waste, domestic waste) are not considered by this study.

### **1.3 Report Objective**

SLR has previously undertaken assessments at the site in relation to the potential risks posed by stockpiled materials. These assessments (dated March 2009 and December 2009) concentrated on risks to Controlled Waters and via the migration of landfill gases and concluded that a high level of risk is not likely to be present. At a practical level these assessments indicate that the site is not causing significant pollution and therefore that the reuse of material already present is plausible. The purpose of this report is to consider the suitability of the materials for re-use at Moorwell more directly and as such considers predominantly human health risks, including risks associated with the potential presence of asbestos containing materials (ACMs).

At the request of the Environment Agency a single round of groundwater monitoring has also been undertaken from three monitoring wells located between the stockpiled material and adjacent Site of Special Scientific Interest (SSSI). The results have been compared to those reported in 2009 to assess whether groundwater quality has improved or deteriorated since this time.

### **1.4 Scope of Works**

The scope of works for the assessment was as follows:

1. Manage health and safety risks associated with the potential presence of ACMs;
2. Excavate trial pits from which to visually assess waste materials and obtain representative samples;

3. Undertake on site testing of samples for the presence of volatile organic compounds (VOCs);
4. Recover sub-samples for laboratory analysis of a range of contaminants with potential to be present in waste materials;
5. Undertake groundwater sampling from existing wells;
6. Determine risks to human health by comparison of laboratory analysis to Generic Assessment Criteria (GAC);
7. Compare groundwater analysis to previous results, relevant Environmental Quality Standards (EQS) and Drinking Water Standards (DWS); and
8. Discuss risks associated with asbestos and practical management of asbestos containing materials.

## **1.5 Report Format**

Section 2 summarises previous reports and assessments completed for the site. Section 3 presents the methodology for the site investigation and Section 4 summarises the results. Section 5 presents a conceptual model for the site and Section 6 provides a generic quantitative risk assessment. Section 7 presents the results of a waste classification of materials currently stockpiled at the site.

## 2.0 REVIEW OF PREVIOUS ASSESSMENTS

### 2.1 SLR's Human Health and Environmental Risk Assessment, March 2009

#### 2.1.1 Report Purpose

This study was commissioned by the Environment Agency (EA) and its purpose was to:

- A. Undertake an initial phase of work to determine the environmental and human health risks associated with the existing landfill operation at Moorwell; and
- B. Undertake a further expanded assessment of the risks specifically posed by the Moorwell Landfill to Joaney's Well, given the use of this well to help meet the potable water supply requirements of the population of St Mary's.

#### 2.1.2 Information Sources

In addition to site visits and monitoring undertaken by SLR the report made use of numerous reports produced by other consultants, Ordnance Survey maps, EA data, pumping records for a local abstraction well (Joaney's Well) and a report supplied by the South West Water Authority.

#### 2.1.3 Desk Study Information

##### Geology

The bedrock of the island comprises granite, which is overlain by superficial deposits that can be divided into three categories as follows:

- Blown Sand: localised thin deposits of fine grained wind blown sand.
- Alluvium: comprising grey to brown organic silty clays, with occasional thin sandy layers, and typically ranging in thickness from 3 to 4m.
- Glacial Deposits: locally referred to as Ram, these deposits are typically present above the weathered granite bedrock in the upland areas and on some hillslopes.

##### Hydrogeology

Aquifer characteristics are summarised in Table 3 below. In terms of groundwater flow directions below the Lower Moors, these are either north-westward toward the sea at Porth Mellon, or south-eastward toward the coast at Old Town Bay. At the coast the freshwater discharges to the sea.

**Table 3 – Moorwell Aquifer Characteristics**

| Geological Unit | Characteristics   |
|-----------------|---|
| Alluvium        | <ul style="list-style-type: none"><li>– Effectively acts as an aquitard, due to relatively low vertical hydraulic conductivity given the silty clay dominated grain size.</li><li>– Typically 3 to 4m thick.</li><li>– Horizontal permeability may be enhanced by occasional interbedded sand layers, although bulk permeability expected to be <math>&lt; 1 \times 10^{-6}</math> m/s given likely limited lateral and localised extent of these sand horizons.</li><li>– High organic carbon content especially in the uppermost horizons (due to</li></ul> |

| Geological Unit  | Characteristics  |
|------------------|--|
|                  | depositional environment and previous vegetation growth – roots etc) should provide significant retardation and degradation of potential contaminants migrating slowly through the alluvium.   |
|                  | – Localised presence of windows of enhanced permeability allowing increased vertical leakage through the alluvium aquitard, as identified at one drilling location near Joaney's Well (see text in Section 2.4).   |
| Glacial Deposits | <ul style="list-style-type: none"> <li>– Represents the main aquifer that is confined by the overlying alluvium aquitard.</li> <li>– Up to 2m thick.</li> <li>– Previous estimates of permeability range between <math>1 \times 10^{-5}</math> to <math>3 \times 10^{-4}</math> m/s, reflecting its sand and gravel dominated composition.</li> <li>– Pumping tests completed on Joaney's Well (thought to tap this aquifer) on a number of previous occasions have given permeability estimates ranging between <math>5 \times 10^{-4}</math> m/s and <math>8 \times 10^{-4}</math> m/s (assuming a saturated aquifer thickness of 1m).</li> <li>– A short term pumping test completed by SLR during February 2009, with pumping from BH K, gave a permeability of c. <math>1 \times 10^{-4}</math> m/s.</li> </ul> |
| Granite          | <ul style="list-style-type: none"> <li>– The uppermost 0.3 to 0.7m of granite is weathered and so is more permeable than the fresh underlying granite.</li> <li>– Relatively low permeability compared to the overlying glacial deposits.</li> <li>– Able to support small abstractions.</li> </ul>  |

## 2.1.4 Groundwater Quality

In February 2009 the EA collected groundwater samples for the glacial deposits groundwater monitoring boreholes located around the perimeter of Moorwell (boreholes BHJ, BHK, BHL, and BHM and Old Moor Well). The results are summarised in Tables 4 and 5 for List I and II substances. Comparison of the results, with regard to DWS (Drinking Water Standards), EQS (freshwater Environmental Quality Standards), MRVs (Minimum Reporting Values) and WHO (World health Organisation) standards, indicated the following:

- Groundwater quality from boreholes BHK and BHL had elevated ammonia (as N), arsenic, chloride, iron, manganese and sodium concentrations;
- BHL groundwater also had List I substances tetrachloroethene, trichloroethene and 1,2-dichloroethane concentrations that were elevated above minimum reporting values (MRVs);
- BHM groundwater had elevated iron, manganese and mercury concentrations, while BHJ had elevated arsenic, chromium, copper and lead; and
- The Old Moor well had slightly elevated arsenic, iron and manganese concentrations.

**Table 4 - Water Quality Monitoring Results for Detected List I Substances (2009)**

| Parameter                       | Sampled Date                   | Units | DWS | EQS (freshwater) | MRV | Landfill BH J | Landfill BH K | Landfill BH L | Landfill BH M | Old Moor Well |
|---------------------------------|--------------------------------|-------|-----|------------------|-----|---------------|---------------|---------------|---------------|---------------|
|                                 |                                |       |     |                  |     | Groundwater   |               |               |               |               |
| CHLOROXURON (herbicide)         | 12 <sup>th</sup> February 2009 | ug/l  | 0.1 | n/a              | n/a | <0.04         | <0.04         | 0.084         | <0.04         | <0.04         |
| MCPB (herbicide)                |                                | ug/l  | 0.1 | n/a              | n/a | <0.04         | <0.042        | 0.045         | <0.04         | <0.04         |
| PROPAZINE (herbicide)           |                                | ug/l  | 0.1 | n/a              | n/a | <0.04         | <0.042        | 0.045         | <0.04         | <0.04         |
| 1,2-DIMETHYL-BENZENE {O-XYLENE} |                                | ug/l  | 10  | 30               | 3   | <0.1          | <0.1          | 0.113         | 0.161         | <0.1          |
| M, P- XYLENE                    |                                | ug/l  | 10  | 30               | 3   | <0.2          | <0.2          | <0.2          | 0.22          | <0.2          |

|                     |                             |      |     |    |      |       |        |              |              |             |
|---------------------|-----------------------------|------|-----|----|------|-------|--------|--------------|--------------|-------------|
| CADMIUM - AS CD     |                             | ug/l | 5   | 5  | 1    | 4.39  | <0.1   | <1           | 0.11         | <0.1        |
| MERCURY - AS HG     |                             | ug/l | 1   | 1  | 0.1  | 0.077 | <0.01  | <0.01        | <b>0.283</b> | <0.01       |
| ATRAZINE            | 17 <sup>th</sup> March 2006 | ug/l | 0.1 | 2  | 0.03 | 0.008 | <0.001 | <0.001       | <0.001       | Not sampled |
| CADMIUM - AS CD     |                             | ug/l | 5   | 5  | 1    | 0.45  | <0.1   | <0.1         | 0.32         |             |
| MERCURY - AS HG     |                             | ug/l | 1   | 1  | 0.1  | 0.05  | <0.01  | <0.01        | 0.05         |             |
| TETRACHLORO-ETHENE  |                             | ug/l | 10  | 10 | 0.1  | <0.1  | <0.1   | <b>3.1</b>   | <0.1         |             |
| TRICHLOROETHENE     |                             | ug/l | 10  | 10 | 0.1  | <0.1  | <0.1   | <b>0.927</b> | <0.1         |             |
| 1,2-DICHLORO-ETHANE |                             | ug/l | 3   | 10 | 1    | <1    | <1     | <b>1.48</b>  | <1           |             |
| BENZENE             |                             | ug/l | 1   | 30 | 1    | <0.1  | <0.1   | 0.264        | <0.1         |             |

**Table 5 - Water Quality Monitoring Results for Detected List II Substances (2009)**

| Parameter        | Units | DWS  | EQS (freshwater) | WHO (Health) | Landfill<br>BH J | Landfill<br>BH K | Landfill<br>BH L | Landfill<br>BH M | Old<br>Moor<br>Well |
|------------------|-------|------|------------------|--------------|------------------|------------------|------------------|------------------|---------------------|
|                  |       |      |                  |              | Groundwater      |                  |                  |                  |                     |
| Ammonia ( N )    | mg/l  | 0.39 | 0.015            | -            | <0.03            | <b>0.474</b>     | <b>0.528</b>     | 0.0411           | 0.0847              |
| Arsenic          | ug/l  | 10   | 50               | 10           | <b>26.9</b>      | <b>105</b>       | <b>279</b>       | 8.31             | <b>15</b>           |
| Chloride         | mg/l  | 250  | 250              | -            | 144              | <b>385</b>       | <b>462</b>       | 153              | 151                 |
| Chromium         | ug/l  | 50   | 10 - 200         | 50           | <b>16.6</b>      | 0.807            | 5.78             | 3.48             | 0.85                |
| Copper           | ug/l  | 2000 | 6 - 10           | 2000         | <b>218</b>       | 1.34             | 13.7             | 3.69             | 6.41                |
| Iron (Diss)      | ug/l  | 200  | 1000             | -            | 68               | <b>17100</b>     | <b>59300</b>     | <b>2540</b>      | <b>207</b>          |
| Lead             | ug/l  | 25   | 10-250           | 10           | <b>265</b>       | 0.608            | 7.88             | 2.22             | 2.14                |
| Manganese (Diss) | ug/l  | 50   | -                | 500          | 40.5             | <b>474</b>       | <b>610</b>       | <b>227</b>       | <b>87.5</b>         |
| Sodium (Diss)    | mg/l  | 200  | 170              | -            | 98.6             | <b>209</b>       | <b>331</b>       | 120              | 99.7                |
| Ammonia ( N )    | mg/l  | 0.39 | 0.015            | -            | <0.03            | <b>0.451</b>     | <b>0.573</b>     | <0.03            | Not sampled         |
| Arsenic (Diss)   | ug/l  | 10   | 50               | 10           | n/a              | n/a              | n/a              | n/a              |                     |
| Chloride         | mg/l  | 250  | 250              | -            | 132              | <b>424</b>       | <b>545</b>       | 202              |                     |
| Chromium         | ug/l  | 50   | 10 - 200         | 50           | 4.8              | <0.5             | 1.2              | <0.5             |                     |
| Copper (Diss)    | ug/l  | 2000 | 6 - 10           | 2000         | <b>14</b>        | <1               | 2.2              | 3.2              |                     |
| Iron (Diss)      | ug/l  | 200  | 1000             | -            | 988              | <b>16900</b>     | <b>55600</b>     | <b>1650</b>      |                     |
| Lead             | ug/l  | 25   | 10-250           | 10           | <b>17.6</b>      | <2               | <2               | <2               |                     |
| Manganese (Diss) | ug/l  | 50   | -                | 500          | 48               | <b>509</b>       | <b>688</b>       | <b>162</b>       |                     |
| Sodium (Diss)    | mg/l  | 200  | 170              | -            | 89.8             | <b>212</b>       | <b>230</b>       | 134              |                     |

### 2.1.5 Conceptual Hydrogeological Site Model

Based on the available historical hydrogeological information and water quality data presented in the 2009 report, the conceptual hydrogeological model for Moorwell Landfill and Lower Moors area including Joaney's Well, was summarised with the following 'source – pathway – target/ receptor' scenario:

### Source

- Moorwell Landfill is a land-raise site that is operated on the principle of dilute and attenuate, and with no engineered containment. Landfilling at the site started in 1965, with the waste tipped directly onto the Lower Moors;
- Domestic, commercial and industrial wastes are accepted at the site, including garden, farm and inert waste (demolition materials, rubble and glass). The maximum depth of waste, including the green waste and incinerator ash disposal areas, is estimated to be up to c.8m in places;
- It is understood that historically much of the combustible waste was typically burnt at the site; however, since 1978 the waste has been incinerated, with the incinerator ash then being landfilled at the site;
- Available information together with observations during the SLR site visits indicate that only partial combustion of the wastes has been achieved on occasions in the past;
- Leaching test results on samples of the incinerator ash waste from the site using deionised water indicate an initial high Total Organic Carbon (TOC) confirming the presence of unburned degradable organic material in the incinerator residues;
- Elevated concentrations of List II substances, including ammonia, chloride, sulphate and metals (arsenic, antimony, chromium, nickel, copper, zinc, iron, manganese and lead) are also present;
- List I substances including industrial solvents, herbicides, PAH's (naphthalene and acenaphthene) and heavy metals (cadmium and mercury) are likely to be present within the leachate, albeit at relatively low concentrations; and
- These leaching test results suggest that leachate that is generated by precipitation percolating through the uncapped wastes at the Moorwell Landfill site is representative of that from aged non-hazardous wastes.

### Pathways

- The majority of the landfill waste at Moorwell Landfill site is likely to be located on 1 to 2m of alluvium, with low permeability characteristics due to the silt and clay dominated grain size of the alluvium;
- The upper horizon of the alluvium is likely to be very organic rich, given the presence of wetland vegetation across this part of the Lower Moors prior to the start of landfilling at the site;
- The high organic carbon content and low permeability of the alluvium should help to minimise and slow down leachate migration through the alluvium and into the underlying glacial deposits aquifer, as a result of retardation of metallic elements, and retardation and biodegradation of organic List I substances (including hydrocarbons, herbicides and pesticides);
- There may be localised pathways through the alluvium, possibly associated with building foundations and services in the immediate vicinity of the site, that allow relatively rapid leachate migration down into the glacial deposits groundwater system below the landfill site; and
- As there is no sidewall containment around the perimeter of the landfill, leachate and contaminated surface water runoff from the landfill are able to migrate laterally into the drainage ditches that run along the eastern and south-eastern perimeters of the landfill site and which form the upper reaches of the Lower Moors drainage system.

### Receptors

- The primary receptors for any leachate that is able to migrate from the Moorwell Landfill site are:

- The groundwater system within the glacial deposits aquifer that underlies the Lower Moors area; and
- The Lower Moors surface water drainage system, which ultimately drains to Old Town Bay;
- The glacial deposits aquifer is utilised by Joaney's Well, located approximately 400m to the east of the landfill boundary on the opposite side of the Lower Moors and so this public water supply well is also considered to be a potential receptor; and
- There are no other potable groundwater abstractions in the vicinity of the site, and the old Moor Well, old round and square incinerator wells are disused.

### 2.1.6 Gas Risk Screening

An initial gas screening survey was completed in February 2009, using a hand held GA2000 portable gas metre supplied by Geotechnical Instruments Limited. The results, recreated in Table 6 below, indicated that the current level of risk presented by the landfill with regard to potential landfill gas can be assessed as 'low'.

**Table 6 – Gas Screening Results**

| Location  | Position<br>(Locations in the<br>immediate vicinity of the<br>landfill and incinerator are<br>shown on Drawing No. 2) | CH <sub>4</sub><br>(%) | CO <sub>2</sub><br>(%) | O <sub>2</sub><br>(%) | Barometric<br>Pressure<br>(mb) |
|---|---|------------------------|------------------------|-----------------------|--------------------------------|
| Surface water drains in workshop and garage area of Landfill Site   | Location 1: Middle of yard in front of garages  | 0                      | 0.1                    | 19.5                  | 1028                           |
|   | Location 2: Rainwater drain at corner of garage   | 0                      | 0.1                    | 19.5                  | 1028                           |
| Road drains in industrial estate to immediate north of Landfill Site  | SU 90929 10698  | 0                      | 0.1                    | 20.7                  | 1028                           |
|   | SU 90873 10653  | 0                      | 0.1                    | 21                    | 1028                           |
| Road drains on Jacksons Hill (residential lane leading off Landfill access road (Moor Well Lane))               | SU 90800 10650  | 0                      | 0.1                    | 20.7                  | 1028                           |
|   | SU 90815 10579  | 0                      | 0.1                    | 20.9                  | 1028                           |
| Road drains in residential area on lane (Pilot's Retreat) running off Church Road and overlooking landfill site | SU 90893 10421  | 0                      | 0.1                    | 21.1                  | 1028                           |
|   | SU 90837 10460  | 0                      | 0.1                    | 21.1                  | 1028                           |
| BH J  | Perimeter groundwater boreholes wells around Moorwell Landfill  | 0                      | 0.1                    | 20.9                  | 1027                           |
| BH K  |   | 0                      | 0.1                    | 21.0                  | 1028                           |
| BH L  |   | 0                      | 0.1                    | 20.7                  | 1028                           |
| BH M  |   | 0                      | 0.1                    | 20.7                  | 1028                           |
| Old Moor Well   |   | 0                      | 0.1                    | 20.7                  | 1028                           |
| Old Round Incinerator Well  |   | 0                      | 0.1                    | 20.9                  | 1028                           |
| Old Square Incinerator Well   |   | 0                      | 0.2                    | 20.9                  | 1027                           |
| Surface water drains on concrete pad surrounding incinerator  | Location 3: SU 90961 10507  | 0                      | 0                      | 20.9                  | 1028                           |
|   | Location 4: SU 90971 10519  | 0                      | 0.1                    | 20.9                  | 1027                           |
|   | Location 5: SU 90959 10518  | 0                      | 0.1                    | 21.1                  | 1027                           |

### 2.1.7 Key Risk Assessment Outputs and Conclusions

Based on the available information reviewed in 2009, the overall risk presented by the Moorwell site to human health and the adjacent groundwater and surface water environments under current conditions was considered to be near zero to low. However,



given the sensitive site setting the following key conclusions and recommendations were provided:

#### Surface Water

- The monitoring data for March 2006 and 2009 suggested that the surface water quality within the Lower Moors drainage system downstream of the landfill site was not significantly impacted by either List I or II substances derived from landfill leachate; and
- Further surface water quality sampling was recommended during the summer and the risk assessment reviewed to confirm that the level of risk to surface water was unchanged under low rainfall conditions.

#### Groundwater

- The available hydrogeological monitoring data confirmed that groundwater quality in the glacial deposits aquifer at the down-gradient (north-eastern) perimeter of the landfill was impacted by leachate leakage from the Moorwell site;
- Under the abstraction regime over recent years for Joaney's Well, the cone of influence due to the periodic abstraction from this well was considered very unlikely to extend as far as Moorwell, except possibly on rare occasions when pumping duration is increased significantly;
- A groundwater monitoring programme was recommended for the perimeter groundwater monitoring boreholes along with a new monitoring location(s) on the Lower Moors between the landfill site and Joaney's Well; and
- Further investigations were recommended in order to better define the risks to Joaney's Well from the Moorwell site.

#### Landfill Gas & APC Residues

- The site setting, landfill design and waste inputs at the site suggested that the risk posed from any landfill gas that may be generated at the site was low.

## **2.2 SLR's Human Health and Environmental Risk Assessments Follow-on Site Investigation, December 2009**

### **2.2.1 Report Purpose**

The report was commissioned by the DEFRA and the EA to complete follow-on hydrogeological site investigations in the vicinities of the Moorwell Landfill Site on St Mary's, and the historic landfill sites located on the off-islands of Bryher, St Martin's and St Agnes.

The scope of works was based on recommendations made by the March 2009 investigation as summarised above.

### **2.2.2 Moorwell Scope of Works**

The scope of works included the following:

- Repeat groundwater and surface water sampling was completed between 2<sup>nd</sup> and 5<sup>th</sup> September 2009;
- Drilling and installations of additional boreholes were completed in September and October 2009;
- A gas monitoring programme was completed in October 2009; and

- A 72 hour constant rate pumping test, immediately followed by a recovery test, was carried out in Joaney's Well.

### **2.2.3 Results of Groundwater Sampling from the Moorwell Boreholes**

- Groundwater quality in boreholes BHJ, BHK, and BHM was slightly impacted by leachate from Moorwell Landfill site, as indicated by ammoniacal nitrogen, chloride, sodium, arsenic, lead, iron and manganese concentrations that failed to meet UK DWS. The elevated metal concentrations were considered very likely to reflect the relatively acidic pH, which also did not meet UK DWS;
- Chloride, sodium, ammoniacal nitrogen and manganese concentrations had not changed significantly between February and September 2009. This suggested that seasonal recharge affects were limited;
- A number of hazardous (List I) substances were detected in boreholes BHK, BHL and BHM, although within the UK DWS;
- Non-hazardous (List II and general) substances that exceeded UK DWS, and hazardous (List I) substances that had been detected are summarised in Table 7, below;
- Substances tentatively identified within the sample taken from BHJ on 3<sup>rd</sup> September 2009 were simazine (0.01ug/l approx.), di-n-butyl phthalate (6ug/l approx.) and bisphenol A (0.34ug/l approx.);
- Substances tentatively identified within the sample taken from BHK on 2<sup>nd</sup> September 2009 were sec-butylbenzene (0.02ug/l approx.) and benzophenone (0.07ug/l approx.);
- The only substance tentatively identified within the sample taken from the BHL on 2<sup>nd</sup> September 2009 was bisphenol A (0.07ug/l approx.); and
- There were no tentatively identified substances within sample from BHM, for 2<sup>nd</sup> September 2009.

### **2.2.4 Gas Monitoring Programme**

The gas monitoring results obtained in 2009 are summarised in Table 8. The results did not indicate significant concentrations of methane, with all results (steady and peak) equal or less than 0.3%.

The in-waste monitoring boreholes gave very low (0.1% or lower) methane concentrations, suggesting that the waste mass is unlikely to be producing significant volumes and concentrations of methane.

### **2.2.5 Moorwell Conclusions**

- Groundwater quality in the glacial deposits aquifer on the eastern (down-gradient) perimeter of the landfill site continued to be slightly impacted by leachate. Ammoniacal nitrogen, chloride, sodium arsenic, lead, iron and manganese concentrations failed to meet UK DWS. A number of hazardous (List I) substances were detected in boreholes BHK, BHL and BHM, although within the UK DWS. Comparison of groundwater quality results for February and September 2009 suggested that seasonal recharge affects were limited;
- Groundwater quality in the old large diameter wells located in the immediate vicinity and up-gradient of Moorwell typically met UK DWS, with the exceptions of iron, manganese and nitrate. Mercury, cadmium and tetrachloroethene were also detected on occasions, although well within UK DWS;

- Comparison of groundwater quality results for February and September 2009 for all wells suggested that seasonal recharge affects on the groundwater quality of the underlying glacial deposits aquifer were limited; and
- The gas monitoring results did not indicate significant concentrations of methane, either within the waste or around the northern and western perimeters of the landfill with all results (steady and peak) equal or less than 0.3%. This was thought to reflect the dominant ash waste stream.

## **2.2.6 Recommendations**

The following key recommendations were provided:

### **Moorwell Landfill and Lower Moors Groundwater and Surface Water Monitoring Programme**

*Objectives:*

- assess the ongoing impact of the Moorwell Landfill site on the groundwater and surface water quality of the Lower Moors and Joaney's Well;
- confirm groundwater quality at the new Lower Moors groundwater monitoring borehole (LM GW1/09) and provide an early warning to any potential contamination of Joaney's Well; and
- provide a baseline that extends throughout the year against which any future developments at the Moorwell Landfill site and risks to Joaney's Well can be assessed.

### **Moorwell Landfill Site Gas Monitoring**

*Objectives:*

- confirm that gas concentrations remain low throughout the year and under different climatic conditions.

## **2.3 SLR's Isles of Scilly Monitoring Review, March 2011**

### **2.3.1 Report Purpose**

The Environment Agency undertook additional groundwater and gas monitoring in March 2010 following recommendations made by SLR, as summarised above. In March 2011 SLR summarised this data in an addendum report.

### **2.3.2 Groundwater Data**

#### **Aunt Joaney's Well**

There was very little difference between the March 2010 data and the 2009 monitoring data at Aunt Joaney's Well. The only determinand with a greater maximum concentration than seen previously was zinc, with a new maximum of 14.9ug/l when compared to the previous maximum of 10.6ug/l. This concentration was still below the old UK DWS of 5mg/l and below the new 2010 Environmental Quality Standard<sup>1</sup> (EQS) of 75ug/l (dependant on the hardness of the water – within the 100-250mg/l CaCO<sub>3</sub> range).

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<sup>1</sup> Environment Agency, 2010. H1 Environmental Risk Assessment – Annex (d). GEHO0810BSXL-E-E.

### Lower Moors Borehole (LM GW1/09)

The March 2010 data showed marked decreases in lead, chromium, manganese and copper, when compared to previous monitoring data, with manganese showing the greatest decrease (3910ug/l 6<sup>th</sup> October 2009 and 306ug/l 1<sup>st</sup> March 2010).

The pH had also decreased over the monitoring period from 6.51 (6<sup>th</sup> October 2009) to 5.96 (1<sup>st</sup> March 2010).

The March 2010 chloride concentration remained elevated (314mg/l) similar to previous concentrations, and the ammonia concentration remained low, as previously, at 0.03mg/l.

Given that the monitoring location had only been sampled in October 2009 and March 2010, it was not clear whether the decrease in the concentrations of these parameters was a seasonal trend and whether these concentrations may rise again. Further monitoring was therefore recommended in order to investigate the significance and reproducibility of the results.

### Old Round Incinerator Well

The March 2010 data showed decreases in lead, chromium, manganese and copper, again with manganese showing the greatest decrease (232ug/l 5<sup>th</sup> September 2009 to 12.9ug/l 1<sup>st</sup> March 2010).

Chloride and ammonia concentrations from March 2010 remained similar to previous monitoring data.

### Moorwell Landfill Groundwater Monitoring Boreholes (K & L)

Borehole K showed very little change between the March 2010 data and the 2009 monitoring data. Ammonia and chloride concentrations (0.449mg/l and 362mg/l respectively) remained at similarly elevated levels to previous data.

Borehole L showed slight decreases in lead, chromium, manganese and copper. As above, manganese showed the greatest decrease (664ug/l 2<sup>nd</sup> September 2009 to 268ug/l 1<sup>st</sup> March 2010).

### Surface Water Data

Due to access issues only the upstream surface water location near Moorwell Landfill (Location I) was sampled during the March 2010 monitoring event.

It was noted that a number of non-hazardous pollutants (copper, iron, lead, manganese and chromium in particular) increased in concentration across the monitoring period (February 2009 to March 2010) e.g. lead concentrations had increased from 2.08ug/l to 31.6ug/l. Manganese concentrations showed the greatest increase from 103ug/l in February 2009 to 260ug/l in March 2010.

Ammonia concentrations also increased from 0.226mg/l in 2009 to 2.81mg/l in March 2010. Chloride concentrations remained at similar levels across the period.

The location of the sampling point immediately up-stream of Moorwell suggested that the site was unlikely to be the source of these elevated contaminants; a possible source is the industrial estate to the immediate north of Moorwell, and immediately up-stream of this sampling point.

### **2.3.3 Gas Data**

No methane was detected during the March 2010 sampling event, and the maximum concentration seen in the October 2009 sampling event was 0.3% volume.

The highest methane concentrations (0.3% in October 2009) were noted in G2/09, which is located within made ground just outside the landfill boundary. This borehole also contained the highest carbon dioxide concentrations (9-14.4%) and the lowest oxygen concentrations (1.3-2.6%) across both monitoring rounds.

Carbon dioxide concentrations were typically higher in the western perimeter gas wells than within the waste gas wells. It was noted that peat and organic clays were encountered within the perimeter gas monitoring boreholes, and so naturally occurring methane and carbon dioxide are likely to be present where there are anaerobic conditions.

Oxygen concentrations detected with the exception of G2/09 were typically within the range of 18 – 21%.

### **2.3.4 Conclusions and Recommendations**

The following key conclusions were drawn from the data review:

- groundwater quality across St Mary's had typically improved since the 2009 monitoring period. Manganese, lead, chromium and copper had decreased in most monitoring locations with chloride and ammonia remaining at similar concentrations;
- surface water quality upstream of Moorwell had declined since 2009 and downstream surface water quality was thought likely to reflect this. Manganese, lead, iron, chromium, copper and ammonia had all increased in concentrations over the monitoring period;
- gas levels had remained similar over the two monitoring periods, with GW2/09 showing elevated carbon dioxide and low oxygen levels. Methane levels remained low across the monitoring locations;
- it was recommended that the monitoring recommendations set out in the Human Health and Environmental Risk Assessments were continued, in order to provide further data across the different seasons and to provide confirmation of the early trends seen in the available monitoring data; and
- there were no indications that Moorwell was having a significant impact on the water quality of Aunt Joaney's Well.

**Table 7 - Summary of Groundwater Quality Results for BH's J, K, L and M 2009**

| Determinand   | Units   | UK DWS                 | Landfill BH J |           | Landfill BH K |           | Landfill BH L |           | Landfill BH M |           |
|---|---------|------------------------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|-----------|
|   |         |                        | 12-Feb-09     | 03-Sep-09 | 12-Feb-09     | 02-Sep-09 | 12-Feb-09     | 02-Sep-09 | 12-Feb-09     | 02-Sep-09 |
|   |         |                        | 15:00         | 15:53     | 12:00         | 15:26     | 14:00         | 15:38     | 13:30         | 15:48     |
| Non-Hazardous (List II and General Substances) - Exceedances above UK DWS |         |                        |               |           |               |           |               |           |               |           |
| Ammoniacal Nitrogen   | mg/l    | 0.39                   | <0.03         | 1.47      | 0.474         | 0.437     | 0.528         | 0.825     | 0.0411        | 0.059     |
| Antimony  | ug/l    | 5                      | <20           | 5.7       | <10           | 2.4       | <10           | <1        | <10           | <1        |
| Arsenic   | ug/l    | 10                     | 26.9          | 120       | 105           | 130       | 279           | 495       | 8.31          | 10.3      |
| Chloride  | mg/l    | 250                    | 144           | 159       | 385           | 353       | 462           | 441       | 153           | 157       |
| Iron (dissolved)  | ug/l    | 200                    | 68            | 9660      | 17100         | 15900     | 59300         | 44900     | 2540          | 3780      |
| Lead  | ug/l    | 25                     | 265           | 38.1      | 0.608         | 12.4      | 7.88          | 5.4       | 2.22          | 10.7      |
| Manganese (dissolved)   | ug/l    | 50                     | 40.5          | 724       | 474           | 444       | 610           | 603       | 227           | 232       |
| Nitrate - as N  | mg/l    | 11                     | 11.3          | <0.196    | <0.196        | <0.196    | 0.221         | <0.196    | 2.33          | 4.13      |
| pH  | pH Unit | 6.5 - 9.5              | 6.4           | 6.74      | 6             | 6.14      | 6.27          | 6.46      | 6.16          | 6.12      |
| Sodium (dissolved)  | mg/l    | 200                    | 98.6          | 122       | 209           | 197       | 331           | 200       | 120           | 116       |
| Hazardous (List I) Substances – Detections                                |         |                        |               |           |               |           |               |           |               |           |
| Mercury   | ug/l    | 1(DWS)<br>0.1<br>(MRV) | 0.077         | 0.015     | <0.01         | <0.01     | <0.01         | <0.01     | 0.283         | 0.219     |
| Cadmium   | ug/l    | 5(DWS)<br>1 (MRV)      | 4.39          | 0.93      | <0.1          | 0.16      | <1            | <0.1      | 0.11          | 0.23      |
| 1,2-Dimethylbenzene<br>(o-xylene)   | ug/l    | 10(DWS)<br>3 (MRV)     | <0.1          | <0.1      | <0.1          | <0.1      | 0.113         | <0.1      | 0.161         | <0.1      |
| Chloroxuron   | ug/l    | 0.1                    | <0.04         | <0.01     | <0.04         | <0.01     | 0.084         | <0.01     | <0.04         | <0.01     |
| Ethylbenzene  | ug/l    | -                      | <0.1          | <0.1      | <0.1          | <0.1      | <0.1          | 0.11      | <0.1          | 0.1       |
| Toluene   | ug/l    | 4 (MRV)                | <2            | <0.1      | <2            | 0.17      | <2            | <0.1      | <2            | 0.18      |
| m,p-xylene  | ug/l    | 3 (MRV)                | <0.2          | <0.2      | <0.2          | <0.2      | <0.2          | 0.21      | 0.22          | <0.2      |

**Table 8 - Gas Survey Results 2009**

| Monitoring Point                       | Date                         | Methane (CH <sub>4</sub> ) (%) |        | Carbon Dioxide (CO <sub>2</sub> ) (%) |        | Oxygen (O <sub>2</sub> ) (%) |        | Barometric Pressure (mBars) | Temp (°C) | weather |
|--|------------------------------|--------------------------------|--------|---------------------------------------|--------|------------------------------|--------|-----------------------------|-----------|---------|
|  |                              | Peak                           | Steady | Peak                                  | Steady | Peak                         | Steady |                             |           |         |
| Conduit chamber near landfill entrance | 8 <sup>th</sup> October 2009 | 0                              | 0      | 0.1                                   | 0.1    | 20.2                         | 20.1   | 1017                        | 14.8      | Sunny   |
| Sewer chamber nearest to weighbridge   |                              | 0                              | 0      | 0.1                                   | 0.1    | 20.2                         | 20.2   | 1017                        | 14.8      | Sunny   |
| Old Moorwell Well                      |                              | 0                              | 0      | 0.1                                   | 0.1    | 20.1                         | 20.1   | 1017                        | 14.8      | Sunny   |
| G1/09                                  |                              | 0                              | 0      | 0.5                                   | 0.5    | 19.2                         | 19.3   | 1017                        | 14.8      | Sunny   |
| G2/09                                  |                              | 0.3                            | 0.3    | 14.4                                  | 14.4   | 3.2                          | 2.6    | 1017                        | 14.8      | Sunny   |
| G3/09                                  |                              | 0.1                            | 0      | 3.7                                   | 3.7    | 17.2                         | 17.1   | 1017                        | 14.8      | Sunny   |
| G4/09                                  |                              | 0                              | 0      | 2.4                                   | 2.2    | 18.5                         | 18.4   | 1017                        | 14.8      | Sunny   |
| L3                                     |                              | 0.1                            | 0      | 2.8                                   | 2.7    | 17.2                         | 17.2   | 1017                        | 14.8      | Sunny   |
| L2                                     |                              | 0                              | 0      | 2                                     | 2      | 18.1                         | 18.1   | 1017                        | 14.8      | Sunny   |
| L1                                     |                              | 0.1                            | 0.1    | 3.1                                   | 3.1    | 16.8                         | 16.8   | 1017                        | 14.8      | Sunny   |

### **3.0 SLR SITE INVESTIGATION – APRIL 2013**

#### **3.1 Management of Contamination/Asbestos Risks**

Prior to the 2013 site investigation it was considered reasonable to assume that a variety of contaminants could be present within waste materials at Moorwell, although existing site investigation data (as summarised above) indicated no specific risks to human health or the environment. It was also considered that “standard” risks associated with direct contact with potentially contaminated materials during the site investigation could be managed using personal protective equipment (PPE), welfare facilities etc. Asbestos was considered likely to be the only contaminant that would require additional precautions to protect site staff and off-site residents.

Although there were not believed to be high risks associated with the presence of asbestos at the site, on the basis that both SLR and other interested parties (for example the local Resident’s Group) were aware of the possible presence of asbestos, certain health and safety precautions were required to be taken.

The significance of the site investigation in terms of the presence of asbestos is discussed later in this report. The key reasons for providing a level of assessment in relation to asbestos were:

1. To prove that the site investigation itself did not result in excessive asbestos fibre release while waste materials were disturbed; and
2. To use the data obtained to assess risks associated with current daily activities at the site and the reuse of materials in the future that might contain asbestos.

The following precautions were taken during the site investigation in relation to the possible presence of asbestos and other contamination:

- A detailed method statement and risk assessment was produced in advance of the works and reviewed by CloS;
- The site investigation was supervised by SLR at all times and all individuals involved had received at least basic asbestos awareness training;
- Prior to trial pitting the surface of the site was inspected for asbestos containing materials (such that trial pitting did not knowingly take place through asbestos) and other hazards;
- Only those personnel directly involved in the site investigation were allowed within the working area, which was defined by SLR’s Engineer and based on the location of air monitoring as discussed below;
- During the site investigation asbestos air monitoring was carried out by a UKAS accredited laboratory. This monitoring was undertaken as a combination of the following:
  1. Representative monitoring around the perimeter of the site in relation to wind direction and the assessment of asbestos fibres crossing the boundary of the area;
  2. Representative monitoring within the excavator cabs; and
  3. Specific monitoring between the site and local residents.
- Mains quality water was made available to dampen soils and other materials if excessive dust was noted; and
- PPE included steel toe capped and mid-soled boots, disposable overalls with hoods, hard hats and half face respirators with asbestos filters or P3 rated particle masks.



### **3.2 Investigation Scope of Works**

The scope of works for the site investigation comprised the following elements:

- Site walkover to visually assess surface asbestos fragments, other potential contaminants and hazards;
- Excavation of trial holes by mechanical excavator;
- Excavation of shallow, hand dug pits;
- Visual assessment of shallow soils from the above excavations;
- Collection of representative soil samples for laboratory analysis; and
- Groundwater sampling from existing monitoring wells.

### **3.3 Site Inspection**

During the initial inspection of the site suspected asbestos containing materials were identified as whole or fragmented asbestos cement bonded sheets. Samples of three different types of materials were taken for laboratory analysis. The locations in which asbestos were predominantly identified are shown on Drawing 1. These areas were avoided during subsequent trial pitting such that deliberate disturbance of asbestos did not occur.

### **3.4 Trial Pits**

Fourteen trial pits (designated TP101 to TP114) were excavated by mechanical excavator on 24<sup>th</sup> and 25<sup>th</sup> April 2013. The location of trial pits are shown on Drawing 2. The rationale for trial pit locations was to give a good general coverage of waste materials that may later be suitable for construction of bunds at the site or use in other construction activities. Trial pits were located as follows:

- TP101 to TP103 – IBA stockpile;
- TP104 to TP107 – soil/green waste stockpile;
- TP108 to TP110 – general waste comprising ash, soil and other materials;
- TP111 to TP114 – C&D waste.

Trial pits were generally around 4m in length and extended to depths up to 3.6m.

### **3.5 Hand Excavated Pits**

Three hand pits (HP115 to HP116) were excavated on the southern face of the soil/green waste stockpile. Shallow soil samples were collected in this area to avoid disturbance of the vegetated bunds that currently shield local residents from the site and since a public footpath is present in this area.

### **3.6 Waste Sampling**

During the excavation of trial pits and hand pits representative samples were collected at 1m intervals. On site headspace testing was then undertaken using a Photo Ionisation Detector (PID) to screen for VOCs. Sub-samples were then collected for laboratory analysis. On the basis that all materials sampled were stockpiled (i.e. no natural strata was encountered) composite samples through the waste profile were generally taken for laboratory analysis.

During waste sampling care was taken to avoid cross contamination of samples. Samples were collected using a fresh pair of nitrile gloves and transferred to laboratory prepared vessels. All samples were packaged in cool boxes and dispatched to a UKAS and MCERTS accredited laboratory under Chain of Custody paperwork.

### **3.7 Groundwater Sampling**

Groundwater samples were collected from three existing monitoring wells (BHK, BHL and BHM) located between the waste stockpiles and adjacent SSSI. Borehole locations are shown on Drawing 2.

All three boreholes have previously been fitted with in-line pumps and receive an electricity supply from the site workshop. After clearing areas of vegetation from around the boreholes they were purged for around 10 minutes using the pumps. After water levels had recharged the water was sampled directly from the pumps using laboratory prepared vessels.

### **3.8 Laboratory Analysis**

Selected samples of ash, C&D waste and soil/green waste were tested for the following suite of contamination testing:

- Heavy metals;
- Total petroleum hydrocarbons (TPH - working group method);
- Poly aromatic hydrocarbons (PAHs);
- Polychlorinated Bi-phenyls (PCBs);
- Phosphates, nitrates and sulphates;
- pH and total organic carbon (TOC); and
- Asbestos.

One sample of each material type was additionally submitted for leachability analysis and three samples of asbestos were tested.

All three groundwater samples were tested for the following suite of contamination testing:

- Heavy metals;
- Chloride;
- Sulphate;
- Nitrate;
- Ammoniacal nitrogen;
- Hardness;
- Conductivity;
- pH;
- Volatile organic compounds (VOCs) and semi volatile organic compounds (SVOCs); and
- Pesticides and herbicides.

## **4.0 RESULTS**

### **4.1 Ground Conditions**

Trial pit logs are included as Appendix A. A description of each material is presented below.

#### **4.1.1 IBA**

Material excavated in TP101 to TP103 comprised incinerator bottom ash, although significant amounts of unburned matter (newspaper, textiles, plastic etc) were present. Other extraneous materials included metal fragments, wire, ceramics, occasional construction materials and glass.

Suspected asbestos containing materials were identified in all three trial pits comprising of single fragments of cement bonded sheet in TP101 and TP102 and five small fragments in TP103.

**Plate 1 – TP101**





**Plate 2 – Extraneous Materials within IBA**



**Plate 3 – Suspected Asbestos Fragment within IBA**





#### **4.1.2 Soil/Green waste**

At surface level the main soil/green waste stockpile appears as a uniformly vegetated stockpile with a high soil content. Discreet stockpiles of vegetation are also present.

On the outer (south-east) side of the bunds very shallow, hand dug samples were collected to avoid the use of an excavator. Here the material comprised a brown silty/sandy topsoil with frequent vegetation.

**Plate 4 – Soil/Green Waste Stockpile**



In TP104 and TP105 (northern end of the stockpile) the material comprised a dark brown topsoil material, variably silty, sand and gravelly, with frequent plant matter (roots, branches etc). Occasional instances of C&D waste, plastic and metal were noted, however the material predominantly comprised “soily” waste with a slight organic odour.

In TP106, beneath a layer of soily material the core of the bund was noted to comprise of a mixture of soil, incinerator bottom ash and C&D waste. Material located near the top of the stockpile appeared to contain a higher soil content. One small fragment of asbestos was noted in this trial pit.



**Plate 5 – Soil in Southern Portion of Bund**



**Plate 6 – Ash Core Identified in TP106**





In TP107 the trial pit terminated at a depth of 1.2m on the basis that an asbestos sheet was encountered. It is considered likely that the core of the bund in this area would be similar to that in TP106. In this respect approximately half of the soil/green waste bund comprises soil and green waste. The other half comprises a mixture of materials with a soil covering and is more likely to contain extraneous materials.

#### **Plate 7 – TP107 and Asbestos Sheeting**



#### **4.1.3 General Waste Stockpile**

The centre of the site is occupied by a large stockpile formed from a variety of materials. The north end of the stockpile comprises C&D waste and the southern end comprises IBA. It is currently unclear where the boundary of these materials lies due to the presence of bulky waste over the majority of the stockpile. It has always been assumed that the bulk of this stockpile comprises ash.

TP108, TP109 and TP110 were constructed in locations shown on Drawing 2. In the area of TP108 and TP109 asbestos containing materials (large sheets) were noted to be present on the surface of the stockpile and were avoided. Conditions within TP108 comprised a mixture of various materials with a matrix of sand and ashy material. Other materials noted within the trial pit were concrete and bricks, plasterboard fragments, plastic piping and plastic sheet, ceramics and metal. Construction materials appeared to increase with depth.

TP109 was constructed to the rear of a 'peninsula' of material that appeared to comprise a mixture of materials with a soil matrix. The material encountered within the trial pit comprised a sandy and clayey silt with frequent inclusions of other waste types and fragments of asbestos. From a depth of 2m the material appeared to comprise predominantly of ash and C&D waste.

TP110 comprised IBA although a pocket of broken asbestos sheet was identified at 2.1m.



**Plate 8 – Suspected Asbestos Present on Stockpile Surface**



**Plate 9 – Sampling from TP108**





**Plate 10 – Variable Materials in TP109**



**Plate 11 – Asbestos Pocket in TP110**





#### **4.1.4 C&D Waste**

The C&D waste was variable in nature and comprised materials such as brick and concrete rubble, gravels, granite boulders and some ceramics. Other materials present as extraneous materials included metal, plastic, wood and plasterboard fragments.

TP111 was located at the top of the C&D stockpile. In this area some movement was noted during excavation, which may indicate that construction materials have been placed over other waste types (e.g. bulky waste). TP111 was terminated at 1m due to stability concerns.

Material in TP112 predominantly comprised a sandy gravel with other materials as noted above. At 2m occasional evidence of domestic waste (likely to be cross-contamination) was witnessed and very occasional fragments of asbestos were observed.

Material similar to the above was encountered in TP113 and TP114 along with large metal lintels. Again occasional asbestos fragments were observed.

**Plate 12 – Typical C&D Materials**





**Plate 13 – Trial Pitting of C&D Waste**



**Plate 14 – TP111**





**Plate 15 – TP112**



#### **4.2 Evidence of Contamination**

No visual or olfactory evidence of specific contamination was identified during the site investigation other than the presence of asbestos containing materials. No evidence of organic contamination (e.g. oils, solvents etc) was observed.

Headspace testing was undertaken on all samples and indicated low concentrations of VOCs. Headspace testing is a method whereby a small sub-sample is placed in a sealed container (for example a tub or bag), left for approximately 20 minutes and a PID used to sample the air above the sample for evidence of VOCs. While this does not record an actual concentration for use in risk assessment, it does give an indication of whether organic contamination is present and which samples should be selected for further analysis.

Although no specific contamination was generally observed we would comment that in some cases cross-contamination of waste streams has occurred. C&D waste often contained metals, plastics and some domestic waste for example, and much of the central stockpile contained a variety of materials. This is not necessarily an environmental risk but will require management if and when materials are later excavated and sorted.

#### **4.3 Asbestos**

As discussed throughout this report, asbestos (or rather material that appears to be asbestos on a visual basis) is present at the site and generally comprises broken or whole sheets. Asbestos was noted both at surface level and within trial pits in some cases. No fibrous or particularly friable material was identified.

Plates 16 to 18 below show the typical types of asbestos present at surface level. Samples of all three materials (Asbestos Samples 1, 2 and 3) were collected and tested. Of these three samples only Sample 3 was actually later confirmed to contain asbestos. These results are included as Appendix B and indicate the presence of chrysotile (white) asbestos only in this sample.

From the above we would comment that there are materials located across the bulky waste stockpile with the visual appearance of asbestos but that do not actually contain asbestos fibres. We would further note however, that where suspected asbestos containing materials were identified within trial pits it was generally material such as that shown in Plate 18 below and that has been confirmed to contain chrysotile asbestos.

**Plate 18 – Asbestos Sample 1**





**Plate 19 – Asbestos Sample 2**



**Plate 20 – Asbestos Sample 3**





#### 4.4 Asbestos Air Monitoring Results

Throughout the site investigation asbestos air monitoring was undertaken around the perimeter of the working area and within the cab of the excavator. The purpose of the air monitoring was to demonstrate that no unacceptable fibre release had occurred. The results of the air monitoring are included as Appendix C.

Fibre counts on microscope slides ranged from only 0.5 to 4.5 fibres, with a corresponding fibre concentration of <0.01 fibres/ml in most cases. A conservative “fail” in an enclosed environment (for example the stripping of asbestos materials within a building) would occur where 18 fibres were observed across 200 microscope fields and in this respect asbestos risk during the site investigation was very low.

Additionally, under UKAS accreditation, the analyst must include all fibres within the count, rather than specific asbestos fibres and it is quite common therefore for synthetic fibres to be included within the fibre count, especially within the excavator cab.

**Plate 21 – Asbestos Air Monitoring Pump**



## 4.5 Waste Sampling Analytical Results

The results of the chemical testing of samples of ash, soil/green waste, general/mixed waste and C&D waste are summarised in the Tables below. Full laboratory analysis certificates are included as Appendix B.

PCBs have not been included below on the basis that PCBs were below laboratory method detection limits (i.e. <5ug/kg) in all samples tested. One sample from the soil/green waste was additionally tested for pesticides and herbicides, however again no concentrations were recorded.

**Table 9 – Ash Waste Metals and Inorganics**

| Contaminants        | Number of samples | Number of non-detects | Range (mg/kg) |       | Average | Highest |
|---------------------|-------------------|-----------------------|---------------|-------|---------|---------|
|                     |                   |                       | Min           | Max   |         |         |
| Arsenic             | 3                 | 0                     | 14.8          | 40.6  | 25      | TP102   |
| Cadmium             | 3                 | 0                     | 3.1           | 5.7   | 4.8     | TP102   |
| Chromium            | 3                 | 0                     | 27.1          | 75.4  | 53      | TP102   |
| Hexavalent Chromium | 3                 | 3                     | <0.3          | <0.3  | <0.3    | -       |
| Copper              | 3                 | 0                     | 699           | 1038  | 860     | TP103   |
| Lead                | 3                 | 0                     | 375           | 940   | 700     | TP102   |
| Mercury             | 3                 | 0                     | 0.2           | 1.3   | 0.6     | TP101   |
| Nickel              | 3                 | 0                     | 46.3          | 111.8 | 74      | TP102   |
| Selenium            | 3                 | 3                     | <1            | <1    | <1      | -       |
| Zinc                | 3                 | 0                     | 957           | 2085  | 1700    | TP102   |

**Table 10 – Ash Waste PAHs and Petroleum Hydrocarbons**

| Contaminants          | Number of samples | Number of non-detects | Range (mg/kg) |       | Average | Highest |
|-----------------------|-------------------|-----------------------|---------------|-------|---------|---------|
|                       |                   |                       | Min           | Max   |         |         |
| Naphthalene           | 2                 | 2                     | <0.04         | <0.04 | <0.04   | -       |
| Acenaphthylene        | 2                 | 2                     | <0.03         | <0.03 | <0.03   | -       |
| Acenaphthene          | 2                 | 2                     | <0.05         | <0.05 | <0.05   | -       |
| Fluorene              | 2                 | 2                     | <0.04         | <0.04 | <0.04   | -       |
| Phenanthrene          | 2                 | 0                     | 0.03          | 0.1   | 0.1     | TP103   |
| Anthracene            | 2                 | 2                     | <0.04         | <0.04 | <0.04   | -       |
| Fluoranthene          | 2                 | 0                     | 0.09          | 0.3   | 0.21    | TP103   |
| Pyrene                | 2                 | 0                     | 0.09          | 0.3   | 0.19    | TP103   |
| Benz(a)anthracene     | 2                 | 0                     | 0.13          | 0.4   | 0.24    | TP103   |
| Chrysene              | 2                 | 0                     | 0.12          | 0.3   | 0.22    | TP103   |
| Benzo(b)fluoranthene  | 2                 | 0                     | 0.18          | 0.5   | 0.33    | TP103   |
| Benzo(k)fluoranthene  | 2                 | 0                     | 0.07          | 0.2   | 0.13    | TP103   |
| Benzo(a)pyrene        | 2                 | 0                     | 0.12          | 0.4   | 0.27    | TP103   |
| Indeno(123cd)pyrene   | 2                 | 0                     | 0.12          | 0.29  | 0.21    | TP103   |
| Dibenzo(ah)anthracene | 2                 | 1                     | <0.04         | 0.07  | 0.06    | TP103   |
| Benzo(ghi)perylene    | 2                 | 0                     | 0.11          | 0.3   | 0.19    | TP103   |
| PAH 16 Total          | 2                 | 0                     | 1.1           | 3     | 2.1     | TP103   |
| Aliphatics C5-C6      | 2                 | 2                     | <0.1          | <0.1  | <0.1    | -       |
| Aliphatics >C6-C8     | 2                 | 2                     | <0.1          | <0.1  | <0.1    | -       |
| Aliphatics >C8-C10    | 2                 | 2                     | <0.1          | <0.1  | <0.1    | -       |
| Aliphatics >C10-C12   | 2                 | 2                     | <0.2          | 0.2   | <0.2    | -       |



| Contaminants                          | Number of | Number | Range (mg/kg) |     | Average | Highest |
|---------------------------------------|-----------|--------|---------------|-----|---------|---------|
| Aliphatics >C12-C16                   | 2         | 2      | <4            | 4   | <4      | -       |
| Aliphatics >C16-C21                   | 2         | 2      | <7            | 7   | <7      | -       |
| Aliphatics >C21-C35                   | 2         | 1      | <7            | 111 | 59      | TP103   |
| Total Aliphatics C5-C35               | 2         | 1      | <19           | 111 | 65      | TP103   |
| Aromatics C6-C7                       | 2         | 2      | <0.1          | 0.1 | <0.1    | -       |
| Aromatics >C7-C8                      | 2         | 2      | <0.1          | 0.1 | <0.1    | -       |
| Aromatics >EC8-EC10                   | 2         | 2      | <0.1          | 0.1 | <0.1    | -       |
| Aromatics >EC10-EC12                  | 2         | 2      | <0.2          | 0.2 | <0.2    | -       |
| Aromatics >EC12-EC16                  | 2         | 2      | <4            | 4   | <4      | -       |
| Aromatics >EC16-EC21                  | 2         | 2      | <7            | 7   | <7      | -       |
| Aromatics >EC21-EC35                  | 2         | 1      | <7            | 76  | 42      | TP103   |
| Total Aromatics C6-C35                | 2         | 1      | <19           | 76  | 48      | TP103   |
| TPH (Aliphatics and Aromatics C5-C35) | 2         | 1      | <38           | 187 | 120     | TP103   |

Table 11 – Soil/Green Waste Metals and Inorganics

| Contaminants              | Number of samples | Number of non-detects | Range (mg/kg) |       | Average | Highest |
|---------------------------|-------------------|-----------------------|---------------|-------|---------|---------|
|                           |                   |                       | Min           | Max   |         |         |
| Arsenic                   | 7                 | 0                     | 9.8           | 16.6  | 13      | HP116   |
| Barium                    | 1                 | 0                     | 79            | 79    | 79      | TP107   |
| Beryllium                 | 1                 | 0                     | 1             | 1     | 1       | TP107   |
| Cadmium                   | 7                 | 0                     | 0.4           | 1.8   | 0.75    | TP106   |
| Chromium                  | 7                 | 0                     | 8.9           | 33.3  | 17      | TP106   |
| Copper                    | 7                 | 0                     | 45            | 216   | 98      | TP106   |
| Lead                      | 7                 | 0                     | 121           | 1408  | 360     | TP104   |
| Mercury                   | 7                 | 3                     | <0.1          | 0.2   | 0.16    | TP104   |
| Nickel                    | 7                 | 0                     | 7.4           | 23.5  | 15      | TP104   |
| Selenium                  | 7                 | 7                     | <1            | <1    | <1      | -       |
| Vanadium                  | 1                 | 0                     | 12            | 12    | 12      | TP107   |
| Water Soluble Boron       | 1                 | 0                     | 3.1           | 3.1   | 3.1     | TP107   |
| Zinc                      | 7                 | 0                     | 193           | 767   | 370     | TP104   |
| Hexavalent Chromium       | 7                 | 7                     | <0.3          | <0.3  | <0.3    | -       |
| Nitrate as NO3 #M         | 2                 | 0                     | 86.6          | 630.3 | 360     | TP105   |
| Ortho Phosphate as PO4    | 2                 | 0                     | 0.6           | 8.3   | 4.5     | TP105   |
| Sulphate as SO4 (2:1 Ext) | 1                 | 0                     | 0.19          | 0.2   | 0.19    | TP105   |

Table 12 – Soil/Green Waste PAHs and Petroleum Hydrocarbons

| Contaminants      | Number of samples | Number of non-detects | Range (mg/kg) |       | Average | Highest |
|-------------------|-------------------|-----------------------|---------------|-------|---------|---------|
|                   |                   |                       | Min           | Max   |         |         |
| Naphthalene       | 2                 | 2                     | <0.04         | <0.04 | <0.04   | -       |
| Acenaphthylene    | 2                 | 2                     | <0.03         | <0.03 | <0.03   | -       |
| Acenaphthene      | 2                 | 2                     | <0.05         | <0.05 | <0.05   | -       |
| Fluorene          | 2                 | 2                     | <0.04         | <0.04 | <0.04   | -       |
| Phenanthrene      | 2                 | 0                     | 0.1           | 0.1   | 0.1     | TP106   |
| Anthracene        | 2                 | 2                     | <0.04         | <0.04 | <0.04   | -       |
| Fluoranthene      | 2                 | 0                     | 0.2           | 0.2   | 0.19    | TP106   |
| Pyrene            | 2                 | 0                     | 0.1           | 0.2   | 0.16    | TP106   |
| Benz(a)anthracene | 2                 | 0                     | 0.1           | 0.2   | 0.18    | TP106   |
| Chrysene          | 2                 | 0                     | 0.1           | 0.2   | 0.16    | TP106   |

| Contaminants                          | Number of | Number | Range (mg/kg) |       | Average | Highest |
|---------------------------------------|-----------|--------|---------------|-------|---------|---------|
| Benzo(b)fluoranthene                  | 2         | 0      | 0.2           | 0.2   | 0.21    | TP106   |
| Benzo(k)fluoranthene                  | 2         | 0      | 0.1           | 0.1   | 0.09    | TP106   |
| Benzo(a)pyrene                        | 2         | 0      | 0.1           | 0.2   | 0.16    | TP106   |
| Indeno(123cd)pyrene                   | 2         | 0      | 0.1           | 0.14  | 0.12    | TP106   |
| Dibenzo(ah)anthracene                 | 2         | 2      | <0.04         | <0.04 | <0.04   | -       |
| Benzo(ghi)perylene                    | 2         | 0      | 0.11          | 0.1   | 0.12    | TP106   |
| PAH 16 Total                          | 2         | 0      | 1.3           | 1.6   | 1.5     | TP106   |
| Aliphatics C5-C6                      | 2         | 2      | <0.1          | <0.1  | <0.1    | -       |
| Aliphatics >C6-C8                     | 2         | 2      | <0.1          | <0.1  | <0.1    | -       |
| Aliphatics >C8-C10                    | 2         | 2      | <0.1          | <0.1  | <0.1    | -       |
| Aliphatics >C10-C12                   | 2         | 2      | <0.2          | 0.2   | <0.2    | -       |
| Aliphatics >C12-C16                   | 2         | 2      | <4            | 4     | <4      | -       |
| Aliphatics >C16-C21                   | 2         | 2      | <7            | 7     | <7      | -       |
| Aliphatics >C21-C35                   | 2         | 1      | <7            | 41    | 24      | TP104   |
| Total Aliphatics C5-C35               | 2         | 1      | <19           | 41    | 30      | TP104   |
| Aromatics C6-C7                       | 2         | 2      | <0.1          | 0.1   | <0.1    | -       |
| Aromatics >C7-C8                      | 2         | 2      | <0.1          | 0.1   | <0.1    | -       |
| Aromatics >EC8-EC10                   | 2         | 2      | <0.1          | 0.1   | <0.1    | -       |
| Aromatics >EC10-EC12                  | 2         | 2      | <0.2          | 0.2   | <0.2    | -       |
| Aromatics >EC12-EC16                  | 2         | 2      | <4            | 4     | <4      | -       |
| Aromatics >EC16-EC21                  | 2         | 2      | <7            | 7     | <7      | -       |
| Aromatics >EC21-EC35                  | 2         | 1      | <7            | 73    | 40      | TP104   |
| Total Aromatics C6-C35                | 2         | 1      | <19           | 73    | 46      | TP104   |
| TPH (Aliphatics and Aromatics C5-C35) | 2         | 1      | <38           | 114   | 76      | TP104   |

Table 13 – Mixed Waste Metals and Inorganics

| Contaminants        | Number of samples | Number of non-detects | Range (mg/kg) |      | Average | Highest |
|---------------------|-------------------|-----------------------|---------------|------|---------|---------|
|                     |                   |                       | Min           | Max  |         |         |
| Arsenic             | 3                 | 0                     | 12.8          | 15.2 | 14      | TP110   |
| Cadmium             | 3                 | 0                     | 0.5           | 3.2  | 2       | TP110   |
| Chromium            | 3                 | 0                     | 15.5          | 91   | 55      | TP109   |
| Copper              | 3                 | 0                     | 70            | 807  | 440     | TP110   |
| Lead                | 3                 | 0                     | 128           | 585  | 430     | TP110   |
| Mercury             | 3                 | 0                     | 0.2           | 0.3  | 0.27    | TP108   |
| Nickel              | 3                 | 0                     | 13.5          | 67.7 | 47      | TP109   |
| Selenium            | 3                 | 3                     | <1            | <1   | <1      | -       |
| Zinc                | 3                 | 0                     | 343           | 2116 | 1200    | TP110   |
| Hexavalent Chromium | 3                 | 3                     | <0.3          | <0.3 | <0.3    | -       |

Table 14 – Mixed Waste PAHs and Petroleum Hydrocarbons

| Contaminants   | Number of samples | Number of non-detects | Range (mg/kg) |       | Average | Highest |
|----------------|-------------------|-----------------------|---------------|-------|---------|---------|
|                |                   |                       | Min           | Max   |         |         |
| Naphthalene    | 2                 | 1                     | <0.04         | 0.1   | 0.1     | TP109   |
| Acenaphthylene | 2                 | 1                     | <0.03         | 0.1   | 0.1     | TP109   |
| Acenaphthene   | 2                 | 2                     | <0.05         | <0.05 | <0.05   | -       |
| Fluorene       | 2                 | 1                     | <0.04         | 0.1   | 0.05    | TP109   |
| Phenanthrene   | 2                 | 0                     | 0.1           | 0.6   | 0.3     | TP109   |
| Anthracene     | 2                 | 1                     | <0.04         | 0.1   | 0.1     | TP109   |

| Contaminants                          | Number | Number | Range (mg/kg) |      | Average | Highest |
|---------------------------------------|--------|--------|---------------|------|---------|---------|
| Fluoranthene                          | 2      | 0      | 0.1           | 1.1  | 0.61    | TP109   |
| Pyrene                                | 2      | 0      | 0.1           | 0.9  | 0.5     | TP109   |
| Benz(a)anthracene                     | 2      | 0      | 0.1           | 0.7  | 0.39    | TP109   |
| Chrysene                              | 2      | 0      | 0.1           | 0.6  | 0.34    | TP109   |
| Benzo(b)fluoranthene                  | 2      | 0      | 0.1           | 0.7  | 0.42    | TP109   |
| Benzo(k)fluoranthene                  | 2      | 0      | 0.04          | 0.3  | 0.17    | TP109   |
| Benzo(a)pyrene                        | 2      | 0      | 0.1           | 0.6  | 0.34    | TP109   |
| Indeno(123cd)pyrene                   | 2      | 0      | 0.05          | 0.37 | 0.21    | TP109   |
| Dibenzo(ah)anthracene                 | 2      | 1      | <0.04         | 0.1  | 0.07    | TP109   |
| Benzo(ghi)perylene                    | 2      | 0      | 0.06          | 0.3  | 0.2     | TP109   |
| PAH 16 Total                          | 2      | 0      | 0.8           | 6.6  | 3.7     | TP109   |
| Aliphatics C5-C6                      | 2      | 2      | <0.1          | <0.1 | <0.1    | -       |
| Aliphatics >C6-C8                     | 2      | 2      | <0.1          | <0.1 | <0.1    | -       |
| Aliphatics >C8-C10                    | 2      | 2      | <0.1          | <0.1 | <0.1    | -       |
| Aliphatics >C10-C12                   | 2      | 2      | <0.2          | 0.2  | <0.2    | -       |
| Aliphatics >C12-C16                   | 2      | 2      | <4            | 4    | <4      | -       |
| Aliphatics >C16-C21                   | 2      | 2      | <7            | 7    | <7      | -       |
| Aliphatics >C21-C35                   | 2      | 1      | <7            | 21   | 14      | TP109   |
| Total Aliphatics C5-C35               | 2      | 1      | <19           | 21   | 20      | TP109   |
| Aromatics C6-C7                       | 2      | 2      | <0.1          | 0.1  | <0.1    | -       |
| Aromatics >C7-C8                      | 2      | 2      | <0.1          | 0.1  | <0.1    | -       |
| Aromatics >EC8-EC10                   | 2      | 2      | <0.1          | 0.1  | <0.1    | -       |
| Aromatics >EC10-EC12                  | 2      | 2      | <0.2          | 0.2  | <0.2    | -       |
| Aromatics >EC12-EC16                  | 2      | 2      | <4            | 4    | <4      | -       |
| Aromatics >EC16-EC21                  | 2      | 2      | <7            | 7    | <7      | -       |
| Aromatics >EC21-EC35                  | 2      | 2      | <7            | 7    | <7      | -       |
| Total Aromatics C6-C35                | 2      | 2      | <19           | 19   | <19     | -       |
| TPH (Aliphatics and Aromatics C5-C35) | 2      | 2      | <38           | 38   | <38     | -       |

Table 15 – C&amp;D Waste Metals and Inorganics

| Contaminants        | Number of samples | Number of non-detects | Range (mg/kg) |      | Average | Highest |
|---------------------|-------------------|-----------------------|---------------|------|---------|---------|
|                     |                   |                       | Min           | Max  |         |         |
| Arsenic             | 4                 | 0                     | 9.9           | 50.4 | 23      | TP113   |
| Cadmium             | 4                 | 0                     | 0.2           | 0.8  | 0.4     | TP113   |
| Chromium            | 4                 | 0                     | 9             | 71.6 | 26      | TP113   |
| Copper              | 4                 | 0                     | 34            | 59   | 43      | TP113   |
| Lead                | 4                 | 0                     | 77            | 192  | 140     | TP112   |
| Mercury             | 4                 | 0                     | 0.2           | 0.5  | 0.28    | TP114   |
| Nickel              | 4                 | 0                     | 7.4           | 52.7 | 20      | TP113   |
| Selenium            | 4                 | 4                     | <1            | <1   | <1      | -       |
| Zinc                | 4                 | 0                     | 167           | 250  | 210     | TP111   |
| Hexavalent Chromium | 4                 | 4                     | <0.3          | <0.3 | <0.3    | -       |

Table 16 – C&amp;D Waste PAHs and Petroleum Hydrocarbons

| Contaminants   | Number of samples | Number of non-detects | Range (mg/kg) |       | Average | Highest |
|----------------|-------------------|-----------------------|---------------|-------|---------|---------|
|                |                   |                       | Min           | Max   |         |         |
| Naphthalene    | 2                 | 2                     | <0.04         | <0.04 | <0.04   | -       |
| Acenaphthylene | 2                 | 0                     | 0.03          | 0.1   | 0.04    | TP112   |

| Contaminants                          | Number of | Number of | Range (mg/kg) |       | Average | Highest |
|---------------------------------------|-----------|-----------|---------------|-------|---------|---------|
| Acenaphthene                          | 2         | 2         | <0.05         | <0.05 | <0.05   | -       |
| Fluorene                              | 2         | 1         | <0.04         | 0.1   | 0.05    | TP112   |
| Phenanthrene                          | 2         | 0         | 0.2           | 0.6   | 0.4     | TP112   |
| Anthracene                            | 2         | 0         | 0.1           | 0.2   | 0.1     | TP112   |
| Fluoranthene                          | 2         | 0         | 0.4           | 0.9   | 0.65    | TP112   |
| Pyrene                                | 2         | 0         | 0.3           | 0.8   | 0.55    | TP112   |
| Benz(a)anthracene                     | 2         | 0         | 0.3           | 0.6   | 0.42    | TP112   |
| Chrysene                              | 2         | 0         | 0.2           | 0.5   | 0.34    | TP112   |
| Benzo(b)fluoranthene                  | 2         | 0         | 0.3           | 0.5   | 0.4     | TP112   |
| Benzo(k)fluoranthene                  | 2         | 0         | 0.1           | 0.2   | 0.15    | TP112   |
| Benzo(a)pyrene                        | 2         | 0         | 0.2           | 0.4   | 0.31    | TP112   |
| Indeno(123cd)pyrene                   | 2         | 0         | 0.16          | 0.27  | 0.22    | TP112   |
| Dibenzo(ah)anthracene                 | 2         | 1         | <0.04         | 0.07  | 0.06    | TP112   |
| Benzo(ghi)perylene                    | 2         | 0         | 0.14          | 0.3   | 0.2     | TP112   |
| PAH 16 Total                          | 2         | 0         | 2.3           | 5.3   | 3.8     | TP112   |
| Aliphatics C5-C6                      | 2         | 2         | <0.1          | <0.1  | <0.1    | -       |
| Aliphatics >C6-C8                     | 2         | 2         | <0.1          | <0.1  | <0.1    | -       |
| Aliphatics >C8-C10                    | 2         | 2         | <0.1          | <0.1  | <0.1    | -       |
| Aliphatics >C10-C12                   | 2         | 2         | <0.2          | 0.2   | <0.2    | -       |
| Aliphatics >C12-C16                   | 2         | 1         | <4            | 18    | 11      | TP113   |
| Aliphatics >C16-C21                   | 2         | 1         | <7            | 103   | 55      | TP113   |
| Aliphatics >C21-C35                   | 2         | 0         | 71            | 162   | 120     | TP113   |
| Total Aliphatics C5-C35               | 2         | 0         | 71            | 283   | 180     | TP113   |
| Aromatics C6-C7                       | 2         | 2         | <0.1          | 0.1   | <0.1    | -       |
| Aromatics >C7-C8                      | 2         | 2         | <0.1          | 0.1   | <0.1    | -       |
| Aromatics >EC8-EC10                   | 2         | 2         | <0.1          | 0.1   | <0.1    | -       |
| Aromatics >EC10-EC12                  | 2         | 2         | <0.2          | 0.2   | <0.2    | -       |
| Aromatics >EC12-EC16                  | 2         | 2         | <4            | 4     | <4      | -       |
| Aromatics >EC16-EC21                  | 2         | 1         | <7            | 12    | 9.5     | TP113   |
| Aromatics >EC21-EC35                  | 2         | 0         | 117           | 244   | 190     | TP113   |
| Total Aromatics C6-C35                | 2         | 0         | 117           | 256   | 190     | TP113   |
| TPH (Aliphatics and Aromatics C5-C35) | 2         | 0         | 188           | 539   | 370     | TP113   |

#### 4.6 Waste Sampling Asbestos Results

In the first instance 17 soil/waste samples were submitted for an asbestos screen. This level of analysis is designed only to establish whether asbestos is present within a given sample.

The results of this process (Appendix B) are summarised in Table 17 below. The results indicated the presence of chrysotile (white) asbestos in most samples and amosite (brown) and crocidolite (blue) asbestos in several samples.

**Table 17 – Asbestos Screen Results**

|        | Asbestos Screen | Asbestos Screen (2) | Asbestos Screen (3) | General Description (Bulk Analysis) | General Description (2)             | General Description (3)           |
|--------|-----------------|---------------------|---------------------|-------------------------------------|-------------------------------------|-----------------------------------|
| TP 101 | Chrysotile      | Amosite             | Crocidolite         | Soil-Silt/Stone/Brick/Fibre Bundles | Soil-Silt/Stone/Brick/Fibre Bundles | Soil-Silt/Stone/Brick/Trace Fibre |
| TP 102 | Chrysotile      | Amosite             | NA                  | Soil-Silt/Stone/Brick/Fibre Bundles | Soil-Silt/Stone/Brick/Fibre Bundle  | NA                                |
| TP 103 | Chrysotile      | Amosite             | NA                  | Soil-Silt/Stone/Brick/Fibre         | Soil-Silt/Stone/Brick/Fibre         | NA                                |

|        | Asbestos<br>Screen | Asbestos<br>Screen (2) | Asbestos<br>Screen (3) | General Description<br>(Bulk Analysis)           | General Description<br>(2)                      | General Description<br>(3)                      |
|--------|--------------------|------------------------|------------------------|--|---|---|
|        |                    |                        |                        | Bundles  | Bundle  |   |
| TP 104 | Chrysotile         | NA                     | NA                     | Soil-<br>Silt/Stone/Brick/Fibre<br>Bundles       | NA  | NA  |
| TP 105 | Chrysotile         | NA                     | NA                     | Soil-<br>Silt/Stone/Brick/Fibre<br>Bundle        | NA  | NA  |
| TP 106 | Chrysotile         | NA                     | NA                     | Soil-<br>Silt/Stone/Brick/MMMF/<br>Trace Fibres  | NA  | NA  |
| TP 107 | Chrysotile         | NA                     | NA                     | Soil-<br>Silt/Stone/Brick/MMMF/<br>Fibre Bundles | NA  | NA  |
| TP 108 | NAD                | NA                     | NA                     | Soil-<br>Silt/Stone/Brick/MMMF                   | NA  | NA  |
| TP 109 | Chrysotile         | NA                     | NA                     | Soil-<br>Silt/Stone/Brick/MMMF/<br>Fibre Bundle  | NA  | NA  |
| TP 110 | Chrysotile         | Amosite                | NA                     | Soil-<br>Silt/Stone/Brick/MMMF/<br>Fibre Bundle  | Soil-<br>Silt/Stone/Brick/MMMF<br>/Fibre Bundle | NA  |
| TP 111 | Chrysotile         | NA                     | NA                     | Soil-<br>Silt/Stone/Brick/MMMF/<br>Fibre Bundle  | NA  | NA  |
| TP 112 | Chrysotile         | Crocidolite            | Amosite                | Soil-<br>Silt/Brick/Stone/MMMF/<br>Tile          | Soil-<br>Silt/Brick/Stone/MMMF<br>/Tile         | Soil-<br>Silt/Brick/Stone/MMMF<br>/Trace Fibres |
| TP 113 | Chrysotile         | NA                     | NA                     | Soil-<br>Silt/Stone/Brick/MMMF/<br>Trace Fibres  | NA  | NA  |
| TP 114 | NAD                | NA                     | NA                     | Soil-<br>Silt/Stone/Brick/MMMF                   | NA  | NA  |
| HP 115 | NAD                | NA                     | NA                     | Soil-<br>Silt/Stone/Brick/MMMF                   | NA  | NA  |
| HP 116 | NAD                | NA                     | NA                     | Soil-<br>Silt/Stone/Brick/MMMF                   | NA  | NA  |
| HP 117 | Chrysotile         | NA                     | NA                     | Soil-<br>Silt/Stone/Brick/MMMF/<br>Trace Fibres  | NA  | NA  |

On the basis of the above results the 13 samples in which asbestos had been detected were submitted for further quantitative analysis to determine the actual concentration of asbestos on a percent, weight for weight basis. The results are summarised in Table 18.

**Table 18 – Asbestos Quantification Results**

|       | Asbestos Mass % |
|-------|-----------------|
| TP101 | 0.029           |
| TP102 | <0.001          |
| TP103 | <0.001          |
| TP104 | 0.002           |
| TP105 | <0.001          |
| TP106 | NA              |
| TP107 | <0.001          |
| TP109 | 0.008           |
| TP110 | 0.01            |
| TP111 | 0.437           |
| TP112 | NA              |
| TP113 | NA              |
| HP117 | NA              |



The above results indicate asbestos at trace amounts and/or below detection limits in 8 samples. The highest concentration was in a sample of C&D waste (0.473% w/w) and the average concentration of asbestos was below 0.1% w/w, which is the carcinogenic and Hazardous Waste threshold.

#### 4.7 Leachability Analysis

In order to assess the leaching potential of waste materials at Moorwell, and notwithstanding the fact that groundwater analysis gives a more reliable indication of actual impact to controlled waters, one sample of each material type was submitted for laboratory leaching tests. The results are shown below.

**Table 19 – Leachability Analysis Results**

| Contaminants            | Number of samples | Number of non-detects | Range (mg/l) |           | Average   | Highest |
|-------------------------|-------------------|-----------------------|--------------|-----------|-----------|---------|
|                         |                   |                       | Min          | Max       |           |         |
| Arsenic                 | 4                 | 1                     | <0.0025      | 0.006     | 0.004     | TP103   |
| Boron                   | 4                 | 4                     | <0.0005      | <0.0005   | <0.0005   | -       |
| Cadmium                 | 4                 | 2                     | <0.0015      | 0.02      | 0.005     | TP109   |
| Chromium                | 4                 | 3                     | <0.007       | 0.02      | 0.01      | TP109   |
| Copper                  | 4                 | 3                     | <0.005       | 0.01      | 0.007     | TP109   |
| Lead                    | 4                 | 4                     | <0.001       | <0.001    | <0.001    | -       |
| Nickel                  | 4                 | 2                     | <0.002       | 0.006     | 0.003     | TP109   |
| Selenium                | 4                 | 4                     | <0.003       | <0.003    | <0.003    | -       |
| Zinc                    | 4                 | 1                     | <0.003       | 0.05      | 0.02      | TP112   |
| Naphthalene             | 4                 | 2                     | <0.000014    | 0.00005   | 0.00003   | TP106   |
| Acenaphthylene          | 4                 | 4                     | <0.000013    | <0.000013 | <0.000013 | -       |
| Acenaphthene            | 4                 | 3                     | <0.00001     | 0.00006   | 0.00003   | TP112   |
| Fluorene                | 4                 | 3                     | <0.00001     | 0.00005   | 0.00002   | TP112   |
| Phenanthrene            | 4                 | 1                     | <0.00001     | 0.0003    | 0.0001    | TP112   |
| Anthracene              | 4                 | 3                     | <0.00001     | 0.00007   | 0.00003   | TP112   |
| Fluoranthene            | 4                 | 0                     | 0.00003      | 0.0005    | 0.0002    | TP112   |
| Pyrene                  | 4                 | 0                     | 0.00003      | 0.0004    | 0.0002    | TP112   |
| Benz(a)anthracene       | 4                 | 0                     | 0.00003      | 0.003     | 0.0001    | TP112   |
| Chrysene                | 4                 | 0                     | 0.00003      | 0.0002    | 0.0001    | TP112   |
| Benzo(b)fluoranthene    | 4                 | 0                     | 0.00006      | 0.0004    | 0.0002    | TP112   |
| Benzo(k)fluoranthene    | 4                 | 0                     | 0.00006      | 0.0004    | 0.0002    | TP112   |
| Benzo(a)pyrene          | 4                 | 0                     | 0.00004      | 0.0002    | 0.00009   | TP112   |
| Indeno(123cd)pyrene     | 4                 | 0                     | 0.00004      | 0.0001    | 0.00008   | TP112   |
| Dibenzo(ah)anthracene   | 4                 | 2                     | <0.00001     | 0.00003   | 0.00002   | TP112   |
| Benzo(ghi)perylene      | 4                 | 0                     | 0.00002      | 0.00008   | 0.00005   | TP112   |
| Aliphatics C5-C6        | 4                 | 4                     | <0.005       | 0.005     | 0.005     | -       |
| Aliphatics >C6-C8       | 4                 | 4                     | <0.005       | 0.005     | 0.005     | -       |
| Aliphatics >C8-C10      | 4                 | 4                     | <0.005       | 0.005     | <0.005    | -       |
| Aliphatics >C10-C12     | 4                 | 4                     | <0.005       | 0.005     | <0.005    | -       |
| Aliphatics >C12-C16     | 4                 | 4                     | <0.01        | 0.01      | <0.01     | -       |
| Aliphatics >C16-C21     | 4                 | 3                     | <0.01        | 0.19      | <0.01     | TP103   |
| Aliphatics >C21-C35     | 4                 | 3                     | <0.01        | 13.26     | 3.32      | TP103   |
| Total Aliphatics C5-C35 | 4                 | 3                     | <0.01        | 13.45     | 3.37      | TP103   |
| Aromatics C6-C7         | 4                 | 4                     | <0.005       | 0.005     | <0.005    | -       |
| Aromatics >C7-C8        | 4                 | 4                     | <0.005       | 0.005     | <0.005    | -       |
| Aromatics >EC8-EC10     | 4                 | 4                     | <0.005       | 0.005     | <0.005    | -       |

| Contaminants                                 | Number | Number | Range (mg/l) |       | Average | Highest |
|--|--------|--------|--------------|-------|---------|---------|
| <b>Aromatics &gt;EC10-EC12</b>               | 4      | 4      | <0.005       | 0.005 | <0.005  | -       |
| <b>Aromatics &gt;EC12-EC16</b>               | 4      | 4      | <0.01        | 0.01  | <0.01   | -       |
| <b>Aromatics &gt;EC16-EC21</b>               | 4      | 4      | <0.01        | 0.01  | <0.01   | -       |
| <b>Aromatics &gt;EC21-EC35</b>               | 4      | 3      | <0.01        | 0.79  | <0.01   | TP103   |
| <b>Total Aromatics C6-C35</b>                | 4      | 3      | <0.01        | 0.79  | <0.01   | TP103   |
| <b>TPH (Aliphatics and Aromatics C5-C35)</b> | 4      | 3      | <0.01        | 14.24 | 3.57    | TP103   |
| <b>Organic Carbon</b>                        | 0      | 0      | 0            | <2    |         | -       |

#### 4.8 Groundwater Results

The results of the chemical testing of groundwater samples are summarised in Table 20 below. Full laboratory analysis certificates are included as Appendix D.

Only contaminants reported above laboratory detection limits are included below. Those groups of contaminants not recorded above detection limits include:

- VOCs;
- SVOCs;
- PAHs;
- Phthalates;
- Organochlorine Pesticides; and
- Organophosphorus Pesticides.

**Table 20 – Groundwater Analysis Results**

| Contaminants              | Number of samples | Number of non-detects | Range (mg/l) |          | Average  | Highest |
|---------------------------|-------------------|-----------------------|--------------|----------|----------|---------|
|                           |                   |                       | Min          | Max      |          |         |
| <b>Aluminium</b>          | 3                 | 2                     | <0.0015      | 0.02     | 0.008    | BHK     |
| <b>Antimony</b>           | 3                 | 3                     | <0.002       | <0.002   | <0.002   | -       |
| <b>Arsenic</b>            | 3                 | 0                     | 0.007        | 0.008    | 0.007    | BHK     |
| <b>Barium</b>             | 3                 | 0                     | 0.018        | 0.025    | 0.021    | BHM     |
| <b>Beryllium</b>          | 3                 | 3                     | <0.0005      | <0.0005  | <0.0005  | -       |
| <b>Boron</b>              | 3                 | 0                     | 0.138        | 0.286    | 0.210    | BHM     |
| <b>Cadmium</b>            | 3                 | 3                     | <0.00003     | <0.00003 | <0.00003 | -       |
| <b>Chromium</b>           | 3                 | 0                     | 0.001        | 0.001    | 0.001    | BHL     |
| <b>Cobalt</b>             | 3                 | 1                     | <0.0001      | 0.001    | 0.0004   | BHK     |
| <b>Copper</b>             | 3                 | 2                     | <0.003       | 0.009    | 0.005    | BHM     |
| <b>Total Iron</b>         | 3                 | 1                     | <0.0047      | 0.089    | 0.045    | BHK     |
| <b>Lead</b>               | 3                 | 0                     | 0.005        | 0.007    | 0.006    | BHM     |
| <b>Manganese</b>          | 3                 | 0                     | 0.164        | 0.677    | 0.410    | BHL     |
| <b>Mercury</b>            | 3                 | 3                     | <0.0005      | <0.0005  | <0.0005  | -       |
| <b>Molybdenum</b>         | 3                 | 0                     | 0.007        | 0.012    | 0.009    | BHM     |
| <b>Nickel</b>             | 3                 | 1                     | <0.0002      | 0.001    | 0.001    | BHM     |
| <b>Phosphorus</b>         | 3                 | 0                     | 0.003        | 0.009    | 0.006    | BHL     |
| <b>Selenium</b>           | 3                 | 3                     | <0.0012      | <0.0012  | <0.0012  | -       |
| <b>Titanium</b>           | 3                 | 3                     | <0.005       | <0.005   | <0.005   | -       |
| <b>Vanadium</b>           | 3                 | 3                     | <0.0006      | <0.0006  | <0.0006  | -       |
| <b>Zinc</b>               | 3                 | 0                     | 0.008        | 0.079    | 0.035    | BHM     |
| <b>Hardness</b>           | 3                 | 0                     | 95           | 290      | 200      | BHL     |
| <b>Sulphate (soluble)</b> | 3                 | 0                     | 66.4         | 95.1     | 85       | BHK     |

| Contaminants               | Number | Number | Range (mg/l) |      | Average | Highest |
|----------------------------|--------|--------|--------------|------|---------|---------|
| <b>Chloride</b>            | 3      | 0      | 136.2        | 380  | 290     | BHL     |
| <b>Nitrate</b>             | 3      | 0      | 0.7          | 11.5 | 4.5     | BHM     |
| <b>Ammoniacal Nitrogen</b> | 3      | 2      | <0.03        | 0.41 | 0.16    | BHK     |

## 5.0 CONCEPTUAL MODEL

Table 21 presents a simple, qualitative assessment known as a Conceptual Model. The purpose of the Conceptual Model is to identify potential sources of contamination, receptors that could be a risk and pathways that connect them. Its purpose is to inform which potential pollution linkages (PPLs) should be taken forward for further assessment. Unless all three elements of a pollutant linkage (i.e. the source, pathway and receptor) are in place a significant risk is not considered to exist and no further, quantitative, assessment is required.

For the purposes of the model below we have assumed that the waste materials present (although only the ash, soil/green waste, C&D waste and mixed soily waste) could be used within bund construction in the long term. On this basis human receptors could include workers at the site, visitors, local residents etc.

**Table 21 – Conceptual Model**

| <b>Sources</b>            | <b>Contaminant</b>                              | <b>Investigation Conclusions</b>  |                     |
|---------------------------|---|---|---------------------|
|                           | History   | Deposition of a variety of waste types at the site over several decades. Precise nature of the materials not known but have been loosely characterised according to type. |                     |
|                           | Heavy metals                                    | Elevated concentrations present, particularly in the ash. Low concentrations in other materials and in groundwater samples.   |                     |
|                           | PAHs  | Low concentrations generally recorded in all materials. Below detection limits in groundwater samples.  |                     |
|                           | Hydrocarbons & oils                             | Low concentrations recorded in all media. No visual or olfactory evidence of contamination identified.  |                     |
|                           | Gases / vapours                                 | Low gas concentrations / flows recorded in previous assessments.  |                     |
|                           | Asbestos  | Present both on the surface of the site and buried within other wastes. Positively identified by laboratory analysis.   |                     |
| <b>Receptors</b>          | <b>Receptor</b>                                 | <b>Description</b>  | <b>Sensitivity</b>  |
|                           | Future site users                               | Current/future site staff   | Low                 |
|                           | Neighbours                                      | Residential properties adjacent to the site   | Low/Medium          |
|                           | Buildings / Services                            | Future new buildings onsite, new service corridors at shallow depth   | Low/Medium          |
|                           | Groundwater                                     | The groundwater system within the glacial deposits aquifer that underlies the Lower Moors area.   | Low/Medium          |
|                           | Surface waters                                  | The Lower Moors surface water drainage system, which ultimately drains to Old Town Bay;   | Low/Medium          |
| <b>Pathways</b>           | <b>Pathway</b>                                  | <b>Linkage</b>  | <b>Significance</b> |
|                           | Dermal contact, ingestion or inhalation         | Onsite Plausible pathway although exposure to materials in bunds will be limited once constructed. Asbestos present on site.  | Medium              |
|                           | Vapour/ gas migration into buildings / outdoors | Onsite No evidence of significant organic contamination. Landfill gas risk is low.  | Low                 |
|                           |   | Offsite No evidence of significant organic contamination. Landfill gas risk is low.   | Low                 |
|                           | Ground to controlled waters                     | GW Plausible, although leachability results indicate low leaching potential generally.  | Low/Medium          |
|                           |   | SW As above. Existing studies generally indicate low risks.   | Low/Medium          |
| <b>Pollutant Linkages</b> | <b>Exposure Pathway</b>                         | <b>Assessment</b>   |                     |
|                           | Onsite health                                   | Direct contact plausible and needs to be managed along with asbestos risk.  |                     |
|                           | Offsite health                                  | Unlikely to be present but asbestos risks need to be quantified.  |                     |
|                           | Buildings / Services                            | Unlikely to be present but building materials should be selected in relation to site conditions.  |                     |

| Sources                        | Contaminant   | Investigation Conclusions                    |
|--------------------------------|---------------|--|
|                                | Groundwater   | Existing studies indicate low risks to date. |
|                                | Surface water | Existing studies indicate low risks to date. |
| <b>Overall risk assessment</b> |               | <b>LOW/MEDIUM</b>                            |

Based upon the above model, the most significant potential pollutant linkages (PPL) appear to be:

- PPL 1:** Inhalation of soil dust and asbestos fibres by future site users, and exposure of site workers to shallow materials used in bund construction.
- PPL 2:** Localised impacts in shallow Made Ground impacting new service corridors.
- PPL 3:** Inhalation of wind-blown asbestos fibres by off-site human receptors.
- PPL 4:** Impact to groundwater and local surface waters.



## **6.0 GENERIC QUANTITATIVE RISK ASSESSMENT**

A Generic Risk Assessment has been undertaken for the four potential pollutant linkages identified in Section 5.

### **6.1 Human Health Risk Assessment**

For PPL1 – human health risks from soil derived contaminants (other than asbestos, which is discussed separately) - the soil data for the sampled soils was compared to selected generic risk assessment criteria (GAC). The site will feature bunds constructed from materials already stockpiled at the site and as such the chemical quality of all four material types sampled during the site investigation has been used in the assessment.

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

- Soil Guideline Values (SGVs) – since March 2002, the Department for Environment, Food and Rural Affairs (Defra) and the Environment Agency have been involved in publishing a series of reports that provide a scientifically based framework for the assessment of risks to human health from land contamination;
- LQM (Land Quality Management)/CIEH (Chartered Institute of Environmental Health) Generic Assessment Criteria (GAC) – Land Quality Management and the Chartered Institute of Environmental Health have published GACs derived following CLR (Contaminated Land Report) technical guidance and using the Environment Agency's CLEA (Contaminated Land Exposure Assessment) UK model;
- SLR's own in-house screening criteria derived following CLR technical guidance using the CLEA UK model; and
- CLAIRE (Contaminated Land – Applications in Real Environments)/ AGS (Association of Geotechnical Specialists) / EIC (Environmental Industries Commission) Generic Assessment Criteria (GAC) – these institutions have published publically available GACs derived following CLR technical guidance and using the Environment Agency's CLEA UK model

The SGVs and GAC have been developed as a guide for regulators and developers; if the concentrations recorded on site are lower than the SGV / GAC it is generally accepted that the contaminants in question are present at acceptable concentrations which aren't capable of putting human health at significant risk - as long as the humans make normal use of the site. An exceedance of these values indicates to an assessor that soil contaminant concentrations need to be considered further. SGVs combine both authoritative science and policy judgements.

The commercial / industrial land uses GACs have been used in this assessment for a 1% soil organic matter content.

### **6.2 Controlled Waters Risk Assessment**

Risks to groundwater and surface water from dissolved contaminants have been assessed in previous reports. At the request of the EA however, additional samples were collected from three Moorwell boreholes. These results have been assessed by screening the site results against generic water quality standards and previous results.

These criteria are protective of the environmental quality of surface waters (EQS) or of human health (via Drinking Water Standards). The screening criteria are drawn from the following list with criteria from the latter standards/guidance only being used where Environmental Quality Standards and UK Drinking Water Standards are not available:

- Environmental Quality Standards (EQS) – used in the UK for amongst others, volatile organic compound contamination assessment within surface water. EQS are derived from toxicity data, noting chronic effects after long-term exposure or at sensitive life stages of target aquatic species. The EQS quoted have been taken from the EAs online chemical standards database, unless stated v2.0 19 April 2011<sup>2</sup>.
- UK Drinking Water Standards (UK DWS) – are for the protection for human health and derive from either the Water Supply (Water Quality) Regulations 1989 or 2000.
- EU Drinking Water Standards (EU DWS) – are for the protection of human health and derive from the Council Directive 98/83/EC.
- World Health Organisation Guidelines (WHO Health) protect health and derive from the World Health Organisation Guidelines for Drinking Water Quality, 1984.

For soil contaminants, the assessment comprises a qualitative review, comprising an evaluation of the results of the WAC testing of soils and comparison to the recorded quality of the underlying groundwater.

### **6.3 PPL 1 - Soils Risks to Human Health Other than Asbestos**

The soil analytical results from the site were grouped together for the four material types:

- IBS (ash waste);
- Soil/Green waste;
- General/Mixed waste (the central stockpiled material beneath the bulky waste); and
- C&D waste.

The individual sample results and maximum recorded concentrations for each contaminant were compared to generic assessment criteria (GAC) comprised of published soil guideline values (SGVs) and screening criteria derived using CLEA UK. The GAC and their sources are detailed in Appendix E.

The site will continue to operate as a waste facility, although in the future materials will be recycled and will not continue to contribute to semi-permanent stockpiles on site as currently. The purpose of this assessment is to establish whether the four material types sampled will be suitable for use in bund construction. The selected GAC for the Site are therefore for the standard commercial / industrial use.

The key results from the risk assessment process are summarised in the tables below.

The generic assessment indicates no exceedances of the GACs for any of the contaminants of concern. This means that with respect to the contaminants included within the assessment all material types are likely to be suitable for reuse on site in bund construction.

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<sup>2</sup> <http://evidence.environment-agency.gov.uk/ChemicalStandards/Home.aspx>

**Table 22 – Generic Risk Assessment – Ash Waste Metals**

| Contaminants    | Selected GAC (mg/kg) | RC    | RC type | No. over GAC | Hazard Quotient | Pass or fail MVT? |
|-----------------|----------------------|-------|---------|--------------|-----------------|-------------------|
| <b>Arsenic</b>  | 640                  | 40.6  | Max     | 0            | 0.0634          | Pass              |
| <b>Cadmium</b>  | 230                  | 5.7   | Max     | 0            | 0.0248          | Pass              |
| <b>Chromium</b> | 30000                | 75.4  | Max     | 0            | 0.0025          | Pass              |
| <b>Copper</b>   | 72000                | 1038  | Max     | 0            | 0.0144          | Pass              |
| <b>Lead</b>     | 5700                 | 940   | Max     | 0            | 0.1649          | Pass              |
| <b>Mercury</b>  | 3600                 | 1.3   | Max     | 0            | 0.0004          | Pass              |
| <b>Nickel</b>   | 1800                 | 111.8 | Max     | 0            | 0.0621          | Pass              |
| <b>Selenium</b> | 13000                | 1     | Max     | 0            | 0.0001          | Pass              |
| <b>Zinc</b>     | 670000               | 2085  | Max     | 0            | 0.0031          | Pass              |

Note: All concentrations in mg/kg  
Contaminants with no GAC or no detects omitted, full results in Appendix B.  
Highlighted cell represents a MVT Failure

**Table 23 - Generic Risk Assessment – Ash Waste PAHs and Petroleum Hydrocarbons**

| Contaminants                   | Selected GAC (mg/kg) | RC   | RC type | No. over GAC | Hazard Quotient | Pass or fail MVT? |
|--------------------------------|----------------------|------|---------|--------------|-----------------|-------------------|
| <b>Naphthalene</b>             | 76                   | 0.04 | Max     | 0            | 0.0005          | Pass              |
| <b>Fluorene</b>                | 153                  | 0.04 | Max     | 0            | 0.0003          | Pass              |
| <b>Benzo(a)pyrene</b>          | 14                   | 0.42 | Max     | 0            | 0.0300          | Pass              |
| <b>Dibenzo(ah)anthracene</b>   | 14                   | 0.07 | Max     | 0            | 0.0050          | Pass              |
| <b>Aliphatics C5-C6</b>        | 300                  | 0.10 | Max     | 0            | 0.0003          | Pass              |
| <b>Aliphatics &gt;C6-C8</b>    | 150                  | 0.10 | Max     | 0            | 0.0007          | Pass              |
| <b>Aliphatics &gt;C8-C10</b>   | 82                   | 0.10 | Max     | 0            | 0.0012          | Pass              |
| <b>Aliphatics &gt;C10-C12</b>  | 50                   | 0.20 | Max     | 0            | 0.0040          | Pass              |
| <b>Aliphatics &gt;C12-C16</b>  | 5000                 | 4.00 | Max     | 0            | 0.0008          | Pass              |
| <b>Aliphatics &gt;C16-C21</b>  | 5000                 | 7.00 | Max     | 0            | 0.0014          | Pass              |
| <b>Aliphatics &gt;C21-C35</b>  | 5000                 | 111  | Max     | 0            | 0.0222          | Pass              |
| <b>Aromatics &gt;EC8-EC10</b>  | 620                  | 0.10 | Max     | 0            | 0.0002          | Pass              |
| <b>Aromatics &gt;EC10-EC12</b> | 370                  | 0.20 | Max     | 0            | 0.0005          | Pass              |
| <b>Aromatics &gt;EC12-EC16</b> | 5000                 | 4    | Max     | 0            | 0.0008          | Pass              |
| <b>Aromatics &gt;EC16-EC21</b> | 5000                 | 7    | Max     | 0            | 0.0014          | Pass              |
| <b>Aromatics &gt;EC21-EC35</b> | 5000                 | 76   | Max     | 0            | 0.0152          | Pass              |

Note: All concentrations in mg/kg  
Contaminants with no GAC or no detects omitted, full results in Appendix B.  
Highlighted cell represents a MVT Failure

**Table 24 - Generic Risk Assessment – Soil/Green Waste Metals**

| Contaminants     | Selected GAC (mg/kg) | RC   | RC type | No. over GAC | Hazard Quotient | Pass or fail MVT? |
|------------------|----------------------|------|---------|--------------|-----------------|-------------------|
| <b>Arsenic</b>   | 640                  | 16.6 | Max     | 0            | 0.0259          | Pass              |
| <b>Beryllium</b> | 420                  | 0.6  | Max     | 0            | 0.0014          | Pass              |
| <b>Cadmium</b>   | 230                  | 1.8  | Max     | 0            | 0.0078          | Pass              |
| <b>Chromium</b>  | 30000                | 33.3 | Max     | 0            | 0.0011          | Pass              |
| <b>Copper</b>    | 72000                | 216  | Max     | 0            | 0.0030          | Pass              |
| <b>Lead</b>      | 5700                 | 1408 | Max     | 0            | 0.2470          | Pass              |

| Contaminants | Selected GAC<br>(mg/kg) | RC   | RC type | No. over GAC | Hazard Quotient | Pass or fail MVT? |
|--------------|-------------------------|------|---------|--------------|-----------------|-------------------|
| Mercury      | 3600                    | 0.2  | Max     | 0            | 0.0001          | Pass              |
| Nickel       | 1800                    | 23.5 | Max     | 0            | 0.0131          | Pass              |
| Selenium     | 13000                   | 1    | Max     | 0            | 0.0001          | Pass              |
| Vanadium     | 3200                    | 12   | Max     | 0            | 0.0038          | Pass              |
| Zinc         | 670000                  | 767  | Max     | 0            | 0.0011          | Pass              |

Note: All concentrations in mg/kg  
Contaminants with no GAC or no detects omitted, full results in Appendix B.  
Highlighted cell represents a MVT Failure

**Table 25 - Generic Risk Assessment – Soil/Green Waste PAHs and Petroleum Hydrocarbons**

| Contaminants          | Selected GAC<br>(mg/kg) | RC   | RC type | No. over GAC | Hazard Quotient | Pass or fail MVT? |
|-----------------------|-------------------------|------|---------|--------------|-----------------|-------------------|
| Naphthalene           | 76                      | 0.04 | Max     | 0            | 0.0005          | Pass              |
| Fluorene              | 153                     | 0.04 | Max     | 0            | 0.0003          | Pass              |
| Benzo(a)pyrene        | 14                      | 0.2  | Max     | 0            | 0.0121          | Pass              |
| Dibenzo(ah)anthracene | 14                      | 0.04 | Max     | 0            | 0.0029          | Pass              |
| Aliphatics C5-C6      | 300                     | 0.1  | Max     | 0            | 0.0003          | Pass              |
| Aliphatics >C6-C8     | 150                     | 0.1  | Max     | 0            | 0.0007          | Pass              |
| Aliphatics >C8-C10    | 82                      | 0.1  | Max     | 0            | 0.0012          | Pass              |
| Aliphatics >C10-C12   | 50                      | 0.2  | Max     | 0            | 0.0040          | Pass              |
| Aliphatics >C12-C16   | 5000                    | 4    | Max     | 0            | 0.0008          | Pass              |
| Aliphatics >C16-C21   | 5000                    | 7    | Max     | 0            | 0.0014          | Pass              |
| Aliphatics >C21-C35   | 5000                    | 41   | Max     | 0            | 0.0082          | Pass              |
| Aromatics >EC8-EC10   | 620                     | 0.1  | Max     | 0            | 0.0002          | Pass              |
| Aromatics >EC10-EC12  | 370                     | 0.2  | Max     | 0            | 0.0005          | Pass              |
| Aromatics >EC12-EC16  | 5000                    | 4    | Max     | 0            | 0.0008          | Pass              |
| Aromatics >EC16-EC21  | 5000                    | 7    | Max     | 0            | 0.0014          | Pass              |
| Aromatics >EC21-EC35  | 5000                    | 73   | Max     | 0            | 0.0146          | Pass              |

Note: All concentrations in mg/kg  
Contaminants with no GAC or no detects omitted, full results in Appendix B.  
Highlighted cell represents a MVT Failure

**Table 26 - Generic Risk Assessment – Mixed Waste Metals**

| Contaminants | Selected GAC<br>(mg/kg) | RC   | RC type | No. over GAC | Hazard Quotient | Pass or fail MVT? |
|--------------|-------------------------|------|---------|--------------|-----------------|-------------------|
| Arsenic      | 640                     | 15.2 | Max     | 0            | 0.0238          | Pass              |
| Cadmium      | 230                     | 3.2  | Max     | 0            | 0.0139          | Pass              |
| Chromium     | 30000                   | 91   | Max     | 0            | 0.0030          | Pass              |
| Copper       | 72000                   | 807  | Max     | 0            | 0.0112          | Pass              |
| Lead         | 5700                    | 585  | Max     | 0            | 0.1026          | Pass              |
| Mercury      | 3600                    | 0.3  | Max     | 0            | 0.0001          | Pass              |
| Nickel       | 1800                    | 67.7 | Max     | 0            | 0.0376          | Pass              |
| Selenium     | 13000                   | 1    | Max     | 0            | 0.0001          | Pass              |
| Zinc         | 670000                  | 2116 | Max     | 0            | 0.0032          | Pass              |

Note: All concentrations in mg/kg  
Contaminants with no GAC or no detects omitted, full results in Appendix B.  
Highlighted cell represents a MVT Failure

**Table 27 - Generic Risk Assessment – Mixed Waste PAHs and Petroleum Hydrocarbons**

| Contaminants          | Selected GAC (mg/kg) | RC  | RC type | No. over GAC | Hazard Quotient | Pass or fail MVT? |
|-----------------------|----------------------|-----|---------|--------------|-----------------|-------------------|
| Naphthalene           | 76                   | 0.1 | Max     | 0            | 0.0008          | Pass              |
| Fluorene              | 153                  | 0.1 | Max     | 0            | 0.0003          | Pass              |
| Benzo(a)pyrene        | 14                   | 0.6 | Max     | 0            | 0.0429          | Pass              |
| Dibenzo(ah)anthracene | 14                   | 0.1 | Max     | 0            | 0.0071          | Pass              |
| Aliphatics C5-C6      | 300                  | 0.1 | Max     | 0            | 0.0003          | Pass              |
| Aliphatics >C6-C8     | 150                  | 0.1 | Max     | 0            | 0.0007          | Pass              |
| Aliphatics >C8-C10    | 82                   | 0.1 | Max     | 0            | 0.0012          | Pass              |
| Aliphatics >C10-C12   | 50                   | 0.2 | Max     | 0            | 0.0040          | Pass              |
| Aliphatics >C12-C16   | 5000                 | 4   | Max     | 0            | 0.0008          | Pass              |
| Aliphatics >C16-C21   | 5000                 | 7   | Max     | 0            | 0.0014          | Pass              |
| Aliphatics >C21-C35   | 5000                 | 21  | Max     | 0            | 0.0042          | Pass              |
| Aromatics >EC8-EC10   | 620                  | 0.1 | Max     | 0            | 0.0002          | Pass              |
| Aromatics >EC10-EC12  | 370                  | 0.2 | Max     | 0            | 0.0005          | Pass              |
| Aromatics >EC12-EC16  | 5000                 | 4   | Max     | 0            | 0.0008          | Pass              |
| Aromatics >EC16-EC21  | 5000                 | 7   | Max     | 0            | 0.0014          | Pass              |
| Aromatics >EC21-EC35  | 5000                 | 7   | Max     | 0            | 0.0014          | Pass              |

Note: All concentrations in mg/kg  
Contaminants with no GAC or no detects omitted, full results in Appendix B.  
Highlighted cell represents a MVT Failure

**Table 28 - Generic Risk Assessment – C&D Waste Metals**

| Contaminants | Selected GAC (mg/kg) | RC   | RC type | No. over GAC | Hazard Quotient | Pass or fail MVT? |
|--------------|----------------------|------|---------|--------------|-----------------|-------------------|
| Arsenic      | 640                  | 50.4 | Max     | 0            | 0.0788          | Pass              |
| Cadmium      | 230                  | 0.8  | Max     | 0            | 0.0035          | Pass              |
| Chromium     | 30000                | 71.6 | Max     | 0            | 0.0024          | Pass              |
| Copper       | 72000                | 59   | Max     | 0            | 0.0008          | Pass              |
| Lead         | 5700                 | 192  | Max     | 0            | 0.0337          | Pass              |
| Mercury      | 3600                 | 0.5  | Max     | 0            | 0.0001          | Pass              |
| Nickel       | 1800                 | 52.7 | Max     | 0            | 0.0293          | Pass              |
| Selenium     | 13000                | 1    | Max     | 0            | 0.0001          | Pass              |
| Zinc         | 670000               | 250  | Max     | 0            | 0.0004          | Pass              |

Note: All concentrations in mg/kg  
Contaminants with no GAC or no detects omitted, full results in Appendix B.  
Highlighted cell represents a MVT Failure

**Table 29 - Generic Risk Assessment – C&D Waste PAHs and Petroleum Hydrocarbons**

| Contaminants          | Selected GAC (mg/kg) | RC   | RC type | No. over GAC | Hazard Quotient | Pass or fail MVT? |
|-----------------------|----------------------|------|---------|--------------|-----------------|-------------------|
| Naphthalene           | 76                   | 0.04 | Max     | 0            | 0.0005          | Pass              |
| Fluorene              | 153                  | 0.05 | Max     | 0            | 0.0003          | Pass              |
| Benzo(a)pyrene        | 14                   | 0.43 | Max     | 0            | 0.0307          | Pass              |
| Dibenzo(ah)anthracene | 14                   | 0.07 | Max     | 0            | 0.0050          | Pass              |



| Contaminants         | Selected GAC<br>(mg/kg) | RC  | RC type | No. over GAC | Hazard Quotient | Pass or fail<br>MVT? |
|----------------------|-------------------------|-----|---------|--------------|-----------------|----------------------|
| Aliphatics C5-C6     | 300                     | 0.1 | Max     | 0            | 0.0003          | Pass                 |
| Aliphatics >C6-C8    | 150                     | 0.1 | Max     | 0            | 0.0007          | Pass                 |
| Aliphatics >C8-C10   | 82                      | 0.1 | Max     | 0            | 0.0012          | Pass                 |
| Aliphatics >C10-C12  | 50                      | 0.2 | Max     | 0            | 0.0040          | Pass                 |
| Aliphatics >C12-C16  | 5000                    | 18  | Max     | 0            | 0.0036          | Pass                 |
| Aliphatics >C16-C21  | 5000                    | 103 | Max     | 0            | 0.0206          | Pass                 |
| Aliphatics >C21-C35  | 5000                    | 162 | Max     | 0            | 0.0324          | Pass                 |
| Aromatics >EC8-EC10  | 620                     | 0.1 | Max     | 0            | 0.0002          | Pass                 |
| Aromatics >EC10-EC12 | 370                     | 0.2 | Max     | 0            | 0.0005          | Pass                 |
| Aromatics >EC12-EC16 | 5000                    | 4   | Max     | 0            | 0.0008          | Pass                 |
| Aromatics >EC16-EC21 | 5000                    | 12  | Max     | 0            | 0.0024          | Pass                 |
| Aromatics >EC21-EC35 | 5000                    | 244 | Max     | 0            | 0.0488          | Pass                 |

Note: All concentrations in mg/kg  
Contaminants with no GAC or no detects omitted, full results in Appendix B.  
Highlighted cell represents a MVT Failure

#### 6.4 PPL 2 - Soil Impacts to New Services

There are various guidance documents available in terms of assessing risks and the level of protection required for installing new services in contaminated land. Given the investigation findings, SLR has assumed that any new services that will be constructed on site will be protected appropriately e.g. new water pipes etc. In reality such services are unlikely to be constructed through waste materials at Moorwell.

As such this pollutant linkage is not suitable for quantitative assessment. This pathway can be mitigated by designing appropriate engineered measures within newly constructed service corridors, such as clean gravel or site won deeper sand for pipe bedding and the use of geotextile membranes within the service trench excavations to ensure no preferential pathways are created.

#### 6.5 PPL 4 – Impact to Controlled Waters

Concentrations of potential contaminants in the stockpiled materials pose a potential risk to the quality of controlled waters off site via:

- Leaching of contaminants from stockpiled material;
- Impact on the groundwater system within the glacial deposits aquifer that underlies the Lower Moors area;
- Lateral migration to the adjacent surface water drainage system; and / or
- Lateral migration to Joaney's Well, located approximately 400m to the east of the landfill boundary on the opposite side of the Lower Moors.

As discussed in Section 2.0 of this report, extensive risk assessment has already been undertaken in relation to potential risks to Controlled Waters and these risks, subject to additional monitoring, are believed to be low. For completeness however, the results of groundwater monitoring from boreholes BHK, BHL and BHM have been subjected to a generic screen against selected water quality standards (WQS) to determine whether there are any critical contaminants of concern.

Additionally the results have been compared to the maximum concentrations recorded in these boreholes during previous monitoring visits and a qualitative assessment of the leachate results is presented.

### 6.5.1 Generic Assessment – Groundwater

Table 30 shows a comparison of all three groundwater samples to EQS and DWS values where available, along with a comparison with the maximum concentration recorded previously from any borehole.

Only contaminants reported above laboratory detection limits are included below. Those groups of contaminants not recorded above detection limits include:

- VOCs;
- SVOCs;
- PAHs;
- Phthalates;
- Organochlorine Pesticides; and
- Organophosphorus Pesticides.

**Table 30 – Generic Risk Assessment - Groundwater**

| Contaminants               | BHL      | BHK      | BHM      | EQS<br>Freshwater | DWS   | Max<br>Previous<br>Result |
|----------------------------|----------|----------|----------|-------------------|-------|---------------------------|
| <b>Aluminium</b>           | <0.0015  | 0.0198   | <0.0015  | n/a               | 0.02  | -                         |
| <b>Antimony</b>            | <0.002   | <0.002   | <0.002   | n/a               | 0.005 | <0.02                     |
| <b>Arsenic</b>             | 0.0076   | 0.0079   | 0.0066   | 0.05              | 0.01  | 0.495                     |
| <b>Barium</b>              | 0.0176   | 0.019    | 0.0254   | n/a               | 1     | -                         |
| <b>Beryllium</b>           | <0.0005  | <0.0005  | <0.0005  | n/a               | n/a   | -                         |
| <b>Boron</b>               | 0.138    | 0.204    | 0.286    | 2                 | 1     | -                         |
| <b>Cadmium</b>             | <0.00003 | <0.00003 | <0.00003 | 0.005             | 0.005 | 0.00439                   |
| <b>Chromium</b>            | 0.0009   | 0.0008   | 0.0009   | 0.01*             | 0.05  | 0.0166                    |
| <b>Cobalt</b>              | <0.0001  | 0.0008   | 0.0002   | n/a               | n/a   | -                         |
| <b>Copper</b>              | <0.003   | <0.003   | 0.009    | 0.04*             | 2     | 0.218                     |
| <b>Total Iron</b>          | 0.0396   | 0.0892   | <0.0047  | 1                 | 0.2   | 59.3                      |
| <b>Lead</b>                | 0.0056   | 0.0047   | 0.0069   | 0.01*             | 0.025 | 0.265                     |
| <b>Manganese</b>           | 0.6769   | 0.3789   | 0.1641   | n/a               | 0.05  | 0.61                      |
| <b>Mercury</b>             | <0.0005  | <0.0005  | <0.0005  | 0.001             | 0.001 | 0.000283                  |
| <b>Molybdenum</b>          | 0.0065   | 0.0096   | 0.0117   | n/a               | n/a   | -                         |
| <b>Nickel</b>              | 0.0008   | <0.0002  | 0.0014   | 0.1*              | 0.02  | -                         |
| <b>Phosphorus</b>          | 0.0092   | 0.0034   | 0.0054   | n/a               | 2.2   | -                         |
| <b>Selenium</b>            | <0.0012  | <0.0012  | <0.0012  | n/a               | 0.01  | -                         |
| <b>Titanium</b>            | <0.005   | <0.005   | <0.005   | n/a               | n/a   | -                         |
| <b>Vanadium</b>            | <0.0006  | <0.0006  | <0.0006  | 0.02**            | n/a   | -                         |
| <b>Zinc</b>                | 0.0159   | 0.0077   | 0.0792   | 0.3*              | 5     | -                         |
| <b>Hardness</b>            | 290      | 207      | 95       | n/a               | n/a   | -                         |
| <b>Sulphate</b>            | 91.61    | 95.11    | 66.36    | 400               | 250   | -                         |
| <b>Chloride</b>            | 380      | 335.4    | 136.2    | 250               | 250   | 462                       |
| <b>Nitrate</b>             | 1.3      | 0.7      | 11.5     | n/a               | 50    | 11.3                      |
| <b>Ammoniacal Nitrogen</b> | <0.03    | 0.41     | <0.03    | 0.015             | 0.39  | 0.825                     |

Note: All concentrations in mg/l.  
All result below Limit of Detection (LOD). LOD above WQS.  
\* at 50-100 CaCO<sub>3</sub>/l  
\*\* at 0-200 mg CaCO<sub>3</sub>/l

The above results indicate that only manganese, chloride and ammoniacal nitrogen were detected marginally above the relevant water quality standards. It should be noted that this is a straight comparison with water standards and does not allow for any form of dilution or attenuation. When compared to the maximum recorded concentrations from 2009 (and that have been proven via risk assessment to present no risk to Controlled Waters receptors) all recorded concentrations in 2013 were lower. Additionally, the slightly elevated concentrations of chloride are likely to be due to saline intrusion.

Based on the above, the material currently stockpiled at the site is not considered to be causing groundwater pollution and is likely to be suitable for use in future bunds.

### **6.5.2 Soil Leaching Risks - Qualitative Summary**

Leachability analysis of selected samples is included in Appendix B and summarised in Table 19. The results do not indicate high leaching potential in most cases. More importantly, analysis of samples of the underlying groundwater recorded no evidence of widespread impact as discussed above, indicating that impact to groundwater from contaminants leaching from stockpiled materials does not appear to be occurring on site.

## **6.6 PPL 1 and 3 - Asbestos Risk Assessment**

This section considers risks specifically posed by asbestos containing materials, both to the site itself and off-site human receptors.

### **6.6.1 Why Asbestos is a Human Health Risk**

Asbestos becomes a risk to human health if asbestos fibres are inhaled. There are four main diseases commonly associated with asbestos inhalation; namely:

- Mesothelioma;
- Lung cancer;
- Asbestosis; and
- Pleural thickening.

Asbestos is a Class 1 carcinogen and as such harm to human health could occur at any level of exposure. In practice however, elevated risk is present when a high level of exposure occurs and an individual breathes in asbestos fibres. The Health and Safety Executive (HSE) provides a variety of information in relation to working with asbestos and asbestos risks are controlled in the UK by the Control of Asbestos Regulations 2012.

Risks associated with asbestos within soil or waste construction materials are less understood, although a joint industry working group (JIWG) is currently looking at the issue. Currently in the UK there is no clear approach to the management of asbestos contaminated soil that could be deemed Best Practice. Traditionally reference has been made to an ageing threshold (0.001%w/w) given in ICRCL Guidance Note 64/85, but reference to any sort of generic threshold value that does not consider site specific risks would not be considered appropriate in SLR's view.

SLR has been retained on a significant number of asbestos-contaminated sites in the UK and has considerable experience of dealing with the unique risks present. In practical terms much more important than the percentage of asbestos present is the type of asbestos, the

matrix in which it is present and the propensity for actual fibre release and human exposure. The three main types of asbestos likely to be encountered on a development or waste site are:

1. Chrysotile (white asbestos);
2. Amosite (brown asbestos); and/or
3. Crocidolite (blue asbestos).

Although it is true that the shape and structure of amosite and crocidolite make them potentially more harmful than chrysotile, more important than the asbestos type is usually the matrix in which the asbestos is present and therefore the propensity for asbestos fibre release and actual risk of human inhalation. For this reason we describe the following general asbestos material types:

- Type 1 – asbestos contained within a firm matrix – this includes asbestos cement products, textured decorative coatings, asbestos paints and any item of bitumen, plastic, resin or rubber (e.g. vinyl floor tiles, electric cables, roofing felt).
- Type 2 – asbestos not contained within a firm matrix – for this project these are any asbestos containing materials not listed above, but particularly asbestos insulation (e.g. lagging materials) and asbestos insulating board (AIB).

The risks associated with the above differ substantially. Type 1 asbestos has a much lower propensity for fibre release and in many cases requires no actual remediation when encountered on a development site.

Two of the key objectives of the proposed site investigation at Moorwell were to establish the significance of asbestos at the site and provide evidence that the investigation itself was undertaken safely and with due regard to on and off-site human receptors.

### **6.6.2 Asbestos Risk Assessment**

#### **Visual Assessment**

Materials suspected to contain asbestos were observed in several areas of the site at surface level, notably those areas marked on Drawing 1. Although the presence of other materials cannot be entirely discounted the only materials observed on site were whole or fragmented cement sheets (i.e. Type 1 asbestos).

In addition to asbestos observed at surface level, fragmented asbestos was identified in all four material types investigated i.e. ash, green waste/soil, mixed wastes and C&D waste.

Within the ash material no asbestos is visible at surface level. Within trial pits occasional fragments of asbestos sheet were generally reported. These are likely to be present due to cross-contamination by other waste streams or, possibly, where asbestos containing materials have been placed in the incinerator. In one case (TP110) a pocket of asbestos was encountered at a depth of around 2m. This particular area of the site is at the interface of other materials such as bulky and mixed waste.

Asbestos materials within the soil/green waste appear to be limited to the southern end of stockpile on the inner (i.e. site) face. In this area several large sheets are present along with fragmented asbestos. Asbestos was not observed in about 50% of the stockpile.

Asbestos containing materials are most evident in the area of trial pits TP108 and TP109. This area is probably formed by a core of ash material, but in reality comprises mixed waste



made up of soil, ash, construction materials, bulky waste and other wastes. Asbestos cement sheet is present at surface level and fragmented within the deeper layers of waste.

In the C&D waste stockpile only rare incidences of asbestos cement in fragmented form were identified. Asbestos is not visible at surface level.

On the basis of the above an initial (i.e. qualitative) view of asbestos risk would be:

1. Asbestos materials have been accepted to the site historically, although probably not recently based on staff interviews and given that all staff have recently undergone asbestos training to increase awareness;
2. Asbestos appears to be concentrated in several key areas of the site, but there is potential for small amounts of asbestos to be present anywhere on site;
3. Measures to improve the distribution of asbestos containing materials and limit further cross-contamination would be relatively simple to implement and are recommended. The removal of visible asbestos from the surface of the site to a sealed would improve the situation considerably; and
4. Notwithstanding the above, based on the type of asbestos present, the risk of significant fibre release is likely to be low. The predominant asbestos type appears to be cement sheet. Cement sheet is usually only 10% to 15% asbestos and the fibres are bound within a firm matrix. Providing the material is not significantly agitated (e.g. crushed, cut etc) risks associated with the material being present at the site now, or in the future within bunds, are likely to be low.

#### Laboratory Analysis Results

The initial laboratory analysis results indicated the presence of asbestos in the majority of samples. This level of analysis is a simple screen. Further, quantitative analysis was then undertaken on 13 samples. This indicated measurable concentrations of asbestos in the following samples:

- TP101 (ash waste) 0.029% asbestos;
- TP104 (soil/green waste) 0.002% asbestos;
- TP109 (mixed waste) 0.008% asbestos;
- TP110 (mixed waste/ash waste) 0.01% asbestos; and
- TP111 (C&D waste) 0.437% asbestos.

In all of the above asbestos was detected as loose fibres. These results, while interesting, do not necessarily reflect what was observed on site (for example a positive detection in TP104 where asbestos was not observed and the highest concentration within TP111) and do not necessarily help determine the level of risk present through possible fibre release (as discussed below). We would however, comment that asbestos fibre concentrations are generally quite low and in most cases below the 0.1% threshold that would render the material hazardous waste if off-site disposal was required.

#### Air Monitoring Results

The results of visual assessment and laboratory analysis confirms the presence of asbestos both as fragmented asbestos sheet and small amounts of loose fibres. In order to assess the actual potential for asbestos fibre release into the air (and therefore the potential for human receptors to be at risk) SLR undertook asbestos air monitoring.

Although there are other methods (e.g. dustiness testing) that can be used to assess risks associated with asbestos fibres release from granular materials, SLR's view is that the most

representative way to assess site specific risk is to re-create conditions that might reasonably be expected to occur as the site is developed.

If stockpiled materials that contain small amounts of asbestos are, in the future, used for the construction of permanent bunds, long term risks to human health (on or off-site) are likely to be very low. Once placed the material will not be disturbed, the bunds will be vegetated, direct contact will be negligible and the risk of significant fibre release will, in SLR's view, be very low.

The highest risks associated with asbestos are likely to be during the waste excavation/processing/placement stage where asbestos containing materials could be disturbed. These risks were also recognised during the site investigation itself, which included the excavation of large trial pits within material that contained asbestos. The air monitoring undertaken as discussed in Section 4.4 therefore demonstrates the following:

- That the movement of soils during the site investigation did not result in excessive asbestos fibre release into the air; and
- That the movement of the same material to construct bunds in the future is unlikely to result in excessive risks to human health.

#### Asbestos Risk Summary

Given all of the above our view would be that current site activities are unlikely to represent a significant risk to site operatives, visitors or local residents. Additionally the presence of asbestos containing materials within stockpiled materials need not prevent the re-use of the materials in bunds at Moorwell. The human health risks associated with the asbestos detected are considered to be low. We would however, comment that risks in relation to asbestos need to be continually assessed. In particular we would recommend the following:

- That asbestos containing materials present on the surface of the site and stockpiled materials are removed to sealed containers by trained personnel. This will not only reduce risks associated with further cross contamination but will significantly reduce overall asbestos content;
- All personnel involved with major earthworks during the development of the site should be trained to identify asbestos materials. If other types of asbestos are encountered (e.g. lagging) additional control measures may need to be put into place; and
- Asbestos air monitoring should be undertaken during the excavation of waste and construction of permanent bunds.

## **7.0 WASTE CLASSIFICATION**

It is proposed that the legacy waste issues at Moorwell are dealt with in such a way that off-island disposal to landfill is avoided where possible. The reuse of currently stockpiled materials will reduce the need for off-site disposal routes and reduce the need for imported resources.

Notwithstanding the above, a waste classification has been undertaken to determine whether or not the contaminant concentrations would render the material Hazardous or Non-Hazardous Waste. The assessment is included as Appendix F and indicates that the material comprises only Non-Hazardous Waste.

In relation to asbestos, soils and other granular materials become hazardous waste once asbestos content exceeds 0.1% w/w. To put this into context, given the actual percentage of asbestos present in typical asbestos cement sheet it would require the presence of nearly a hundred 10cm by 10cm fragments of asbestos in one tonne of material (about the size of a typical excavator bucket) to render the material hazardous waste assuming significant fibre content was not also present. This volume of asbestos (other than where it has been placed in sheets at surface level) was never encountered at Moorwell during the site investigation.

The current view of the Environment Agency is based on a case where they were asked to comment on at what stage construction and demolition waste impacted with asbestos became Hazardous Waste. The decision taken was based on a distinction between material with and without a separately identifiable phase of asbestos. Where asbestos is identifiable (i.e. visible) and benefit would be had by its removal, the material is Hazardous. Where there is no visibly identifiable phase of asbestos, and overall asbestos content is below 0.1% w/w the material could be non-hazardous.

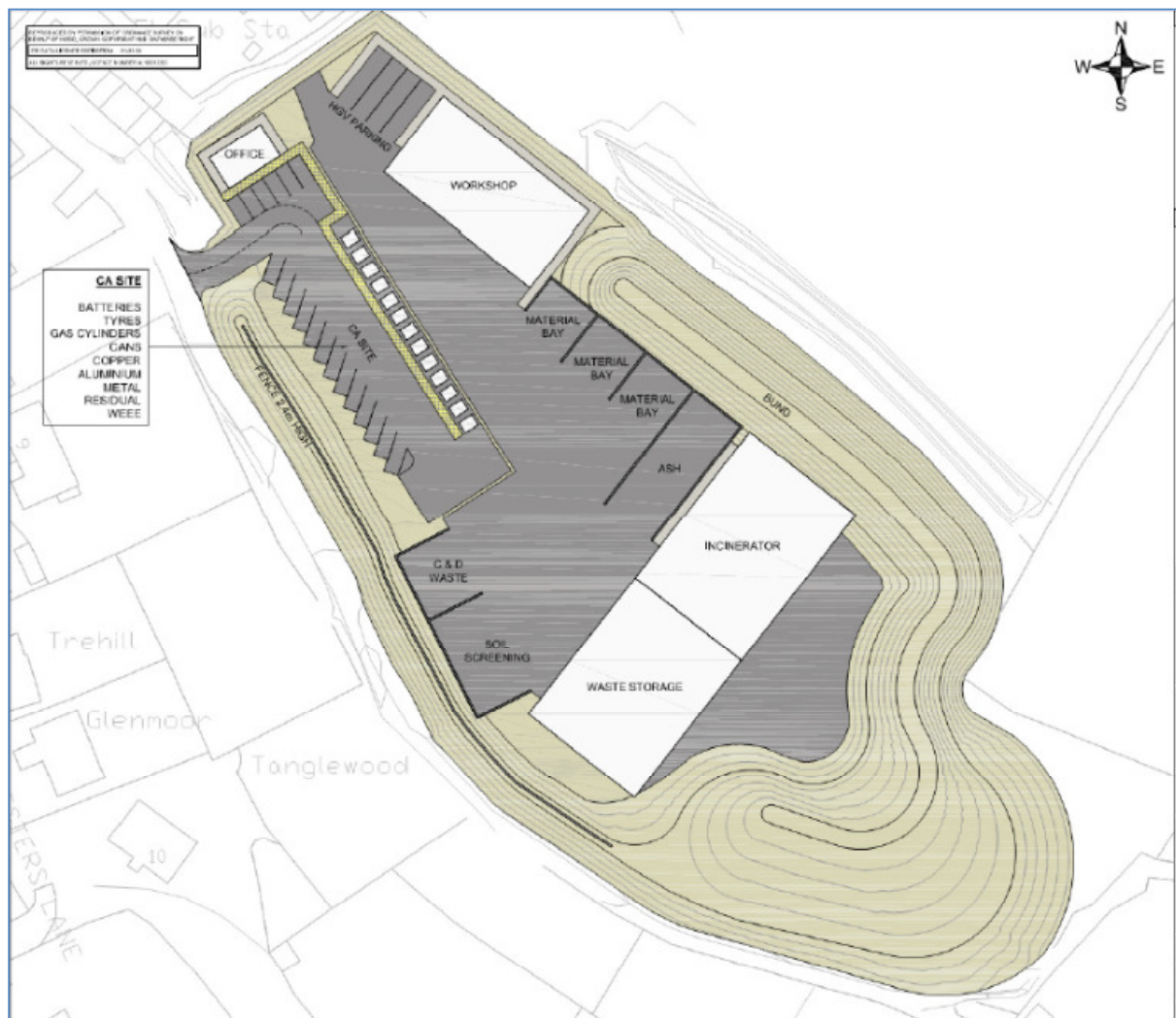
In relation to the above we would comment that it is recommended that asbestos sheets currently located on the surface of the site are placed within sealed skips. We do not necessarily regard this as treatment, rather sensible housekeeping to prevent further cross-contamination. With this material placed in skips our view would be that a separate phase of asbestos (other than the potential for occasional pockets of asbestos) is not likely to be present. In other words we do not see that remediation of stockpiled materials specifically to remove further incidences of asbestos would represent a substantial environmental benefit. On this basis, and since the average measured concentration of asbestos fibres in the material is less than 0.1% w/w, SLR would seek to agree with the Environment Agency that the material is Non-Hazardous Waste.

## 8.0 CONCLUSIONS AND MATERIAL REUSE POTENTIAL

### 8.1 Assessment Summary

The purpose of the site investigation summarised in this report was to establish that materials currently stockpiled at Moorwell do not pose a risk to human or environmental receptors and to provide evidence that the reuse of these materials in bunds would be appropriate if and when the site is redeveloped with new waste management facilities. There is currently no final design for the redevelopment of the site, however various options, including that shown in Figure 2 below are being considered.

**Figure 2 – Possible Site Layout Following Redevelopment**



Any scheme ultimately chosen for the redevelopment of the site is almost certain to require the provision of visual attenuation bunds to shield the site from local residents. It is proposed that materials currently stockpiled at the site are used for this purpose.

A site investigation was undertaken by SLR in April 2013. This followed extensive study undertaken at the site in 2009 where it was established that the site, in its current condition, does not pose a significant risk to Controlled Waters or a local groundwater abstraction borehole.



The 2013 site investigation comprised the excavation of trial pits, sampling from hand-excavated pits, asbestos air monitoring and groundwater sampling. Samples of four key waste types were collected and laboratory analysis undertaken by an accredited laboratory.

The results of the site investigation indicated no visual or olfactory evidence of contamination other than the presence of asbestos containing materials. It was noted however, that in many cases individual waste streams have become mixed. In particular the central stockpile contains a mixture of materials including ash, soil, construction materials etc. In addition this central area of the site contains bulky waste (furniture, mattresses etc) on top of the central stockpile. Although this limited the location and number of trial pits in this area a good coverage of the site was achieved.

A risk assessment was undertaken based on the laboratory analysis of waste samples. The assessment indicates that the concentrations of contaminants present in the IBA (ash waste), soil/green waste, a mixed waste material and C&D waste do not pose a significant risk to human or environmental receptors based on a continued commercial use of the site.

Groundwater analysis generally indicates low concentrations of contamination and in most cases individual dissolved contaminants were below laboratory detection limits and/or Drinking Water Standards. On the basis that levels of contamination have not increased since 2009 (in fact they generally fallen) SLR continues to support the view that the site is not currently causing pollution of Controlled Waters.

The key issue identified in waste materials at the site was the presence of asbestos containing materials. Although these are present in various areas of the site a simple exercise to collect this material and place it within sealed skips for later off-site disposal would considerably improve the situation. In addition, the materials observed on site were noted to comprise lower risk asbestos i.e. those contained within a firm matrix and that are not prone to significant fibre release unless significantly agitated/crushed.

Fragmented asbestos and some loose fibres were identified in all four waste types in which intrusive investigation was undertaken. Based on visual observations and asbestos air monitoring however, SLR's view would be as follows:

- Other than removal of surface asbestos (i.e. asbestos sheets) the volume of asbestos present does not necessarily justify the remediation of the stockpiled material specifically to reduce asbestos content if the materials are to be retained on site in the future;
- The risks posed to human receptors (site operative and local residents) is considered low; and
- Given the above the presence of some asbestos materials in stockpiled waste should not prevent the reuse of the material at Moorwell providing risks are frequently reviewed and certain precautions undertaken.

## **8.2 Reuse Potential and Recommendations**

Given the assessment undertaken and subject to obtaining Planning Permission and a suitable Environmental Permit the materials currently stockpiled at the Moorwell Waste Facility are considered likely to be suitable for use in future bund construction and in the context of the continued operation of the site as a waste facility.

Short term risks during the construction phase are likely to be higher than long term risks associated with recovery of the material in bunds, however it is considered that short term risks can be managed in such a way to avoid unacceptable risks to human health or the environment.

In terms of recommendations for further assessment additional sampling of the waste materials at this stage may not yield a significant benefit. At a high level risks to human health are considered manageable. Some of the waste cannot currently be accessed for sampling due to the presence of overlying materials. For this reason it is unlikely that the material will be fully characterised until commencement of redevelopment of the site and the removal of certain waste types (e.g. bulky waste) commences. In SLR's view, and having established that the material present is generally suitable for use for future bund construction, a watching brief should be maintained throughout the duration of redevelopment works such that if unexpected contamination is encountered risks are re-assessed and remedial works undertaken if deemed necessary.

In relation to risks to Controlled Waters the current level of assessment undertaken indicates that the use of materials discussed in this report for bund construction will not result in a significant, ongoing risk. On the basis that only limited further monitoring has been undertaken since SLR's risk assessment report of December 2009 however, it is recommended that the suggested monitoring works discussed in that report are adopted up to, and throughout the duration of, the proposed site redevelopment works.

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## Drawings







## LEGEND

- C/L HT 2.0m
- Fence
- ⋈ Gate
- Tree
- ⊕ Trial Pit Location
- ⊗ Hand Pit Location



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Moorwell Waste Management Site  
Trial Pit Location Plan

**DWG No. 2**

scale NTS

Date JUNE 2013

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## Appendices

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## **Appendix A – Trial Pit Logs**

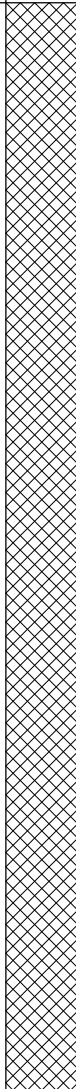
SLR 


Form SLR AGS3 UK TP File 130525 416.03263.00001 MOORWELL LOGS.GPJ 18-07-13

SLR Consulting Ltd, 19 Hollingworth Court, Turkey Mill,, Maidstone, Kent, ME14 5PP, Tel: , Fax:   
 LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH BS5930




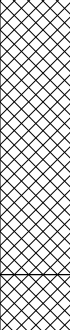



|   |                           |                      |                      |   |
|---|---------------------------|----------------------|----------------------|---|
| <p align="center"><b>TRIAL PIT LOG</b></p>                |                           |                      |                      | <p align="center">TRIAL PIT No<br/><b>TP102</b></p>                                 |
| <p>Client:<br/><b>COUNCIL OF THE ISLES OF SCILLY</b></p>  |                           |                      |                      |  |
| <p>Project:<br/><b>MOORWELL WASTE MANAGEMENT SITE</b></p> |                           |                      |                      |   |
| <p>Project No:<br/>416.03263.00001</p>                    | <p>Date:<br/>24/04/13</p> | <p>Ground Level:</p> | <p>Co-ordinates:</p> | <p>Sheet:<br/>1 of 1</p>  |

| SAMPLES & TESTS        |         |           |             | Water | STRATA   |        |   | Instrument/<br>Backfill |
|------------------------|---------|-----------|-------------|-------|--|--------|---|-------------------------|
| Depth                  | Type No | Test Type | Test Result |       | Reduced Level  | Legend | Depth (Thick-ness)  |                         |
| 1<br>1.00<br>1.00-3.60 | ES      | HS        | 2ppm        |       |  | (3.60) | MADE GROUND: Dark grey/brown, becoming light brown fine to coarse ash with frequent cemented boulders (>50cm dia). Occasional red/brown staining and sandy pockets and brick cobbles.<br><br>Old piece of suspected agricultural machinery also noted.<br><br>Approximately 30% content not fully incinerated (black bag waste).<br>0.50 - 1.00 Band of poorly incinerated plastics and textiles noted. |                         |
| 2<br>2.00              |         | HS        | 2ppm        |       |  |        | 2.00 1 piece of asbestos sheet 7.5 x 3cm.   |                         |
| 3<br>3.00              |         | HS        | 4ppm        |       |  |        | 3.00 Clinker/weakly cemented ash  |                         |
| 3.60                   |         | HS        | 3ppm        |       |  |        | 3.60  |                         |

|   |   |
|---|---|
| <p><b>GENERAL REMARKS:</b></p> <p>1. Trial pit dry and stable whilst open.</p>  | <div style="text-align: right;"> <p><b>Trial Pit Dimensions:</b></p>  </div> |
| <p><b>KEY:</b></p> <p>V = Hand Vane Shear Strength</p> <p>PP = Pocket Penetrometer Shear Strength</p> <p>D = Small Disturbed Sample</p> <p>B = Large Bulk Sample</p> <p>HS = Head Space Measurement</p> | <p><b>Shoring/Support:</b></p> <p><b>Stability:</b></p>   |


|  |                        |                          |                   |                     |
|--|------------------------|--------------------------|-------------------|---------------------|
| All dimensions in metres<br>Scale 1:25 | Contractor :<br>Plant: | Method: Trial Pit/trench | Logged By:<br>SMJ | Approved By:<br>DJC |
|--|------------------------|--------------------------|-------------------|---------------------|

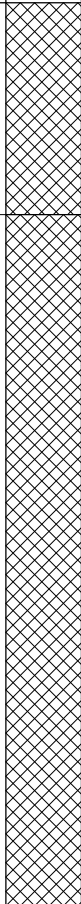
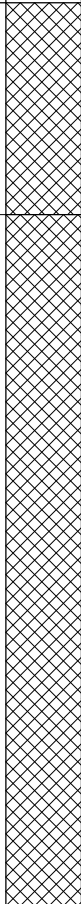
|   |  |                   |               |                              |                  |
|---|--|-------------------|---------------|------------------------------|------------------|
| TRIAL PIT LOG                                     |  |                   |               | TRIAL PIT No<br><b>TP103</b> |                  |
| Client:<br><b>COUNCIL OF THE ISLES OF SCILLY</b>  |  |                   |               |                              |                  |
| Project:<br><b>MOORWELL WASTE MANAGEMENT SITE</b> |  |                   |               |                              |                  |
| Project No:<br>416.03263.00001                    |  | Date:<br>24/04/13 | Ground Level: | Co-ordinates:                | Sheet:<br>1 of 1 |


| SAMPLES & TESTS |         |           |             | Water   | STRATA        |   |                    | Instrument/<br>Backfill   |
|-----------------|---------|-----------|-------------|---|---------------|---|--------------------|---|
| Depth           | Type No | Test Type | Test Result |   | Reduced Level | Legend  | Depth (Thick-ness) |   |
| 1               | 1.00    | HS        | 2ppm        |   |               |    | (2.00)             | MADE GROUND: Dark Grey/Black medium to coarse ash, with varying amounts (up to 15%) of glass, plastic, ceramics, paper, tin cans and whole bottles.<br><br>1.00 One piece of asbestos sheet 20 x 10cm noted.  |
|                 |         |           |             |   |               |   | 2.00               |   |
| 2               | 2.00    | HS        | 3ppm        |   |               |   | (0.20)<br>2.20     | MADE GROUND: Brick and concrete cobbles (Hardcore and rare concrete boulders (1m x 0.5m ) with large fragments of metal and rare whole bricks.<br><br>5 Asbestos fragments <10cm noted.   |
|                 |         |           |             |   |               |   |                    |   |
| 3               | 3.00    | HS        | 5ppm        |   |               |  | (1.50)             | MADE GROUND: Dark Grey/Black slightly clayey, slightly sandy, medium to coarse ash with varying amounts (up to 20%) of glass, plastic, ceramics, paper, tin cans and whole bottles.<br><br>Topsoil/loam content increasing with depth, with occasional construction and demolition waste and organic odour noted. |
|                 |         |           |             |   |               |   |                    |   |
|                 | 3.50    | ES        | 1ppm        |   |               |  | 3.70               | 3.50 Becoming damp with strong organic odour.   |
|                 |         |           |             |  |               |   |                    | Water seepage observed with trial pit becoming unstable.<br><br>Trial Pit complete at 3.70m   |

|   |  |
|---|--|
| <p><b>GENERAL REMARKS:</b><br/>1. Trial pit stable to 3.5. 2. Water seepage noted at 3.7m. 3. Trial Pit becoming unstable at 3.7m excavation terminated.</p> <p><b>KEY:</b><br/>V = Hand Vane Shear Strength<br/>PP = Pocket Penetrometer Shear Strength<br/>D = Small Disturbed Sample<br/>B = Large Bulk Sample<br/>HS = Head Space Measurement</p> | <p><b>Trial Pit Dimensions:</b></p> <p>Shoring/Support:<br/>Stability:</p> |
|---|--|


|  |                        |                          |                   |                     |
|--|------------------------|--------------------------|-------------------|---------------------|
| All dimensions in metres<br>Scale 1:25 | Contractor :<br>Plant: | Method: Trial Pit/trench | Logged By:<br>DJC | Approved By:<br>DJC |
|--|------------------------|--------------------------|-------------------|---------------------|

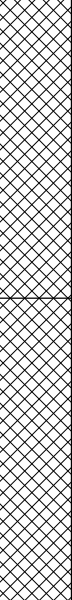
|  |                                      |                          |                          |  |
|--|--------------------------------------|--------------------------|--------------------------|--|
| <div> <div>TRIAL PIT LOG</div> <div> <div>Client:</div> <div>COUNCIL OF THE ISLES OF SCILLY</div> </div> <div> <div>Project:</div> <div>MOORWELL WASTE MANAGEMENT SITE</div> </div> </div> |                                      |                          |                          | <div>TRIAL PIT No</div> <div>TP104</div>   |
| <div>Project No:</div> <div>416.03263.00001</div>  | <div>Date:</div> <div>24/04/13</div> | <div>Ground Level:</div> | <div>Co-ordinates:</div> | <div> <div>SLR</div>  </div> <div> <div>Sheet:</div> <div>1 of 1</div> </div> |

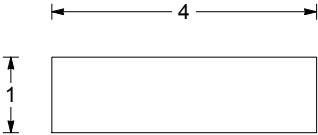
| SAMPLES & TESTS        |         |           |             | Water | STRATA        |  |  |   | Instrument/<br>Backfill |
|------------------------|---------|-----------|-------------|-------|---------------|--|--|---|-------------------------|
| Depth                  | Type No | Test Type | Test Result |       | Reduced Level | Legend   | Depth (Thick-ness)   | DESCRIPTION   |                         |
| 1<br>1.00<br>1.00-3.00 | ES      | HS        | 3ppm        |       |               |  | (0.70)   | MADE GROUND: Pale brown slightly silty gravelly SAND. Gravel is fine to coarse angular to sub rounded concrete and slate. Rare concrete cobbles and rare vegetation noted. (SOIL AND GREEN WASTE) |                         |
|                        |         |           |             |       | 0.70          |  | MADE GROUND: Dark brown sandy silty clayey gravelly TOPSOIL. Gravel is concrete, brick, ceramic, slate and flint/quartzite medium to coarse angular to sub rounded. Rare concrete and brick cobbles. Locally with fine white/yellow sand. Significant vegetation inclusions of tree roots and branches up to 5cm dia. also noted.<br><br>Organic odour throughout stockpile.<br>0.90 Some black bag waste observed |   |                         |
| 2<br>2.00              |         | HS        | 2ppm        |       |               |  | (2.30)   | 2.20 - 3.00 Eastern edge (centre of stockpile) becoming an ash/soil mix.  |                         |
| 3<br>3.00              |         | HS        | 4ppm        |       |               |  | 3.00   | Trial Pit complete at 3.00m   |                         |

|  |  |
|--|--|
| <p>GENERAL REMARKS:</p> <p>1. Trial Pit dry and stable whilst open.</p>  | <div style="text-align: right;"> <p>Trial Pit Dimensions:</p>  </div> |
| <p>KEY:</p> <p>V = Hand Vane Shear Strength</p> <p>PP = Pocket Penetrometer Shear Strength</p> <p>D = Small Disturbed Sample</p> <p>B = Large Bulk Sample</p> <p>HS = Head Space Measurement</p> | <p>Shoring/Support:</p> <p>Stability:</p>  |


|  |                        |                          |                   |                     |
|--|------------------------|--------------------------|-------------------|---------------------|
| All dimensions in metres<br>Scale 1:25 | Contractor :<br>Plant: | Method: Trial Pit/trench | Logged By:<br>SMJ | Approved By:<br>DJC |
|--|------------------------|--------------------------|-------------------|---------------------|

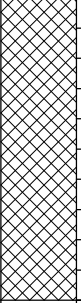
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|---|-------------------|---------------|---------------|---|--|
| <b>TRIAL PIT LOG</b>                              |                   |               |               | TRIAL PIT No<br><b>TP105</b>  |  |
| Client:<br><b>COUNCIL OF THE ISLES OF SCILLY</b>  |                   |               |               |  |  |
| Project:<br><b>MOORWELL WASTE MANAGEMENT SITE</b> |                   |               |               |   |  |
| Project No:<br>416.03263.00001                    | Date:<br>24/04/13 | Ground Level: | Co-ordinates: | Sheet:<br>1 of 1  |  |

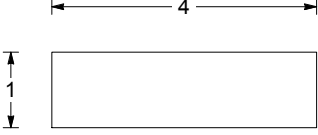
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|------------------------|---------|-----------|-------------|-------|---------------|--|-------------------|--|-------------------------|
| Depth                  | Type No | Test Type | Test Result |       | Reduced Level | Legend   | Depth (Thickness) | DESCRIPTION  |                         |
| 1<br>1.00<br>1.00-2.00 | ES      | HS        | 1ppm        |       |               |  | (1.00)            | MADE GROUND: Dark brown gravelly silty SAND. Gravel is sub angular to sub rounded concrete and brick. Frequent fine branch and root inclusions. Rare concrete and brick cobbles, rare plastic and metal waste, rare large logs.    |                         |
|                        |         |           |             |       |               |  | 1.00              | MADE GROUND: Dark brown gravelly silty SAND. Gravel is sub rounded to sub angular medium to coarse concrete and brick. Some roots and branches also noted. 1.00 - 2.00 Material noted to be slightly moist and with some cohesion. |                         |
| 2<br>2.00              |         | HS        | 1ppm        |       |               |  | (1.00)            |  |                         |
|                        |         |           |             |       |               |  | 2.00              |  |                         |
|                        |         |           |             |       |               |  |                   | Trial Pit complete at 2.00m  |                         |
| 3                      |         |           |             |       |               |  |                   |  |                         |

|  |  |   |  |
|--|--|---|--|
| <b>GENERAL REMARKS:</b><br>1. Trial pit excavated in side of steep batter.   |  | <b>Trial Pit Dimensions:</b><br> |  |
| <b>KEY:</b><br>V = Hand Vane Shear Strength<br>PP = Pocket Penetrometer Shear Strength<br>D = Small Disturbed Sample<br>B = Large Bulk Sample<br>HS = Head Space Measurement |  | <b>Shoring/Support:</b><br>Stability:   |  |

|  |                        |                          |                   |                     |
|--|------------------------|--------------------------|-------------------|---------------------|
| All dimensions in metres<br>Scale 1:25 | Contractor :<br>Plant: | Method: Trial Pit/trench | Logged By:<br>SMJ | Approved By:<br>DJC |
|--|------------------------|--------------------------|-------------------|---------------------|


|   |                   |               |               |   |  |
|---|-------------------|---------------|---------------|---|--|
| <b>TRIAL PIT LOG</b>                              |                   |               |               | TRIAL PIT No<br><b>TP106</b>  |  |
| Client:<br><b>COUNCIL OF THE ISLES OF SCILLY</b>  |                   |               |               |  |  |
| Project:<br><b>MOORWELL WASTE MANAGEMENT SITE</b> |                   |               |               |   |  |
| Project No:<br>416.03263.00001                    | Date:<br>24/04/13 | Ground Level: | Co-ordinates: | Sheet:<br>1 of 1  |  |

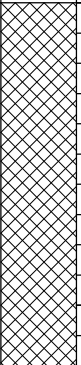
| SAMPLES & TESTS |         |           |             | Water | STRATA        |   |                   |   | Instrument/<br>Backfill |
|-----------------|---------|-----------|-------------|-------|---------------|---|-------------------|---|-------------------------|
| Depth           | Type No | Test Type | Test Result |       | Reduced Level | Legend  | Depth (Thickness) | DESCRIPTION   |                         |
| 0.50            | Ash     | HS        | 1ppm        |       |               |  | (1.00)            | MADE GROUND: Dark grey/brown, fine to coarse ash with occasional fragments of metal, plastic, paper and brick/concrete cobbles, locally up to boulder size.<br><br>Topsoil/loam content increasing with depth.<br><br>One piece of asbestos sheet noted 10cm x 2cm. |                         |
| 1.00            | ESSoil  | HS        | 3ppm        |       |               |   | 1.00              | Trial Pit complete at 1.00m   |                         |
| 1               |         |           |             |       |               |   |                   |   |                         |
| 2               |         |           |             |       |               |   |                   |   |                         |
| 3               |         |           |             |       |               |   |                   |   |                         |

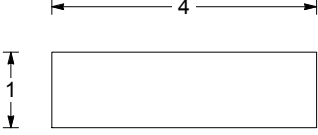
|  |  |   |  |
|--|--|---|--|
| <b>GENERAL REMARKS:</b><br>1. Trial pit stopped at 1.0m.   |  | <b>Trial Pit Dimensions:</b><br> |  |
| <b>KEY:</b><br>V = Hand Vane Shear Strength<br>PP = Pocket Penetrometer Shear Strength<br>D = Small Disturbed Sample<br>B = Large Bulk Sample<br>HS = Head Space Measurement |  | Shoring/Support:<br>Stability:  |  |

|  |                        |                          |                   |                     |
|--|------------------------|--------------------------|-------------------|---------------------|
| All dimensions in metres<br>Scale 1:25 | Contractor :<br>Plant: | Method: Trial Pit/trench | Logged By:<br>SMJ | Approved By:<br>DJC |
|--|------------------------|--------------------------|-------------------|---------------------|





|   |                   |               |               |   |  |
|---|-------------------|---------------|---------------|---|--|
| <b>TRIAL PIT LOG</b>                              |                   |               |               | TRIAL PIT No<br><b>TP107</b>  |  |
| Client:<br><b>COUNCIL OF THE ISLES OF SCILLY</b>  |                   |               |               |  |  |
| Project:<br><b>MOORWELL WASTE MANAGEMENT SITE</b> |                   |               |               |   |  |
| Project No:<br>416.03263.00001                    | Date:<br>24/04/13 | Ground Level: | Co-ordinates: | Sheet:<br>1 of 1  |  |


| SAMPLES & TESTS |         |           |             | Water | STRATA        |   |                   |   | Instrument/<br>Backfill |
|-----------------|---------|-----------|-------------|-------|---------------|---|-------------------|---|-------------------------|
| Depth           | Type No | Test Type | Test Result |       | Reduced Level | Legend  | Depth (Thickness) | DESCRIPTION   |                         |
| 1               | 1.00    | ES        | HS          | 3ppm  |               |  | (1.20)<br>1.20    | MADE GROUND: Brown sandy silty gravelly clayey TOPSOIL with frequent (30-40%) concrete, brick, corrugated plastic, plastic, metal, paper and wood inclusions and some vegetation.<br><br>Asbestos sheet encountered - trial pit stopped.<br><br>Trial Pit complete at 1.20m |                         |
| 2               |         |           |             |       |               |   |                   |   |                         |
| 3               |         |           |             |       |               |   |                   |   |                         |

|  |  |   |  |
|--|--|---|--|
| <b>GENERAL REMARKS:</b><br>1. Trial pit abandoned at 1.2m.   |  | <b>Trial Pit Dimensions:</b><br> |  |
| <b>KEY:</b><br>V = Hand Vane Shear Strength<br>PP = Pocket Penetrometer Shear Strength<br>D = Small Disturbed Sample<br>B = Large Bulk Sample<br>HS = Head Space Measurement |  | <b>Shoring/Support:</b><br><b>Stability:</b>  |  |


|  |                        |                          |                   |                     |
|--|------------------------|--------------------------|-------------------|---------------------|
| All dimensions in metres<br>Scale 1:25 | Contractor :<br>Plant: | Method: Trial Pit/trench | Logged By:<br>SMJ | Approved By:<br>DJC |
|--|------------------------|--------------------------|-------------------|---------------------|


|   |                           |                      |                      |   |
|---|---------------------------|----------------------|----------------------|---|
| <p align="center"><b>TRIAL PIT LOG</b></p>            |                           |                      |                      | <p align="center">TRIAL PIT No<br/><b>TP108</b></p>                                 |
| <p>Client: <b>COUNCIL OF THE ISLES OF SCILLY</b></p>  |                           |                      |                      |  |
| <p>Project: <b>MOORWELL WASTE MANAGEMENT SITE</b></p> |                           |                      |                      |   |
| <p>Project No:<br/>416.03263.00001</p>                | <p>Date:<br/>24/04/13</p> | <p>Ground Level:</p> | <p>Co-ordinates:</p> | <p>Sheet:<br/>1 of 1</p>  |

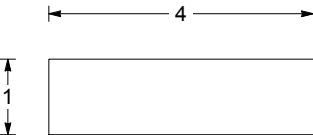
| SAMPLES & TESTS        |         |           |             | Water | STRATA   |        |  | Instrument/<br>Backfill |
|------------------------|---------|-----------|-------------|-------|--|--------|--|-------------------------|
| Depth                  | Type No | Test Type | Test Result |       | Reduced Level  | Legend | Depth (Thick-ness)   |                         |
| 1<br>1.00<br>1.00-3.00 | ES      | HS        | 1ppm        |       |  | (3.00) | MADE GROUND: Slightly silty ashy SAND. Sand is medium to coarse. with frequent inclusions of concrete, bricks, ceramics, plasterboard fragments, some roots (at shallow depth), plastic piping, plastic sheeting, hose pipe, broken toilets, taps, metal pipework and slate.<br><br>Construction and demolition waste size increases with depth. |                         |
| 2<br>2.00              |         | HS        | 3ppm        |       |  |        |  |                         |
| 3<br>3.00              |         | HS        | 2ppm        |       |  |        |  |                         |


|   |   |
|---|---|
| <p><b>GENERAL REMARKS:</b></p> <p>1. Trial pit dry and stable whilst open.</p>  | <div style="text-align: right;"> <p><b>Trial Pit Dimensions:</b></p>  </div> |
| <p><b>KEY:</b></p> <p>V = Hand Vane Shear Strength</p> <p>PP = Pocket Penetrometer Shear Strength</p> <p>D = Small Disturbed Sample</p> <p>B = Large Bulk Sample</p> <p>HS = Head Space Measurement</p> | <p><b>Shoring/Support:</b></p> <p><b>Stability:</b></p>   |

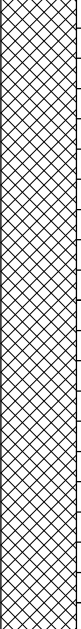
|  |                        |                          |                   |                     |
|--|------------------------|--------------------------|-------------------|---------------------|
| All dimensions in metres<br>Scale 1:25 | Contractor :<br>Plant: | Method: Trial Pit/trench | Logged By:<br>SMJ | Approved By:<br>DJC |
|--|------------------------|--------------------------|-------------------|---------------------|

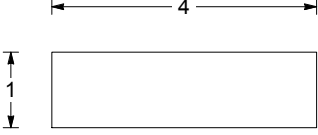
|  |   |                                       |                                       |   |
|--|---|---------------------------------------|---------------------------------------|---|
| <div> <div>TRIAL PIT LOG</div> </div>                                      |   |                                       |                                       | <div> <div>TRIAL PIT No</div> <div>TP109</div> </div>   |
| <div> <div>Client:</div> <div>COUNCIL OF THE ISLES OF SCILLY</div> </div>  |   |                                       |                                       | <div> <div>SLR</div>  </div> |
| <div> <div>Project:</div> <div>MOORWELL WASTE MANAGEMENT SITE</div> </div> |   |                                       |                                       |   |
| <div> <div>Project No:</div> <div>416.03263.00001</div> </div>             | <div> <div>Date:</div> <div>24/04/13</div> </div> | <div> <div>Ground Level:</div> </div> | <div> <div>Co-ordinates:</div> </div> | <div> <div>Sheet:</div> <div>1 of 1</div> </div>  |

| SAMPLES & TESTS        |         |           |             | Water | STRATA   |        |  | Instrument/<br>Backfill |
|------------------------|---------|-----------|-------------|-------|--|--------|--|-------------------------|
| Depth                  | Type No | Test Type | Test Result |       | Reduced Level  | Legend | Depth (Thick-ness)   |                         |
| 1<br>1.00<br>1.00-3.00 | ES      | HS        | 1ppm        |       |  | (3.00) | MADE GROUND: Brown sandy clayey SILT with frequent fragments of plasterboard, plastic, metal, whole bricks, concrete cobbles and boulders (>0.5m), bin bags, textiles, roof tiles and wood fragments. Frequent asbestos cement fragments noted throughout. |                         |
| 2<br>2.00              |         | HS        | 2ppm        |       |  |        | 2.00 - 3.00 Predominantly ash and brick/concrete cobbles and boulders.   |                         |
| 3<br>3.00              |         | HS        | 2ppm        |       |  |        | Trial Pit complete at 3.00m  |                         |


|  |                                   |   |   |
|--|-----------------------------------|---|---|
| <p>GENERAL REMARKS:</p> <p>1. Trial pit dry and stable whilst open.</p>  |                                   | <p>Trial Pit Dimensions:</p>  <p>Shoring/Support:<br/>Stability:</p> |   |
| <p>KEY:</p> <p>V = Hand Vane Shear Strength</p> <p>PP = Pocket Penetrometer Shear Strength</p> <p>D = Small Disturbed Sample</p> <p>B = Large Bulk Sample</p> <p>HS = Head Space Measurement</p> |                                   |   |   |
| <p>All dimensions in metres</p> <p>Scale 1:25</p>  | <p>Contractor :</p> <p>Plant:</p> | <p>Method: Trial Pit/trench</p>   | <p>Logged By:<br/>DJC</p> <p>Approved By:<br/>DJC</p> |

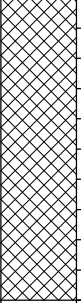
|   |  |                   |               |   |                  |
|---|--|-------------------|---------------|---|------------------|
| <b>TRIAL PIT LOG</b>                              |  |                   |               | TRIAL PIT No<br><b>TP110</b>  |                  |
| Client:<br><b>COUNCIL OF THE ISLES OF SCILLY</b>  |  |                   |               |  |                  |
| Project:<br><b>MOORWELL WASTE MANAGEMENT SITE</b> |  |                   |               |   |                  |
| Project No:<br>416.03263.00001                    |  | Date:<br>24/04/13 | Ground Level: | Co-ordinates:   | Sheet:<br>1 of 1 |

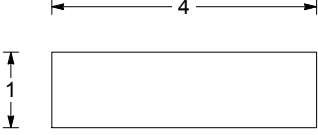
| SAMPLES & TESTS        |         |           |             | Water | STRATA        |  |                   |  | Instrument/<br>Backfill |
|------------------------|---------|-----------|-------------|-------|---------------|--|-------------------|--|-------------------------|
| Depth                  | Type No | Test Type | Test Result |       | Reduced Level | Legend   | Depth (Thickness) | DESCRIPTION  |                         |
| 1<br>1.00<br>1.00-2.00 | ES      | HS        | 2ppm        |       |               |  | (2.10)            | MADE GROUND: Dark grey/brown, becoming light brown fine to coarse ash with frequent weakly cemented boulders (>50cm dia). Occasional red/brown staining and sandy pockets.<br><br>Waste inclusions include metals, plastics, paper and cloth materials. Wires and copper cable. Various fragments of ceramics, crushed glass, bone and wood. |                         |
| 2<br>2.00              |         | HS        | 1ppm        |       |               |  | 2.10              | Significant volume of asbestos sheet encountered trial pit terminated.<br><br>Trial Pit complete at 2.10m  |                         |
| 3                      |         |           |             |       |               |  |                   |  |                         |

|  |  |   |  |
|--|--|---|--|
| <b>GENERAL REMARKS:</b><br>1. Trial pit abandoned at 2.1m.   |  | <b>Trial Pit Dimensions:</b><br> |  |
| <b>KEY:</b><br>V = Hand Vane Shear Strength<br>PP = Pocket Penetrometer Shear Strength<br>D = Small Disturbed Sample<br>B = Large Bulk Sample<br>HS = Head Space Measurement |  | <b>Shoring/Support:</b><br>Stability:   |  |

|  |                        |                          |                   |                     |
|--|------------------------|--------------------------|-------------------|---------------------|
| All dimensions in metres<br>Scale 1:25 | Contractor :<br>Plant: | Method: Trial Pit/trench | Logged By:<br>DJC | Approved By:<br>DJC |
|--|------------------------|--------------------------|-------------------|---------------------|


|   |  |                   |               |   |                  |
|---|--|-------------------|---------------|---|------------------|
| <b>TRIAL PIT LOG</b>                              |  |                   |               | TRIAL PIT No<br><b>TP111</b>  |                  |
| Client:<br><b>COUNCIL OF THE ISLES OF SCILLY</b>  |  |                   |               |  |                  |
| Project:<br><b>MOORWELL WASTE MANAGEMENT SITE</b> |  |                   |               |   |                  |
| Project No:<br>416.03263.00001                    |  | Date:<br>25/04/13 | Ground Level: | Co-ordinates:   | Sheet:<br>1 of 1 |

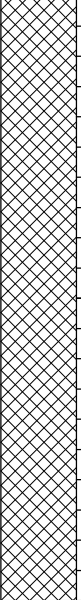
| SAMPLES & TESTS |         |           |             | Water | STRATA        |   |                   |   | Instrument/<br>Backfill |
|-----------------|---------|-----------|-------------|-------|---------------|---|-------------------|---|-------------------------|
| Depth           | Type No | Test Type | Test Result |       | Reduced Level | Legend  | Depth (Thickness) | DESCRIPTION   |                         |
| 1               | 1.00    | ES        | HS          | 7ppm  |               |  | (1.00)<br>1.00    | MADE GROUND: Dark brown clayey sandy GRAVEL. Frequent large concrete cobbles and boulders (<0.5m). Medium to coarse gravel size fragments of concrete, slate and brick. Rare plastic and metal inclusions. Frequent wood pieces. Slight organic odour throughout. |                         |
| 2               |         |           |             |       |               |   |                   | Trial pit terminated due to instability.<br>Trial Pit complete at 1.00m   |                         |
| 3               |         |           |             |       |               |   |                   |   |                         |

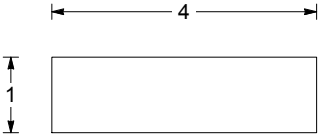
|  |  |   |  |
|--|--|---|--|
| <b>GENERAL REMARKS:</b><br>1. Trial pit becoming unstable abandoned at 1.0m.   |  | <b>Trial Pit Dimensions:</b><br> |  |
| <b>KEY:</b><br>V = Hand Vane Shear Strength<br>PP = Pocket Penetrometer Shear Strength<br>D = Small Disturbed Sample<br>B = Large Bulk Sample<br>HS = Head Space Measurement |  | <b>Shoring/Support:</b><br><b>Stability:</b>  |  |

|  |                        |                          |                   |                     |
|--|------------------------|--------------------------|-------------------|---------------------|
| All dimensions in metres<br>Scale 1:25 | Contractor :<br>Plant: | Method: Trial Pit/trench | Logged By:<br>DJC | Approved By:<br>DJC |
|--|------------------------|--------------------------|-------------------|---------------------|



|   |                   |               |               |   |  |
|---|-------------------|---------------|---------------|---|--|
| <b>TRIAL PIT LOG</b>                              |                   |               |               | TRIAL PIT No<br><b>TP112</b>  |  |
| Client:<br><b>COUNCIL OF THE ISLES OF SCILLY</b>  |                   |               |               |  |  |
| Project:<br><b>MOORWELL WASTE MANAGEMENT SITE</b> |                   |               |               |   |  |
| Project No:<br>416.03263.00001                    | Date:<br>25/04/13 | Ground Level: | Co-ordinates: | Sheet:<br>1 of 1  |  |

| SAMPLES & TESTS        |         |           |             | Water | STRATA        |  |                   |  | Instrument/<br>Backfill |
|------------------------|---------|-----------|-------------|-------|---------------|--|-------------------|--|-------------------------|
| Depth                  | Type No | Test Type | Test Result |       | Reduced Level | Legend   | Depth (Thickness) | DESCRIPTION  |                         |
| 1<br>1.00<br>1.00-2.00 | ES      | HS        | 3ppm        |       |               |  | (2.00)            | MADE GROUND: Dark brown clayey sandy GRAVEL. Frequent large concrete and granite cobbles and boulders (<0.5m). Medium to coarse gravel size fragments of concrete, slate and brick. Plastic, wood and chipboard inclusions.<br><br>Rare Asbestos cement fragments. |                         |
| 2<br>2.00              |         | HS        | 4ppm        |       |               |  | 2.00              | Evidence of domestic waste below 2m.<br><br>Trial Pit complete at 2.00m  |                         |
| 3                      |         |           |             |       |               |  |                   |  |                         |


|  |  |   |  |
|--|--|---|--|
| <b>GENERAL REMARKS:</b><br>1. Trial pit dry and stable whilst open.  |  | <b>Trial Pit Dimensions:</b><br> |  |
| <b>KEY:</b><br>V = Hand Vane Shear Strength<br>PP = Pocket Penetrometer Shear Strength<br>D = Small Disturbed Sample<br>B = Large Bulk Sample<br>HS = Head Space Measurement |  | Shoring/Support:<br>Stability:  |  |

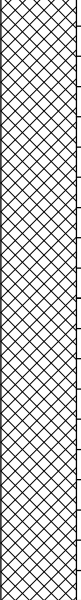
|  |                        |                          |                   |                     |
|--|------------------------|--------------------------|-------------------|---------------------|
| All dimensions in metres<br>Scale 1:25 | Contractor :<br>Plant: | Method: Trial Pit/trench | Logged By:<br>DJC | Approved By:<br>DJC |
|--|------------------------|--------------------------|-------------------|---------------------|

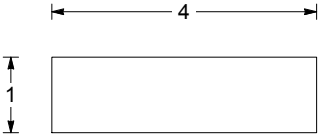
SLR 

Form SLR AGS3 UK TP File 130525 416.03263.00001 MOORWELL LOGS.GPJ 18-07-13

SLR Consulting Ltd, 19 Hollingworth Court, Turkey Mill,, Maidstone, Kent, ME14 5PP, Tel: , Fax:   
 LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH BS5930

|   |                   |               |               |   |  |
|---|-------------------|---------------|---------------|---|--|
| <b>TRIAL PIT LOG</b>                              |                   |               |               | TRIAL PIT No<br><b>TP114</b>  |  |
| Client:<br><b>COUNCIL OF THE ISLES OF SCILLY</b>  |                   |               |               |  |  |
| Project:<br><b>MOORWELL WASTE MANAGEMENT SITE</b> |                   |               |               |   |  |
| Project No:<br>416.03263.00001                    | Date:<br>25/04/13 | Ground Level: | Co-ordinates: | Sheet:<br>1 of 1  |  |

| SAMPLES & TESTS        |         |           |             | Water | STRATA        |  |                   |  | Instrument/<br>Backfill |
|------------------------|---------|-----------|-------------|-------|---------------|--|-------------------|--|-------------------------|
| Depth                  | Type No | Test Type | Test Result |       | Reduced Level | Legend   | Depth (Thickness) | DESCRIPTION  |                         |
| 1<br>1.00<br>1.00-2.00 | ES      | HS        | 2ppm        |       |               |  | (2.00)            | MADE GROUND: Dark brown clayey sandy GRAVEL with frequent large concrete and granite cobbles and boulders (<0.5m). Medium to coarse gravel size fragments of concrete, slate and brick. Plastic, wood, chipboard, crushed plasterboard.<br><br>Rare asbestos fragments.<br><br>1.50 Large pocket of plasterboard and plumbing waste noted. |                         |
| 2<br>2.00              |         | HS        | 3ppm        |       |               |  | 2.00              | Trial Pit complete at 2.00m  |                         |
| 3                      |         |           |             |       |               |  |                   |  |                         |

|  |  |   |  |
|--|--|---|--|
| <b>GENERAL REMARKS:</b><br>1. Trial pit dry and stable whilst open.  |  | <b>Trial Pit Dimensions:</b><br> |  |
| <b>KEY:</b><br>V = Hand Vane Shear Strength<br>PP = Pocket Penetrometer Shear Strength<br>D = Small Disturbed Sample<br>B = Large Bulk Sample<br>HS = Head Space Measurement |  | Shoring/Support:<br>Stability:  |  |

|  |                        |                          |                   |                     |
|--|------------------------|--------------------------|-------------------|---------------------|
| All dimensions in metres<br>Scale 1:25 | Contractor :<br>Plant: | Method: Trial Pit/trench | Logged By:<br>DJC | Approved By:<br>DJC |
|--|------------------------|--------------------------|-------------------|---------------------|

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## **Appendix B – Laboratory Analysis – Soils**



## Jones Environmental Laboratory

Unit 3 Deeside Point  
Zone 3  
Deeside Industrial Park  
Deeside  
CH5 2UA

SLR Consulting Ltd  
19 Hollingworth Court  
Turkey Mill  
Maidstone  
ME14 5PP

Tel: +44 (0) 1244 833780  
Fax: +44 (0) 1244 833781



No.4225



**Attention :** Dan Collins  
**Date :** 23rd May, 2013  
**Your reference :** 402.0341.00017  
**Our reference :** Test Report 13/4471 Batch 1 Schedule A  
**Location :** MOORWELL  
**Date samples received :** 11th May, 2013  
**Status :** Final report  
**Issue :** 1

Twenty three samples were received for analysis on 11th May, 2013. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

### Compiled By:

**Jamie Williams B.Sc**  
**Project Co-ordinator**

**Bob Millward B.Sc**  
**Principal Chemist**



# Jones Environmental Laboratory

**Client Name:** SLR Consulting Ltd  
**Reference:** 402.0341.00017  
**Location:** MOORWELL  
**Contact:** Dan Collins  
**JE Job No.:** 13/4471

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

| J E Sample No.                        | 1-3        | 4-5        | 6-7        | 8-10       | 11-12      | 13-14      | 15-16      | 17-19      | 20-21      | 22-23      | Please see attached notes for all abbreviations and acronyms |       |            |
|---------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--|-------|------------|
| Sample ID                             | TP101      | TP102      | TP103      | TP104      | TP105      | TP106      | TP107      | TP108      | TP109      | TP110      |  |       |            |
| Depth                                 |            |            | 3.5        |            |            |            | 1          |            |            | 2          |  |       |            |
| COC No / misc                         |            |            |            |            |            |            |            |            |            |            |  |       |            |
| Containers                            | V J B      | V J        | V J        | V J B      | V J        | V J        | V J        | V J B      | V J        | V J        |  |       |            |
| Sample Date                           | 24/04/2013 | 24/04/2013 | 24/04/2013 | 24/04/2013 | 24/04/2013 | 24/04/2013 | 24/04/2013 | 24/04/2013 | 24/04/2013 | 24/04/2013 |  |       |            |
| Sample Type                           | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       |  |       |            |
| Batch Number                          | 1          | 1          | 1          | 1          | 1          | 1          | 1          | 1          | 1          | 1          |  |       |            |
| Date of Receipt                       | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 |  |       |            |
|                                       |            |            |            |            |            |            |            |            |            |            | LOD  | Units | Method No. |
| Arsenic <sup>#M</sup>                 | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | 13.6       | NDP        | NDP        | <0.5   | mg/kg | TM30/PM15  |
| Barium <sup>#M</sup>                  | -          | -          | -          | -          | -          | -          | NDP        | -          | -          | -          | <1   | mg/kg | TM30/PM15  |
| Beryllium                             | -          | -          | -          | -          | -          | -          | NDP        | -          | -          | -          | <0.5   | mg/kg | TM30/PM15  |
| Cadmium <sup>#M</sup>                 | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | 0.5        | NDP        | NDP        | <0.1   | mg/kg | TM30/PM15  |
| Chromium <sup>#M</sup>                | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | 15.5       | NDP        | NDP        | <0.5   | mg/kg | TM30/PM15  |
| Copper <sup>#M</sup>                  | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | 70         | NDP        | NDP        | <1   | mg/kg | TM30/PM15  |
| Lead <sup>#M</sup>                    | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | 128        | NDP        | NDP        | <5   | mg/kg | TM30/PM15  |
| Mercury <sup>#M</sup>                 | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | 0.3        | NDP        | NDP        | <0.1   | mg/kg | TM30/PM15  |
| Nickel <sup>#M</sup>                  | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | 13.5       | NDP        | NDP        | <0.7   | mg/kg | TM30/PM15  |
| Selenium <sup>#M</sup>                | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | <1         | NDP        | NDP        | <1   | mg/kg | TM30/PM15  |
| Vanadium                              | -          | -          | -          | -          | -          | -          | NDP        | -          | -          | -          | <1   | mg/kg | TM30/PM15  |
| Water Soluble Boron <sup>#M</sup>     | -          | -          | -          | -          | -          | -          | NDP        | -          | -          | -          | <0.1   | mg/kg | TM74/PM32  |
| Zinc <sup>#M</sup>                    | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | NDP        | 343        | NDP        | NDP        | <5   | mg/kg | TM30/PM15  |
| <b>PAH MS</b>                         |            |            |            |            |            |            |            |            |            |            |  |       |            |
| Naphthalene <sup>#M</sup>             | <0.04      | -          | <0.04      | <0.04      | -          | <0.04      | -          | -          | 0.06       | <0.04      | <0.04  | mg/kg | TM4/PM8    |
| Acenaphthylene                        | <0.03      | -          | <0.03      | <0.03      | -          | <0.03      | -          | -          | 0.07       | <0.03      | <0.03  | mg/kg | TM4/PM8    |
| Acenaphthene <sup>#M</sup>            | <0.05      | -          | <0.05      | <0.05      | -          | <0.05      | -          | -          | <0.05      | <0.05      | <0.05  | mg/kg | TM4/PM8    |
| Fluorene <sup>#M</sup>                | <0.04      | -          | <0.04      | <0.04      | -          | <0.04      | -          | -          | 0.05       | <0.04      | <0.04  | mg/kg | TM4/PM8    |
| Phenanthrene <sup>#M</sup>            | 0.03       | -          | 0.07       | 0.07       | -          | 0.10       | -          | -          | 0.60       | 0.07       | <0.03  | mg/kg | TM4/PM8    |
| Anthracene <sup>#</sup>               | <0.04      | -          | <0.04      | <0.04      | -          | <0.04      | -          | -          | 0.13       | <0.04      | <0.04  | mg/kg | TM4/PM8    |
| Fluoranthene <sup>#M</sup>            | 0.09       | -          | 0.32       | 0.15       | -          | 0.22       | -          | -          | 1.10       | 0.11       | <0.03  | mg/kg | TM4/PM8    |
| Pyrene <sup>#</sup>                   | 0.09       | -          | 0.28       | 0.14       | -          | 0.18       | -          | -          | 0.90       | 0.09       | <0.03  | mg/kg | TM4/PM8    |
| Benzo(a)anthracene <sup>#</sup>       | 0.13       | -          | 0.35       | 0.14       | -          | 0.21       | -          | -          | 0.69       | 0.09       | <0.06  | mg/kg | TM4/PM8    |
| Chrysene <sup>#M</sup>                | 0.12       | -          | 0.31       | 0.14       | -          | 0.17       | -          | -          | 0.60       | 0.07       | <0.02  | mg/kg | TM4/PM8    |
| Benzo(bk)fluoranthene <sup>#M</sup>   | 0.25       | -          | 0.66       | 0.27       | -          | 0.32       | -          | -          | 1.02       | 0.14       | <0.07  | mg/kg | TM4/PM8    |
| Benzo(a)pyrene <sup>#</sup>           | 0.12       | -          | 0.42       | 0.14       | -          | 0.17       | -          | -          | 0.60       | 0.07       | <0.04  | mg/kg | TM4/PM8    |
| Indeno(123cd)pyrene <sup>#M</sup>     | 0.12       | -          | 0.29       | 0.10       | -          | 0.14       | -          | -          | 0.37       | 0.05       | <0.04  | mg/kg | TM4/PM8    |
| Dibenzo(ah)anthracene <sup>#</sup>    | <0.04      | -          | 0.07       | <0.04      | -          | <0.04      | -          | -          | 0.10       | <0.04      | <0.04  | mg/kg | TM4/PM8    |
| Benzo(ghi)perylene <sup>#</sup>       | 0.11       | -          | 0.26       | 0.11       | -          | 0.13       | -          | -          | 0.34       | 0.06       | <0.04  | mg/kg | TM4/PM8    |
| PAH 16 Total                          | 1.1        | -          | 3.0        | 1.3        | -          | 1.6        | -          | -          | 6.6        | 0.8        | <0.6   | mg/kg | TM4/PM8    |
| Benzo(b)fluoranthene                  | 0.18       | -          | 0.48       | 0.19       | -          | 0.23       | -          | -          | 0.73       | 0.10       | <0.05  | mg/kg | TM4/PM8    |
| Benzo(k)fluoranthene                  | 0.07       | -          | 0.18       | 0.08       | -          | 0.09       | -          | -          | 0.29       | 0.04       | <0.02  | mg/kg | TM4/PM8    |
| PAH Surrogate % Recovery              | 106        | -          | 106        | 102        | -          | 102        | -          | -          | 108        | 104        | <0   | %     | TM4/PM8    |
| MTBE <sup>#</sup>                     | <0.005     | -          | <0.005     | <0.005     | -          | <0.005     | -          | -          | <0.005     | <0.005     | <0.005   | mg/kg | TM31/PM12  |
| Benzene <sup>#</sup>                  | <0.005     | -          | <0.005     | <0.005     | -          | <0.005     | -          | -          | <0.005     | <0.005     | <0.005   | mg/kg | TM31/PM12  |
| Toluene <sup>#</sup>                  | <0.005     | -          | <0.005     | <0.005     | -          | <0.005     | -          | -          | <0.005     | <0.005     | <0.005   | mg/kg | TM31/PM12  |
| Ethylbenzene <sup>#</sup>             | <0.005     | -          | <0.005     | <0.005     | -          | <0.005     | -          | -          | <0.005     | <0.005     | <0.005   | mg/kg | TM31/PM12  |
| m/p-Xylene <sup>#</sup>               | <0.005     | -          | <0.005     | <0.005     | -          | <0.005     | -          | -          | <0.005     | <0.005     | <0.005   | mg/kg | TM31/PM12  |
| o-Xylene <sup>#</sup>                 | <0.005     | -          | <0.005     | <0.005     | -          | <0.005     | -          | -          | <0.005     | <0.005     | <0.005   | mg/kg | TM31/PM12  |
| Xylenes (sum of isomers) <sup>#</sup> | <0.01      | -          | <0.01      | <0.01      | -          | <0.01      | -          | -          | <0.01      | <0.01      | <0.01  | mg/kg | TM31/PM12  |

# **Jones Environmental Laboratory**

**Client Name:** SLR Consulting Ltd  
**Reference:** 402.0341.00017  
**Location:** MOORWELL  
**Contact:** Dan Collins  
**JE Job No.:** 13/4471

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

| J E Sample No.                     | 1-3        | 4-5        | 6-7        | 8-10       | 11-12      | 13-14      | 15-16      | 17-19      | 20-21      | 22-23      | Please see attached notes for all abbreviations and acronyms |       |            |
|------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--|-------|------------|
| Sample ID                          | TP101      | TP102      | TP103      | TP104      | TP105      | TP106      | TP107      | TP108      | TP109      | TP110      |  |       |            |
| Depth                              |            |            | 3.5        |            |            |            | 1          |            |            | 2          |  |       |            |
| COC No / misc                      |            |            |            |            |            |            |            |            |            |            |  |       |            |
| Containers                         | V J B      | V J        | V J        | V J B      | V J        | V J        | V J        | V J B      | V J        | V J        |  |       |            |
| Sample Date                        | 24/04/2013 | 24/04/2013 | 24/04/2013 | 24/04/2013 | 24/04/2013 | 24/04/2013 | 24/04/2013 | 24/04/2013 | 24/04/2013 | 24/04/2013 |  |       |            |
| Sample Type                        | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       |  |       |            |
| Batch Number                       | 1          | 1          | 1          | 1          | 1          | 1          | 1          | 1          | 1          | 1          |  |       |            |
| Date of Receipt                    | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 |  |       |            |
|                                    |            |            |            |            |            |            |            |            |            |            | LOD  | Units | Method No. |
| <b>Pesticides MS</b>               |            |            |            |            |            |            |            |            |            |            |  |       |            |
| <b>Organochlorine Pesticides</b>   |            |            |            |            |            |            |            |            |            |            |  |       |            |
| Aldrin                             | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Alpha-BHC                          | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Beta-BHC                           | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Dieldrin                           | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Endosulphan I                      | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Endosulphan II                     | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Endosulphan sulphate               | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Endrin                             | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Gamma-BHC                          | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Heptachlor                         | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Heptachlor Epoxide                 | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| p,p'-DDE                           | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| p,p'-DDT                           | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| p,p'-TDE                           | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Total Methoxychlor                 | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| <b>Organophosphorus Pesticides</b> |            |            |            |            |            |            |            |            |            |            |  |       |            |
| Azinphos methyl                    | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Diazinon                           | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Dichlorvos                         | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Disulfoton                         | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Ethion                             | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Ethyl Parathion (Parathion)        | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Fenitrothion                       | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Malathion                          | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Methyl Parathion                   | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| Mevinphos                          | -          | -          | -          | -          | <1         | -          | -          | -          | -          | -          | <1   | ug/kg | TM42/PM8   |
| <b>TPH CWG</b>                     |            |            |            |            |            |            |            |            |            |            |  |       |            |
| <b>Aliphatics</b>                  |            |            |            |            |            |            |            |            |            |            |  |       |            |
| >C5-C6 <sup>#M</sup>               | <0.1       | -          | <0.1       | <0.1       | -          | <0.1       | -          | -          | <0.1       | <0.1       | <0.1   | mg/kg | TM36/PM12  |
| >C6-C8 <sup>#M</sup>               | <0.1       | -          | <0.1       | <0.1       | -          | <0.1       | -          | -          | <0.1       | <0.1       | <0.1   | mg/kg | TM36/PM12  |
| >C8-C10                            | <0.1       | -          | <0.1       | <0.1       | -          | <0.1       | -          | -          | <0.1       | <0.1       | <0.1   | mg/kg | TM36/PM12  |
| >C10-C12 <sup>#M</sup>             | <0.2       | -          | <0.2       | <0.2       | -          | <0.2       | -          | -          | <0.2       | <0.2       | <0.2   | mg/kg | TM5/PM16   |
| >C12-C16 <sup>#M</sup>             | <4         | -          | <4         | <4         | -          | <4         | -          | -          | <4         | <4         | <4   | mg/kg | TM5/PM16   |
| >C16-C21 <sup>#M</sup>             | <7         | -          | <7         | <7         | -          | <7         | -          | -          | <7         | <7         | <7   | mg/kg | TM5/PM16   |
| >C21-C35 <sup>#M</sup>             | <7         | -          | 111        | 41         | -          | <7         | -          | -          | 21         | <7         | <7   | mg/kg | TM5/PM16   |
| Total aliphatics C5-35             | <19        | -          | 111        | 41         | -          | <19        | -          | -          | 21         | <19        | <19  | mg/kg | TM5/PM16   |

# Jones Environmental Laboratory

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**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

| J E Sample No.                          | 1-3          | 4-5          | 6-7        | 8-10       | 11-12        | 13-14        | 15-16        | 17-19      | 20-21        | 22-23      | Please see attached notes for all abbreviations and acronyms |       |            |
|---|--------------|--------------|------------|------------|--------------|--------------|--------------|------------|--------------|------------|--|-------|------------|
| Sample ID                               | TP101        | TP102        | TP103      | TP104      | TP105        | TP106        | TP107        | TP108      | TP109        | TP110      |  |       |            |
| Depth                                   |              |              | 3.5        |            |              |              | 1            |            |              | 2          |  |       |            |
| COC No / misc                           |              |              |            |            |              |              |              |            |              |            |  |       |            |
| Containers                              | V J B        | V J          | V J        | V J B      | V J          | V J          | V J          | V J B      | V J          | V J        |  |       |            |
| Sample Date                             | 24/04/2013   | 24/04/2013   | 24/04/2013 | 24/04/2013 | 24/04/2013   | 24/04/2013   | 24/04/2013   | 24/04/2013 | 24/04/2013   | 24/04/2013 |  |       |            |
| Sample Type                             | Soil         | Soil         | Soil       | Soil       | Soil         | Soil         | Soil         | Soil       | Soil         | Soil       |  |       |            |
| Batch Number                            | 1            | 1            | 1          | 1          | 1            | 1            | 1            | 1          | 1            | 1          |  |       |            |
| Date of Receipt                         | 11/05/2013   | 11/05/2013   | 11/05/2013 | 11/05/2013 | 11/05/2013   | 11/05/2013   | 11/05/2013   | 11/05/2013 | 11/05/2013   | 11/05/2013 | LOD  | Units | Method No. |
| <b>TPH CWG</b>                          |              |              |            |            |              |              |              |            |              |            |  |       |            |
| <b>Aromatics</b>                        |              |              |            |            |              |              |              |            |              |            |  |       |            |
| >C5-EC7                                 | <0.1         | -            | <0.1       | <0.1       | -            | <0.1         | -            | -          | <0.1         | <0.1       | <0.1   | mg/kg | TM36/PM12  |
| >EC7-EC8                                | <0.1         | -            | <0.1       | <0.1       | -            | <0.1         | -            | -          | <0.1         | <0.1       | <0.1   | mg/kg | TM36/PM12  |
| >EC8-EC10 <sup>#M</sup>                 | <0.1         | -            | <0.1       | <0.1       | -            | <0.1         | -            | -          | <0.1         | <0.1       | <0.1   | mg/kg | TM36/PM12  |
| >EC10-EC12 <sup>#M</sup>                | <0.2         | -            | <0.2       | <0.2       | -            | <0.2         | -            | -          | <0.2         | <0.2       | <0.2   | mg/kg | TM5/PM16   |
| >EC12-EC16 <sup>#M</sup>                | <4           | -            | <4         | <4         | -            | <4           | -            | -          | <4           | <4         | <4   | mg/kg | TM5/PM16   |
| >EC16-EC21 <sup>#M</sup>                | <7           | -            | <7         | <7         | -            | <7           | -            | -          | <7           | <7         | <7   | mg/kg | TM5/PM16   |
| >EC21-EC35 <sup>#M</sup>                | <7           | -            | 76         | 73         | -            | <7           | -            | -          | <7           | <7         | <7   | mg/kg | TM5/PM16   |
| Total aromatics C5-35                   | <19          | -            | 76         | 73         | -            | <19          | -            | -          | <19          | <19        | <19  | mg/kg | TM5/PM16   |
| Total aliphatics and aromatics(C5-35)   | <38          | -            | 187        | 114        | -            | <38          | -            | -          | <38          | <38        | <38  | mg/kg | TM5/PM16   |
| <b>PCBs</b>                             |              |              |            |            |              |              |              |            |              |            |  |       |            |
| PCB 77                                  | -            | -            | <5         | -          | <5           | <5           | -            | -          | <5           | -          | <5   | ug/kg | TM16/PM8   |
| PCB 81                                  | -            | -            | <5         | -          | <5           | <5           | -            | -          | <5           | -          | <5   | ug/kg | TM16/PM8   |
| PCB 105                                 | -            | -            | <5         | -          | <5           | <5           | -            | -          | <5           | -          | <5   | ug/kg | TM16/PM8   |
| PCB 114                                 | -            | -            | <5         | -          | <5           | <5           | -            | -          | <5           | -          | <5   | ug/kg | TM16/PM8   |
| PCB 118                                 | -            | -            | <5         | -          | <5           | <5           | -            | -          | <5           | -          | <5   | ug/kg | TM16/PM8   |
| PCB 123                                 | -            | -            | <5         | -          | <5           | <5           | -            | -          | <5           | -          | <5   | ug/kg | TM16/PM8   |
| PCB 126                                 | -            | -            | <5         | -          | <5           | <5           | -            | -          | <5           | -          | <5   | ug/kg | TM16/PM8   |
| PCB 156                                 | -            | -            | <5         | -          | <5           | <5           | -            | -          | <5           | -          | <5   | ug/kg | TM16/PM8   |
| PCB 157                                 | -            | -            | <5         | -          | <5           | <5           | -            | -          | <5           | -          | <5   | ug/kg | TM16/PM8   |
| PCB 167                                 | -            | -            | <5         | -          | <5           | <5           | -            | -          | <5           | -          | <5   | ug/kg | TM16/PM8   |
| PCB 169                                 | -            | -            | <5         | -          | <5           | <5           | -            | -          | <5           | -          | <5   | ug/kg | TM16/PM8   |
| PCB 189                                 | -            | -            | <5         | -          | <5           | <5           | -            | -          | <5           | -          | <5   | ug/kg | TM16/PM8   |
| Total 12 PCBs                           | -            | -            | <60        | -          | <60          | <60          | -            | -          | <60          | -          | <60  | ug/kg | TM16/PM8   |
| <b>Heavy Metals</b>                     |              |              |            |            |              |              |              |            |              |            |  |       |            |
| Hexavalent Chromium                     | <0.3         | <0.3         | <0.3       | <0.3       | <0.3         | <0.3         | <0.3         | <0.3       | <0.3         | <0.3       | <0.3   | mg/kg | TM38/PM20  |
| Nitrate as NO3 <sup>#M</sup>            | -            | -            | -          | NDP        | NDP          | -            | -            | -          | -            | -          | <2.5   | mg/kg | TM38/PM20  |
| Ortho Phosphate as PO4                  | -            | -            | -          | NDP        | NDP          | -            | -            | -          | -            | -          | <0.3   | mg/kg | TM38/PM20  |
| Sulphate as SO4 (2:1 Ext) <sup>#M</sup> | -            | -            | -          | NDP        | NDP          | -            | -            | -          | -            | -          | <0.0015  | g/l   | TM38/PM20  |
| Total Cyanide <sup>#M</sup>             | -            | -            | -          | <0.5       | <0.5         | -            | -            | -          | -            | -          | <0.5   | mg/kg | TM89/PM45  |
| Total Organic Carbon <sup>#</sup>       | -            | -            | NDP        | NDP        | -            | NDP          | -            | 1.4        | -            | NDP        | <0.2   | %     | TM21/PM24  |
| Sample Type                             | Loam         | Loam         | Loam       | Loam       | Loam         | Loam         | Loam         | Loam       | Loam         | Loam       |  | None  | PM13/PM0   |
| Sample Colour                           | Medium Brown | Medium Brown | Dark Brown | Dark Brown | Medium Brown | Medium Brown | Medium Brown | Dark Brown | Medium Brown | Dark Brown |  | None  | PM13/PM0   |
| Other Items                             | n.a          | n.a          | n.a        | n.a        | n.a          | n.a          | n.a          | n.a        | n.a          | n.a        | Brick/Glass Fragments  | None  | PM13/PM0   |
| Chromium III                            | -            | -            | -          | -          | -            | -            | NDP          | -          | -            | -          | <0.3   | mg/kg | NONE/NONE  |

# Jones Environmental Laboratory

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**JE Job No.:** 13/4471

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

| J E Sample No.                        | 24-25,49   | 26-27      | 28-29      | 30-31      | 43-44      | 45-46      | 47-48      |  |  |  | Please see attached notes for all abbreviations and acronyms |       |            |
|---------------------------------------|------------|------------|------------|------------|------------|------------|------------|--|--|--|--|-------|------------|
| Sample ID                             | TP111      | TP112      | TP113      | TP114      | HP115      | HP116      | HP117      |  |  |  |  |       |            |
| Depth                                 |            |            |            |            |            |            |            |  |  |  |  |       |            |
| COC No / misc                         |            |            |            |            |            |            |            |  |  |  |  |       |            |
| Containers                            | V J B      | V J        | V J        | V J        | V J        | V J        | V J        |  |  |  |  |       |            |
| Sample Date                           | 25/04/2013 | 25/04/2013 | 25/04/2013 | 25/04/2013 | 25/04/2013 | 25/04/2013 | 25/04/2013 |  |  |  |  |       |            |
| Sample Type                           | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       |  |  |  |  |       |            |
| Batch Number                          | 1          | 1          | 1          | 1          | 1          | 1          | 1          |  |  |  |  |       |            |
| Date of Receipt                       | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 |  |  |  | LOD  | Units | Method No. |
| Arsenic <sup>#M</sup>                 | NDP        | NDP        | NDP        | 13.5       | 10.0       | 16.6       | NDP        |  |  |  | <0.5   | mg/kg | TM30/PM15  |
| Barium <sup>#M</sup>                  | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | mg/kg | TM30/PM15  |
| Beryllium                             | -          | -          | -          | -          | -          | -          | -          |  |  |  | <0.5   | mg/kg | TM30/PM15  |
| Cadmium <sup>#M</sup>                 | NDP        | NDP        | NDP        | 0.2        | 0.5        | 0.4        | NDP        |  |  |  | <0.1   | mg/kg | TM30/PM15  |
| Chromium <sup>#M</sup>                | NDP        | NDP        | NDP        | 11.2       | 13.1       | 11.4       | NDP        |  |  |  | <0.5   | mg/kg | TM30/PM15  |
| Copper <sup>#M</sup>                  | NDP        | NDP        | NDP        | 41         | 92         | 59         | NDP        |  |  |  | <1   | mg/kg | TM30/PM15  |
| Lead <sup>#M</sup>                    | NDP        | NDP        | NDP        | 127        | 143        | 148        | NDP        |  |  |  | <5   | mg/kg | TM30/PM15  |
| Mercury <sup>#M</sup>                 | NDP        | NDP        | NDP        | 0.5        | 0.2        | 0.2        | NDP        |  |  |  | <0.1   | mg/kg | TM30/PM15  |
| Nickel <sup>#M</sup>                  | NDP        | NDP        | NDP        | 10.1       | 16.2       | 11.0       | NDP        |  |  |  | <0.7   | mg/kg | TM30/PM15  |
| Selenium <sup>#M</sup>                | NDP        | NDP        | NDP        | <1         | <1         | <1         | NDP        |  |  |  | <1   | mg/kg | TM30/PM15  |
| Vanadium                              | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | mg/kg | TM30/PM15  |
| Water Soluble Boron <sup>#M</sup>     | -          | -          | -          | -          | -          | -          | -          |  |  |  | <0.1   | mg/kg | TM74/PM32  |
| Zinc <sup>#M</sup>                    | NDP        | NDP        | NDP        | 167        | 261        | 201        | NDP        |  |  |  | <5   | mg/kg | TM30/PM15  |
| <b>PAH MS</b>                         |            |            |            |            |            |            |            |  |  |  |  |       |            |
| Naphthalene <sup>#M</sup>             | -          | <0.04      | <0.04      | -          | -          | -          | -          |  |  |  | <0.04  | mg/kg | TM4/PM8    |
| Acenaphthylene                        | -          | 0.05       | 0.03       | -          | -          | -          | -          |  |  |  | <0.03  | mg/kg | TM4/PM8    |
| Acenaphthene <sup>#M</sup>            | -          | <0.05      | <0.05      | -          | -          | -          | -          |  |  |  | <0.05  | mg/kg | TM4/PM8    |
| Fluorene <sup>#M</sup>                | -          | 0.05       | <0.04      | -          | -          | -          | -          |  |  |  | <0.04  | mg/kg | TM4/PM8    |
| Phenanthrene <sup>#M</sup>            | -          | 0.58       | 0.18       | -          | -          | -          | -          |  |  |  | <0.03  | mg/kg | TM4/PM8    |
| Anthracene <sup>#</sup>               | -          | 0.15       | 0.06       | -          | -          | -          | -          |  |  |  | <0.04  | mg/kg | TM4/PM8    |
| Fluoranthene <sup>#M</sup>            | -          | 0.94       | 0.36       | -          | -          | -          | -          |  |  |  | <0.03  | mg/kg | TM4/PM8    |
| Pyrene <sup>#</sup>                   | -          | 0.75       | 0.34       | -          | -          | -          | -          |  |  |  | <0.03  | mg/kg | TM4/PM8    |
| Benzo(a)anthracene <sup>#</sup>       | -          | 0.56       | 0.28       | -          | -          | -          | -          |  |  |  | <0.06  | mg/kg | TM4/PM8    |
| Chrysene <sup>#M</sup>                | -          | 0.45       | 0.23       | -          | -          | -          | -          |  |  |  | <0.02  | mg/kg | TM4/PM8    |
| Benzo(bk)fluoranthene <sup>#M</sup>   | -          | 0.73       | 0.36       | -          | -          | -          | -          |  |  |  | <0.07  | mg/kg | TM4/PM8    |
| Benzo(a)pyrene <sup>#</sup>           | -          | 0.43       | 0.18       | -          | -          | -          | -          |  |  |  | <0.04  | mg/kg | TM4/PM8    |
| Indeno(123cd)pyrene <sup>#M</sup>     | -          | 0.27       | 0.16       | -          | -          | -          | -          |  |  |  | <0.04  | mg/kg | TM4/PM8    |
| Dibenzo(ah)anthracene <sup>#</sup>    | -          | 0.07       | <0.04      | -          | -          | -          | -          |  |  |  | <0.04  | mg/kg | TM4/PM8    |
| Benzo(ghi)perylene <sup>#</sup>       | -          | 0.25       | 0.14       | -          | -          | -          | -          |  |  |  | <0.04  | mg/kg | TM4/PM8    |
| PAH 16 Total                          | -          | 5.3        | 2.3        | -          | -          | -          | -          |  |  |  | <0.6   | mg/kg | TM4/PM8    |
| Benzo(b)fluoranthene                  | -          | 0.53       | 0.26       | -          | -          | -          | -          |  |  |  | <0.05  | mg/kg | TM4/PM8    |
| Benzo(k)fluoranthene                  | -          | 0.20       | 0.10       | -          | -          | -          | -          |  |  |  | <0.02  | mg/kg | TM4/PM8    |
| PAH Surrogate % Recovery              | -          | 123        | 92         | -          | -          | -          | -          |  |  |  | <0   | %     | TM4/PM8    |
| MTBE <sup>#</sup>                     | -          | <0.005     | <0.005     | -          | -          | -          | -          |  |  |  | <0.005   | mg/kg | TM31/PM12  |
| Benzene <sup>#</sup>                  | -          | <0.005     | <0.005     | -          | -          | -          | -          |  |  |  | <0.005   | mg/kg | TM31/PM12  |
| Toluene <sup>#</sup>                  | -          | <0.005     | <0.005     | -          | -          | -          | -          |  |  |  | <0.005   | mg/kg | TM31/PM12  |
| Ethylbenzene <sup>#</sup>             | -          | <0.005     | <0.005     | -          | -          | -          | -          |  |  |  | <0.005   | mg/kg | TM31/PM12  |
| m/p-Xylene <sup>#</sup>               | -          | <0.005     | <0.005     | -          | -          | -          | -          |  |  |  | <0.005   | mg/kg | TM31/PM12  |
| o-Xylene <sup>#</sup>                 | -          | <0.005     | <0.005     | -          | -          | -          | -          |  |  |  | <0.005   | mg/kg | TM31/PM12  |
| Xylenes (sum of isomers) <sup>#</sup> | -          | <0.01      | <0.01      | -          | -          | -          | -          |  |  |  | <0.01  | mg/kg | TM31/PM12  |

# **Jones Environmental Laboratory**

**Client Name:** SLR Consulting Ltd  
**Reference:** 402.0341.00017  
**Location:** MOORWELL  
**Contact:** Dan Collins  
**JE Job No.:** 13/4471

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

| J E Sample No.                     | 24-25,49   | 26-27      | 28-29      | 30-31      | 43-44      | 45-46      | 47-48      |  |  |  | Please see attached notes for all abbreviations and acronyms |       |            |
|------------------------------------|------------|------------|------------|------------|------------|------------|------------|--|--|--|--|-------|------------|
| Sample ID                          | TP111      | TP112      | TP113      | TP114      | HP115      | HP116      | HP117      |  |  |  |  |       |            |
| Depth                              |            |            |            |            |            |            |            |  |  |  |  |       |            |
| COC No / misc                      |            |            |            |            |            |            |            |  |  |  |  |       |            |
| Containers                         | V J B      | V J        | V J        | V J        | V J        | V J        | V J        |  |  |  |  |       |            |
| Sample Date                        | 25/04/2013 | 25/04/2013 | 25/04/2013 | 25/04/2013 | 25/04/2013 | 25/04/2013 | 25/04/2013 |  |  |  |  |       |            |
| Sample Type                        | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       |  |  |  |  |       |            |
| Batch Number                       | 1          | 1          | 1          | 1          | 1          | 1          | 1          |  |  |  |  |       |            |
| Date of Receipt                    | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 |  |  |  | LOD  | Units | Method No. |
| <b>Pesticides MS</b>               |            |            |            |            |            |            |            |  |  |  |  |       |            |
| <b>Organochlorine Pesticides</b>   |            |            |            |            |            |            |            |  |  |  |  |       |            |
| Aldrin                             | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Alpha-BHC                          | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Beta-BHC                           | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Dieldrin                           | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Endosulphan I                      | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Endosulphan II                     | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Endosulphan sulphate               | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Endrin                             | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Gamma-BHC                          | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Heptachlor                         | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Heptachlor Epoxide                 | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| p,p'-DDE                           | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| p,p'-DDT                           | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| p,p'-TDE                           | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Total Methoxychlor                 | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| <b>Organophosphorus Pesticides</b> |            |            |            |            |            |            |            |  |  |  |  |       |            |
| Azinphos methyl                    | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Diazinon                           | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Dichlorvos                         | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Disulfoton                         | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Ethion                             | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Ethyl Parathion (Parathion)        | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Fenitrothion                       | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Malathion                          | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Methyl Parathion                   | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| Mevinphos                          | -          | -          | -          | -          | -          | -          | -          |  |  |  | <1   | ug/kg | TM42/PM8   |
| <b>TPH CWG</b>                     |            |            |            |            |            |            |            |  |  |  |  |       |            |
| <b>Aliphatics</b>                  |            |            |            |            |            |            |            |  |  |  |  |       |            |
| >C5-C6 <sup>#M</sup>               | -          | <0.1       | <0.1       | -          | -          | -          | -          |  |  |  | <0.1   | mg/kg | TM36/PM12  |
| >C6-C8 <sup>#M</sup>               | -          | <0.1       | <0.1       | -          | -          | -          | -          |  |  |  | <0.1   | mg/kg | TM36/PM12  |
| >C8-C10                            | -          | <0.1       | <0.1       | -          | -          | -          | -          |  |  |  | <0.1   | mg/kg | TM36/PM12  |
| >C10-C12 <sup>#M</sup>             | -          | <0.2       | <0.2       | -          | -          | -          | -          |  |  |  | <0.2   | mg/kg | TM5/PM16   |
| >C12-C16 <sup>#M</sup>             | -          | <4         | 18         | -          | -          | -          | -          |  |  |  | <4   | mg/kg | TM5/PM16   |
| >C16-C21 <sup>#M</sup>             | -          | <7         | 103        | -          | -          | -          | -          |  |  |  | <7   | mg/kg | TM5/PM16   |
| >C21-C35 <sup>#M</sup>             | -          | 71         | 162        | -          | -          | -          | -          |  |  |  | <7   | mg/kg | TM5/PM16   |
| Total aliphatics C5-35             | -          | 71         | 283        | -          | -          | -          | -          |  |  |  | <19  | mg/kg | TM5/PM16   |



# **Jones Environmental Laboratory**

**Client Name:** SLR Consulting Ltd  
**Reference:** 402.0341.00017  
**Location:** MOORWELL  
**Contact:** Dan Collins  
**JE Job No.:** 13/4471

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

| J E Sample No.                          | 24-25,49    | 26-27        | 28-29       | 30-31        | 43-44        | 45-46        | 47-48        |  |  |  | Please see attached notes for all abbreviations and acronyms |       |               |
|---|-------------|--------------|-------------|--------------|--------------|--------------|--------------|--|--|--|--|-------|---------------|
| Sample ID                               | TP111       | TP112        | TP113       | TP114        | HP115        | HP116        | HP117        |  |  |  |  |       |               |
| Depth                                   |             |              |             |              |              |              |              |  |  |  |  |       |               |
| COC No / misc                           |             |              |             |              |              |              |              |  |  |  |  |       |               |
| Containers                              | V J B       | V J          | V J         | V J          | V J          | V J          | V J          |  |  |  |  |       |               |
| Sample Date                             | 25/04/2013  | 25/04/2013   | 25/04/2013  | 25/04/2013   | 25/04/2013   | 25/04/2013   | 25/04/2013   |  |  |  |  |       |               |
| Sample Type                             | Soil        | Soil         | Soil        | Soil         | Soil         | Soil         | Soil         |  |  |  |  |       |               |
| Batch Number                            | 1           | 1            | 1           | 1            | 1            | 1            | 1            |  |  |  |  |       |               |
| Date of Receipt                         | 11/05/2013  | 11/05/2013   | 11/05/2013  | 11/05/2013   | 11/05/2013   | 11/05/2013   | 11/05/2013   |  |  |  | LOD  | Units | Method No.    |
| <b>TPH CWG</b>                          |             |              |             |              |              |              |              |  |  |  |  |       |               |
| <b>Aromatics</b>                        |             |              |             |              |              |              |              |  |  |  |  |       |               |
| >C5-EC7                                 | -           | <0.1         | <0.1        | -            | -            | -            | -            |  |  |  | <0.1   | mg/kg | TM36/PM12     |
| >EC7-EC8                                | -           | <0.1         | <0.1        | -            | -            | -            | -            |  |  |  | <0.1   | mg/kg | TM36/PM12     |
| >EC8-EC10 <sup>#M</sup>                 | -           | <0.1         | <0.1        | -            | -            | -            | -            |  |  |  | <0.1   | mg/kg | TM36/PM12     |
| >EC10-EC12 <sup>#M</sup>                | -           | <0.2         | <0.2        | -            | -            | -            | -            |  |  |  | <0.2   | mg/kg | TM5/PM16      |
| >EC12-EC16 <sup>#M</sup>                | -           | <4           | <4          | -            | -            | -            | -            |  |  |  | <4   | mg/kg | TM5/PM16      |
| >EC16-EC21 <sup>#M</sup>                | -           | <7           | 12          | -            | -            | -            | -            |  |  |  | <7   | mg/kg | TM5/PM16      |
| >EC21-EC35 <sup>#M</sup>                | -           | 117          | 244         | -            | -            | -            | -            |  |  |  | <7   | mg/kg | TM5/PM16      |
| Total aromatics C5-35                   | -           | 117          | 256         | -            | -            | -            | -            |  |  |  | <19  | mg/kg | TM5/PM16/PM20 |
| Total aliphatics and aromatics(C5-35)   | -           | 188          | 539         | -            | -            | -            | -            |  |  |  | <38  | mg/kg | TM5/PM16/PM20 |
| <b>PCBs</b>                             |             |              |             |              |              |              |              |  |  |  |  |       |               |
| PCB 77                                  | -           | -            | -           | -            | -            | -            | <5           |  |  |  | <5   | ug/kg | TM16/PM8      |
| PCB 81                                  | -           | -            | -           | -            | -            | -            | <5           |  |  |  | <5   | ug/kg | TM16/PM8      |
| PCB 105                                 | -           | -            | -           | -            | -            | -            | <5           |  |  |  | <5   | ug/kg | TM16/PM8      |
| PCB 114                                 | -           | -            | -           | -            | -            | -            | <5           |  |  |  | <5   | ug/kg | TM16/PM8      |
| PCB 118                                 | -           | -            | -           | -            | -            | -            | <5           |  |  |  | <5   | ug/kg | TM16/PM8      |
| PCB 123                                 | -           | -            | -           | -            | -            | -            | <5           |  |  |  | <5   | ug/kg | TM16/PM8      |
| PCB 126                                 | -           | -            | -           | -            | -            | -            | <5           |  |  |  | <5   | ug/kg | TM16/PM8      |
| PCB 156                                 | -           | -            | -           | -            | -            | -            | <5           |  |  |  | <5   | ug/kg | TM16/PM8      |
| PCB 157                                 | -           | -            | -           | -            | -            | -            | <5           |  |  |  | <5   | ug/kg | TM16/PM8      |
| PCB 167                                 | -           | -            | -           | -            | -            | -            | <5           |  |  |  | <5   | ug/kg | TM16/PM8      |
| PCB 169                                 | -           | -            | -           | -            | -            | -            | <5           |  |  |  | <5   | ug/kg | TM16/PM8      |
| PCB 189                                 | -           | -            | -           | -            | -            | -            | <5           |  |  |  | <5   | ug/kg | TM16/PM8      |
| Total 12 PCBs                           | -           | -            | -           | -            | -            | -            | <60          |  |  |  | <60  | ug/kg | TM16/PM8      |
| <b>Heavy Metals</b>                     |             |              |             |              |              |              |              |  |  |  |  |       |               |
| Hexavalent Chromium                     | <0.3        | <0.3         | <0.3        | <0.3         | <0.3         | <0.3         | <0.3         |  |  |  | <0.3   | mg/kg | TM38/PM20     |
| Nitrate as NO3 <sup>#M</sup>            | -           | -            | -           | -            | -            | -            | -            |  |  |  | <2.5   | mg/kg | TM38/PM20     |
| Ortho Phosphate as PO4                  | -           | -            | -           | -            | -            | -            | -            |  |  |  | <0.3   | mg/kg | TM38/PM20     |
| Sulphate as SO4 (2:1 Ext) <sup>#M</sup> | -           | -            | -           | -            | -            | -            | -            |  |  |  | <0.0015  | g/l   | TM38/PM20     |
| Total Cyanide <sup>#M</sup>             | -           | -            | -           | -            | -            | -            | -            |  |  |  | <0.5   | mg/kg | TM89/PM45     |
| Total Organic Carbon <sup>#</sup>       | NDP         | -            | NDP         | -            | 1.8          | -            | -            |  |  |  | <0.2   | %     | TM21/PM24     |
| Sample Type                             | Loam        | Loam         | Loam        | Loam         | Loam         | Loam         | Loam         |  |  |  | None   |       | PM13/PM0      |
| Sample Colour                           | Light Brown | Medium Brown | Light Brown | Medium Brown | Medium Brown | Medium Brown | Medium Brown |  |  |  | None   |       | PM13/PM0      |
| Other Items                             | n.a         | Stones       | Stones      | n.a          | n.a          | n.a          | n.a          |  |  |  | None   |       | PM13/PM0      |
| Chromium III                            | -           | -            | -           | -            | -            | -            | -            |  |  |  | <0.3   | mg/kg | NONE/NONE     |

|                            |                    |
|----------------------------|--------------------|
| <b><i>Client Name:</i></b> | SLR Consulting Ltd |
| <b><i>Reference:</i></b>   | 402.0341.00017     |
| <b><i>Location:</i></b>    | MOORWELL           |
| <b><i>Contact:</i></b>     | Dan Collins        |
| <b><i>JE Job No.:</i></b>  | 13/4471            |

**Report : CEN 10:1 1 Batch**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

| J E Sample No.              | 6-7        | 13-14      | 20-21      | 26-27      |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |            |
|-----------------------------|------------|------------|------------|------------|--|--|--|--|--|--|--|-------|------------|
| Sample ID                   | TP103      | TP106      | TP109      | TP112      |  |  |  |  |  |  |  |       |            |
| Depth                       | 3.5        |            |            |            |  |  |  |  |  |  |  |       |            |
| COC No / misc               |            |            |            |            |  |  |  |  |  |  |  |       |            |
| Containers                  | V J        | V J        | V J        | V J        |  |  |  |  |  |  |  |       |            |
| Sample Date                 | 24/04/2013 | 24/04/2013 | 24/04/2013 | 25/04/2013 |  |  |  |  |  |  |  |       |            |
| Sample Type                 | Soil       | Soil       | Soil       | Soil       |  |  |  |  |  |  |  |       |            |
| Batch Number                | 1          | 1          | 1          | 1          |  |  |  |  |  |  |  |       |            |
| Date of Receipt             | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 |  |  |  |  |  |  | LOD  | Units | Method No. |
| Dissolved Arsenic #         | 0.0061     | 0.0031     | 0.0036     | <0.0025    |  |  |  |  |  |  | <0.0025  | mg/l  | TM30/PM17  |
| Dissolved Cadmium #         | <0.0005    | <0.0005    | <0.0005    | <0.0005    |  |  |  |  |  |  | <0.0005  | mg/l  | TM30/PM17  |
| Dissolved Chromium #        | <0.0015    | <0.0015    | 0.0154     | 0.0030     |  |  |  |  |  |  | <0.0015  | mg/l  | TM30/PM17  |
| Dissolved Copper #          | <0.007     | <0.007     | 0.021      | <0.007     |  |  |  |  |  |  | <0.007   | mg/l  | TM30/PM17  |
| Dissolved Lead #            | <0.005     | <0.005     | 0.011      | <0.005     |  |  |  |  |  |  | <0.005   | mg/l  | TM30/PM17  |
| Dissolved Mercury #         | <0.001     | <0.001     | <0.001     | <0.001     |  |  |  |  |  |  | <0.001   | mg/l  | TM30/PM17  |
| Dissolved Nickel #          | <0.002     | <0.002     | 0.006      | 0.003      |  |  |  |  |  |  | <0.002   | mg/l  | TM30/PM17  |
| Dissolved Selenium #        | <0.003     | <0.003     | <0.003     | <0.003     |  |  |  |  |  |  | <0.003   | mg/l  | TM30/PM17  |
| Dissolved Zinc #            | 0.010      | 0.028      | <0.003     | 0.050      |  |  |  |  |  |  | <0.003   | mg/l  | TM30/PM17  |
| <b>PAH MS</b>               |            |            |            |            |  |  |  |  |  |  |  |       |            |
| Naphthalene                 | <0.000014  | 0.000050   | 0.000030   | <0.000014  |  |  |  |  |  |  | <0.000014  | mg/l  | TM4/PM30   |
| Acenaphthylene              | <0.000013  | <0.000013  | <0.000013  | <0.000013  |  |  |  |  |  |  | <0.000013  | mg/l  | TM4/PM30   |
| Acenaphthene                | <0.000013  | <0.000013  | <0.000013  | 0.000060   |  |  |  |  |  |  | <0.000013  | mg/l  | TM4/PM30   |
| Fluorene                    | <0.000014  | <0.000014  | <0.000014  | 0.000050   |  |  |  |  |  |  | <0.000014  | mg/l  | TM4/PM30   |
| Phenanthrene                | <0.000011  | 0.000050   | 0.000020   | 0.000330   |  |  |  |  |  |  | <0.000011  | mg/l  | TM4/PM30   |
| Anthracene                  | <0.000013  | <0.000013  | <0.000013  | 0.000070   |  |  |  |  |  |  | <0.000013  | mg/l  | TM4/PM30   |
| Fluoranthene                | 0.000030   | 0.000130   | 0.000050   | 0.000490   |  |  |  |  |  |  | <0.000012  | mg/l  | TM4/PM30   |
| Pyrene                      | 0.000030   | 0.000120   | 0.000040   | 0.000390   |  |  |  |  |  |  | <0.000013  | mg/l  | TM4/PM30   |
| Benzo(a)anthracene          | 0.000030   | 0.000090   | 0.000040   | 0.000250   |  |  |  |  |  |  | <0.000015  | mg/l  | TM4/PM30   |
| Chrysene                    | 0.000030   | 0.000090   | 0.000040   | 0.000220   |  |  |  |  |  |  | <0.000011  | mg/l  | TM4/PM30   |
| Benzo(bk)fluoranthene       | 0.000060   | 0.000180   | 0.000080   | 0.000350   |  |  |  |  |  |  | <0.000018  | mg/l  | TM4/PM30   |
| Benzo(a)pyrene              | 0.000040   | 0.000090   | 0.000040   | 0.000190   |  |  |  |  |  |  | <0.000016  | mg/l  | TM4/PM30   |
| Indeno(123cd)pyrene         | 0.000040   | 0.000100   | 0.000040   | 0.000120   |  |  |  |  |  |  | <0.000011  | mg/l  | TM4/PM30   |
| Dibenzo(ah)anthracene       | <0.00001   | 0.00002    | <0.00001   | 0.00003    |  |  |  |  |  |  | <0.00001   | mg/l  | TM4/PM30   |
| Benzo(ghi)perylene          | 0.000030   | 0.000050   | 0.000020   | 0.000080   |  |  |  |  |  |  | <0.000011  | mg/l  | TM4/PM30   |
| PAH 16 Total                | 0.000290   | 0.000970   | 0.000400   | 0.002630   |  |  |  |  |  |  | <0.000195  | mg/l  | TM4/PM30   |
| PAH Surrogate % Recovery    | 93         | 127        | 99         | 99         |  |  |  |  |  |  | <0   | %     | TM4/PM30   |
|                             |            |            |            |            |  |  |  |  |  |  |  |       |            |
| Methyl Tertiary Butyl Ether | <1         | <1         | <1         | <1         |  |  |  |  |  |  | <1   | ug/l  | TM15/PM10  |
| Benzene                     | <1         | <1         | <1         | <1         |  |  |  |  |  |  | <1   | ug/l  | TM15/PM10  |
| Toluene                     | <2         | <2         | <2         | <2         |  |  |  |  |  |  | <2   |       |            |

**Jones Environmental Laboratory**

**Client Name:** SLR Consulting Ltd  
**Reference:** 402.0341.00017  
**Location:** MOORWELL  
**Contact:** Dan Collins  
**JE Job No.:** 13/4471

**Report :** CEN 10:1 1 Batch

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

| J E Sample No.                        | 6-7        | 13-14      | 20-21      | 26-27      |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |               |
|---------------------------------------|------------|------------|------------|------------|--|--|--|--|--|--|--|-------|---------------|
| Sample ID                             | TP103      | TP106      | TP109      | TP112      |  |  |  |  |  |  |  |       |               |
| Depth                                 | 3.5        |            |            |            |  |  |  |  |  |  |  |       |               |
| COC No / misc                         |            |            |            |            |  |  |  |  |  |  |  |       |               |
| Containers                            | V J        | V J        | V J        | V J        |  |  |  |  |  |  |  |       |               |
| Sample Date                           | 24/04/2013 | 24/04/2013 | 24/04/2013 | 25/04/2013 |  |  |  |  |  |  |  |       |               |
| Sample Type                           | Soil       | Soil       | Soil       | Soil       |  |  |  |  |  |  |  |       |               |
| Batch Number                          | 1          | 1          | 1          | 1          |  |  |  |  |  |  |  |       |               |
| Date of Receipt                       | 11/05/2013 | 11/05/2013 | 11/05/2013 | 11/05/2013 |  |  |  |  |  |  | LOD  | Units | Method No.    |
| <b>TPH CWG</b>                        |            |            |            |            |  |  |  |  |  |  |  |       |               |
| <b>Aliphatics</b>                     |            |            |            |            |  |  |  |  |  |  |  |       |               |
| >C5-C6                                | <0.005     | <0.005     | <0.005     | <0.005     |  |  |  |  |  |  | <0.005   | mg/l  | TM36/PM12     |
| >C6-C8                                | <0.005     | <0.005     | <0.005     | <0.005     |  |  |  |  |  |  | <0.005   | mg/l  | TM36/PM12     |
| >C8-C10                               | <0.005     | <0.005     | <0.005     | <0.005     |  |  |  |  |  |  | <0.005   | mg/l  | TM36/PM12     |
| >C10-C12                              | <0.005     | <0.005     | <0.005     | <0.005     |  |  |  |  |  |  | <0.005   | mg/l  | TM5/PM30      |
| >C12-C16                              | <0.01      | <0.01      | <0.01      | <0.01      |  |  |  |  |  |  | <0.01  | mg/l  | TM5/PM30      |
| >C16-C21                              | 0.19       | <0.01      | <0.01      | <0.01      |  |  |  |  |  |  | <0.01  | mg/l  | TM5/PM30      |
| >C21-C35                              | 13.26      | <0.01      | <0.01      | <0.01      |  |  |  |  |  |  | <0.01  | mg/l  | TM5/PM30      |
| Total aliphatics C5-35                | 13.45      | <0.01      | <0.01      | <0.01      |  |  |  |  |  |  | <0.01  | mg/l  | TM5/TM36/PM30 |
| <b>Aromatics</b>                      |            |            |            |            |  |  |  |  |  |  |  |       |               |
| >C5-EC7                               | <0.005     | <0.005     | <0.005     | <0.005     |  |  |  |  |  |  | <0.005   | mg/l  | TM36/PM12     |
| >EC7-EC8                              | <0.005     | <0.005     | <0.005     | <0.005     |  |  |  |  |  |  | <0.005   | mg/l  | TM36/PM12     |
| >EC8-EC10                             | <0.005     | <0.005     | <0.005     | <0.005     |  |  |  |  |  |  | <0.005   | mg/l  | TM36/PM12     |
| >EC10-EC12                            | <0.005     | <0.005     | <0.005     | <0.005     |  |  |  |  |  |  | <0.005   | mg/l  | TM5/PM30      |
| >EC12-EC16                            | <0.01      | <0.01      | <0.01      | <0.01      |  |  |  |  |  |  | <0.01  | mg/l  | TM5/PM30      |
| >EC16-EC21                            | <0.01      | <0.01      | <0.01      | <0.01      |  |  |  |  |  |  | <0.01  | mg/l  | TM5/PM30      |
| >EC21-EC35                            | 0.79       | <0.01      | <0.01      | <0.01      |  |  |  |  |  |  | <0.01  | mg/l  | TM5/PM30      |
| Total aromatics C5-35                 | 0.79       | <0.01      | <0.01      | <0.01      |  |  |  |  |  |  | <0.01  | mg/l  | TM5/PM30      |
| Total aliphatics and aromatics(C5-35) | 14.24      | <0.01      | <0.01      | <0.01      |  |  |  |  |  |  | <0.01  | mg/l  | TM5/TM36/PM30 |
| Dissolved Organic Carbon              | 6          | 4          | -          | -          |  |  |  |  |  |  | <2   | mg/l  | TM60/PM0      |
| Hexavalent Chromium                   | <0.03      | <0.03      | <0.03      | <0.03      |  |  |  |  |  |  | <0.03  | mg/l  | TM38/PM0      |
| Total Xylenes                         | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5   | ug/l  | TM15/PM10     |
| PCB 77                                | <0.1       | <0.1       | <0.1       | -          |  |  |  |  |  |  | <0.1   | ug/l  | TM17/PM30     |
| PCB 81                                | <0.1       | <0.1       | <0.1       | -          |  |  |  |  |  |  | <0.1   | ug/l  | TM17/PM30     |
| PCB 105                               | <0.1       | <0.1       | <0.1       | -          |  |  |  |  |  |  | <0.1   | ug/l  | TM17/PM30     |
| PCB 114                               | <0.1       | <0.1       | <0.1       | -          |  |  |  |  |  |  | <0.1   | ug/l  | TM17/PM30     |
| PCB 118                               | <0.1       | <0.1       | <0.1       | -          |  |  |  |  |  |  | <0.1   | ug/l  | TM17/PM30     |
| PCB 123                               | <0.1       | <0.1       | <0.1       | -          |  |  |  |  |  |  | <0.1   | ug/l  | TM17/PM30     |
| PCB 126                               | <0.1       | <0.1       | <0.1       | -          |  |  |  |  |  |  | <0.1   | ug/l  | TM17/PM30     |
| PCB 156                               | <0.1       | <0.1       | <0.1       | -          |  |  |  |  |  |  | <0.1   | ug/l  | TM17/PM30     |
| PCB 157                               | <0.1       | <0.1       | <0.1       | -          |  |  |  |  |  |  | <0.1   | ug/l  | TM17/PM30     |
| PCB 167                               | <0.1       | <0.1       | <0.1       | -          |  |  |  |  |  |  | <0.1   | ug/l  | TM17/PM30     |
| PCB 169                               | <0.1       | <0.1       | <0.1       | -          |  |  |  |  |  |  | <0.1   | ug/l  | TM17/PM30     |
| PCB 189                               | <0.1       | <0.1       | <0.1       | -          |  |  |  |  |  |  | <0.1   | ug/l  | TM17/PM30     |
| Total 12 PCBs                         | <1.2       | <1.2       | <1.2       | -          |  |  |  |  |  |  | <1.2   | ug/l  | TM17/PM30     |

**Client Name:** SLR Consulting Ltd  
**Reference:** 402.0341.00017  
**Location:** MOORWELL  
**Contact:** Dan Collins

**Note:**

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions lie outside the scope of our UKAS accreditation.

*Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.*

*If asbestos fibres are reported at trace levels there will not be enough fibres to quantify and will be less than 0.001%.*

Signed on behalf of Jones Environmental Laboratory:



Gemma Newsome  
Asbestos Team Leader

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Description  | Asbestos Results                 |
|-------------|-------|-----------|-------|----------------|------------------|--|----------------------------------|
| 13/4471     | 1     | TP101     |       | 1-3            | 20/05/2013       | Soil-Silt/Stone/Brick/Fibre Bundles, Soil-Silt/Stone/Brick/Trace Fibre   | Amosite, Chrysotile, Crocidolite |
| 13/4471     | 1     | TP102     |       | 4-5            | 20/05/2013       | Soil-Silt/Stone/Brick/Fibre Bundle, Soil-Silt/Stone/Brick/Fibre Bundles  | Amosite, Chrysotile              |
| 13/4471     | 1     | TP103     | 3.5   | 6-7            | 20/05/2013       | Soil-Silt/Stone/Brick/Fibre Bundle, Soil-Silt/Stone/Brick/Fibre Bundles  | Amosite, Chrysotile              |
| 13/4471     | 1     | TP104     |       | 8-10           | 20/05/2013       | Soil-Silt/Stone/Brick/Fibre Bundles                                      | Chrysotile                       |
| 13/4471     | 1     | TP105     |       | 11-12          | 20/05/2013       | Soil-Silt/Stone/Brick/Fibre Bundle                                       | Chrysotile                       |
| 13/4471     | 1     | TP106     |       | 13-14          | 20/05/2013       | Soil-Silt/Stone/Brick/MMMF/Trace Fibres                                  | Chrysotile                       |
| 13/4471     | 1     | TP107     | 1     | 15-16          | 20/05/2013       | Soil-Silt/Stone/Brick/MMMF/Fibre Bundles                                 | Chrysotile                       |
| 13/4471     | 1     | TP108     |       | 17-19          | 20/05/2013       | Soil-Silt/Stone/Brick/MMMF   | NAD                              |
| 13/4471     | 1     | TP109     |       | 20-21          | 20/05/2013       | Soil-Silt/Stone/Brick/MMMF/Fibre Bundle                                  | Chrysotile                       |
| 13/4471     | 1     | TP110     | 2     | 22-23          | 20/05/2013       | Soil-Silt/Stone/Brick/MMMF/Fibre Bundle                                  | Amosite, Chrysotile              |
| 13/4471     | 1     | TP111     |       | 24-25,49       | 20/05/2013       | Soil-Silt/Stone/Brick/MMMF/Fibre Bundle                                  | Chrysotile                       |
| 13/4471     | 1     | TP112     |       | 26-27          | 20/05/2013       | Soil-Silt/Brick/Stone/MMMF/Tile, Soil-Silt/Brick/Stone/MMMF/Trace Fibres | Amosite, Chrysotile, Crocidolite |
| 13/4471     | 1     | TP113     |       | 28-29          | 20/05/2013       | Soil-Silt/Stone/Brick/MMMF/Trace Fibres                                  | Chrysotile                       |
| 13/4471     | 1     | TP114     |       | 30-31          | 20/05/2013       | Soil-Silt/Stone/Brick/MMMF   | NAD                              |
| 13/4471     | 1     | ASBESTOS1 |       | 41             | 16/05/2013       | Tile-MMMF  | NAD                              |
| 13/4471     | 1     | ASBESTOS2 |       | 42             | 16/05/2013       | Tile-MMMF/Woodchip   | NAD                              |
| 13/4471     | 1     | HP115     |       | 43-44          | 20/05/2013       | Soil-Silt/Stone/Brick/MMMF   | NAD                              |
| 13/4471     | 1     | HP116     |       | 45-46          | 20/05/2013       | Soil-Silt/Stone/Brick/MMMF   | NAD                              |
| 13/4471     | 1     | HP117     |       | 47-48          | 20/05/2013       | Soil-Silt/Stone/Brick/MMMF/Trace Fibres                                  | Chrysotile                       |
| 13/4471     | 1     | ASBESTOS3 |       | 50             | 16/05/2013       | Tile   | Chrysotile                       |

**Client Name:** SLR Consulting Ltd

**Matrix : Solid**

**Reference:** 402.0341.00017

**Location:** MOORWELL

**Contact:** Dan Collins

[illegible]

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 13/4471

## SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

## WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory. It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

## DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

## SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

## NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.



**ABBREVIATIONS and ACRONYMS USED**

|     |  |
|-----|--|
| #   | UKAS accredited.   |
| B   | Indicates analyte found in associated method blank.  |
| DR  | Dilution required.   |
| M   | MCERTS accredited.   |
| NA  | Not applicable   |
| NAD | No Asbestos Detected.  |
| ND  | None Detected (usually refers to VOC and/SVOC TICs).   |
| NDP | No Determination Possible  |
| SS  | Calibrated against a single substance.   |
| SV  | Surrogate recovery outside performance criteria. This may be due to a matrix effect.                       |
| W   | Results expressed on as received basis.  |
| +   | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++  | Result outside calibration range, results should be considered as indicative only and are not accredited.  |
| *   | Analysis subcontracted to a Jones Environmental approved laboratory.                                       |
| CO  | Suspected carry over   |
| OC  | Outside Calibration Range  |
| NFD | No Fibres Detected   |

JE Job No 13/4471

| Test Method No. | Description   | Prep Method No. (if appropriate) | Description                          | UKAS | MCERTS (soils only) | Analysis done on As Received (AR) or Air Dried (AD) | Solid Results expressed on Dry/Wet basis |
|-----------------|---|----------------------------------|--------------------------------------|------|---------------------|---|--|
| TM4             | 16 PAH by GC-MS, modified USEPA 8270  | PM30                             | Magnetic stirrer extraction          |      |                     | AR  | DRY                                      |
| TM4             | 16 PAH by GC-MS, modified USEPA 8270  | PM30                             | Magnetic stirrer extraction          |      |                     | AR  |  |
| TM4             | 16 PAH by GC-MS, modified USEPA 8270  | PM8                              | End Over End extraction              |      |                     | AR  | DRY                                      |
| TM4             | 16 PAH by GC-MS, modified USEPA 8270  | PM8                              | End Over End extraction              | Yes  |                     | AR  | DRY                                      |
| TM4             | 16 PAH by GC-MS, modified USEPA 8270  | PM8                              | End Over End extraction              | Yes  | Yes                 | AR  | DRY                                      |
| TM4             | 16 PAH by GC-MS, modified USEPA 8270  | PM8                              | End Over End extraction              |      |                     | AR  |  |
| TM5             | EPH by GC-FID, modified USEPA 8015  | PM16                             | Aliphatic/Aromatic fractionation     | Yes  | Yes                 | AR  | DRY                                      |
| TM5             | EPH by GC-FID, modified USEPA 8015  | PM30                             | Magnetic stirrer extraction          |      |                     | AR  | DRY                                      |
| TM5/TM36        | TPH CWG by GC-FID   | PM12/PM16                        | CWG GC-FID                           |      |                     | AR  | DRY                                      |
| TM5/TM36        | TPH CWG by GC-FID   | PM30                             | Magnetic stirrer extraction          |      |                     | AR  | DRY                                      |
| PM13            | Soil Typing for MCERTS  | PM0                              | No Preparation                       |      |                     | AR  |  |
| TM15            | VOC - Target by GC-MS, modified USEPA 8260  | PM10                             | VOC GC-MS                            |      |                     | AR  | DRY                                      |
| TM15            | VOC - Target by GC-MS, modified USEPA 8260  | PM10                             | VOC GC-MS                            |      |                     | AR  |  |
| TM16            | SVOC - Target by GC-MS, modified USEPA 8270   | PM8                              | End Over End extraction              |      |                     | AR  | DRY                                      |
| TM17            | PCB 7 Congeners and WHO 12 PCBs by GC-MS  | PM30                             | Magnetic stirrer extraction          |      |                     | AR  | DRY                                      |
| TM21            | TOC and TC by Combustion  | PM24                             | Eltra preparation                    | Yes  |                     | AD  | DRY                                      |
| TM30            | Metals by ICP-OES   | PM15                             | Aqua Regia extraction (Soils)        |      |                     | AD  | DRY                                      |
| TM30            | Metals by ICP-OES   | PM15                             | Aqua Regia extraction (Soils)        | Yes  | Yes                 | AD  | DRY                                      |
| TM30            | Metals by ICP-OES   | PM17                             | CEN PR12457-2 10:1 1 batch leach     | Yes  |                     | AR  | DRY                                      |
| TM31            | BTEX/MTBE by GC-FID, modified USEPA 8015  | PM12                             | GRO GC-FID                           |      |                     | AR  | DRY                                      |
| TM31            | BTEX/MTBE by GC-FID, modified USEPA 8015  | PM12                             | GRO GC-FID                           | Yes  |                     | AR  | DRY                                      |
| TM36            | GRO by Headspace GC-FID   | PM12                             | GRO GC-FID                           |      |                     | AR  | DRY                                      |
| TM36            | GRO by Headspace GC-FID   | PM12                             | GRO GC-FID                           | Yes  | Yes                 | AR  | DRY                                      |
| TM38            | SO <sub>4</sub> ,Cl,NO <sub>3</sub> ,NO <sub>2</sub> ,F,PO <sub>4</sub> , Amm N <sub>2</sub> ,ThioCN, Hex Cr by Aquakem | PM0                              | No Preparation                       |      |                     | AR  | DRY                                      |
| TM38            | SO <sub>4</sub> ,Cl,NO <sub>3</sub> ,NO <sub>2</sub> ,F,PO <sub>4</sub> , Amm N <sub>2</sub> ,ThioCN, Hex Cr by Aquakem | PM20                             | 1:2 soil to water extraction         |      |                     | AD  | DRY                                      |
| TM38            | SO <sub>4</sub> ,Cl,NO <sub>3</sub> ,NO <sub>2</sub> ,F,PO <sub>4</sub> , Amm N <sub>2</sub> ,ThioCN, Hex Cr by Aquakem | PM20                             | 1:2 soil to water extraction         | Yes  | Yes                 | AD  | DRY                                      |
| TM38            | SO <sub>4</sub> ,Cl,NO <sub>3</sub> ,NO <sub>2</sub> ,F,PO <sub>4</sub> , Amm N <sub>2</sub> ,ThioCN, Hex Cr by Aquakem | PM20                             | 1:2 soil to water extraction         |      |                     | AR  | DRY                                      |
| TM42            | OC and OP Pesticides by GC-MS   | PM8                              | End Over End extraction              |      |                     | AR  | DRY                                      |
| TM60            | TOC/DOC by NDIR   | PM0                              | No Preparation                       |      |                     | AR  | DRY                                      |
| TM65            | Asbestos Bulk Identification  | PM42                             | Screening of soils for fibres        |      |                     | AR  |  |
| TM65            | Asbestos Bulk Identification  | PM42                             | Screening of soils for fibres        | Yes  |                     | AR  |  |
| TM74            | Water Soluble Boron by ICP-OES  | PM32                             | Preparation of soils for WSB         | Yes  | Yes                 | AD  | DRY                                      |
| TM89            | Cyanide by FIA  | PM45                             | Cyanide & Thiocyanate prep for soils | Yes  | Yes                 | AR  | DRY                                      |
| NONE            | No Method Code  | NONE                             | No Method Code                       |      |                     |   | DRY                                      |
| NONE            | No Method Code  | PM4                              | Moisture Content                     |      |                     | AR  |  |
|                 |   |                                  |                                      |      |                     |   |  |
|                 |   |                                  |                                      |      |                     |   |  |
|                 |   |                                  |                                      |      |                     |   |  |
|                 |   |                                  |                                      |      |                     |   |  |
|                 |   |                                  |                                      |      |                     |   |  |
|                 |   |                                  |                                      |      |                     |   |  |
|                 |   |                                  |                                      |      |                     |   |  |
|                 |   |                                  |                                      |      |                     |   |  |
|                 |   |                                  |                                      |      |                     |   |  |
|                 |   |                                  |                                      |      |                     |   |  |



# Jones Environmental Laboratory

Unit 3 Deeside Point  
Zone 3  
Deeside Industrial Park  
Deeside  
CH5 2UA

SLR Consulting Ltd  
19 Hollingworth Court  
Turkey Mill  
Maidstone  
ME14 5PP

Tel: +44 (0) 1244 833780  
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No.4225



**Attention :** Dan Collins  
**Date :** 4th June, 2013  
**Your reference :** 402.0341.00017  
**Our reference :** Test Report 13/4471 Batch 1 Schedule C  
**Location :** MOORWELL  
**Date samples received :** 11th May, 2013  
**Status :** Final report  
**Issue :** 1

Twenty three samples were received for analysis on 11th May, 2013. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

## Compiled By:

**Jamie Williams B.Sc**  
Project Co-ordinator

**Bob Millward B.Sc**  
Principal Chemist

**Client Name:** SLR Consulting Ltd  
**Reference:** 402.0341.00017  
**Location:** MOORWELL  
**Contact:** Dan Collins  
**JE Job No.:** 13/4471

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

**Client Name:** SLR Consulting Ltd  
**Reference:** 402.0341.00017  
**Location:** MOORWELL  
**Contact:** Dan Collins  
**JE Job No.:** 13/4471

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

| <div>Please see attached notes for all abbreviations and acronyms</div> |            |            |            |  |  |  |  |  |  |  | LOD     | Units  | Method No.    |
|---|------------|------------|------------|--|--|--|--|--|--|--|---------|--------|---------------|
|   |            |            |            |  |  |  |  |  |  |  |         |        |               |
|   |            |            |            |  |  |  |  |  |  |  |         |        |               |
|   |            |            |            |  |  |  |  |  |  |  |         |        |               |
|   |            |            |            |  |  |  |  |  |  |  |         |        |               |
|   |            |            |            |  |  |  |  |  |  |  |         |        |               |
|   |            |            |            |  |  |  |  |  |  |  |         |        |               |
|   |            |            |            |  |  |  |  |  |  |  |         |        |               |
|   |            |            |            |  |  |  |  |  |  |  |         |        |               |
| J E Sample No.  | 26-27      | 28-29      | 47-48      |  |  |  |  |  |  |  |         |        |               |
| Sample ID   | TP112      | TP113      | HP117      |  |  |  |  |  |  |  |         |        |               |
| Depth   |            |            |            |  |  |  |  |  |  |  |         |        |               |
| COC No / misc   |            |            |            |  |  |  |  |  |  |  |         |        |               |
| Containers  | V J        | V J        | V J        |  |  |  |  |  |  |  |         |        |               |
| Sample Date   | 25/04/2013 | 25/04/2013 | 25/04/2013 |  |  |  |  |  |  |  |         |        |               |
| Sample Type   | Soil       | Soil       | Soil       |  |  |  |  |  |  |  |         |        |               |
| Batch Number  | 1          | 1          | 1          |  |  |  |  |  |  |  |         |        |               |
| Date of Receipt   | 11/05/2013 | 11/05/2013 | 11/05/2013 |  |  |  |  |  |  |  |         |        |               |
| Arsenic   | 15.5       | 50.4       | 9.8        |  |  |  |  |  |  |  | <0.5    | mg/kg  | TM30/PM62     |
| Barium  | -          | -          | -          |  |  |  |  |  |  |  | <1      | mg/kg  | TM30/PM62     |
| Beryllium   | -          | -          | -          |  |  |  |  |  |  |  | <0.5    | mg/kg  | TM30/PM62     |
| Cadmium   | 0.3        | 0.8        | 0.6        |  |  |  |  |  |  |  | <0.1    | mg/kg  | TM30/PM62     |
| Chromium  | 11.1       | 71.6       | 9.2        |  |  |  |  |  |  |  | <0.5    | mg/kg  | TM30/PM62     |
| Copper  | 34         | 59         | 73         |  |  |  |  |  |  |  | <1      | mg/kg  | TM30/PM62     |
| Lead  | 192        | 163        | 122        |  |  |  |  |  |  |  | <5      | mg/kg  | TM30/PM62     |
| Mercury   | 0.2        | 0.2        | <0.1       |  |  |  |  |  |  |  | <0.1    | mg/kg  | TM30/PM62     |
| Nickel  | 8.5        | 52.7       | 8.3        |  |  |  |  |  |  |  | <0.7    | mg/kg  | TM30/PM62     |
| Selenium  | <1         | <1         | <1         |  |  |  |  |  |  |  | <1      | mg/kg  | TM30/PM62     |
| Vanadium  | -          | -          | -          |  |  |  |  |  |  |  | <1      | mg/kg  | TM30/PM62     |
| Water Soluble Boron   | -          | -          | -          |  |  |  |  |  |  |  | <0.1    | mg/kg  | TM74/PM61     |
| Zinc  | 232        | 173        | 291        |  |  |  |  |  |  |  | <5      | mg/kg  | TM30/PM62     |
| Nitrate as NO3 <sup>#M</sup>  | -          | -          | -          |  |  |  |  |  |  |  | <2.5    | mg/kg  | TM38/PM60     |
| Ortho Phosphate as PO4  | -          | -          | -          |  |  |  |  |  |  |  | <0.3    | mg/kg  | TM38/PM60     |
| Sulphate as SO4 (2:1 Ext) <sup>#M</sup>                                 | -          | -          | -          |  |  |  |  |  |  |  | <0.0015 | g/l    | TM38/PM60     |
| Asbestos PCOM Quantification*   | -          | -          | -          |  |  |  |  |  |  |  | <0.001  | mass % | Subcontracted |

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 13/4471

## SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

## WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory. It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

## DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

## SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

## NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.



**ABBREVIATIONS and ACRONYMS USED**

|     |  |
|-----|--|
| #   | UKAS accredited.   |
| B   | Indicates analyte found in associated method blank.  |
| DR  | Dilution required.   |
| M   | MCERTS accredited.   |
| NA  | Not applicable   |
| NAD | No Asbestos Detected.  |
| ND  | None Detected (usually refers to VOC and/SVOC TICs).   |
| NDP | No Determination Possible  |
| SS  | Calibrated against a single substance.   |
| SV  | Surrogate recovery outside performance criteria. This may be due to a matrix effect.                       |
| W   | Results expressed on as received basis.  |
| +   | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++  | Result outside calibration range, results should be considered as indicative only and are not accredited.  |
| *   | Analysis subcontracted to a Jones Environmental approved laboratory.                                       |
| CO  | Suspected carry over   |
| OC  | Outside Calibration Range  |
| NFD | No Fibres Detected   |

**JE Job No** 13/4471

[illegible]



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## **Appendix C – Asbestos Air Monitoring Results**

| Air Sampling & Fibre Counting |  |           |            |            |                                 |                     |                 | Lucion Report No.                |                                | 24276                          |                              |                          |             |            |                                       |   |
|-------------------------------|--|-----------|------------|------------|---------------------------------|---------------------|-----------------|----------------------------------|--------------------------------|--------------------------------|------------------------------|--------------------------|-------------|------------|---------------------------------------|---|
| Air Volume Correction Detail  |  |           |            |            | Microscope & Calculation Detail |                     |                 |                                  |                                |                                |                              |                          |             |            |                                       |   |
| Sample No. Range              | Date   | T Cal (K) | T Site (C) | Pcal (hPa) | Psite (hPa)                     | Correction Required | Sample No.Range | Date                             | Micro No.                      | Graticule Dia (µm)             | Test Slide Result (Grid No.) | Filter Dia. Exposed (mm) | Field Blank | Sampled By | Counted By                            |   |
| 10-16                         | 2013/04/25   | 293       | 11.9       | 1014       | 1023                            | None                | 10-16           | 2013/04/25                       | MS34                           | 100                            | 7                            | 22.5                     | n/a         | AWY        | AWY                                   |   |
| Instrument Detail             |  |           |            |            |                                 |                     |                 |                                  |                                |                                |                              |                          |             |            |                                       |   |
| Thermo                        | WS40   | Baro      | WS40       | Flow (Hi)  | FM78                            | Flow (Low)          | FM82            | Timepiece                        | WS40                           | HSE/NPL                        | 5739                         |                          | Grat Slide  | SM30       |                                       |   |
| Sample Detail                 |  |           |            |            |                                 |                     |                 |                                  |                                |                                |                              |                          |             |            |                                       |   |
| Sample No.                    | Sample Location                                    | Test Code | Head No.   | Pump No.   | Time On (hh:mm)                 | Time Off (hh:mm)    | Run Time (mins) | Start Flow (lmin <sup>-1</sup> ) | Int Flow (lmin <sup>-1</sup> ) | End Flow (lmin <sup>-1</sup> ) | Calc. Volume (l)             | Corr. Volume (l)         | Fibres      | Fields     | Calc. Conc. (Fibresml <sup>-1</sup> ) | Report. Conc. (Fibresml <sup>-1</sup> ) |
| 24276-10                      | Adjacent construction waste stockpile during works | R         | H202       | SP113      | 10:12                           | 10:45               | 33              | 16                               |                                | 16                             | 528                          | 528                      | 1           | 200        | 0.000                                 | <0.01                                   |
| 24276-11                      | Adjacent construction waste stockpile during works | R         | H199       | SP82       | 10:13                           | 10:46               | 33              | 16                               |                                | 16                             | 528                          | 528                      | 2           | 200        | 0.001                                 | <0.01                                   |
| 24276-12                      | Adjacent construction waste stockpile during works | R         | H116       | SP77       | 10:14                           | 10:47               | 33              | 16                               |                                | 16                             | 528                          | 528                      | 1           | 200        | 0.000                                 | <0.01                                   |
| 24276-13                      | Personal on C.Guy in digger cabin during works     | P         | H79        | PP33       | 10:15                           | 11:19               | 64              | 2                                |                                | 2                              | 128                          | 128                      | 3           | 200        | 0.006                                 | <0.01                                   |
| 24276-14                      | Adjacent construction waste stockpile during works | R         | H199       | SP113      | 10:50                           | 11:20               | 30              | 16                               |                                | 16                             | 480                          | 480                      | 4           | 200        | 0.002                                 | <0.01                                   |
| 24276-15                      | Adjacent construction waste stockpile during works | R         | H116       | SP82       | 10:51                           | 11:21               | 30              | 16                               |                                | 16                             | 480                          | 480                      | 2           | 200        | 0.001                                 | <0.01                                   |
| 24276-16                      | Adjacent construction waste stockpile during works | R         | H130       | SP77       | 10:52                           | 11:22               | 30              | 16                               |                                | 16                             | 480                          | 480                      | 2           | 200        | 0.001                                 | <0.01                                   |
|                               |  |           |            |            |                                 |                     |                 |                                  |                                |                                |                              |                          |             |            |                                       |   |
|                               |  |           |            |            |                                 |                     |                 |                                  |                                |                                |                              |                          |             |            |                                       |   |
|                               |  |           |            |            |                                 |                     |                 |                                  |                                |                                |                              |                          |             |            |                                       |   |
|                               |  |           |            |            |                                 |                     |                 |                                  |                                |                                |                              |                          |             |            |                                       |   |
|                               |  |           |            |            |                                 |                     |                 |                                  |                                |                                |                              |                          |             |            |                                       |   |

This air sampling report and count sheet is only valid when accompanied by a Lucion report bearing an authorised signature. Where calculated fibre concentration is below the limit of quantification of the method and sample volume (V) is less than 480 litres and/or less than 200 graticule areas (N) have been examined; the reportable concentration will be given as (96000 / (V x N)) x 0.010.

## AIR MONITORING REPORT

|   |  |
|---|--|
| This certificate is for attention of      | Dan Collins, SLR Consulting Ltd,<br>19 Hollingsworth Court, Turkey Mill,<br>Ashford Road, Maidstone,<br>ME14 5PP   |
| Site Address                              | Moorwell Waste Facility,<br>St Mary's Island,<br>Isles of Scilly   |
| Work Area / Description of Works          | Investigation into the nature of stockpiled waste materials  |
| Asbestos Removal Contractor               | N/A  |
| Contractor Representative On Site         | Dan Collins  |
| Outcome of Test Results                   | Airborne fibre levels are below 0.01f/cm <sup>3</sup> - this is below the limit of detection of the method employed  |
| Lucion Environmental Ltd Test Report No.  | 24276  |
| Report Issue Date                         | 2013/04/24   |
| Lucion Analyst(s) on Site                 | Mr Adam Yates Analyst  |
| Lucion Analyst(s) Authorised Signature(s) |   |

**Sampling & Evaluation Methods**

In-house methods TOP02.08 & TOP02.09 in accordance with HSG 248 – Asbestos: The Analyst's Guide For Sampling, Analysis and Clearance Procedures H.S.E. 2005.

**Notes:** The samples referred to in this report will be retained for 6 months unless requested otherwise. Unless otherwise stated, there are no departures from the sampling and evaluation methods specified. Results detailed in this report relate only to the time, and corresponding conditions prevailing, when the sampling and examination were undertaken.

**Notes to Test Accuracy:**

Airflow measured on site is recorded against a correction chart.

Flow meters are calibrated against a UKAS certified master flow meter accurate to  $\pm 0.5\%$ .

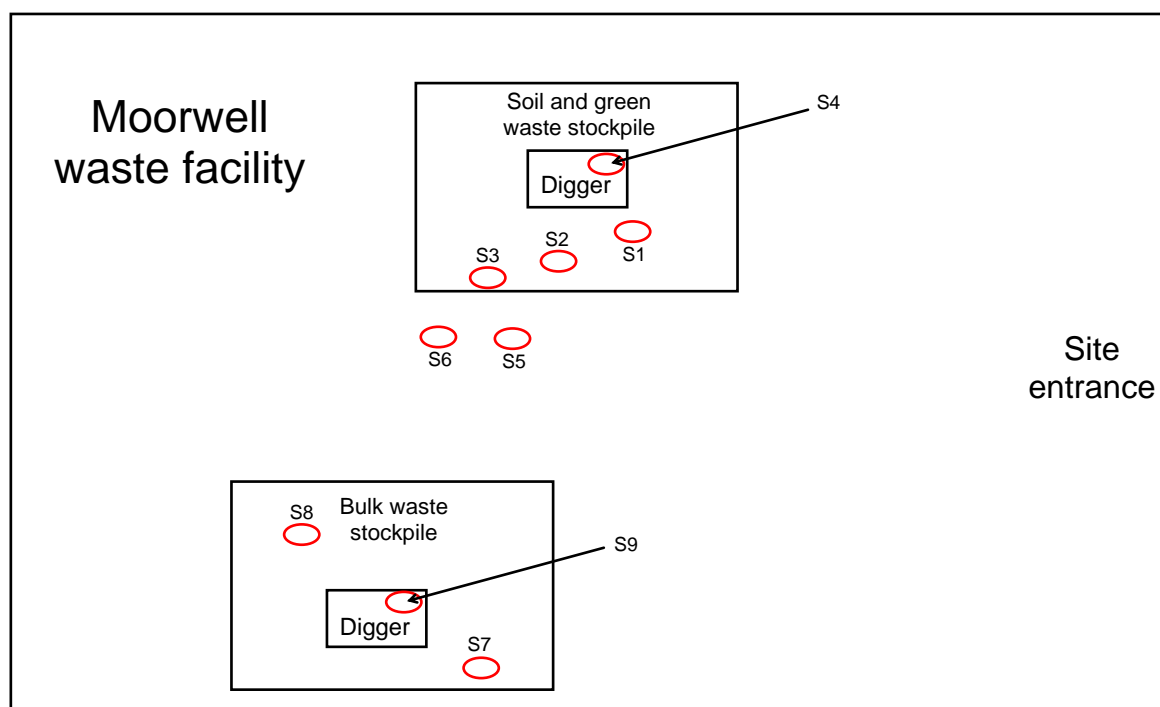
In accordance with HSG248, if the combined effect of ambient temperature and pressure between calibration and sampling location exceeds 5% a correction is applied to the air sample volume. The calculated fibre concentration is given for each air sample taken. Where the corresponding reported fibre concentration is preceded by "<", the lower limit of quantification (LOQ) of the method has not been reached. For a 480 litre air sample with 200 graticule areas counted, the (LOQ) of this method is 0.010 fibres per ml of air; samples of less volume/graticules will be reported to a lower LOQ (refer count sheet).

While counting randomly distributed fibres, an expected degree of variation of 1.5 standard deviations from the mean count may occur. At clearance indicator level (0.01 fibres per ml of air) a 480-litre air sample yielding a count of 20 fibres over 200 fields would have an expected standard deviation of  $\pm 8$  fibres.

Any opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This certificate is valid only when it bears the signature of an authorised member of Lucion personnel. Unsigned copy certificates are retained by Lucion. Refer Lucion Count Sheet Attached For Test Results

| Report Attachment Summary   | Yes | No | Details |  |
|---|-----|----|---------|--|
| A sampling plan is attached to this report                          | ✓   |    |         |  |
| Photograph(s) are attached to this report                           |     | ✗  | Photo 1 |  |
|   |     |    | Photo 2 |  |
|   |     |    | Photo 3 |  |
|   |     |    | Photo 4 |  |
| An additional statement from the analyst is attached to this report |     | ✗  |         |  |

## Sampling Plan





The above sampling plan is NOT to scale and is intended for the purposes of showing approximate locations of air samples as reported overleaf.

## Additional Comments



## AIR MONITORING REPORT

|   |  |
|---|--|
| This certificate is for attention of      | Dan Collins, SLR Consulting Ltd,<br>19 Hollingsworth Court, Turkey Mill,<br>Ashford Road, Maidstone,<br>ME14 5PP   |
| Site Address                              | Moorwell Waste Facility,<br>St Mary's Island,<br>Isles of Scilly   |
| Work Area / Description of Works          | Investigation into the nature of stockpiled waste materials  |
| Asbestos Removal Contractor               | N/A  |
| Contractor Representative On Site         | Dan Collins  |
| Outcome of Test Results                   | Airborne fibre levels are below 0.01f/cm <sup>3</sup> - this is below the limit of detection of the method employed  |
| Lucion Environmental Ltd Test Report No.  | 24276  |
| Report Issue Date                         | 2013/04/25   |
| Lucion Analyst(s) on Site                 | Mr Adam Yates Analyst  |
| Lucion Analyst(s) Authorised Signature(s) |   |

**Sampling & Evaluation Methods**

In-house methods TOP02.08 & TOP02.09 in accordance with HSG 248 – Asbestos: The Analyst's Guide For Sampling, Analysis and Clearance Procedures H.S.E. 2005.

**Notes:** The samples referred to in this report will be retained for 6 months unless requested otherwise. Unless otherwise stated, there are no departures from the sampling and evaluation methods specified. Results detailed in this report relate only to the time, and corresponding conditions prevailing, when the sampling and examination were undertaken.

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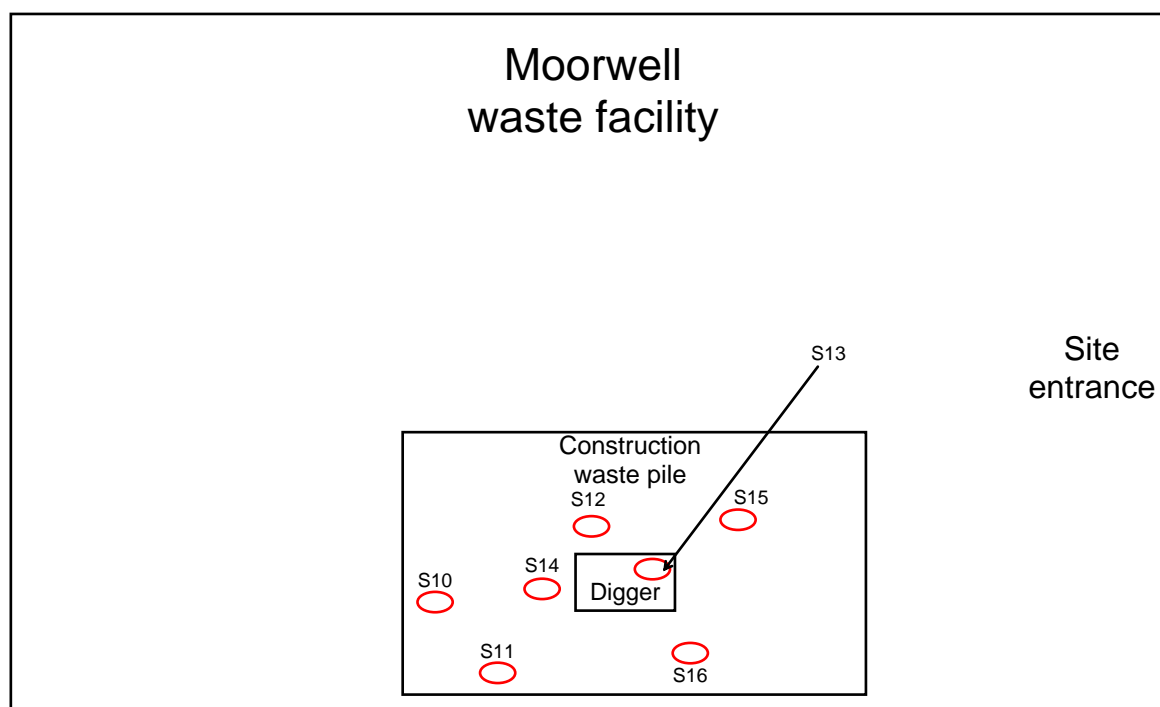
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| Report Attachment Summary   | Yes | No | Details |  |
|---|-----|----|---------|--|
| A sampling plan is attached to this report                          | ✓   |    |         |  |
| Photograph(s) are attached to this report                           |     | ✗  | Photo 1 |  |
|   |     |    | Photo 2 |  |
|   |     |    | Photo 3 |  |
|   |     |    | Photo 4 |  |
| An additional statement from the analyst is attached to this report |     | ✗  |         |  |

## Sampling Plan



The above sampling plan is NOT to scale and is intended for the purposes of showing approximate locations of air samples as reported overleaf.

## Additional Comments

| Air Sampling & Fibre Counting |  |           |            |            |                                 |                     |                 | Lucion Report No.                |                                | 24276                          |                              |                          |             |            |                                       |   |
|-------------------------------|--|-----------|------------|------------|---------------------------------|---------------------|-----------------|----------------------------------|--------------------------------|--------------------------------|------------------------------|--------------------------|-------------|------------|---------------------------------------|---|
| Air Volume Correction Detail  |  |           |            |            | Microscope & Calculation Detail |                     |                 |                                  |                                |                                |                              |                          |             |            |                                       |   |
| Sample No. Range              | Date   | T Cal (K) | T Site (C) | Pcal (hPa) | Psite (hPa)                     | Correction Required | Sample No.Range | Date                             | Micro No.                      | Graticule Dia (µm)             | Test Slide Result (Grid No.) | Filter Dia. Exposed (mm) | Field Blank | Sampled By | Counted By                            |   |
| 1-9                           | 2013/04/24   | 293       | 14.1       | 1014       | 1026                            | None                | 1-9             | 2013/04/24                       | MS34                           | 100                            | 7                            | 22.5                     | n/a         | AWY        | AWY                                   |   |
| Instrument Detail             |  |           |            |            |                                 |                     |                 |                                  |                                |                                |                              |                          |             |            |                                       |   |
| Thermo                        | WS40   | Baro      | WS40       | Flow (Hi)  | FM78                            | Flow (Low)          | FM82            | Timepiece                        | WS40                           | HSE/NPL                        | 5739                         |                          | Grat Slide  | SM30       |                                       |   |
| Sample Detail                 |  |           |            |            |                                 |                     |                 |                                  |                                |                                |                              |                          |             |            |                                       |   |
| Sample No.                    | Sample Location                                      | Test Code | Head No.   | Pump No.   | Time On (hh:mm)                 | Time Off (hh:mm)    | Run Time (mins) | Start Flow (lmin <sup>-1</sup> ) | Int Flow (lmin <sup>-1</sup> ) | End Flow (lmin <sup>-1</sup> ) | Calc. Volume (l)             | Corr. Volume (l)         | Fibres      | Fields     | Calc. Conc. (Fibresml <sup>-1</sup> ) | Report. Conc. (Fibresml <sup>-1</sup> ) |
| 24276-1                       | Adjacent soil and green waste stockpile during works | R         | H202       | SP113      | 13:28                           | 14:02               | 34              | 16                               |                                | 16                             | 544                          | 544                      | 2           | 200        | 0.001                                 | <0.01                                   |
| 24276-2                       | Adjacent soil and green waste stockpile during works | R         | H199       | SP82       | 13:29                           | 14:03               | 34              | 16                               |                                | 16                             | 544                          | 544                      | 2           | 200        | 0.001                                 | <0.01                                   |
| 24276-3                       | Adjacent soil and green waste stockpile during works | R         | H130       | SP77       | 13:30                           | 14:04               | 34              | 16                               |                                | 16                             | 544                          | 544                      | 1           | 200        | 0.000                                 | <0.01                                   |
| 24276-4                       | Personal on C.Guy in digger cabin during works       | P         | H116       | PP33       | 13:31                           | 14:47               | 76              | 2                                |                                | 2                              | 152                          | 152                      | 3.5         | 200        | 0.006                                 | <0.03                                   |
| 24276-5                       | Adjacent soil and greenwaste stockpile during works  | R         | H202       | SP113      | 14:12                           | 14:43               | 31              | 16                               |                                | 16                             | 496                          | 496                      | 1           | 200        | 0.001                                 | <0.01                                   |
| 24276-6                       | Adjacent soil and greenwaste stockpile during works  | R         | H79        | SP82       | 14:13                           | 14:44               | 31              | 16                               |                                | 16                             | 496                          | 496                      | 0.5         | 200        | 0.000                                 | <0.01                                   |
| 24276-7                       | Adjacent bulk waste stockpile during works           | R         | H116       | SP113      | 15:33                           | 16:09               | 36              | 16                               |                                | 16                             | 576                          | 576                      | 4           | 200        | 0.002                                 | <0.01                                   |
| 24276-8                       | Adjacent bulk waste stockpile during works           | R         | H79        | SP77       | 15:34                           | 16:10               | 36              | 16                               |                                | 16                             | 576                          | 576                      | 2           | 200        | 0.001                                 | <0.01                                   |
| 24276-9                       | Personal on C.Guy in digger cabin during works       | P         | H          | PP33       | 15:35                           | 16:48               | 73              | 2                                |                                | 2                              | 146                          | 146                      | 4.5         | 200        | 0.008                                 | <0.02                                   |
|                               |  |           |            |            |                                 |                     |                 |                                  |                                |                                |                              |                          |             |            |                                       |   |
|                               |  |           |            |            |                                 |                     |                 |                                  |                                |                                |                              |                          |             |            |                                       |   |
|                               |  |           |            |            |                                 |                     |                 |                                  |                                |                                |                              |                          |             |            |                                       |   |

This air sampling report and count sheet is only valid when accompanied by a Lucion report bearing an authorised signature. Where calculated fibre concentration is below the limit of quantification of the method and sample volume (V) is less than 480 litres and/or less than 200 graticule areas (N) have been examined; the reportable concentration will be given as  $(96000 / (V \times N)) \times 0.010$ .

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## **Appendix D – Laboratory Analysis – Groundwater**



## Jones Environmental Laboratory

Unit 3 Deeside Point  
Zone 3  
Deeside Industrial Park  
Deeside  
CH5 2UA

SLR Consulting Ltd  
19 Hollingworth Court  
Turkey Mill  
Maidstone  
ME14 5PP

Tel: +44 (0) 1244 833780  
Fax: +44 (0) 1244 833781



No.4225

|                                |  |
|--------------------------------|--|
| <b>Attention :</b>             | Dan Collins                            |
| <b>Date :</b>                  | 30th May, 2013                         |
| <b>Your reference :</b>        | 402.0341.00017                         |
| <b>Our reference :</b>         | Test Report 13/4471 Batch 1 Schedule B |
| <b>Location :</b>              | MOORWELL                               |
| <b>Date samples received :</b> | 11th May, 2013                         |
| <b>Status :</b>                | Final report                           |
| <b>Issue :</b>                 | 1                                      |

Twenty three samples were received for analysis on 11th May, 2013. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

### Compiled By:

**Jamie Williams B.Sc**  
**Project Co-ordinator**

**Bob Millward B.Sc**  
**Principal Chemist**

# **Jones Environmental Laboratory**

**Client Name:** SLR Consulting Ltd  
**Reference:** 402.0341.00017  
**Location:** MOORWELL  
**Contact:** Dan Collins  
**JE Job No.:** 13/4471

**Report : Liquid**

**Liquids/products:** V=40ml vial, G=glass bottle, P=plastic bottle  
H=H<sub>2</sub>SO<sub>4</sub>, Z=ZnAc, N=NaOH, HN=HN0<sub>3</sub>

| J E Sample No.                      | 32-34        | 35-37        | 38-40        |  |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |            |
|-------------------------------------|--------------|--------------|--------------|--|--|--|--|--|--|--|--|-------|------------|
| Sample ID                           | BHL          | BHK          | BHM          |  |  |  |  |  |  |  |  |       |            |
| Depth                               |              |              |              |  |  |  |  |  |  |  |  |       |            |
| COC No / misc                       |              |              |              |  |  |  |  |  |  |  |  |       |            |
| Containers                          | V G          | V G          | V G          |  |  |  |  |  |  |  |  |       |            |
| Sample Date                         | 25/04/2013   | 25/04/2013   | 25/04/2013   |  |  |  |  |  |  |  |  |       |            |
| Sample Type                         | Ground Water | Ground Water | Ground Water |  |  |  |  |  |  |  |  |       |            |
| Batch Number                        | 1            | 1            | 1            |  |  |  |  |  |  |  |  |       |            |
| Date of Receipt                     | 11/05/2013   | 11/05/2013   | 11/05/2013   |  |  |  |  |  |  |  | LOD  | Units | Method No. |
| Dissolved Aluminium #               | <0.0015      | 0.0198       | <0.0015      |  |  |  |  |  |  |  | <0.0015  | mg/l  | TM30/PM14  |
| Dissolved Antimony #                | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002   | mg/l  | TM30/PM14  |
| Dissolved Arsenic #                 | 0.0076       | 0.0079       | 0.0066       |  |  |  |  |  |  |  | <0.0009  | mg/l  | TM30/PM14  |
| Dissolved Barium #                  | 0.0176       | 0.0190       | 0.0254       |  |  |  |  |  |  |  | <0.0018  | mg/l  | TM30/PM14  |
| Dissolved Beryllium                 | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM30/PM14  |
| Dissolved Boron                     | 0.138        | 0.204        | 0.286        |  |  |  |  |  |  |  | <0.002   | mg/l  | TM30/PM14  |
| Dissolved Cadmium #                 | <0.00003     | <0.00003     | <0.00003     |  |  |  |  |  |  |  | <0.00003   | mg/l  | TM30/PM14  |
| Total Dissolved Chromium #          | 0.0009       | 0.0008       | 0.0009       |  |  |  |  |  |  |  | <0.0002  | mg/l  | TM30/PM14  |
| Dissolved Cobalt #                  | <0.0001      | 0.0008       | 0.0002       |  |  |  |  |  |  |  | <0.0001  | mg/l  | TM30/PM14  |
| Dissolved Copper #                  | <0.003       | <0.003       | 0.009        |  |  |  |  |  |  |  | <0.003   | mg/l  | TM30/PM14  |
| Total Dissolved Iron #              | 0.0396       | 0.0892       | <0.0047      |  |  |  |  |  |  |  | <0.0047  | mg/l  | TM30/PM14  |
| Dissolved Lead #                    | 0.0056       | 0.0047       | 0.0069       |  |  |  |  |  |  |  | <0.0004  | mg/l  | TM30/PM14  |
| Dissolved Manganese #               | 0.6769       | 0.3789       | 0.1641       |  |  |  |  |  |  |  | <0.0015  | mg/l  | TM30/PM14  |
| Dissolved Mercury #                 | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM30/PM14  |
| Dissolved Molybdenum #              | 0.0065       | 0.0096       | 0.0117       |  |  |  |  |  |  |  | <0.0002  | mg/l  | TM30/PM14  |
| Dissolved Nickel #                  | 0.0008       | <0.0002      | 0.0014       |  |  |  |  |  |  |  | <0.0002  | mg/l  | TM30/PM14  |
| Dissolved Phosphorus #              | 0.0092       | 0.0034       | 0.0054       |  |  |  |  |  |  |  | <0.0007  | mg/l  | TM30/PM14  |
| Dissolved Selenium #                | <0.0012      | <0.0012      | <0.0012      |  |  |  |  |  |  |  | <0.0012  | mg/l  | TM30/PM14  |
| Dissolved Vanadium #                | <0.0006      | <0.0006      | <0.0006      |  |  |  |  |  |  |  | <0.0006  | mg/l  | TM30/PM14  |
| Dissolved Zinc #                    | 0.0159       | 0.0077       | 0.0792       |  |  |  |  |  |  |  | <0.0015  | mg/l  | TM30/PM14  |
| Total Hardness Dissolved (as CaCO3) | 290          | 207          | 95           |  |  |  |  |  |  |  | <1   | mg/l  | TM30/PM0   |
| <b>Pesticides MS</b>                |              |              |              |  |  |  |  |  |  |  |  |       |            |
| <b>Organochlorine Pesticides</b>    |              |              |              |  |  |  |  |  |  |  |  |       |            |
| Aldrin                              | <0.00001     | <0.00001     | <0.00001     |  |  |  |  |  |  |  | <0.00001   | mg/l  | TM42/PM30  |
| Alpha-BHC                           | <0.00001     | <0.00001     | <0.00001     |  |  |  |  |  |  |  | <0.00001   | mg/l  | TM42/PM30  |
| Beta-BHC                            | <0.00001     | <0.00001     | <0.00001     |  |  |  |  |  |  |  | <0.00001   | mg/l  | TM42/PM30  |
| Dieldrin                            | <0.00001     | <0.00001     | <0.00001     |  |  |  |  |  |  |  | <0.00001   | mg/l  | TM42/PM30  |
| Endosulphan I                       | <0.00001     | <0.00001     | <0.00001     |  |  |  |  |  |  |  | <0.00001   | mg/l  | TM42/PM30  |
| Endosulphan II                      | <0.00001     | <0.00001     | <0.00001     |  |  |  |  |  |  |  | <0.00001   | mg/l  | TM42/PM30  |
| Endosulphan sulphate                | <0.00001     | <0.00001     | <0.00001     |  |  |  |  |  |  |  | <0.00001   | mg/l  | TM42/PM30  |
| Endrin                              | <0.00001     | <0.00001     | <0.00001     |  |  |  |  |  |  |  | <0.00001   | mg/l  | TM42/PM30  |
| Gamma-BHC                           | <0.00001     | <0.00001     | <0.00001     |  |  |  |  |  |  |  | <0.00001   | mg/l  | TM42/PM30  |
| Heptachlor                          | <0.00001     | <0.00001     | <0.00001     |  |  |  |  |  |  |  | <0.00001   | mg/l  | TM42/PM30  |
| Heptachlor Epoxide                  | <0.00001     | <0.00001     | <0.00001     |  |  |  |  |  |  |  | <0.00001   | mg/l  | TM42/PM30  |
| p,p'-DDE                            | <0.00001     | <0.00001     | <0.00001     |  |  |  |  |  |  |  | <0.00001   | mg/l  | TM42/PM30  |
| p,p'-DDT                            | <0.00001     | <0.00001     | <0.00001     |  |  |  |  |  |  |  | <0.00001   | mg/l  | TM42/PM30  |
| p,p'-TDE                            | <0.00001     | <0.00001     | <0.00001     |  |  |  |  |  |  |  | <0.00001   | mg/l  | TM42/PM30  |
| Total Methoxychlor                  | <0.00001     | <0.00001     | <0.00001     |  |  |  |  |  |  |  | <0.00001   | mg/l  | TM42/PM30  |



**Client Name:** SLR Consulting Ltd  
**Reference:** 402.0341.00017  
**Location:** MOORWELL  
**Contact:** Dan Collins  
**JE Job No.:** 13/4471

**Liquids/products:** V=40ml vial, G=glass bottle, P=plastic bottle  
H=H<sub>2</sub>SO<sub>4</sub>, Z=ZnAc, N=NaOH, HN=HNO<sub>3</sub>

Please see attached notes for all abbreviations and acronyms

Client Name: SLR Consulting Ltd

SVOC Report : Liquid

Reference: 402.0341.00017

Location: MOORWELL

Contact: Dan Collins

JE Job No.: 13/4471

| J E Sample No.              | 32-34        | 35-37        | 38-40        |  |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |            |
|-----------------------------|--------------|--------------|--------------|--|--|--|--|--|--|--|--|-------|------------|
| Sample ID                   | BHL          | BHK          | BHM          |  |  |  |  |  |  |  |  |       |            |
| Depth                       |              |              |              |  |  |  |  |  |  |  |  |       |            |
| COC No / misc               |              |              |              |  |  |  |  |  |  |  |  |       |            |
| Containers                  | V G          | V G          | V G          |  |  |  |  |  |  |  |  |       |            |
| Sample Date                 | 25/04/2013   | 25/04/2013   | 25/04/2013   |  |  |  |  |  |  |  |  |       |            |
| Sample Type                 | Ground Water | Ground Water | Ground Water |  |  |  |  |  |  |  |  |       |            |
| Batch Number                | 1            | 1            | 1            |  |  |  |  |  |  |  |  |       |            |
| Date of Receipt             | 11/05/2013   | 11/05/2013   | 11/05/2013   |  |  |  |  |  |  |  | LOD  | Units | Method No. |
| <b>SVOC MS</b>              |              |              |              |  |  |  |  |  |  |  |  |       |            |
| <b>Phenols</b>              |              |              |              |  |  |  |  |  |  |  |  |       |            |
| 2-Chlorophenol #            | <0.001       | <0.001       | <0.001       |  |  |  |  |  |  |  | <0.001   | mg/l  | TM16/PM30  |
| 2-Methylphenol #            | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM16/PM30  |
| 2-Nitrophenol #             | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM16/PM30  |
| 2,4-Dichlorophenol #        | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM16/PM30  |
| 2,4-Dimethylphenol          | <0.01        | <0.01        | <0.01        |  |  |  |  |  |  |  | <0.01  | mg/l  | TM16/PM30  |
| 2,4,5-Trichlorophenol #     | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM16/PM30  |
| 2,4,6-Trichlorophenol       | <0.01        | <0.01        | <0.01        |  |  |  |  |  |  |  | <0.01  | mg/l  | TM16/PM30  |
| 4-Chloro-3-methylphenol #   | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM16/PM30  |
| 4-Methylphenol              | <0.01        | <0.01        | <0.01        |  |  |  |  |  |  |  | <0.01  | mg/l  | TM16/PM30  |
| 4-Nitrophenol               | <0.01        | <0.01        | <0.01        |  |  |  |  |  |  |  | <0.01  | mg/l  | TM16/PM30  |
| Pentachlorophenol           | <0.01        | <0.01        | <0.01        |  |  |  |  |  |  |  | <0.01  | mg/l  | TM16/PM30  |
| Phenol                      | <0.01        | <0.01        | <0.01        |  |  |  |  |  |  |  | <0.01  | mg/l  | TM16/PM30  |
| <b>PAHs</b>                 |              |              |              |  |  |  |  |  |  |  |  |       |            |
| 2-Chloronaphthalene #       | <0.001       | <0.001       | <0.001       |  |  |  |  |  |  |  | <0.001   | mg/l  | TM16/PM30  |
| 2-Methylnaphthalene #       | <0.001       | <0.001       | <0.001       |  |  |  |  |  |  |  | <0.001   | mg/l  | TM16/PM30  |
| Naphthalene #               | <0.001       | <0.001       | <0.001       |  |  |  |  |  |  |  | <0.001   | mg/l  | TM16/PM30  |
| Acenaphthylene #            | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM16/PM30  |
| Acenaphthene #              | <0.001       | <0.001       | <0.001       |  |  |  |  |  |  |  | <0.001   | mg/l  | TM16/PM30  |
| Fluorene #                  | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM16/PM30  |
| Phenanthrene #              | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM16/PM30  |
| Anthracene #                | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM16/PM30  |
| Fluoranthene #              | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM16/PM30  |
| Pyrene #                    | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM16/PM30  |
| Benzo(a)anthracene #        | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM16/PM30  |
| Chrysene #                  | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM16/PM30  |
| Benzo(bk)fluoranthene #     | <0.001       | <0.001       | <0.001       |  |  |  |  |  |  |  | <0.001   | mg/l  | TM16/PM30  |
| Benzo(a)pyrene              | <0.01        | <0.01        | <0.01        |  |  |  |  |  |  |  | <0.01  | mg/l  | TM16/PM30  |
| Indeno(123cd)pyrene         | <0.01        | <0.01        | <0.01        |  |  |  |  |  |  |  | <0.01  | mg/l  | TM16/PM30  |
| Dibenzo(ah)anthracene #     | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM16/PM30  |
| Benzo(ghi)perylene #        | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005  | mg/l  | TM16/PM30  |
| <b>Phthalates</b>           |              |              |              |  |  |  |  |  |  |  |  |       |            |
| Bis(2-ethylhexyl) phthalate | <0.01        | <0.01        | <0.01        |  |  |  |  |  |  |  | <0.01  | mg/l  | TM16/PM30  |
| Butylbenzyl phthalate       | <0.01        | <0.01        | <0.01        |  |  |  |  |  |  |  | <0.01  | mg/l  | TM16/PM30  |
| Di-n-butyl phthalate #      | <0.0015      | <0.0015      | <0.0015      |  |  |  |  |  |  |  | <0.0015  | mg/l  | TM16/PM30  |
| Di-n-Octyl phthalate        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |  |  | <0.01  | mg/l  | TM16/PM30  |
| Diethyl phthalate #         | <0.001       | <0.001       | <0.001       |  |  |  |  |  |  |  | <0.001   | mg/l  | TM16/PM30  |
| Dimethyl phthalate          | <0.01        | <0.01        | <0.01        |  |  |  |  |  |  |  | <0.01  | mg/l  | TM16/PM30  |

**Client Name:** SLR Consulting Ltd  
**Reference:** 402.0341.00017  
**Location:** MOORWELL  
**Contact:** Dan Collins  
**JE Job No.:** 13/4471

Please see attached notes for all abbreviations and acronyms

QF-PM 3.1.3 v10

# Jones Environmental Laboratory

**Client Name:** SLR Consulting Ltd  
**Reference:** 402.0341.00017  
**Location:** MOORWELL  
**Contact:** Dan Collins  
**JE Job No.:** 13/4471

**VOC Report :** Liquid

| J E Sample No.   | 32-34        | 35-37        | 38-40        |  |  |  |  |  |  |  |         |       |            |
|--|--------------|--------------|--------------|--|--|--|--|--|--|--|---------|-------|------------|
| Sample ID  | BHL          | BHK          | BHM          |  |  |  |  |  |  |  |         |       |            |
| Depth  |              |              |              |  |  |  |  |  |  |  |         |       |            |
| COC No / misc  |              |              |              |  |  |  |  |  |  |  |         |       |            |
| Containers   | V G          | V G          | V G          |  |  |  |  |  |  |  |         |       |            |
| Sample Date  | 25/04/2013   | 25/04/2013   | 25/04/2013   |  |  |  |  |  |  |  |         |       |            |
| Sample Type  | Ground Water | Ground Water | Ground Water |  |  |  |  |  |  |  |         |       |            |
| Batch Number   | 1            | 1            | 1            |  |  |  |  |  |  |  |         |       |            |
| Date of Receipt  | 11/05/2013   | 11/05/2013   | 11/05/2013   |  |  |  |  |  |  |  |         |       |            |
|  |              |              |              |  |  |  |  |  |  |  | LOD     | Units | Method No. |
| Please see attached notes for all abbreviations and acronyms |              |              |              |  |  |  |  |  |  |  |         |       |            |
| <b>VOC MS</b>  |              |              |              |  |  |  |  |  |  |  |         |       |            |
| Dichlorodifluoromethane                                      | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| Methyl Tertiary Butyl Ether #                                | <0.0001      | <0.0001      | <0.0001      |  |  |  |  |  |  |  | <0.0001 | mg/l  | TM15/PM10  |
| Chloromethane #  | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| Vinyl Chloride   | <0.0001      | <0.0001      | <0.0001      |  |  |  |  |  |  |  | <0.0001 | mg/l  | TM15/PM10  |
| Bromomethane   | <0.001       | <0.001       | <0.001       |  |  |  |  |  |  |  | <0.001  | mg/l  | TM15/PM10  |
| Chloroethane #   | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| Trichlorofluoromethane #                                     | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| 1,1-Dichloroethene (1,1 DCE) #                               | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| Dichloromethane (DCM) #                                      | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| trans-1-2-Dichloroethene #                                   | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| 1,1-Dichloroethane #   | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| cis-1-2-Dichloroethene #                                     | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| 2,2-Dichloropropane  | <0.001       | <0.001       | <0.001       |  |  |  |  |  |  |  | <0.001  | mg/l  | TM15/PM10  |
| Bromochloromethane #   | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| Chloroform #   | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| 1,1,1-Trichloroethane #                                      | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| 1,1-Dichloropropene #  | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| Carbon tetrachloride #                                       | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| 1,2-Dichloroethane #   | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| Benzene #  | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005 | mg/l  | TM15/PM10  |
| Trichloroethene (TCE) #                                      | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| 1,2-Dichloropropane #  | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| Dibromomethane #   | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| Bromodichloromethane #                                       | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| cis-1-3-Dichloropropene                                      | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| Toluene #  | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005 | mg/l  | TM15/PM10  |
| trans-1-3-Dichloropropene                                    | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| 1,1,2-Trichloroethane #                                      | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| Tetrachloroethene (PCE) #                                    | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| 1,3-Dichloropropane #  | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| Dibromochloromethane #                                       | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| 1,2-Dibromoethane #  | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| Chlorobenzene #  | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| 1,1,1,2-Tetrachloroethane #                                  | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| Ethylbenzene #   | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005 | mg/l  | TM15/PM10  |
| p/m-Xylene #   | <0.001       | <0.001       | <0.001       |  |  |  |  |  |  |  | <0.001  | mg/l  | TM15/PM10  |
| o-Xylene #   | <0.0005      | <0.0005      | <0.0005      |  |  |  |  |  |  |  | <0.0005 | mg/l  | TM15/PM10  |
| Styrene  | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| Bromoform #  | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| Isopropylbenzene #   | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| 1,1,2,2-Tetrachloroethane                                    | <0.004       | <0.004       | <0.004       |  |  |  |  |  |  |  | <0.004  | mg/l  | TM15/PM10  |
| Bromobenzene #   | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| 1,2,3-Trichloropropane #                                     | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| Propylbenzene #  | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| 2-Chlorotoluene #  | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| 1,3,5-Trimethylbenzene #                                     | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| 4-Chlorotoluene #  | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| tert-Butylbenzene #  | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| 1,2,4-Trimethylbenzene #                                     | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| sec-Butylbenzene #   | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| 4-Isopropyltoluene #   | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| 1,3-Dichlorobenzene #  | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| 1,4-Dichlorobenzene #  | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| n-Butylbenzene #   | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| 1,2-Dichlorobenzene #  | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| 1,2-Dibromo-3-chloropropane                                  | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| 1,2,4-Trichlorobenzene                                       | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| Hexachlorobutadiene  | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| Naphthalene  | <0.002       | <0.002       | <0.002       |  |  |  |  |  |  |  | <0.002  | mg/l  | TM15/PM10  |
| 1,2,3-Trichlorobenzene                                       | <0.003       | <0.003       | <0.003       |  |  |  |  |  |  |  | <0.003  | mg/l  | TM15/PM10  |
| Surrogate Recovery Toluene D8                                | 84           | 94           | 93           |  |  |  |  |  |  |  | <0      | %     | TM15/PM10  |
| Surrogate Recovery 4-Bromofluorobenzene                      | 95           | 105          | 99           |  |  |  |  |  |  |  | <0      | %     | TM15/PM10  |

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# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 13/4471

## SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

## WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory. It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

## DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

## SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

## NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

**ABBREVIATIONS and ACRONYMS USED**

|     |  |
|-----|--|
| #   | UKAS accredited.   |
| B   | Indicates analyte found in associated method blank.  |
| DR  | Dilution required.   |
| M   | MCERTS accredited.   |
| NA  | Not applicable   |
| NAD | No Asbestos Detected.  |
| ND  | None Detected (usually refers to VOC and/SVOC TICs).   |
| NDP | No Determination Possible  |
| SS  | Calibrated against a single substance.   |
| SV  | Surrogate recovery outside performance criteria. This may be due to a matrix effect.                       |
| W   | Results expressed on as received basis.  |
| +   | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++  | Result outside calibration range, results should be considered as indicative only and are not accredited.  |
| *   | Analysis subcontracted to a Jones Environmental approved laboratory.                                       |
| CO  | Suspected carry over   |
| OC  | Outside Calibration Range  |
| NFD | No Fibres Detected   |

**JE Job No** 13/4471

[illegible]



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## **Appendix E – Generic Assessment Criteria**

**SLR VERSION 4b. 'GENERIC ASSESSMENT CRITERIA' (mg/kg)**

| Chemical                        | GAC Source      | SOM | Residential with plant uptake | Residential without plant uptake | Allotments | Commercial/ Industrial |
|---------------------------------|-----------------|-----|-------------------------------|----------------------------------|------------|------------------------|
| METALS                          |                 |     |                               |                                  |            |                        |
| Arsenic                         | SGV (2009)      |     | 32                            | 35                               | 43         | 640                    |
| Mercury – Inorganic (Elemental) | SGV (2009)      |     | 170 (1.0)                     | 240                              | 80 (26)    | 3,600 (26)             |
| Nickel                          | SGV (2009)      |     | 130                           | 130                              | 230        | 1,800                  |
| Selenium                        | SGV (2009)      |     | 350                           | 600                              | 120        | 13,000                 |
| Cadmium                         | SGV (2009)      |     | 10                            | 18                               | 1.8        | 230                    |
| Lead                            | SLR             |     | 290                           | 340                              | 250        | 5,700                  |
| Chromium (VI)                   | LQM/CIEH (2009) |     | 4.3                           |                                  | 2.1        | 35                     |
| Chromium (III)                  |                 |     | 3,000                         |                                  | 35,000     | 30,000                 |
| Copper                          | LQM/CIEH (2009) |     | 2,330                         |                                  | 524        | 72,000                 |
| Zinc                            | LQM/CIEH (2009) |     | 3,750                         |                                  | 618        | 670,000                |
| Vanadium                        | LQM/CIEH (2009) |     | 75                            |                                  | 18         | 3,200                  |
| Beryllium                       | LQM/CIEH (2009) |     | 51                            |                                  | 55         | 420                    |
| Boron                           | LQM/CIEH (2009) |     | 291                           |                                  | 45         | 192,000                |
| ORGANICS                        |                 |     |                               |                                  |            |                        |
| Phenol                          | SGV (2009)      | 1%  | 180                           | 310                              | 66         | 3,200 <sup>#</sup>     |
|                                 |                 | 3%  | 320                           | 440                              | 160        |                        |
|                                 |                 | 6%  | 420                           | 520                              | 280        |                        |
| BTEX COMPOUNDS                  |                 |     |                               |                                  |            |                        |
| Benzene                         | SGV (2009)      | 1%  | 0.079                         | 0.27                             | 0.017      | 28                     |
|                                 |                 | 3%  | 0.18                          | 0.56                             | 0.04       | 57                     |
|                                 |                 | 6%  | 0.33                          | 1.0                              | 0.07       | 95                     |
| Toluene                         | SGV (2009)      | 1%  | 119                           | 607                              | 22         | 869                    |
|                                 |                 | 3%  | 319                           | 1,510                            | 61         | 2,300                  |
|                                 |                 | 6%  | 610                           | 2,710                            | 120        | 4,400                  |
| Ethylbenzenes                   | SGV (2009)      | 1%  | 65                            | 167                              | 16         | 518                    |
|                                 |                 | 3%  | 183                           | 451                              | 46         | 1,500                  |
|                                 |                 | 6%  | 350                           | 843                              | 90         | 2,800                  |

| Chemical                         | GAC Source      | SOM  | Residential with plant uptake | Residential without plant uptake | Allotments | Commercial/ Industrial |
|----------------------------------|-----------------|------|-------------------------------|----------------------------------|------------|------------------------|
| Xylene                           | SGV (2009)      | 1%   | 42                            | 53                               | 29         | 576                    |
|                                  |                 | 3%   | 117                           | 148                              | 83         | 1,610                  |
|                                  |                 | 6%   | 230                           | 288                              | 160        | 2,600                  |
| POLYCYCLIC AROMATIC HYDROCARBONS |                 |      |                               |                                  |            |                        |
| Threshold Toxicity PAHs          |                 |      |                               |                                  |            |                        |
| Acenaphthene                     | LQM/CIEH (2009) | 1%   | 210                           |                                  | 34         | ≥5,000*                |
|                                  |                 | 2.5% | 480                           |                                  | 85         |                        |
|                                  |                 | 6%   | 1000                          |                                  | 200        |                        |
| Acenaphthylene                   | LQM/CIEH (2009) | 1%   | 170                           |                                  | 28         | ≥5,000*                |
|                                  |                 | 2.5% | 400                           |                                  | 69         |                        |
|                                  |                 | 6%   | 850                           |                                  | 160        |                        |
| Anthracene                       | LQM/CIEH (2009) | 1%   | 2,300                         |                                  | 380        | ≥5,000*                |
|                                  |                 | 2.5% | 4,900                         |                                  | 950        |                        |
|                                  |                 | 6%   | 9,200                         |                                  | 2,200      |                        |
| Fluoranthene                     | LQM/CIEH (2009) | 1%   | 260                           |                                  | 52         | ≥5,000*                |
|                                  |                 | 2.5% | 460                           |                                  | 130        |                        |
|                                  |                 | 6%   | 670                           |                                  | 290        |                        |
| Fluorene                         | LQM/CIEH (2009) | 1%   | 160                           |                                  | 27         | ≥5,000*                |
|                                  |                 | 2.5% | 380                           |                                  | 67         |                        |
|                                  |                 | 6%   | 780                           |                                  | 160        |                        |
| Naphthalene                      | SLR             | 1%   | 10                            | 16                               | 4.1        | 76                     |
|                                  |                 | 3%   | 29                            | 45                               | 12         | 219                    |
|                                  |                 | 6%   | 56                            | 87                               | 23         | 432                    |
| Phenanthrene                     | LQM/CIEH (2009) | 1%   | 92                            |                                  | 16         | ≥5,000*                |
|                                  |                 | 2.5% | 200                           |                                  | 38         |                        |
|                                  |                 | 6%   | 380                           |                                  | 90         |                        |
| Pyrene                           | LQM/CIEH (2009) | 1%   | 560                           |                                  | 110        | ≥5,000*                |
|                                  |                 | 2.5% | 1,000                         |                                  | 270        |                        |
|                                  |                 | 6%   | 1,600                         |                                  | 620        |                        |
| Non-threshold Toxicity PAHs      |                 |      |                               |                                  |            |                        |
| Benz(a)anthracene                | LQM/CIEH (2009) | 1%   | 3.1                           |                                  | 2.5        | 90                     |
|                                  |                 | 2.5% | 4.7                           |                                  | 5.5        | 95                     |
|                                  |                 | 6%   | 5.9                           |                                  | 10         | 97                     |
| Benzo(a)Pyrene                   | SLR             | 1%   | 1                             | 1                                | 1.1        | 14                     |
|                                  |                 | 3%   |                               |                                  | 1.6        |                        |
|                                  |                 | 6%   |                               |                                  | 1.8        |                        |
| Benzo(b)fluoranthene             | LQM/CIEH (2009) | 1%   | 5.6                           |                                  | 3.5        |                        |
|                                  |                 | 2.5% | 6.5                           |                                  | 7.4        | 100                    |
|                                  |                 | 6%   | 7.0                           |                                  | 13         |                        |

| Chemical             | GAC Source      | SOM  | Residential with plant uptake | Residential without plant uptake | Allotments | Commercial/ Industrial |
|----------------------|-----------------|------|-------------------------------|----------------------------------|------------|------------------------|
| Benzo(k)fluoranthene | LQM/CIEH (2009) | 1%   | 10                            |                                  | 6.8        | 140                    |
|                      |                 | 2.5% |                               |                                  | 14         |                        |
|                      |                 | 6%   |                               |                                  | 23         |                        |
| Benzo(ghi)perylene   | LQM/CIEH (2009) | 1%   | 44                            |                                  | 70         | 650                    |
|                      |                 | 2.5% | 46                            |                                  | 120        |                        |
|                      |                 | 6%   | 47                            |                                  | 160        |                        |
| Chrysene             | LQM/CIEH (2009) | 1%   | 6.0                           |                                  | 2.6        | 140                    |
|                      |                 | 2.5% | 8.0                           |                                  | 5.8        |                        |
|                      |                 | 6%   | 9.3                           |                                  | 12         |                        |
| Dibenz(ah)anthracene | LQM/CIEH (2009) | 1%   | 1                             |                                  | 0.8        | 13                     |
|                      |                 | 2.5% |                               |                                  | 1.5        |                        |
|                      |                 | 6%   |                               |                                  | 2.3        |                        |
| Indeno(123-cd)pyrene | LQM/CIEH (2009) | 1%   | 3.2                           |                                  | 1.8        | 60                     |
|                      |                 | 2.5% | 3.9                           |                                  | 3.8        |                        |
|                      |                 | 6%   | 4.2                           |                                  | 7.1        |                        |

#### PETROLEUM HYDROCARBON FRACTIONS

|                    |                 |    |          |          |          |          |
|--------------------|-----------------|----|----------|----------|----------|----------|
| Aliphatic EC 5-6   | MVDC/SLR (2009) | 1% | 62       | 62       | ≥800*    | 300      |
|                    |                 | 3% | 130      | 131      |          | 632      |
|                    |                 | 6% | 233      | 234      |          | ≥800*    |
| Aliphatic EC>6-8   | MVDC/SLR (2009) | 1% | 150      | 150      | ≥800*    | 150      |
|                    |                 | 3% | 400      | 400      |          | 400      |
|                    |                 | 6% | 770      | 770      |          | 770      |
| Aliphatic EC>8-10  | MVDC/SLR (2009) | 1% | 38       | 39       | 664      | 82       |
|                    |                 | 3% | 111      | 112      | ≥800*    | 240      |
|                    |                 | 6% | 219      | 220      |          | 480      |
| Aliphatic EC>10-12 | MVDC/SLR (2009) | 1% | 50       | 50       | ≥800*    | 50       |
|                    |                 | 3% | 150      | 150      |          | 150      |
|                    |                 | 6% | 300      | 300      |          | 300      |
| Aliphatic EC>12-16 | MVDC/SLR (2009) | 1% | 1,250    | 1,250    | 2,060    | ≥5,000*  |
|                    |                 | 3% | 2,920    | 2,930    | ≥3,500*  |          |
|                    |                 | 6% | ≥3,500*  | ≥3,500*  |          |          |
| Aliphatic EC>16-35 | MVDC/SLR (2009) |    | ≥3,500*  | ≥3,500*  | ≥3,500*  | ≥5,000*  |
| Aliphatic EC>35-44 | MVDC/SLR (2009) |    | ≥10,000* | ≥10,000* | ≥10,000* | ≥10,000* |

| Chemical                      | GAC Source      | SOM | Residential with plant uptake | Residential without plant uptake | Allotments | Commercial/Industrial |
|-------------------------------|-----------------|-----|-------------------------------|----------------------------------|------------|-----------------------|
| Aromatic EC>8-10              | MVDC/SLR (2009) | 1%  | 37                            | 43                               | 42         | 620                   |
|                               |                 | 3%  | 109                           | 125                              | 125        | ≥800*                 |
|                               |                 | 6%  | 214                           | 245                              | 248        |                       |
| Aromatic EC>10-12             | MVDC/SLR (2009) | 1%  | 83.1                          | 218                              | 19         | 370                   |
|                               |                 | 3%  | 234                           | 557                              | 56         | ≥800*                 |
|                               |                 | 6%  | 431                           | ≥800*                            | 112        |                       |
| Aromatic EC>12-16             | MVDC/SLR (2009) | 1%  | 197                           | 1,560                            | 34         | ≥5,000*               |
|                               |                 | 3%  | 513                           | 2,150                            | 101        |                       |
|                               |                 | 6%  | 858                           | 2,370                            | 199        |                       |
| Aromatic EC>16-21             | MVDC/SLR (2009) | 1%  | 541                           | 2,650                            | 102        | ≥5,000*               |
|                               |                 | 3%  | 1,150                         |                                  | 297        |                       |
|                               |                 | 6%  | 1,600                         |                                  | 574        |                       |
| Aromatic EC>21-35             | MVDC/SLR (2009) | 1%  | 1,770                         | 2,670                            | 745        | ≥5,000*               |
|                               |                 | 3%  | 2,270                         |                                  | 1,900      |                       |
|                               |                 | 6%  | 2,450                         |                                  | 3,100      |                       |
| Aromatic EC>35-44             | MVDC/SLR (2009) | 1%  | 1,780                         | 2,670                            | 747        | ≥10,000*              |
|                               |                 | 3%  | 2,280                         |                                  | 1,900      |                       |
|                               |                 | 6%  | 2,450                         |                                  | 3,100      |                       |
| Aliphatic & Aromatic EC>44-70 | MVDC/SLR (2009) | 1%  | 2,360                         | 2,670                            | 2,360      | ≥10,000*              |
|                               |                 | 3%  | 2,550                         |                                  | ≥10,000*   |                       |
|                               |                 | 6%  | 2,600                         |                                  |            |                       |

**Notes:**

1. Generic assessment criteria in mg/kg dry weight in soil
2. SGV - Soil Guideline Value reports, EA 2009. Refer to relevant "SGV" or "Tox" report for further details
3. Based on sandy loam soil as defined in CLEA report
4. Chromium is assumed to be all Chromium (VI)
5. No GAC is pH influenced
6. SLR – Version 4a 'SLR in-house criteria' produced using CLEA model (v1.04)
7. SOM – Soil Organic Matter Content
8. 500 – Health based criteria generated using the CLEA model v1.04 are considerably higher than these values; the values reported are theoretical soil saturation limits, particularly where vapour pathway is critical for volatile contaminants
9. \* – Health based criteria generated using the CLEA model v1.04 are considerably higher than these values, the values reported are based on Canadian 'management limits' for petroleum hydrocarbons in fine grained soils (CCME, 2008). The management limit for CCME fraction 1 (800 mg/kg) is adopted for petrol range organics (PRO); the management limits for fraction 3 are adopted for DRO, i.e. 3,500 mg/kg for agricultural/residential land use and 5,000 mg/kg for commercial/industrial; and the management limit for fraction 4 (10,000 mg/kg) is adopted for EC>35. CCME management limits are based on free phase formation, exposure of workers in trenches, fire and explosive hazards, effects on buried infrastructure, aesthetic considerations and technological factors.
10. # - SGV based on phenol concentration potentially corrosive to skin

This table constitutes the fourth release (i.e. Version 4) of 'generic assessment criteria' (GAC) to be used by SLR staff for screening purposes in the generic quantitative risk assessment of potentially contaminated land. The values contained in the table are comprised of:

- Revised 'Soil Guideline Values' (SGVs) published to date by the Environment Agency during 2009;
- Generic Assessment Criteria published by Land Quality Management and the Chartered Institute of Environmental Health (LQM/CIEH, 2009); and
- SLR-generated values, derived using the CLEA v1.04 model (released by the Environment Agency in January 2009).

'SLR' values have been generated following the approaches recommended in the CLEA Report (EA, 2009a) and associated material (CLEA software Handbook; EA, 2009b) and are therefore based on health criteria values selected following the TOX Guidance Report (EA, 2009c). Physico-chemical input parameters for the CLEA v1.04 model were selected from Environment Agency publications (e.g. previous SGV reports and EA, 2009d), where available, and other authoritative data sources<sup>1</sup>.

It should be noted that a number of the GAC derived by LQM/CIEH and SLR are populated by input parameter values taken from the Agency's SGV and TOX reports published between 2002 and 2005. The Environment Agency is currently undertaking a programme to update these reports, which are due to be reissued throughout 2009. This program is likely to result in changes to the values recommended in the TOX and SGV reports with the effect that published SGVs and re-calculated GACs may be different to the values detailed here. The results of an assessment based on these criteria could therefore be re-evaluated in light of any future changes.

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

GAC for petroleum hydrocarbons have been derived using health criteria, soil vapour saturation limits where inhalation exposure is the critical pathway and the application of CCME management limit values based on criteria including visual aesthetics (e.g. staining of soil), fire and explosive risks, risks to ground workers and technological factors (CCME, 2008).

An additive hazard index approach should also be used for risk assessment of the non-threshold PAHs (i.e. those compounds judged to be genotoxic carcinogens). Threshold effect PAHs with similar health endpoints should also be considered to be additive.

This table of GAC are for use within SLR only and will added to as further SGV/GACs are published by the Environment Agency and LQM/CIEH and values are generated in-

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<sup>1</sup> E.g. CRC Handbook of Chemistry and Physics, IUPAC-NIST Solubility Series and US Environmental Protection Agency.

house for additional contaminants. Future releases will be labelled Version 5, 6....etc. and will supersede all previous versions.

## **References**

Environment Agency (2009a) Updated Technical Background to the CLEA model, Science Report SC050021/SR3. Bristol: Environment Agency.

Environment Agency (2009b) CLEA Software (Version 1.04) Handbook, Science Report SC050021/SR4. Bristol: Environment Agency.

Environment Agency (2009c) Human Health Toxicological Assessment of Contaminants in Soil, Science Report SC050021/SR2. Bristol: Environment Agency.

Environment Agency (2009d) Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values. Science Report SC050021/SR7. Bristol: Environment Agency

CCME (2008) Canada-Wide Standard for Petroleum Hydrocarbons (PHC) in Soil: Scientific Rationale – Supporting Technical Document, PN 1399, ISBN 978-1-896997-77-3. Canadian Council of Ministers of the Environment, January 2008.

LQM/CIEH (2009) The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment (2<sup>nd</sup> Edition). Land Quality Press, Nottingham. ISBN 0-9547474-7-X

Mole Valley District Council and SLR Consulting (2009) Human Health Generic Assessment Criteria for Petroleum Hydrocarbons: Position Paper. Available at <http://www.mole-valley.gov.uk/index.cfm?articleid=562>



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## **Appendix F – Waste Classification Results**

### Job name

Moorwell with moisture contents

### Waste stream

Revised Contaminated Land

### Comments

### Report

Created by: Hills, Toby

Created date: 19/06/2013 15:47

### Job summary

| #  | Sample name | Depth | Classification result | Hazardous properties |
|----|-------------|-------|-----------------------|----------------------|
| 1  | TP101       |       | Non Hazardous         |                      |
| 2  | TP102       |       | Non Hazardous         |                      |
| 3  | TP103       | 3.5   | Non Hazardous         |                      |
| 4  | TP104       |       | Non Hazardous         |                      |
| 5  | TP105       |       | Non Hazardous         |                      |
| 6  | TP106       |       | Non Hazardous         |                      |
| 7  | TP107       | 1     | Non Hazardous         |                      |
| 8  | TP108       |       | Non Hazardous         |                      |
| 9  | TP109       |       | Non Hazardous         |                      |
| 10 | TP110       | 2     | Non Hazardous         |                      |
| 11 | TP111       |       | Non Hazardous         |                      |
| 12 | TP112       |       | Non Hazardous         |                      |
| 13 | TP113       |       | Non Hazardous         |                      |
| 14 | TP114       |       | Non Hazardous         |                      |
| 15 | HP115       |       | Non Hazardous         |                      |
| 16 | HP116       |       | Non Hazardous         |                      |
| 17 | HP117       |       | Non Hazardous         |                      |

## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**TP101**

Site:

Project:

Sample Depth:

**0 m**

Dry Weight Moisture Content:

**5.2%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinand:

Lead compounds (with the exception of those listed separately in this Annex): (0.109%)

## Determinands (Dry Weight Moisture Content: 5.2%)

Arsenic trioxide: (Cation conc. entered: 17.5 mg/kg, converted to compound conc.:21.964 mg/kg or 0.0022%)

Cadmium sulphide: (Cation conc. entered: 5.4 mg/kg, converted to compound conc.:6.597 mg/kg or 0.00066%)

Chromium(III) oxide: (Cation conc. entered: 55.6 mg/kg, converted to compound conc.:77.246 mg/kg or 0.00772%)

Copper (I) oxide: (Cation conc. entered: 837 mg/kg, converted to compound conc.:895.788 mg/kg or 0.0896%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 761 mg/kg, converted to compound conc.:1092.31 mg/kg or 0.109%)

Mercury dichloride: (Cation conc. entered: 1.3 mg/kg, converted to compound conc.:1.673 mg/kg or 0.000167%)

Nickel dihydroxide: (Cation conc. entered: 61.3 mg/kg, converted to compound conc.:92.037 mg/kg or 0.0092%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.426 mg/kg or <0.000143%) **IGNORED Because: "<LOD"**

Zinc oxide: (Cation conc. entered: 1987 mg/kg, converted to compound conc.:2350.995 mg/kg or 0.235%)

Naphthalene: (Whole concentration entered as: <0.04 mg/kg or <0.0000038%) **IGNORED Because: "<LOD"**

Acenaphthylene: (Whole concentration entered as: <0.03 mg/kg or <0.00000285%) **IGNORED Because: "<LOD"**

Acenaphthene: (Whole concentration entered as: <0.05 mg/kg or <0.00000475%) **IGNORED Because: "<LOD"**  
 Fluorene: (Whole concentration entered as: <0.04 mg/kg or <0.0000038%) **IGNORED Because: "<LOD"**  
 Phenanthrene: (Whole concentration entered as: 0.03 mg/kg or 0.00000285%)  
 Anthracene: (Whole concentration entered as: <0.04 mg/kg or <0.0000038%) **IGNORED Because: "<LOD"**  
 Fluoranthene: (Whole concentration entered as: 0.09 mg/kg or 0.00000856%)  
 Pyrene: (Whole concentration entered as: 0.09 mg/kg or 0.00000856%)  
 Benzo[a]anthracene: (Whole concentration entered as: 0.13 mg/kg or 0.0000124%)  
 Chrysene: (Whole concentration entered as: 0.12 mg/kg or 0.0000114%)  
 Benzo[b]fluoranthene: (Whole concentration entered as: 0.18 mg/kg or 0.0000171%)  
 Benzo[k]fluoranthene: (Whole concentration entered as: 0.07 mg/kg or 0.00000665%)  
 Benzo[a]pyrene; benzo[def]chrysene: (Whole concentration entered as: 0.12 mg/kg or 0.0000114%)  
 Indeno[123-cd]pyrene: (Whole concentration entered as: 0.12 mg/kg or 0.0000114%)  
 Dibenz[a,h]anthracene: (Whole concentration entered as: <0.04 mg/kg or <0.0000038%) **IGNORED Because: "<LOD"**  
 Benzo[ghi]perylene: (Whole concentration entered as: 0.11 mg/kg or 0.0000105%)  
 Oils: PAHs (8) as carcinogenic marker for oils: (Whole concentration entered as: 0.61 mg/kg or 0.000058%)  
 tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane: (Whole concentration entered as: <0.005 mg/kg or <0.00000475%) **IGNORED Because: "<LOD"**  
 Benzene: (Whole concentration entered as: <0.005 mg/kg or <0.00000475%) **IGNORED Because: "<LOD"**  
 Toluene: (Whole concentration entered as: <0.005 mg/kg or <0.00000475%) **IGNORED Because: "<LOD"**  
 Ethylbenzene: (Whole concentration entered as: <0.005 mg/kg or <0.00000475%) **IGNORED Because: "<LOD"**  
 Xylene: (Whole concentration entered as: <0.01 mg/kg or <0.00000951%) **IGNORED Because: "<LOD"**  
 Oils: GRO/PRO (C6-C10): (Whole concentration entered as: <0.1 mg/kg or <0.00000951%) **IGNORED Because: "<LOD"**  
 Oils: fuel oils (including DRO, C10-C25): (Whole concentration entered as: <7 mg/kg or <0.000665%) **IGNORED Because: "<LOD"**  
 Oils: non-fuel oils/lubricating oils (>C25): (Whole concentration entered as: <7 mg/kg or <0.000665%) **IGNORED Because: "<LOD"**

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

### Acenaphthylene (CAS Number: 208-96-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=59285&HarmOnly=no>

Data source date: 16/07/2012

Classification: R22, R26, R27, R36, R37, R38

### Acenaphthene (CAS Number: 83-32-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=133563&HarmOnly=no>

Data source date: 16/07/2012

Classification: N; R50/53, N; R51/53, R36, R37, R38

### Fluorene (CAS Number: 86-73-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=81845&HarmOnly=no>

Data source date: 16/07/2012

Classification: N; R50/53, R53

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**Phenanthrene** (CAS Number: 85-01-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=109754&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R22, R36, R37, R38, R40, R43

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**Anthracene** (CAS Number: 120-12-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=101102&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: N; R50/53, R36, R37, R38, R43

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**Fluoranthene** (CAS Number: 206-44-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=56375&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R20, R22, R36

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**Pyrene** (CAS Number: 129-00-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=87484&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R23

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**Indeno[123-cd]pyrene** (CAS Number: 193-39-5)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=128806&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: R40

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

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=15793&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53

---

**Oils: PAHs (8) as carcinogenic marker for oils**

Comments:  
Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency  
Data source date: 29/06/2007  
Classification:

---

**Oils: GRO/PRO (C6-C10)**

Comments:  
Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency  
Data source date: 29/06/2007  
Classification: R65, R45, R49, R51/53

#### Oils: fuel oils (including DRO, C10-C25)

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R40, R51/53

#### Oils: non-fuel oils/lubricating oils (>C25)

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R45, R49, R53

#### Notes utilised in assessment

##### Additional Risk Phrase Comments

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

##### C14.5.5: Step 5

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration. Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Arsenic trioxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Chromium(III) oxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Copper (I) oxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Mercury dichloride"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Nickel dihydroxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Phenanthrene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Fluoranthene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Pyrene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Benzo[a]anthracene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Chrysene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Benzo[b]fluoranthene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Benzo[k]fluoranthene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Benzo[a]pyrene; benzo[def]chrysene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Benzo[ghi]perylene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Cadmium sulphide"

##### C14.5.6: Step 6

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Does the waste contain two or more substances that are classified as dangerous for the environment with aquatic risk phrases? The additive equations are only used where two or more ecotoxic substances are present."

Note used on:

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53"

##### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Cadmium sulphide"

## Substance notes

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

### Note A

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

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

### Note E (Table 3.2)

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

## Version

Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008

1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26 September 2009; binding date 1 Dec 2010

2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30 March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures

3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July 2012; binding date 1 Dec 2013



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HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08  
HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)  
HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)

## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**TP102**

Site:

Project:

Sample Depth:

**0 m**

Dry Weight Moisture Content:

**5.2%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinand:

Lead compounds (with the exception of those listed separately in this Annex): (0.135%)

## Determinands (Dry Weight Moisture Content: 5.2%)

Arsenic trioxide: (Cation conc. entered: 40.6 mg/kg, converted to compound conc.:50.956 mg/kg or 0.0051%)

Cadmium sulphide: (Cation conc. entered: 5.7 mg/kg, converted to compound conc.:6.964 mg/kg or 0.000696%)

Chromium(III) oxide: (Cation conc. entered: 75.4 mg/kg, converted to compound conc.:104.754 mg/kg or 0.0105%)

Copper (I) oxide: (Cation conc. entered: 699 mg/kg, converted to compound conc.:748.095 mg/kg or 0.0748%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 940 mg/kg, converted to compound conc.:1349.24 mg/kg or 0.135%)

Mercury dichloride: (Cation conc. entered: 0.3 mg/kg, converted to compound conc.:0.386 mg/kg or 0.000386%)

Nickel dihydroxide: (Cation conc. entered: 111.8 mg/kg, converted to compound conc.:167.859 mg/kg or 0.0168%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.426 mg/kg or <0.000143%) **IGNORED Because: "<LOD"**

Zinc oxide: (Cation conc. entered: 2085 mg/kg, converted to compound conc.:2466.947 mg/kg or 0.247%)

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

## Notes utilised in assessment

### Additional Risk Phrase Comments

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

### C14.5.5: Step 5

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration.

Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Arsenic trioxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Chromium(III) oxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Copper (I) oxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Mercury dichloride"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Nickel dihydroxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Cadmium sulphide"

### C14.5.6: Step 6

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Does the waste contain two or more substances that are classified as dangerous for the environment with aquatic risk phrases? The additive equations are only used where two or more ecotoxic substances are present."

Note used on:

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53"

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Cadmium sulphide"

## Substance notes

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

### Note A

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

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

### Note E (Table 3.2)

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

## Version

Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008  
1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26 September 2009; binding date 1 Dec 2010

2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30 March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures

3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July 2012; binding date 1 Dec 2013

HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08

HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)

HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)

## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**TP103**

Site:

Project:

Sample Depth:

**3.5 m**

Dry Weight Moisture Content:

**5.2%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinands:

Lead compounds (with the exception of those listed separately in this Annex): (0.0538%)

PCBs/PCTs: (0.0000057%)

## Determinands (Dry Weight Moisture Content: 5.2%)

Arsenic trioxide: (Cation conc. entered: 14.8 mg/kg, converted to compound conc.:18.575 mg/kg or 0.00186%)

Cadmium sulphide: (Cation conc. entered: 3.1 mg/kg, converted to compound conc.:3.787 mg/kg or 0.000379%)

Chromium(III) oxide: (Cation conc. entered: 27.1 mg/kg, converted to compound conc.:37.65 mg/kg or 0.00377%)

Copper (I) oxide: (Cation conc. entered: 1038 mg/kg, converted to compound conc.:1110.905 mg/kg or 0.111%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 375 mg/kg, converted to compound conc.:538.26 mg/kg or 0.0538%)

Mercury dichloride: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.257 mg/kg or 0.0000257%)

Nickel dihydroxide: (Cation conc. entered: 46.3 mg/kg, converted to compound conc.:69.516 mg/kg or 0.00695%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.426 mg/kg or <0.000143%) **IGNORED Because: "<LOD"**

Zinc oxide: (Cation conc. entered: 957 mg/kg, converted to compound conc.:1132.311 mg/kg or 0.113%)

Naphthalene: (Whole concentration entered as: <0.04 mg/kg or <0.0000038%) **IGNORED Because: "<LOD"**

Acenaphthylene: (Whole concentration entered as: <0.03 mg/kg or <0.00000285%) **IGNORED Because: "<LOD"**  
 Acenaphthene: (Whole concentration entered as: <0.05 mg/kg or <0.00000475%) **IGNORED Because: "<LOD"**  
 Fluorene: (Whole concentration entered as: <0.04 mg/kg or <0.0000038%) **IGNORED Because: "<LOD"**  
 Phenanthrene: (Whole concentration entered as: 0.07 mg/kg or 0.00000665%)  
 Anthracene: (Whole concentration entered as: <0.04 mg/kg or <0.0000038%) **IGNORED Because: "<LOD"**  
 Fluoranthene: (Whole concentration entered as: 0.32 mg/kg or 0.0000304%)  
 Pyrene: (Whole concentration entered as: 0.28 mg/kg or 0.0000266%)  
 Benzo[a]anthracene: (Whole concentration entered as: 0.35 mg/kg or 0.0000333%)  
 Chrysene: (Whole concentration entered as: 0.31 mg/kg or 0.0000295%)  
 Benzo[b]fluoranthene: (Whole concentration entered as: 0.48 mg/kg or 0.0000456%)  
 Benzo[k]fluoranthene: (Whole concentration entered as: 0.18 mg/kg or 0.0000171%)  
 Benzo[a]pyrene; benzo[def]chrysene: (Whole concentration entered as: 0.42 mg/kg or 0.0000399%)  
 Indeno[123-cd]pyrene: (Whole concentration entered as: 0.29 mg/kg or 0.0000276%)  
 Dibenzo[a,h]anthracene: (Whole concentration entered as: 0.07 mg/kg or 0.00000665%)  
 Benzo[ghi]perylene: (Whole concentration entered as: 0.26 mg/kg or 0.0000247%)  
 Oils: PAHs (8) as carcinogenic marker for oils: (Whole concentration entered as: 1.75 mg/kg or 0.000166%)  
 tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane: (Whole concentration entered as: <0.005 mg/kg or <0.00000475%) **IGNORED Because: "<LOD"**  
 Benzene: (Whole concentration entered as: <0.005 mg/kg or <0.00000475%) **IGNORED Because: "<LOD"**  
 Toluene: (Whole concentration entered as: <0.005 mg/kg or <0.00000475%) **IGNORED Because: "<LOD"**  
 Ethylbenzene: (Whole concentration entered as: <0.005 mg/kg or <0.00000475%) **IGNORED Because: "<LOD"**  
 Xylene: (Whole concentration entered as: <0.01 mg/kg or <0.00000951%) **IGNORED Because: "<LOD"**  
 Oils: GRO/PRO (C6-C10): (Whole concentration entered as: <0.1 mg/kg or <0.00000951%) **IGNORED Because: "<LOD"**  
 Oils: fuel oils (including DRO, C10-C25): (Whole concentration entered as: 187 mg/kg or 0.0178%)  
 Oils: non-fuel oils/lubricating oils (>C25): (Whole concentration entered as: 187 mg/kg or 0.0178%)  
 PCBs/PCTs: (Whole concentration entered as: 0.06 mg/kg or 0.0000057%)

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

### Acenaphthylene (CAS Number: 208-96-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=59285&HarmOnly=no>

Data source date: 16/07/2012

Classification: R22, R26, R27, R36, R37, R38

### Acenaphthene (CAS Number: 83-32-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=133563&HarmOnly=no>

Data source date: 16/07/2012

Classification: N; R50/53, N; R51/53, R36, R37, R38

### Fluorene (CAS Number: 86-73-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=81845&HarmOnly=no>

Data source date: 16/07/2012

Classification: N; R50/53, R53

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**Phenanthrene** (CAS Number: 85-01-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=109754&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R22, R36, R37, R38, R40, R43

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**Anthracene** (CAS Number: 120-12-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=101102&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: N; R50/53, R36, R37, R38, R43

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**Fluoranthene** (CAS Number: 206-44-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=56375&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R20, R22, R36

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**Pyrene** (CAS Number: 129-00-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=87484&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R23

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**Indeno[123-cd]pyrene** (CAS Number: 193-39-5)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=128806&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: R40

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

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=15793&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53

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**Oils: PAHs (8) as carcinogenic marker for oils**

Comments:  
Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency  
Data source date: 29/06/2007  
Classification:

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**Oils: GRO/PRO (C6-C10)**

Comments:  
Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency  
Data source date: 29/06/2007  
Classification: R65, R45, R49, R51/53



#### Oils: fuel oils (including DRO, C10-C25)

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R40, R51/53

#### Oils: non-fuel oils/lubricating oils (>C25)

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R45, R49, R53

#### Notes utilised in assessment

##### Additional Risk Phrase Comments

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "Additional on R33" for determinand: "PCBs/PCTs"

##### C14.5.5: Step 5

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration.

Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Arsenic trioxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Chromium(III) oxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Mercury dichloride"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Nickel dihydroxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Phenanthrene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Fluoranthene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Pyrene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Benzo[a]anthracene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Chrysene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Benzo[b]fluoranthene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Benzo[k]fluoranthene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Benzo[a]pyrene; benzo[def]chrysene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Dibenz[a,h]anthracene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Benzo[ghi]perylene"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "PCBs/PCTs"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Oils: fuel oils (including DRO, C10-C25)"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Oils: non-fuel oils/lubricating oils (>C25)"

##### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Cadmium sulphide"

## Substance notes

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

### Note A

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

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

### Note C

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "PCBs/PCTs"

### Note E (Table 3.2)

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

---

## Version

### Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008  
1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26 September 2009; binding date 1 Dec 2010  
2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30 March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures  
3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July 2012; binding date 1 Dec 2013

HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08

HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)

HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)

## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**TP104**

Site:

Project:

Sample Depth:

**0 m**

Dry Weight Moisture Content:

**0%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinand:

Lead compounds (with the exception of those listed separately in this Annex): (0.213%)

## Determinands (Dry Weight Moisture Content: 0%)

Arsenic trioxide: (Cation conc. entered: 10.6 mg/kg, converted to compound conc.:13.995 mg/kg or 0.0014%)

Cadmium sulphide: (Cation conc. entered: 0.7 mg/kg, converted to compound conc.:0.9 mg/kg or 0.00009%)

Chromium(III) oxide: (Cation conc. entered: 29 mg/kg, converted to compound conc.:42.385 mg/kg or 0.00424%)

Copper (I) oxide: (Cation conc. entered: 126 mg/kg, converted to compound conc.:141.862 mg/kg or 0.0142%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 1408 mg/kg, converted to compound conc.:2126.08 mg/kg or 0.213%)

Mercury dichloride: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.271 mg/kg or 0.0000271%)

Nickel dihydroxide: (Cation conc. entered: 23.5 mg/kg, converted to compound conc.:37.118 mg/kg or 0.00371%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.5 mg/kg or <0.00015%) **IGNORED Because: "<LOD"**

Zinc oxide: (Cation conc. entered: 767 mg/kg, converted to compound conc.:954.696 mg/kg or 0.0955%)

Naphthalene: (Whole concentration entered as: <0.04 mg/kg or <0.000004%) **IGNORED Because: "<LOD"**

Acenaphthylene: (Whole concentration entered as: <0.03 mg/kg or <0.000003%) **IGNORED Because: "<LOD"**

Acenaphthene: (Whole concentration entered as: <0.05 mg/kg or <0.000005%) **IGNORED Because: "<LOD"**  
 Fluorene: (Whole concentration entered as: <0.04 mg/kg or <0.000004%) **IGNORED Because: "<LOD"**  
 Phenanthrene: (Whole concentration entered as: 0.07 mg/kg or 0.000007%)  
 Anthracene: (Whole concentration entered as: <0.04 mg/kg or <0.000004%) **IGNORED Because: "<LOD"**  
 Fluoranthene: (Whole concentration entered as: 0.15 mg/kg or 0.000015%)  
 Pyrene: (Whole concentration entered as: 0.14 mg/kg or 0.000014%)  
 Benzo[a]anthracene: (Whole concentration entered as: 0.14 mg/kg or 0.000014%)  
 Chrysene: (Whole concentration entered as: 0.14 mg/kg or 0.000014%)  
 Benzo[b]fluoranthene: (Whole concentration entered as: 0.19 mg/kg or 0.000019%)  
 Benzo[k]fluoranthene: (Whole concentration entered as: 0.08 mg/kg or 0.000008%)  
 Benzo[a]pyrene; benzo[def]chrysene: (Whole concentration entered as: 0.14 mg/kg or 0.000014%)  
 Indeno[123-cd]pyrene: (Whole concentration entered as: 0.1 mg/kg or 0.00001%)  
 Dibenz[a,h]anthracene: (Whole concentration entered as: <0.04 mg/kg or <0.000004%) **IGNORED Because: "<LOD"**  
 Benzo[ghi]perylene: (Whole concentration entered as: 0.11 mg/kg or 0.000011%)  
 Oils: PAHs (8) as carcinogenic marker for oils: (Whole concentration entered as: 0.65 mg/kg or 0.000065%)  
 tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane: (Whole concentration entered as: <0.005 mg/kg or <0.000005%) **IGNORED Because: "<LOD"**  
 Benzene: (Whole concentration entered as: <0.005 mg/kg or <0.000005%) **IGNORED Because: "<LOD"**  
 Toluene: (Whole concentration entered as: <0.005 mg/kg or <0.000005%) **IGNORED Because: "<LOD"**  
 Ethylbenzene: (Whole concentration entered as: <0.005 mg/kg or <0.000005%) **IGNORED Because: "<LOD"**  
 Xylene: (Whole concentration entered as: <0.01 mg/kg or <0.000001%) **IGNORED Because: "<LOD"**  
 Oils: GRO/PRO (C6-C10): (Whole concentration entered as: <0.1 mg/kg or <0.00001%) **IGNORED Because: "<LOD"**  
 Oils: fuel oils (including DRO, C10-C25): (Whole concentration entered as: 114 mg/kg or 0.0114%)  
 Oils: non-fuel oils/lubricating oils (>C25): (Whole concentration entered as: 114 mg/kg or 0.0114%)  
 Cyanides (with the exception of complex cyanides): (Whole concentration entered as: <0.5 mg/kg or <0.00005%)  
**IGNORED Because: "<LOD"**

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

### Acenaphthylene (CAS Number: 208-96-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=59285&HarmOnly=no>

Data source date: 16/07/2012

Classification: R22, R26, R27, R36, R37, R38

### Acenaphthene (CAS Number: 83-32-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=133563&HarmOnly=no>

Data source date: 16/07/2012

Classification: N; R50/53, N; R51/53, R36, R37, R38

### Fluorene (CAS Number: 86-73-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=81845&HarmOnly=no>

Data source date: 16/07/2012

Classification: N; R50/53, R53

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**Phenanthrene** (CAS Number: 85-01-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=109754&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R22, R36, R37, R38, R40, R43

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**Anthracene** (CAS Number: 120-12-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=101102&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: N; R50/53, R36, R37, R38, R43

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**Fluoranthene** (CAS Number: 206-44-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=56375&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R20, R22, R36

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**Pyrene** (CAS Number: 129-00-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=87484&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R23

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**Indeno[123-cd]pyrene** (CAS Number: 193-39-5)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=128806&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: R40

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

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=15793&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53

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**Oils: PAHs (8) as carcinogenic marker for oils**

Comments:  
Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency  
Data source date: 29/06/2007  
Classification:

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**Oils: GRO/PRO (C6-C10)**

Comments:  
Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency  
Data source date: 29/06/2007  
Classification: R65, R45, R49, R51/53



#### **Oils: fuel oils (including DRO, C10-C25)**

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R40, R51/53

#### **Oils: non-fuel oils/lubricating oils (>C25)**

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R45, R49, R53

#### **Notes utilised in assessment**

##### **Additional Risk Phrase Comments**

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

##### **C14.5.5: Step 5**

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration. Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Oils: non-fuel oils/lubricating oils (>C25)"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chromium(III) oxide"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Mercury dichloride"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc oxide"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Phenanthrene"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Fluoranthene"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Pyrene"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]anthracene"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chrysene"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[b]fluoranthene"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[k]fluoranthene"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]pyrene; benzo[def]chrysene"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[ghi]perylene"  
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Oils: fuel oils (including DRO, C10-C25)"

##### **C14.5.6: Step 6**

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Does the waste contain two or more substances that are classified as dangerous for the environment with aquatic risk phrases? The additive equations are only used where two or more ecotoxic substances are present."

Note used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53"

##### **Note 1**

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"



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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

## Substance notes

### Note 1

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

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

Note used on:

determinand: "Cadmium sulphide"

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

### Note A

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

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

Note used on:

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

### Note E (Table 3.2)

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

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

## Version

Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008

1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26 September 2009; binding date 1 Dec 2010

2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30 March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures

3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July 2012; binding date 1 Dec 2013

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HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08  
HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)  
HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)

## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**TP105**

Site:

Project:

Sample Depth:

**0 m**

Dry Weight Moisture Content:

**0%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinands:

Lead compounds (with the exception of those listed separately in this Annex): (0.0222%)

PCBs/PCTs: (0.000006%)

## Determinands (Dry Weight Moisture Content: 0%)

Arsenic trioxide: (Cation conc. entered: 13.1 mg/kg, converted to compound conc.:17.296 mg/kg or 0.00173%)

Cadmium sulphide: (Cation conc. entered: 0.6 mg/kg, converted to compound conc.:0.771 mg/kg or 0.0000771%)

Chromium(III) oxide: (Cation conc. entered: 12.6 mg/kg, converted to compound conc.:18.416 mg/kg or 0.00184%)

Copper (I) oxide: (Cation conc. entered: 72 mg/kg, converted to compound conc.:81.064 mg/kg or 0.00811%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 147 mg/kg, converted to compound conc.:221.97 mg/kg or 0.0222%)

Mercury dichloride: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.135 mg/kg or <0.0000135%)

**IGNORED Because: "<LOD"**

Nickel dihydroxide: (Cation conc. entered: 13 mg/kg, converted to compound conc.:20.533 mg/kg or 0.00205%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.5 mg/kg or <0.00015%) **IGNORED Because: "<LOD"**

Zinc oxide: (Cation conc. entered: 193 mg/kg, converted to compound conc.:240.23 mg/kg or 0.024%)

Cyanides (with the exception of complex cyanides): (Whole concentration entered as: <0.5 mg/kg or <0.00005%)

**IGNORED Because: "<LOD"**

PCBs/PCTs: (Whole concentration entered as: 0.06 mg/kg or 0.000006%)

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

## Notes utilised in assessment

### Additional Risk Phrase Comments

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "Additional on R33" for determinand: "PCBs/PCTs"

### C14.5.5: Step 5

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration.

Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chromium(III) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "PCBs/PCTs"

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

## Substance notes

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

#### **Note A**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

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

#### **Note C**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "PCBs/PCTs"

#### **Note E (Table 3.2)**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

#### **Version**

Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008  
1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26 September 2009; binding date 1 Dec 2010

2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30 March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures

3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July 2012; binding date 1 Dec 2013

HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08

HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)

HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)

## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**TP106**

Site:

Project:

Sample Depth:

**0 m**

Dry Weight Moisture Content:

**24.4%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinands:

Lead compounds (with the exception of those listed separately in this Annex): (0.0461%)

PCBs/PCTs: (0.00000482%)

## Determinands (Dry Weight Moisture Content: 24.4%)

Arsenic trioxide: (Cation conc. entered: 13.6 mg/kg, converted to compound conc.:14.434 mg/kg or 0.00144%)

Cadmium sulphide: (Cation conc. entered: 1.8 mg/kg, converted to compound conc.:1.86 mg/kg or 0.000186%)

Chromium(III) oxide: (Cation conc. entered: 33.3 mg/kg, converted to compound conc.:39.124 mg/kg or 0.00391%)

Copper (I) oxide: (Cation conc. entered: 216 mg/kg, converted to compound conc.:195.492 mg/kg or 0.0195%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 380 mg/kg, converted to compound conc.:461.254 mg/kg or 0.0461%)

Mercury dichloride: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.218 mg/kg or 0.0000218%)

Nickel dihydroxide: (Cation conc. entered: 22.4 mg/kg, converted to compound conc.:28.441 mg/kg or 0.00284%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.206 mg/kg or <0.000121%) **IGNORED Because: "<LOD"**

Zinc oxide: (Cation conc. entered: 669 mg/kg, converted to compound conc.:669.384 mg/kg or 0.0669%)

Naphthalene: (Whole concentration entered as: <0.04 mg/kg or <0.00000322%) **IGNORED Because: "<LOD"**

Acenaphthylene: (Whole concentration entered as: <0.03 mg/kg or <0.00000241%) **IGNORED Because: "<LOD"**  
 Acenaphthene: (Whole concentration entered as: <0.05 mg/kg or <0.00000402%) **IGNORED Because: "<LOD"**  
 Fluorene: (Whole concentration entered as: <0.04 mg/kg or <0.00000322%) **IGNORED Because: "<LOD"**  
 Phenanthrene: (Whole concentration entered as: 0.1 mg/kg or 0.00000804%)  
 Anthracene: (Whole concentration entered as: <0.04 mg/kg or <0.00000322%) **IGNORED Because: "<LOD"**  
 Fluoranthene: (Whole concentration entered as: 0.22 mg/kg or 0.0000177%)  
 Pyrene: (Whole concentration entered as: 0.18 mg/kg or 0.0000145%)  
 Benzo[a]anthracene: (Whole concentration entered as: 0.21 mg/kg or 0.0000169%)  
 Chrysene: (Whole concentration entered as: 0.17 mg/kg or 0.0000137%)  
 Benzo[b]fluoranthene: (Whole concentration entered as: 0.23 mg/kg or 0.0000185%)  
 Benzo[k]fluoranthene: (Whole concentration entered as: 0.09 mg/kg or 0.00000723%)  
 Benzo[a]pyrene; benzo[def]chrysene: (Whole concentration entered as: 0.17 mg/kg or 0.0000137%)  
 Indeno[123-cd]pyrene: (Whole concentration entered as: 0.14 mg/kg or 0.0000113%)  
 Dibenz[a,h]anthracene: (Whole concentration entered as: <0.04 mg/kg or <0.00000322%) **IGNORED Because: "<LOD"**  
 Benzo[ghi]perylene: (Whole concentration entered as: 0.13 mg/kg or 0.0000105%)  
 Oils: PAHs (8) as carcinogenic marker for oils: (Whole concentration entered as: 0.8 mg/kg or 0.0000643%)  
 tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane: (Whole concentration entered as: <0.005 mg/kg or <0.000000402%) **IGNORED Because: "<LOD"**  
 Benzene: (Whole concentration entered as: <0.005 mg/kg or <0.000000402%) **IGNORED Because: "<LOD"**  
 Toluene: (Whole concentration entered as: <0.005 mg/kg or <0.000000402%) **IGNORED Because: "<LOD"**  
 Ethylbenzene: (Whole concentration entered as: <0.005 mg/kg or <0.000000402%) **IGNORED Because: "<LOD"**  
 Xylene: (Whole concentration entered as: <0.01 mg/kg or <0.000000804%) **IGNORED Because: "<LOD"**  
 Oils: GRO/PRO (C6-C10): (Whole concentration entered as: <0.1 mg/kg or <0.00000804%) **IGNORED Because: "<LOD"**  
 Oils: fuel oils (including DRO, C10-C25): (Whole concentration entered as: <7 mg/kg or <0.000563%) **IGNORED Because: "<LOD"**  
 Oils: non-fuel oils/lubricating oils (>C25): (Whole concentration entered as: <7 mg/kg or <0.000563%) **IGNORED Because: "<LOD"**  
 PCBs/PCTs: (Whole concentration entered as: 0.06 mg/kg or 0.00000482%)

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

### Acenaphthylene (CAS Number: 208-96-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=59285&HarmOnly=no>

Data source date: 16/07/2012

Classification: R22, R26, R27, R36, R37, R38

### Acenaphthene (CAS Number: 83-32-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=133563&HarmOnly=no>

Data source date: 16/07/2012

Classification: N; R50/53, N; R51/53, R36, R37, R38



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**Fluorene** (CAS Number: 86-73-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=81845&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R53

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**Phenanthrene** (CAS Number: 85-01-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=109754&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R22, R36, R37, R38, R40, R43

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**Anthracene** (CAS Number: 120-12-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=101102&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: N; R50/53, R36, R37, R38, R43

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**Fluoranthene** (CAS Number: 206-44-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=56375&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R20, R22, R36

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**Pyrene** (CAS Number: 129-00-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=87484&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R23

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**Indeno[123-cd]pyrene** (CAS Number: 193-39-5)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=128806&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: R40

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

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=15793&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53

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**Oils: PAHs (8) as carcinogenic marker for oils**

Comments:  
Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency  
Data source date: 29/06/2007  
Classification:

#### **Oils: GRO/PRO (C6-C10)**

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R45, R49, R51/53

#### **Oils: fuel oils (including DRO, C10-C25)**

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R40, R51/53

#### **Oils: non-fuel oils/lubricating oils (>C25)**

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R45, R49, R53

### **Notes utilised in assessment**

#### **Additional Risk Phrase Comments**

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "Additional on R33" for determinand: "PCBs/PCTs"

#### **C14.5.5: Step 5**

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration. Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chromium(III) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Mercury dichloride"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Phenanthrene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Fluoranthene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Pyrene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]anthracene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chrysene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[b]fluoranthene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[k]fluoranthene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]pyrene; benzo[def]chrysene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[ghi]perylene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "PCBs/PCTs"

**Note 1**

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

**Substance notes**

**Note 1**

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

**Note A**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

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

**Note C**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "PCBs/PCTs"

**Note E (Table 3.2)**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

---

## Version

### Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008  
1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26 September 2009; binding date 1 Dec 2010  
2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30 March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures  
3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July 2012; binding date 1 Dec 2013

HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08

HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)

HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)

## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**TP107**

Site:

Project:

Sample Depth:

**1 m**

Dry Weight Moisture Content:

**0%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinand:

Lead compounds (with the exception of those listed separately in this Annex): (0.0183%)

## Determinands (Dry Weight Moisture Content: 0%)

Arsenic trioxide: (Cation conc. entered: 14.3 mg/kg, converted to compound conc.:18.881 mg/kg or 0.00189%)

Cadmium sulphide: (Cation conc. entered: 0.6 mg/kg, converted to compound conc.:0.771 mg/kg or 0.0000771%)

Chromium(III) oxide: (Cation conc. entered: 8.9 mg/kg, converted to compound conc.:13.008 mg/kg or 0.0013%)

Copper (I) oxide: (Cation conc. entered: 45 mg/kg, converted to compound conc.:50.665 mg/kg or 0.00507%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 121 mg/kg, converted to compound conc.:182.71 mg/kg or 0.0183%)

Mercury dichloride: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.135 mg/kg or <0.0000135%)

**IGNORED Because: "<LOD"**

Nickel dihydroxide: (Cation conc. entered: 7.4 mg/kg, converted to compound conc.:11.688 mg/kg or 0.00117%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.5 mg/kg or <0.00015%) **IGNORED Because: "<LOD"**

diboron trioxide; boric oxide: (Whole concentration entered as: 3.1 mg/kg or 0.00031%)

Zinc oxide: (Cation conc. entered: 193 mg/kg, converted to compound conc.:240.23 mg/kg or 0.024%)

beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex: (Whole concentration entered as: 0.6 mg/kg or 0.00006%)  
barium salts, with the exception of barium sulphate, salts of 1-azo-2-hydroxynaphthalenyl aryl sulphonic acid, and of salts specified elsewhere in this Annex: (Whole concentration entered as: 79 mg/kg or 0.0079%)

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

## Notes utilised in assessment

### Additional Risk Phrase Comments

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

### C14.5.5: Step 5

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration. Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chromium(III) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex"

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

## Substance notes

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

determinand: "barium salts, with the exception of barium sulphate, salts of 1-azo-2-hydroxynaphthalenyl aryl sulphonic acid, and of salts specified elsewhere in this Annex"

### Note A

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

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

determinand: "beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex"

determinand: "barium salts, with the exception of barium sulphate, salts of 1-azo-2-hydroxynaphthalenyl aryl sulphonic acid, and of salts specified elsewhere in this Annex"

### Note E (Table 3.2)

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

determinand: "beryllium compounds with the exception of aluminium beryllium silicates, and with those specified elsewhere in this Annex"

## Version

Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008  
1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26 September 2009; binding date 1 Dec 2010

2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30 March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures

3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July 2012; binding date 1 Dec 2013

HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08

HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)

HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)



## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**TP108**

Site:

Project:

Sample Depth:

**0 m**

Dry Weight Moisture Content:

**0%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinand:

Lead compounds (with the exception of those listed separately in this Annex): (0.0193%)

## Determinands (Dry Weight Moisture Content: 0%)

Arsenic trioxide: (Cation conc. entered: 13.6 mg/kg, converted to compound conc.:17.956 mg/kg or 0.0018%)

Cadmium sulphide: (Cation conc. entered: 0.5 mg/kg, converted to compound conc.:0.643 mg/kg or 0.0000643%)

Chromium(III) oxide: (Cation conc. entered: 15.5 mg/kg, converted to compound conc.:22.654 mg/kg or 0.00227%)

Copper (I) oxide: (Cation conc. entered: 70 mg/kg, converted to compound conc.:78.812 mg/kg or 0.00788%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 128 mg/kg, converted to compound conc.:193.28 mg/kg or 0.0193%)

Mercury dichloride: (Cation conc. entered: 0.3 mg/kg, converted to compound conc.:0.406 mg/kg or 0.0000406%)

Nickel dihydroxide: (Cation conc. entered: 13.5 mg/kg, converted to compound conc.:21.323 mg/kg or 0.00213%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.5 mg/kg or <0.00015%) **IGNORED Because: "<LOD"**

Zinc oxide: (Cation conc. entered: 343 mg/kg, converted to compound conc.:426.937 mg/kg or 0.0427%)

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

## Notes utilised in assessment

### Additional Risk Phrase Comments

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

### C14.5.5: Step 5

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration.

Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chromium(III) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Mercury dichloride"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc oxide"

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

## Substance notes

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

**Note A**

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

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

Note used on:

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

**Note E (Table 3.2)**

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

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

**Version**

Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008

1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26

September 2009; binding date 1 Dec 2010

2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30

March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures

3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July

2012; binding date 1 Dec 2013

HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08

HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)

HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)

## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**TP109**

Site:

Project:

Sample Depth:

**0 m**

Dry Weight Moisture Content:

**20%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinands:

Lead compounds (with the exception of those listed separately in this Annex): (0.0717%)

PCBs/PCTs: (0.000005%)

## Determinands (Dry Weight Moisture Content: 20%)

Arsenic trioxide: (Cation conc. entered: 12.8 mg/kg, converted to compound conc.:14.083 mg/kg or 0.00141%)

Cadmium sulphide: (Cation conc. entered: 2.1 mg/kg, converted to compound conc.:2.249 mg/kg or 0.000225%)

Chromium(III) oxide: (Cation conc. entered: 91 mg/kg, converted to compound conc.:110.835 mg/kg or 0.0111%)

Copper (I) oxide: (Cation conc. entered: 435 mg/kg, converted to compound conc.:408.135 mg/kg or 0.0408%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 570 mg/kg, converted to compound conc.:717.25 mg/kg or 0.0717%)

Mercury dichloride: (Cation conc. entered: 0.3 mg/kg, converted to compound conc.:0.338 mg/kg or 0.0000338%)

Nickel dihydroxide: (Cation conc. entered: 67.7 mg/kg, converted to compound conc.:89.11 mg/kg or 0.00891%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.25 mg/kg or <0.000125%) **IGNORED Because: "<LOD"**

Zinc oxide: (Cation conc. entered: 900 mg/kg, converted to compound conc.:933.535 mg/kg or 0.0934%)

Naphthalene: (Whole concentration entered as: 0.06 mg/kg or 0.000005%)

Acenaphthylene: (Whole concentration entered as: 0.07 mg/kg or 0.00000583%)  
 Acenaphthene: (Whole concentration entered as: <0.05 mg/kg or <0.00000417%) **IGNORED Because: "<LOD"**  
 Fluorene: (Whole concentration entered as: 0.05 mg/kg or 0.00000417%)  
 Phenanthrene: (Whole concentration entered as: 0.6 mg/kg or 0.00005%)  
 Anthracene: (Whole concentration entered as: 0.13 mg/kg or 0.0000108%)  
 Fluoranthene: (Whole concentration entered as: 1.1 mg/kg or 0.0000917%)  
 Pyrene: (Whole concentration entered as: 0.9 mg/kg or 0.000075%)  
 Benzo[a]anthracene: (Whole concentration entered as: 0.69 mg/kg or 0.0000575%)  
 Chrysene: (Whole concentration entered as: 0.6 mg/kg or 0.00005%)  
 Benzo[b]fluoranthene: (Whole concentration entered as: 0.73 mg/kg or 0.0000608%)  
 Benzo[k]fluoranthene: (Whole concentration entered as: 0.29 mg/kg or 0.0000242%)  
 Benzo[a]pyrene; benzo[def]chrysene: (Whole concentration entered as: 0.6 mg/kg or 0.00005%)  
 Indeno[123-cd]pyrene: (Whole concentration entered as: 0.37 mg/kg or 0.0000308%)  
 Dibenzo[a,h]anthracene: (Whole concentration entered as: 0.1 mg/kg or 0.00000833%)  
 Benzo[ghi]perylene: (Whole concentration entered as: 0.34 mg/kg or 0.0000283%)  
 Oils: PAHs (8) as carcinogenic marker for oils: (Whole concentration entered as: 2.69 mg/kg or 0.000224%)  
 tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane: (Whole concentration entered as: <0.005 mg/kg or <0.00000417%) **IGNORED Because: "<LOD"**  
 Benzene: (Whole concentration entered as: <0.005 mg/kg or <0.00000417%) **IGNORED Because: "<LOD"**  
 Toluene: (Whole concentration entered as: <0.005 mg/kg or <0.00000417%) **IGNORED Because: "<LOD"**  
 Ethylbenzene: (Whole concentration entered as: <0.005 mg/kg or <0.00000417%) **IGNORED Because: "<LOD"**  
 Xylene: (Whole concentration entered as: <0.01 mg/kg or <0.00000833%) **IGNORED Because: "<LOD"**  
 Oils: GRO/PRO (C6-C10): (Whole concentration entered as: <0.1 mg/kg or <0.00000833%) **IGNORED Because: "<LOD"**  
 Oils: fuel oils (including DRO, C10-C25): (Whole concentration entered as: 21 mg/kg or 0.00175%)  
 Oils: non-fuel oils/lubricating oils (>C25): (Whole concentration entered as: <7 mg/kg or <0.000583%) **IGNORED Because: "<LOD"**  
 PCBs/PCTs: (Whole concentration entered as: 0.06 mg/kg or 0.000005%)

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

### Acenaphthylene (CAS Number: 208-96-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=59285&HarmOnly=no>

Data source date: 16/07/2012

Classification: R22, R26, R27, R36, R37, R38

### Acenaphthene (CAS Number: 83-32-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=133563&HarmOnly=no>

Data source date: 16/07/2012

Classification: N; R50/53, N; R51/53, R36, R37, R38

### Fluorene (CAS Number: 86-73-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=81845&HarmOnly=no>

Data source date: 16/07/2012

Classification: N; R50/53, R53

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**Phenanthrene** (CAS Number: 85-01-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=109754&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R22, R36, R37, R38, R40, R43

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**Anthracene** (CAS Number: 120-12-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=101102&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: N; R50/53, R36, R37, R38, R43

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**Fluoranthene** (CAS Number: 206-44-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=56375&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R20, R22, R36

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**Pyrene** (CAS Number: 129-00-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=87484&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R23

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**Indeno[123-cd]pyrene** (CAS Number: 193-39-5)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=128806&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: R40

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

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=15793&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53

---

**Oils: PAHs (8) as carcinogenic marker for oils**

Comments:  
Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency  
Data source date: 29/06/2007  
Classification:

---

**Oils: GRO/PRO (C6-C10)**

Comments:  
Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency  
Data source date: 29/06/2007  
Classification: R65, R45, R49, R51/53



#### Oils: fuel oils (including DRO, C10-C25)

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R40, R51/53

#### Oils: non-fuel oils/lubricating oils (>C25)

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R45, R49, R53

#### Notes utilised in assessment

##### Additional Risk Phrase Comments

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "Additional on R33" for determinand: "PCBs/PCTs"

##### C14.5.5: Step 5

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration.

Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Fluorene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chromium(III) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Mercury dichloride"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Naphthalene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Phenanthrene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Anthracene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Fluoranthene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Pyrene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]anthracene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chrysene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[b]fluoranthene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[k]fluoranthene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]pyrene; benzo[def]chrysene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Dibenz[a,h]anthracene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[ghi]perylene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "PCBs/PCTs"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Oils: fuel oils (including DRO, C10-C25)"

##### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"



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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

## Substance notes

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

### Note A

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

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

### Note C

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "PCBs/PCTs"

### Note E (Table 3.2)

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

---

## Version

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**Classification utilises the following:**

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008  
1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26 September 2009; binding date 1 Dec 2010  
2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30 March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures  
3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July 2012; binding date 1 Dec 2013

HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08

HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)

HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)

## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**TP110**

Site:

Project:

Sample Depth:

**2 m**

Dry Weight Moisture Content:

**20%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinand:

Lead compounds (with the exception of those listed separately in this Annex): (0.0736%)

## Determinands (Dry Weight Moisture Content: 20%)

Arsenic trioxide: (Cation conc. entered: 15.2 mg/kg, converted to compound conc.:16.724 mg/kg or 0.00167%)

Cadmium sulphide: (Cation conc. entered: 3.2 mg/kg, converted to compound conc.:3.427 mg/kg or 0.000343%)

Chromium(III) oxide: (Cation conc. entered: 55.9 mg/kg, converted to compound conc.:68.084 mg/kg or 0.00681%)

Copper (I) oxide: (Cation conc. entered: 807 mg/kg, converted to compound conc.:757.16 mg/kg or 0.0757%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 585 mg/kg, converted to compound conc.:736.125 mg/kg or 0.0736%)

Mercury dichloride: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.226 mg/kg or 0.0000226%)

Nickel dihydroxide: (Cation conc. entered: 59.1 mg/kg, converted to compound conc.:77.79 mg/kg or 0.00778%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.25 mg/kg or <0.000125%) **IGNORED Because: "<LOD"**

Zinc oxide: (Cation conc. entered: 2116 mg/kg, converted to compound conc.:2194.846 mg/kg or 0.219%)

Naphthalene: (Whole concentration entered as: <0.04 mg/kg or <0.00000333%) **IGNORED Because: "<LOD"**

Acenaphthylene: (Whole concentration entered as: <0.03 mg/kg or <0.0000025%) **IGNORED Because: "<LOD"**

Acenaphthene: (Whole concentration entered as: <0.05 mg/kg or <0.00000417%) **IGNORED Because: "<LOD"**  
 Fluorene: (Whole concentration entered as: <0.04 mg/kg or <0.00000333%) **IGNORED Because: "<LOD"**  
 Phenanthrene: (Whole concentration entered as: 0.07 mg/kg or 0.00000583%)  
 Anthracene: (Whole concentration entered as: <0.04 mg/kg or <0.00000333%) **IGNORED Because: "<LOD"**  
 Fluoranthene: (Whole concentration entered as: 0.11 mg/kg or 0.00000917%)  
 Pyrene: (Whole concentration entered as: 0.09 mg/kg or 0.0000075%)  
 Benzo[a]anthracene: (Whole concentration entered as: 0.09 mg/kg or 0.0000075%)  
 Chrysene: (Whole concentration entered as: 0.07 mg/kg or 0.00000583%)  
 Benzo[b]fluoranthene: (Whole concentration entered as: 0.1 mg/kg or 0.00000833%)  
 Benzo[k]fluoranthene: (Whole concentration entered as: 0.04 mg/kg or 0.00000333%)  
 Benzo[a]pyrene; benzo[def]chrysene: (Whole concentration entered as: 0.07 mg/kg or 0.00000583%)  
 Indeno[123-cd]pyrene: (Whole concentration entered as: 0.05 mg/kg or 0.00000417%)  
 Dibenz[a,h]anthracene: (Whole concentration entered as: <0.04 mg/kg or <0.00000333%) **IGNORED Because: "<LOD"**  
 Benzo[ghi]perylene: (Whole concentration entered as: 0.06 mg/kg or 0.000005%)  
 Oils: PAHs (8) as carcinogenic marker for oils: (Whole concentration entered as: 0.33 mg/kg or 0.0000275%)  
 tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane: (Whole concentration entered as: <0.005 mg/kg or <0.00000417%) **IGNORED Because: "<LOD"**  
 Benzene: (Whole concentration entered as: <0.005 mg/kg or <0.00000417%) **IGNORED Because: "<LOD"**  
 Toluene: (Whole concentration entered as: <0.005 mg/kg or <0.00000417%) **IGNORED Because: "<LOD"**  
 Ethylbenzene: (Whole concentration entered as: <0.005 mg/kg or <0.00000417%) **IGNORED Because: "<LOD"**  
 Xylene: (Whole concentration entered as: <0.01 mg/kg or <0.00000833%) **IGNORED Because: "<LOD"**  
 Oils: GRO/PRO (C6-C10): (Whole concentration entered as: <0.1 mg/kg or <0.00000833%) **IGNORED Because: "<LOD"**  
 Oils: fuel oils (including DRO, C10-C25): (Whole concentration entered as: <7 mg/kg or <0.000583%) **IGNORED Because: "<LOD"**  
 Oils: non-fuel oils/lubricating oils (>C25): (Whole concentration entered as: <7 mg/kg or <0.000583%) **IGNORED Because: "<LOD"**

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

### Acenaphthylene (CAS Number: 208-96-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=59285&HarmOnly=no>

Data source date: 16/07/2012

Classification: R22, R26, R27, R36, R37, R38

### Acenaphthene (CAS Number: 83-32-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=133563&HarmOnly=no>

Data source date: 16/07/2012

Classification: N; R50/53, N; R51/53, R36, R37, R38

### Fluorene (CAS Number: 86-73-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=81845&HarmOnly=no>

Data source date: 16/07/2012

Classification: N; R50/53, R53

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**Phenanthrene** (CAS Number: 85-01-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=109754&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R22, R36, R37, R38, R40, R43

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**Anthracene** (CAS Number: 120-12-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=101102&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: N; R50/53, R36, R37, R38, R43

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**Fluoranthene** (CAS Number: 206-44-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=56375&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R20, R22, R36

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**Pyrene** (CAS Number: 129-00-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=87484&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R23

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**Indeno[123-cd]pyrene** (CAS Number: 193-39-5)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=128806&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: R40

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

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=15793&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53

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**Oils: PAHs (8) as carcinogenic marker for oils**

Comments:  
Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency  
Data source date: 29/06/2007  
Classification:

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**Oils: GRO/PRO (C6-C10)**

Comments:  
Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency  
Data source date: 29/06/2007  
Classification: R65, R45, R49, R51/53

#### Oils: fuel oils (including DRO, C10-C25)

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R40, R51/53

#### Oils: non-fuel oils/lubricating oils (>C25)

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R45, R49, R53

### Notes utilised in assessment

#### Additional Risk Phrase Comments

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

#### C14.5.5: Step 5

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration. Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chromium(III) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Mercury dichloride"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Phenanthrene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Fluoranthene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Pyrene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]anthracene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chrysene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[b]fluoranthene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[k]fluoranthene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]pyrene; benzo[def]chrysene"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[ghi]perylene"

#### C14.5.6: Step 6

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Does the waste contain two or more substances that are classified as dangerous for the environment with aquatic risk phrases? The additive equations are only used where two or more ecotoxic substances are present."

Note used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53"

#### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

## Substance notes

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

### Note A

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

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

### Note E (Table 3.2)

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

## Version

Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008  
1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26 September 2009; binding date 1 Dec 2010

2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30 March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures

3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July 2012; binding date 1 Dec 2013



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HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08  
HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)  
HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)

## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**TP111**

Site:

Project:

Sample Depth:

**0 m**

Dry Weight Moisture Content:

**0%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinand:

Lead compounds (with the exception of those listed separately in this Annex): (0.0116%)

## Determinands (Dry Weight Moisture Content: 0%)

Arsenic trioxide: (Cation conc. entered: 9.9 mg/kg, converted to compound conc.:13.071 mg/kg or 0.00131%)

Cadmium sulphide: (Cation conc. entered: 0.3 mg/kg, converted to compound conc.:0.386 mg/kg or 0.0000386%)

Chromium(III) oxide: (Cation conc. entered: 9 mg/kg, converted to compound conc.:13.154 mg/kg or 0.00132%)

Copper (I) oxide: (Cation conc. entered: 36 mg/kg, converted to compound conc.:40.532 mg/kg or 0.00405%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 77 mg/kg, converted to compound conc.:116.27 mg/kg or 0.0116%)

Mercury dichloride: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.271 mg/kg or 0.0000271%)

Nickel dihydroxide: (Cation conc. entered: 7.4 mg/kg, converted to compound conc.:11.688 mg/kg or 0.00117%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.5 mg/kg or <0.00015%) **IGNORED Because: "<LOD"**

Zinc oxide: (Cation conc. entered: 250 mg/kg, converted to compound conc.:311.178 mg/kg or 0.0311%)

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

## Notes utilised in assessment

### Additional Risk Phrase Comments

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

### C14.5.5: Step 5

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration.

Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chromium(III) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Mercury dichloride"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc oxide"

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

## Substance notes

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

#### **Note A**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

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

#### **Note E (Table 3.2)**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

#### **Version**

Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008

1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26

September 2009; binding date 1 Dec 2010

2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30

March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures

3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July

2012; binding date 1 Dec 2013

HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08

HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)

HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)

## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**TP112**

Site:

Project:

Sample Depth:

**0 m**

Dry Weight Moisture Content:

**17.9%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinand:

Lead compounds (with the exception of those listed separately in this Annex): (0.0246%)

## Determinands (Dry Weight Moisture Content: 17.9%)

Arsenic trioxide: (Cation conc. entered: 15.5 mg/kg, converted to compound conc.:17.358 mg/kg or 0.00174%)

Cadmium sulphide: (Cation conc. entered: 0.3 mg/kg, converted to compound conc.:0.327 mg/kg or 0.0000327%)

Chromium(III) oxide: (Cation conc. entered: 11.1 mg/kg, converted to compound conc.:13.76 mg/kg or 0.00138%)

Copper (I) oxide: (Cation conc. entered: 34 mg/kg, converted to compound conc.:32.468 mg/kg or 0.00325%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 192 mg/kg, converted to compound conc.:245.903 mg/kg or 0.0246%)

Mercury dichloride: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.23 mg/kg or 0.000023%)

Nickel dihydroxide: (Cation conc. entered: 8.5 mg/kg, converted to compound conc.:11.387 mg/kg or 0.00114%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.272 mg/kg or <0.000127%) **IGNORED Because: "<LOD"**

Zinc oxide: (Cation conc. entered: 232 mg/kg, converted to compound conc.:244.931 mg/kg or 0.0245%)

Naphthalene: (Whole concentration entered as: <0.04 mg/kg or <0.00000339%) **IGNORED Because: "<LOD"**

Acenaphthylene: (Whole concentration entered as: 0.05 mg/kg or 0.00000424%)

Acenaphthene: (Whole concentration entered as: <0.05 mg/kg or <0.00000424%) **IGNORED Because: "<LOD"**  
 Fluorene: (Whole concentration entered as: 0.05 mg/kg or 0.00000424%)  
 Phenanthrene: (Whole concentration entered as: 0.58 mg/kg or 0.0000492%)  
 Anthracene: (Whole concentration entered as: 0.15 mg/kg or 0.0000127%)  
 Fluoranthene: (Whole concentration entered as: 0.94 mg/kg or 0.0000797%)  
 Pyrene: (Whole concentration entered as: 0.75 mg/kg or 0.0000636%)  
 Benzo[a]anthracene: (Whole concentration entered as: 0.56 mg/kg or 0.0000475%)  
 Chrysene: (Whole concentration entered as: 0.45 mg/kg or 0.0000382%)  
 Benzo[b]fluoranthene: (Whole concentration entered as: 0.53 mg/kg or 0.000045%)  
 Benzo[k]fluoranthene: (Whole concentration entered as: 0.2 mg/kg or 0.000017%)  
 Benzo[a]pyrene; benzo[def]chrysene: (Whole concentration entered as: 0.43 mg/kg or 0.0000365%)  
 Indeno[123-cd]pyrene: (Whole concentration entered as: 0.27 mg/kg or 0.0000229%)  
 Dibenz[a,h]anthracene: (Whole concentration entered as: 0.07 mg/kg or 0.00000594%)  
 Benzo[ghi]perylene: (Whole concentration entered as: 0.25 mg/kg or 0.0000212%)  
 Oils: PAHs (8) as carcinogenic marker for oils: (Whole concentration entered as: 1.95 mg/kg or 0.000165%)  
 tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane: (Whole concentration entered as: <0.005 mg/kg or <0.00000424%) **IGNORED Because: "<LOD"**  
 Benzene: (Whole concentration entered as: <0.005 mg/kg or <0.00000424%) **IGNORED Because: "<LOD"**  
 Toluene: (Whole concentration entered as: <0.005 mg/kg or <0.00000424%) **IGNORED Because: "<LOD"**  
 Ethylbenzene: (Whole concentration entered as: <0.005 mg/kg or <0.00000424%) **IGNORED Because: "<LOD"**  
 Xylene: (Whole concentration entered as: <0.01 mg/kg or <0.00000848%) **IGNORED Because: "<LOD"**  
 Oils: GRO/PRO (C6-C10): (Whole concentration entered as: <0.1 mg/kg or <0.00000848%) **IGNORED Because: "<LOD"**  
 Oils: fuel oils (including DRO, C10-C25): (Whole concentration entered as: 188 mg/kg or 0.0159%)  
 Oils: non-fuel oils/lubricating oils (>C25): (Whole concentration entered as: 188 mg/kg or 0.0159%)

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

### Acenaphthylene (CAS Number: 208-96-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=59285&HarmOnly=no>

Data source date: 16/07/2012

Classification: R22, R26, R27, R36, R37, R38

### Acenaphthene (CAS Number: 83-32-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=133563&HarmOnly=no>

Data source date: 16/07/2012

Classification: N; R50/53, N; R51/53, R36, R37, R38

### Fluorene (CAS Number: 86-73-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=81845&HarmOnly=no>

Data source date: 16/07/2012

Classification: N; R50/53, R53

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**Phenanthrene** (CAS Number: 85-01-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=109754&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R22, R36, R37, R38, R40, R43

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**Anthracene** (CAS Number: 120-12-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=101102&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: N; R50/53, R36, R37, R38, R43

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**Fluoranthene** (CAS Number: 206-44-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=56375&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R20, R22, R36

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**Pyrene** (CAS Number: 129-00-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=87484&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R23

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**Indeno[123-cd]pyrene** (CAS Number: 193-39-5)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=128806&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: R40

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

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=15793&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53

---

**Oils: PAHs (8) as carcinogenic marker for oils**

Comments:  
Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency  
Data source date: 29/06/2007  
Classification:

---

**Oils: GRO/PRO (C6-C10)**

Comments:  
Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency  
Data source date: 29/06/2007  
Classification: R65, R45, R49, R51/53



#### Oils: fuel oils (including DRO, C10-C25)

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R40, R51/53

#### Oils: non-fuel oils/lubricating oils (>C25)

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R45, R49, R53

#### Notes utilised in assessment

##### Additional Risk Phrase Comments

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

##### C14.5.5: Step 5

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration. Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Fluorene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Oils: non-fuel oils/lubricating oils (>C25)"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chromium(III) oxide"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Mercury dichloride"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc oxide"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Phenanthrene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Anthracene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Fluoranthene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Pyrene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]anthracene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chrysene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[b]fluoranthene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[k]fluoranthene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]pyrene; benzo[def]chrysene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Dibenz[a,h]anthracene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[ghi]perylene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Oils: fuel oils (including DRO, C10-C25)"

##### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

## Substance notes

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

### Note A

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

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

### Note E (Table 3.2)

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

## Version

Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008  
1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26 September 2009; binding date 1 Dec 2010  
2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30 March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures  
3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July 2012; binding date 1 Dec 2013

HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08

HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)

HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)

## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**TP113**

Site:

Project:

Sample Depth:

**0 m**

Dry Weight Moisture Content:

**0%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinand:

Lead compounds (with the exception of those listed separately in this Annex): (0.0246%)

## Determinands (Dry Weight Moisture Content: 0%)

Arsenic trioxide: (Cation conc. entered: 50.4 mg/kg, converted to compound conc.:66.544 mg/kg or 0.00665%)

Cadmium sulphide: (Cation conc. entered: 0.8 mg/kg, converted to compound conc.:1.028 mg/kg or 0.000103%)

Chromium(III) oxide: (Cation conc. entered: 71.6 mg/kg, converted to compound conc.:104.647 mg/kg or 0.0105%)

Copper (I) oxide: (Cation conc. entered: 59 mg/kg, converted to compound conc.:66.427 mg/kg or 0.00664%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 163 mg/kg, converted to compound conc.:246.13 mg/kg or 0.0246%)

Mercury dichloride: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.271 mg/kg or 0.0000271%)

Nickel dihydroxide: (Cation conc. entered: 52.7 mg/kg, converted to compound conc.:83.24 mg/kg or 0.00832%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.5 mg/kg or <0.00015%) **IGNORED Because: "<LOD"**

Zinc oxide: (Cation conc. entered: 173 mg/kg, converted to compound conc.:215.336 mg/kg or 0.0215%)

Naphthalene: (Whole concentration entered as: <0.04 mg/kg or <0.000004%) **IGNORED Because: "<LOD"**

Acenaphthylene: (Whole concentration entered as: 0.03 mg/kg or 0.000003%)

Acenaphthene: (Whole concentration entered as: <0.05 mg/kg or <0.000005%) **IGNORED Because: "<LOD"**  
 Fluorene: (Whole concentration entered as: <0.04 mg/kg or <0.000004%) **IGNORED Because: "<LOD"**  
 Phenanthrene: (Whole concentration entered as: 0.18 mg/kg or 0.000018%)  
 Anthracene: (Whole concentration entered as: 0.06 mg/kg or 0.000006%)  
 Fluoranthene: (Whole concentration entered as: 0.36 mg/kg or 0.000036%)  
 Pyrene: (Whole concentration entered as: 0.34 mg/kg or 0.000034%)  
 Benzo[a]anthracene: (Whole concentration entered as: 0.28 mg/kg or 0.000028%)  
 Chrysene: (Whole concentration entered as: 0.23 mg/kg or 0.000023%)  
 Benzo[b]fluoranthene: (Whole concentration entered as: 0.26 mg/kg or 0.000026%)  
 Benzo[k]fluoranthene: (Whole concentration entered as: 0.1 mg/kg or 0.00001%)  
 Benzo[a]pyrene; benzo[def]chrysene: (Whole concentration entered as: 0.18 mg/kg or 0.000018%)  
 Indeno[123-cd]pyrene: (Whole concentration entered as: 0.16 mg/kg or 0.000016%)  
 Dibenz[a,h]anthracene: (Whole concentration entered as: <0.04 mg/kg or <0.000004%) **IGNORED Because: "<LOD"**  
 Benzo[ghi]perylene: (Whole concentration entered as: 0.14 mg/kg or 0.000014%)  
 Oils: PAHs (8) as carcinogenic marker for oils: (Whole concentration entered as: 0.93 mg/kg or 0.000093%)  
 tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane: (Whole concentration entered as: <0.005 mg/kg or <0.000005%) **IGNORED Because: "<LOD"**  
 Benzene: (Whole concentration entered as: <0.005 mg/kg or <0.000005%) **IGNORED Because: "<LOD"**  
 Toluene: (Whole concentration entered as: <0.005 mg/kg or <0.000005%) **IGNORED Because: "<LOD"**  
 Ethylbenzene: (Whole concentration entered as: <0.005 mg/kg or <0.000005%) **IGNORED Because: "<LOD"**  
 Xylene: (Whole concentration entered as: <0.01 mg/kg or <0.000001%) **IGNORED Because: "<LOD"**  
 Oils: GRO/PRO (C6-C10): (Whole concentration entered as: <0.1 mg/kg or <0.00001%) **IGNORED Because: "<LOD"**  
 Oils: fuel oils (including DRO, C10-C25): (Whole concentration entered as: 539 mg/kg or 0.0539%)  
 Oils: non-fuel oils/lubricating oils (>C25): (Whole concentration entered as: 406 mg/kg or 0.0406%)

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

### Acenaphthylene (CAS Number: 208-96-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=59285&HarmOnly=no>

Data source date: 16/07/2012

Classification: R22, R26, R27, R36, R37, R38

### Acenaphthene (CAS Number: 83-32-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=133563&HarmOnly=no>

Data source date: 16/07/2012

Classification: N; R50/53, N; R51/53, R36, R37, R38

### Fluorene (CAS Number: 86-73-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=81845&HarmOnly=no>

Data source date: 16/07/2012

Classification: N; R50/53, R53

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**Phenanthrene** (CAS Number: 85-01-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=109754&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R22, R36, R37, R38, R40, R43

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**Anthracene** (CAS Number: 120-12-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=101102&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: N; R50/53, R36, R37, R38, R43

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**Fluoranthene** (CAS Number: 206-44-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=56375&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R20, R22, R36

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**Pyrene** (CAS Number: 129-00-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=87484&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53, R23

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**Indeno[123-cd]pyrene** (CAS Number: 193-39-5)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=128806&HarmOnly=no>  
Data source date: 08/03/2013  
Classification: R40

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

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=15793&HarmOnly=no>  
Data source date: 16/07/2012  
Classification: N; R50/53

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**Oils: PAHs (8) as carcinogenic marker for oils**

Comments:  
Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency  
Data source date: 29/06/2007  
Classification:

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**Oils: GRO/PRO (C6-C10)**

Comments:  
Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency  
Data source date: 29/06/2007  
Classification: R65, R45, R49, R51/53

#### Oils: fuel oils (including DRO, C10-C25)

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R40, R51/53

#### Oils: non-fuel oils/lubricating oils (>C25)

Comments:

Data source: HWR08 Version 3.1, June 2007: How to find out if waste oil and wastes that contain oil are hazardous, Environment Agency

Data source date: 29/06/2007

Classification: R65, R45, R49, R53

#### Notes utilised in assessment

##### Additional Risk Phrase Comments

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

##### C14.5.5: Step 5

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration. Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Oils: non-fuel oils/lubricating oils (>C25)"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chromium(III) oxide"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Mercury dichloride"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc oxide"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Phenanthrene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Anthracene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Fluoranthene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Pyrene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]anthracene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chrysene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[b]fluoranthene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[k]fluoranthene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]pyrene; benzo[def]chrysene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[ghi]perylene"  
 Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Oils: fuel oils (including DRO, C10-C25)"

##### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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



Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

## Substance notes

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

### Note A

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

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

### Note E (Table 3.2)

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

## Version

Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008  
1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26 September 2009; binding date 1 Dec 2010  
2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30 March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures  
3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July 2012; binding date 1 Dec 2013

HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08

HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)

HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)



## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**TP114**

Site:

Project:

Sample Depth:

**0 m**

Dry Weight Moisture Content:

**0%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinand:

Lead compounds (with the exception of those listed separately in this Annex): (0.0192%)

## Determinands (Dry Weight Moisture Content: 0%)

Arsenic trioxide: (Cation conc. entered: 13.5 mg/kg, converted to compound conc.:17.824 mg/kg or 0.00178%)

Cadmium sulphide: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.257 mg/kg or 0.000257%)

Chromium(III) oxide: (Cation conc. entered: 11.2 mg/kg, converted to compound conc.:16.369 mg/kg or 0.00164%)

Copper (I) oxide: (Cation conc. entered: 41 mg/kg, converted to compound conc.:46.161 mg/kg or 0.00462%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 127 mg/kg, converted to compound conc.:191.77 mg/kg or 0.0192%)

Mercury dichloride: (Cation conc. entered: 0.5 mg/kg, converted to compound conc.:0.677 mg/kg or 0.000677%)

Nickel dihydroxide: (Cation conc. entered: 10.1 mg/kg, converted to compound conc.:15.953 mg/kg or 0.0016%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.5 mg/kg or <0.00015%) **IGNORED Because: "<LOD"**

Zinc oxide: (Cation conc. entered: 167 mg/kg, converted to compound conc.:207.867 mg/kg or 0.0208%)

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

## Notes utilised in assessment

### Additional Risk Phrase Comments

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

### C14.5.5: Step 5

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration.

Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chromium(III) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Mercury dichloride"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc oxide"

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

## Substance notes

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

#### **Note A**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

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

#### **Note E (Table 3.2)**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

#### **Version**

Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008

1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26

September 2009; binding date 1 Dec 2010

2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30

March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures

3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July

2012; binding date 1 Dec 2013

HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08

HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)

HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)

## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**HP115**

Site:

Project:

Sample Depth:

**0 m**

Dry Weight Moisture Content:

**0%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinand:

Lead compounds (with the exception of those listed separately in this Annex): (0.0216%)

## Determinands (Dry Weight Moisture Content: 0%)

Arsenic trioxide: (Cation conc. entered: 10 mg/kg, converted to compound conc.:13.203 mg/kg or 0.00132%)

Cadmium sulphide: (Cation conc. entered: 0.5 mg/kg, converted to compound conc.:0.643 mg/kg or 0.0000643%)

Chromium(III) oxide: (Cation conc. entered: 13.1 mg/kg, converted to compound conc.:19.146 mg/kg or 0.00191%)

Copper (I) oxide: (Cation conc. entered: 92 mg/kg, converted to compound conc.:103.582 mg/kg or 0.0104%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 143 mg/kg, converted to compound conc.:215.93 mg/kg or 0.0216%)

Mercury dichloride: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.271 mg/kg or 0.0000271%)

Nickel dihydroxide: (Cation conc. entered: 16.2 mg/kg, converted to compound conc.:25.588 mg/kg or 0.00256%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.5 mg/kg or <0.00015%) **IGNORED Because: "<LOD"**

Zinc oxide: (Cation conc. entered: 261 mg/kg, converted to compound conc.:324.87 mg/kg or 0.0325%)

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

## Notes utilised in assessment

### Additional Risk Phrase Comments

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

### C14.5.5: Step 5

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration.

Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chromium(III) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Mercury dichloride"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc oxide"

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

## Substance notes

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

#### **Note A**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

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

#### **Note E (Table 3.2)**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

#### **Version**

Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008

1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26

September 2009; binding date 1 Dec 2010

2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30

March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures

3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July

2012; binding date 1 Dec 2013

HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08

HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)

HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)

## Classification



### Non Hazardous Waste

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:

**HP116**

Site:

Project:

Sample Depth:

**0 m**

Dry Weight Moisture Content:

**0%**

Comments:

EWC 2002 code:

Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**

Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinand:

Lead compounds (with the exception of those listed separately in this Annex): (0.0223%)

## Determinands (Dry Weight Moisture Content: 0%)

Arsenic trioxide: (Cation conc. entered: 16.6 mg/kg, converted to compound conc.:21.917 mg/kg or 0.00219%)

Cadmium sulphide: (Cation conc. entered: 0.4 mg/kg, converted to compound conc.:0.514 mg/kg or 0.0000514%)

Chromium(III) oxide: (Cation conc. entered: 11.4 mg/kg, converted to compound conc.:16.662 mg/kg or 0.00167%)

Copper (I) oxide: (Cation conc. entered: 59 mg/kg, converted to compound conc.:66.427 mg/kg or 0.00664%)

Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 148 mg/kg, converted to compound conc.:223.48 mg/kg or 0.0223%)

Mercury dichloride: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.271 mg/kg or 0.0000271%)

Nickel dihydroxide: (Cation conc. entered: 11 mg/kg, converted to compound conc.:17.374 mg/kg or 0.00174%)

Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.5 mg/kg or <0.00015%) **IGNORED Because: "<LOD"**

Zinc oxide: (Cation conc. entered: 201 mg/kg, converted to compound conc.:250.188 mg/kg or 0.025%)



## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

## Notes utilised in assessment

### Additional Risk Phrase Comments

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

### C14.5.5: Step 5

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration.

Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Arsenic trioxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Chromium(III) oxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Copper (I) oxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Mercury dichloride"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Nickel dihydroxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Zinc oxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Cadmium sulphide"

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Cadmium sulphide"

## Substance notes

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

#### **Note A**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

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

#### **Note E (Table 3.2)**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

#### **Version**

Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008

1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26

September 2009; binding date 1 Dec 2010

2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30

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2012; binding date 1 Dec 2013

HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08

HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)

HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)

## Classification



**Non Hazardous Waste**

Classified as **17 05 04**  
in the European Waste Catalogue 2002

## Classified by

Name:  
**Hills, Toby**  
Date:  
**05/06/2013 15:50**  
Telephone:  
**01622 609242**

Company:  
**SLR Consulting**  
**19 Hollingworth Court**  
**Turkey Mill**  
**Maidstone**  
**ME14 5PP**

## Sample details

Sample Name:  
**HP117**  
Site:

Project:

Sample Depth:  
**0 m**  
Dry Weight Moisture Content:  
**0%**  
Comments:

EWC 2002 code:  
Chapter: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**  
Entry: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**

## Hazard properties

None identified

**Additional: Additional Risk Phrases** "Additional risk phrases apply, please check potential effects. NOTE: These are additional risk phrases and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

**R33** "Danger of cumulative effects"

Because of determinands:

Lead compounds (with the exception of those listed separately in this Annex): (0.0184%)  
PCBs/PCTs: (0.000006%)

## Determinands (Dry Weight Moisture Content: 0%)

Arsenic trioxide: (Cation conc. entered: 9.8 mg/kg, converted to compound conc.:12.939 mg/kg or 0.00129%)  
Cadmium sulphide: (Cation conc. entered: 0.6 mg/kg, converted to compound conc.:0.771 mg/kg or 0.0000771%)  
Chromium(III) oxide: (Cation conc. entered: 9.2 mg/kg, converted to compound conc.:13.446 mg/kg or 0.00134%)  
Copper (I) oxide: (Cation conc. entered: 73 mg/kg, converted to compound conc.:82.19 mg/kg or 0.00822%)  
Lead compounds (with the exception of those listed separately in this Annex): (Cation conc. entered: 122 mg/kg, converted to compound conc.:184.22 mg/kg or 0.0184%)  
Mercury dichloride: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.135 mg/kg or <0.0000135%)  
**IGNORED Because: "<LOD"**  
Nickel dihydroxide: (Cation conc. entered: 8.3 mg/kg, converted to compound conc.:13.11 mg/kg or 0.00131%)  
Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.5 mg/kg or <0.00015%) **IGNORED Because: "<LOD"**  
Zinc oxide: (Cation conc. entered: 291 mg/kg, converted to compound conc.:362.212 mg/kg or 0.0362%)

PCBs/PCTs: (Whole concentration entered as: 0.06 mg/kg or 0.000006%)

## User Defined and non CLP Substances

### Chromium(III) oxide (CAS Number: 1308-38-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory

Data source:

[http://clp-](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

[inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en](http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=33806&HarmOnly=no?fc=true&lang=en)

Data source date: 26/11/2012

Classification: R20, R22, R36, R37, R38, R42, R43, R60, R61, R50/53

## Notes utilised in assessment

### Additional Risk Phrase Comments

from section: Table 3.1 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

Note used on:

Test: "Additional on R33" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "Additional on R33" for determinand: "PCBs/PCTs"

### C14.5.5: Step 5

from section: C14.5 in the document: "[WM2 - Hazardous Waste Technical Guidance](#)"

"Remove dangerous substances below the trace impurity thresholds concentrations from further consideration.

Where an individual dangerous substance is present at a very low concentration it can be excluded from further consideration."

Note used on:

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Arsenic trioxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Chromium(III) oxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Copper (I) oxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Nickel dihydroxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Zinc oxide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "PCBs/PCTs"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Cadmium sulphide"

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

Test: "H14 on R50/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R52, R53, R52/53" for determinand: "Cadmium sulphide"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Lead compounds (with the exception of those listed separately in this Annex)"

Test: "H14 on R50, R50/53, R51/53, R52, R53, R52/53" for determinand: "Cadmium sulphide"

## Substance notes

### Note 1

from section: 1.1.3.2, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "Cadmium sulphide"

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

#### **Note A**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

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

#### **Note C**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

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

Note used on:

determinand: "PCBs/PCTs"

#### **Note E (Table 3.2)**

from section: 1.1.3.1, Annex VI in the document: "[CLP Regulations](#)"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Note used on:

determinand: "Arsenic trioxide"

determinand: "Cadmium sulphide"

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

determinand: "Nickel dihydroxide"

#### **Version**

Classification utilises the following:

CLP Regulations - Regulation (EC) No 1272/2008 of the European Parliament and of the Council: 16 December 2008  
1st ATP - 1st Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 26 September 2009; binding date 1 Dec 2010  
2nd ATP - 2nd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 30 March 2011; binding date 1 Dec 2012 in respect of substances and 1 June 2015 in respect of mixtures  
3rd ATP - 3rd Adaptation to Technical Progress for European Regulation 1272/2008: Date entered into force 31 July 2012; binding date 1 Dec 2013

HazWasteOnline Engine: WM2 version 2.3 (April 2011) using HWR08

HazWasteOnline Engine Version: 1.0.2191.4965 (10 Apr 2013)

HazWasteOnline Database: 1.0.2177.4949 (24 Mar 2013)



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Energy



Waste  
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