

**CCG-C-21-12518**

**PHASE II GEOENVIRONMENTAL REPORT  
FOR LAND AT THE FORMER  
PRESCOT POLICE STATION  
DERBY STREET  
PRESCOT  
MERSEYSIDE  
L34**

**SEPTEMBER 2021**

Prepared for:

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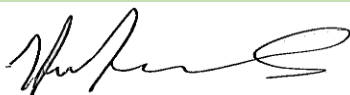
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| Client:                               | Prima group                                                                                                              |
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| Reference Number:                     | CCG-C-21-12518                                                                                                           |
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## **1.0 INTRODUCTION**

**CC GEOTECHNICAL LIMITED (CCG)** is providing consultancy services to **PRIMA GROUP** in connection with the proposed redevelopment of land located immediately to the north of Derby Street, Prescott, L34.

It is understood that the existing Police Station fronting on to Derby Street is to be retained and modified / converted for residential use.

It is further proposed that the land to the rear of the Police Station is to be developed by the construction of 6nr 2.5-storey town houses constructed of traditional brick elevations under pitched roofing materials together with associated newly created hard paved access / egress roadway, off-road car parking facilities and front and rear private gardens.

The existing and proposed site layouts, together with elevations of the proposed development are shown on **PRIMA GROUP** architectural drawings contained herein.

The proposed development falls within the administrative jurisdiction of **KNOWSLEY METROPOLITAN BOROUGH COUNCIL**.

## **2.0 PREVIOUS STUDIES**

The development site was the subject of a Phase I Desk Study Report prepared by **CCG** under report Reference No. **CCG-C-21-12516**, dated September 2021 which concluded that a Phase II intrusive investigation was required, and made recommendations on the scope of the Phase II investigation.

In addition, given that the site is located within the ‘*Knowsley District Coal Mining Referral Area*’, a coal mine risk assessment (CMRA) report was commissioned (prepared by **CCG** under Report Reference No. CCG-C-21-12517, dated September 2021).

This report documents the findings of the Phase II investigation.

This report should be read in conjunction with **CCG** Desk Study Report No. **CCG-C-21-12516**, and **CCG** CMRA Report Reference No. **CCG-C-21-12517**, and with Notes on Limitations, contained herein.

## **2.0 PURPOSE & AIMS OF THE PHASE II INTRUSIVE INVESTIGATION**

The primary purpose of the Phase II intrusive investigation was to confirm the indications of the desk study with respect to:

- The collation of data on soil and groundwater contamination, insofar as they may adversely impact on human and/or environmental receptors
- The collation of data on the properties of the substrata, insofar as they relate to the design and construction of house foundations, ground slabs, and development infrastructure

## **3.0 SITE DATA**

The site is located immediately to the north of Derby Street, Prescott, L34 3LG as shown on **CCG** Drawing No. CCG-C-21-12518-1 contained herein. The **ORDNANCE SURVEY** coordinates for the approximate site centre are 346312 392867. It stands at an approximate elevation of c.72m Ordnance Datum.

The site is situated predominantly within a residential context and comprises an irregular shaped parcel of land which extends to the approximate dimensions of c.68m x 48m, its long axis being on a north – south alignment.

It is bound to the south by public pavements extending along Derby Street (A57), and to the west by an un-named roadway. Its south-eastern boundary is adjoined by commercial premises (Bridal Storey), with its northern and eastern boundaries being adjoined by a series of private gardens associated with residential properties fronting on to Egerton Road and Stanley Crescent respectively.

Existing structures occupying the site comprise a well-maintained 2-storey property fronting on to Derby Street with associated single storey out-buildings to the rear, each constructed of traditional brick and dressed sandstone elevations under pitched roofing materials with a terrace of prefabricated flat roofed garages extending along its northern boundary.

The external topography across the site was seen to be sensibly flat with surface cover comprising black bituminous paving.

Given that the site was previously utilised for commercial land use, there is a potential for the presence of buried services to exist beneath the site.

There was no visual evidence of the presence of native and/or non-native plant species within, or adjoining, the site boundary.

Vehicle and pedestrian access can be made via its Derby Street frontage to the south.

### 3.1 Published Geology

The geology of the site was researched by reference to the 1:50000 scale **BRITISH GEOLOGICAL SURVEY (BGS)** Sheet 097 Liverpool (Solid and Drift Editions: 1977 - 1980).

These indicate the site is devoid of natural drift cover. However, given the presence of natural drift deposits comprising impermeable diamicton (boulder clay) of glacial origin (*Late-Quaternary Epoch - Devensian Age*), there is a potential for the presence of unrecorded drift deposits to be present.

The documented solid geology comprises the Pennine Lower Coal Measures Formation (formerly the Lower Coal Measures) of the Pennine Coal Measures Group comprising interbedded argillaceous mudstone, siltstones, fluvial sandstones and productive coal measure, of the Upper Carboniferous Period (Silesian: Westphalian A: Langsettian Age).

The study site is located within an area where ancient earth movements have caused significant displacements and miss-alignments of the underlying country rock and nearby associated coal seams. Hence the general dip of the solid geology within the surrounding area is seen on the **BGS** mapping data is seen to vary between 8°-30° in a south / south-westerly direction.

There are numerous geological lines of weakness (*i.e. faults, coal seams, etc.*) within the surrounding area, the nearest being geological fault which extends on a north – south alignment immediately to the east of the study site.

The **BGS** solid geology mapping information shows the presence of 2nr seams of coal sub-crop within close proximity to the sites northern and southern boundaries.

The '*Indicative Atlas of Radon in England and Wales*' (Miles. J.C.H et.al, 2007) Map 13 '*Northern Welsh Marches and Liverpool*', shows the site to be situated within an area where it is believed that less than 1% of the properties within the area are affected by Radon and therefore no Radon Protection Measures will be required for new structures in contact with the ground.

As with many previously developed sites superficial made ground deposits of an unknown composition thickness and extent associated with the development of the site and its immediate environs may underlie the site.

### 3.2 Hydrogeology & Hydrology

Information pertaining to hydrogeological and hydrological features of the site may be summarised as follows:

- The solid geology (Pennine Lower Coal Measures Formation) is classified as being a Secondary A Aquifer
- The overlying made ground deposits, if present, are classified as an Unproductive Aquifer
- There are no records pertaining to Ground Water Abstraction Licences within 1km of the site
- There are no records pertaining to the presence of Surface Water Abstraction points within 0.4km of the study site, the nearest being 415m west: James Whitaker & Sons Nurserymen Ltd. Licence No: 2569028003
- There are no records pertaining to the presence of Portable Water Abstraction points within 1km of the study site
- The site is not located within a designated Source Protection Zone (SPZ)
- The site is not located within an Environment Agency Zone II and/or III Flood Plain

## 4.0 PRELIMINARY CONCEPTUAL MODEL

### 4.1 Introduction

The risk assessment methodologies adopted by **CCG** are based on current available guidance from several sources and are included in Appendix I.

A Tier 1 Risk Assessment and Preliminary Conceptual Model (PCM) were formulated using the information collated in the Phase I Desk Study and based on the following assumptions:

- It is understood that the existing Police Station fronting on to Derby Street is to be retained and modified / converted for residential use.

It is further proposed that the land to the rear of the Police Station is to be developed by the construction of 6nr 2.5-storey town houses constructed of traditional brick elevations under pitched roofing materials together with associated newly created hard paved access / egress roadway, off-road car parking facilities and front and rear private gardens.

The existing and proposed layouts are as annotated on **Prima Group** architectural drawings contained herein.

- Drinking water will be from a mains supply.

In constructing the Preliminary Conceptual Model (PCM), **CCG** applied the guidance contained in CIRIA C552: 2001. This recommends use of a Risk Matrix which classifies risk based on the product of Probability of a source being present, and the Consequence of receptors being exposed to the source. Guidance tables setting out the classifications of probability and consequence together with a risk matrix are given in Tables 1-3 hereunder. In using this approach **CCG** recommends actual intrusive investigation of any Risk Classification of “*Moderate*” or over.

**Table 1: Matrix of consequences against probability to gain a risk classification [CIRIA C552, 2001]**

|             |                 | CONSEQUENCE         |                     |                     |                     |
|-------------|-----------------|---------------------|---------------------|---------------------|---------------------|
|             |                 | SEVERE              | MEDIUM              | MILD                | MINOR               |
| Probability | High Likelihood | Very High Risk      | High Risk           | Moderate Risk       | Moderate / Low Risk |
|             | Likely          | High Risk           | Moderate Risk       | Moderate / Low Risk | Low Risk            |
|             | Low Likelihood  | Moderate Risk       | Moderate / Low Risk | Low Risk            | Very Low Risk       |
|             | Unlikely        | Moderate / Low Risk | Low Risk            | Very Low Risk       | Very Low Risk       |

**Table 2: Classification Definitions (C552 CIRIA, 2001)**

| CLASSIFICATION | DEFINITION                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Very High      | There is a high probability that severe harm could arise to a designated receptor from an identified hazard. Or, there is evidence that server harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.                                                                  |
| High           | Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term.                                                                                                                                 |
| Moderate       | It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that such harm would be server, or if any harm were to occur it is more likely that harm would be relatively mild. Investigation (if not undertaken already) is normally required to clarify the risk and to determine to potential liability. Some remedial works may be required in the longer term. |
| Moderate / Low | -                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Low            | It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild                                                                                                                                                                                                                                                                    |
| Very Low       | There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be server.                                                                                                                                                                                                                                                                                                   |

## 4.2 Preliminary Conceptual Model

By application of the risk assessment methodology outlined above, the following PCM was constructed.

**Table 3: Preliminary Conceptual Model (PCM)**

| POLLUTANT LINKAGE | SOURCE                                                                                                                                                         | PATHWAY                           | RECEPTOR                                                                                  | PROBABILITY | CONSEQUENCE | RISK RATING |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------|-------------|-------------|-------------|
| 1                 | Broad spectrum of heavy metals, aggressive pH, hydrocarbons, PAH's in Made Ground associated with the development & redevelopment of the site & adjoining area | Soil and / or soil dust ingestion | Construction workers<br>Future occupants (adults & infants)<br>Offsite receptors<br>Flora | Likely      | Medium      | Moderate    |

|   |                                                                                                                                       |                                 |                                                                                  |          |              |                |
|---|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------------------------------------------------------------|----------|--------------|----------------|
| 2 | Asbestos containing materials (ACM) in made ground soils associated with the development & redevelopment of the site & adjoining area | Fibre Inhalation                | Construction workers<br>Future occupants (adults & infants)<br>Offsite receptors | Likely   | Severe (ACM) | High           |
| 3 | Inhalation of vapours associated with potential made ground deposits etc.                                                             | Inhalation                      | Future residents                                                                 | Unlikely | Medium       | Moderate       |
| 4 | Inhalation of ground gases from onsite or offsite sources i.e. historical mine workings, made ground soils etc.                       | Inhalation                      | Future residents                                                                 | Unlikely | Medium       | Moderate       |
| 5 | pH & Sulphate attack on concrete                                                                                                      | Future building                 | Future building                                                                  | Likely   | Mild         | Moderate / Low |
| 6 | Organic contamination                                                                                                                 | Direct contact with water mains | Potable water supply                                                             | Unlikely | Medium       | Moderate       |

The contaminants of concern associated with those risks which require intrusive investigation were researched by reference to published industry profiles, and are summarised hereunder:

**Table 4: Summary of Contaminants of Concern based on PCM**

| LINKAGE NO.       | METALS                                        | NON-METALS    | ORGANICS                                | GASES                                                | OTHERS         |
|-------------------|-----------------------------------------------|---------------|-----------------------------------------|------------------------------------------------------|----------------|
| PL1, PL2 PL5, PL6 | Be, Cd, Cr (total and VI), Ni, Cu, Pb, Hg, Se | As, sulphates | TPHCWG, PAH's, BTEX, Volatiles (by PID) | -                                                    | pH<br>Asbestos |
| PL3 & PL4         | -                                             | -             | -                                       | CH <sub>4</sub> , CO <sub>2</sub> , H <sub>2</sub> S | -              |
| PL1, PL6          | -                                             | -             | TPHCWG PAH's, BTEX, Volatiles (by PID)  | -                                                    | -              |
| PL1-PL6           | Be, Cd, Cr (total and VI), Ni, Cu, Pb, Hg, Se | As, sulphates | TPHCWG, BTEX PAH's, Volatiles (by PID)  | CH <sub>4</sub> , CO <sub>2</sub> , H <sub>2</sub> S | pH<br>Asbestos |

### 4.3 Summary of Risks

The foregoing analysis identified a significant number of potential risks, and if present, these could adversely impact on human or environmental receptors. Given the sensitivity of the proposed end use, an intrusive phase of investigation was undertaken to determine whether the postulated pollutant linkages are present on site.

## 5.0 FIELDWORK

### 5.1 Introduction

A programme of fieldwork investigation was undertaken in August 2021. The programme comprised:

- The manual excavation, logging and sampling of 6nr borehole service clearance pits, each extending to 1.2mbngl
- The sinking of boreholes from the base of each service avoidance pit using light dynamic sampling methods
- The subsampling of borehole arisings for laboratory testing
- Installation of 50mm HDPE plain and slotted well-tube and associated headworks, complete with non-lime pea gravel surround and bentonite seals at 3nr borehole positions
- The instigation of a programme of groundwater / gas monitoring comprising 6nr rounds over a 3-month period

The fieldwork was planned in accordance with BSEN 1997-1 (2007) Eurocode 7, BS10175: 2011, BS5930: 1999, and the sampling and monitoring methodologies employed by **CCG** as presented in Appendix B, insofar as they related to the scope of the investigation.

The layout of the proposed intrusive investigation is as annotated on **PRIMA GROUP** Drawing No. 102-013 'Existing & Proposed Site Plan' contained herein.

### 5.2 Borehole Drilling & Monitoring Installations

#### 5.2.1 Light Dynamic Sampling Boreholes

In accordance with the ground investigation plan, 6nr boreholes were sunk using light dynamic sampling methods using a Dando Terrier 2000 rig deploying 100mm casings and associated tools. 3

Each borehole location was positioned clear of overhead services and was scanned for buried electrical services using CAT cable avoidance scanner before and during hand excavation of a starter pit extending to 1.2mbngl.

Boring tools were decontaminated prior to commencement.

In this method of investigation samples of subsoils are recovered by driving and extracting a series of reducing diameter 1m long steel tubes. Standard penetration test's (SPT's) were undertaken at regular depth increments.

This method of sampling recovers relatively "undisturbed" soil profiles in Perspex tubes, which are used to line the steel tubes. The Perspex tubes were split and carefully logged and subsampled. Subsamples for potential chemical analysis were removed at appropriate positions from the profile and transferred to chilled amber glass jars and vials for laboratory analysis.

The logs of the boreholes, annotated with sampling details, SPT 'N' values and details of standpipe construction are presented in Appendix C.

### 5.2.2 Monitoring Installations

Standpipes comprising 50mm diameter HDPE plain and slotted well tube set in bentonite and non-limestone pea gravel surround were installed at 3nr borehole positions. Each standpipe was fitted with a gas valve connector and was protected by a flush cover set in concrete. Details of standpipe installations are provided on the relevant borehole logs in Appendix C and summarised in the tabulation hereunder:

**Table 5: Borehole Installation Details**

| BOREHOLE | DEPTH OF BOREHOLE (mbgl) | DEPTH OF STANDPIPE [mbgl] | RESPONSE ZONE (mbgl) |      |
|----------|--------------------------|---------------------------|----------------------|------|
|          |                          |                           | FROM                 | TO   |
| WS1      | 3.0m                     | 3.0m                      | 0.5m                 | 3.0m |
| WS3      | 3.0m                     | 2.5m                      | 0.5m                 | 2.5m |
| BH2      | 2.8m                     | 2.8m                      | 0.5m                 | 2.8m |

The standpipe installations were periodically monitored for flow rate and composition of ground gas using a Geotechnical Instruments GA 2000 infra-red analyser. The installations were also monitored for standing water levels with an electronic dip meter.

The results of the gas and groundwater monitoring, together with calibration certificates of the instruments used are given in Appendix D.

## 6.0 OBSERVED STRATIGRAPHY

The stratigraphy of the boreholes was generally consistent with the documented geology. The succession may be generalised as tabulated hereunder:

**Table 6: Observed Stratigraphy**

| Location | STRATIGRAPHY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS1      | Bituminous paving and associated sub-base overlying superficial made ground deposits comprising dark brown clayey sands and gravel extending to 0.45mbgl. The sequence thereafter continues in natural drift deposits comprising loose red / brown sands and gravel to 2mbgl, then grey / brown weathered mudstone thereafter, recovered as soft becoming stiff clay, proven to 3mbgl.<br>Borehole reported to be dry on completion                                                                                                        |
| WS2      | Bituminous paving and associated sub-base overlying made ground deposits comprising black sandy gravel extending to 0.5mbgl. The sequence thereafter continues in natural drift deposits comprising dark grey varying to brown sandy locally organic clay to 1.2mbgl, loose grey clayey silt to 1.9mbgl, then grey weathered siltstone / mudstone thereafter, recovered as medium dense becoming dense clayey silts, proven to 2.6mbgl<br>Slight seepage reported at 1.8mbgl                                                               |
| WS3      | Bituminous paving and associated sub-base overlying natural drift deposits comprising grey / brown sandy clay to 0.35mbgl, black silty organic clay to 0.5mbgl, light grey sands to 0.85mbgl, firm grey silty clay to 2.1mbgl, then grey weathered mudstone thereafter, recovered as very dense very clayey sands and gravel, proven to 3mbgl<br>Borehole reported to be dry on completion                                                                                                                                                 |
| WS4      | Bituminous paving and associated sub-base extending to 0.1mbgl. the sequence thereafter continues in natural drift deposits comprising firm brown varying to grey silty clay to 1.35mbgl, medium dense clayey gravel to 1.5mbgl, firm grey clay to 2mbgl, then grey weathered mudstone recovered as medium dense varying to dense very clayey gravel, proven to 2.7mbgl.<br>Slight seepage reported at c.1.7mbgl                                                                                                                           |
| WS5      | Bituminous paving and associated sub-base overlying made ground deposits comprising dark brown clayey sands and gravel extending to 0.7mbgl. The sequence thereafter continues in natural drift deposits comprising soft brown varying to grey silty clay to 1.6mbgl, loose dark grey clayey gravel to 2mbgl, then weathered mudstone interbedded with thin coal thereafter, recovered as stiff gravelly silty clay to 2mbgl, then medium dense becoming dense clayey gravel, proven to 3mbgl<br>Slight seepage reported from coal horizon |
| WS6      | Bituminous paving and associated sub-base overlying superficial made ground deposits comprising dark brown clayey gravelly sand extending to 0.55mbgl. The sequence thereafter continues in natural drift deposits comprising medium dense very gravelly sands to 1.85mbgl, then dense becoming very dense grey locally brown sandy silty gravel thereafter, possibly weathered mudstone, proven to 2.8mbgl<br>Slight seepage reported at 2.8mbgl                                                                                          |

There was no visual and/or olfactory evidence of contamination and/or biodegradable materials affecting the made ground mass at any sampling position.

## 7.0 GROUNDWATER REGIME

Slight seepages were reported at some borehole positions, with monitored standing water levels being in the order of 2.3mbgl during the ongoing gas – groundwater standpipe monitoring programme.

## 8.0 LABORATORY TESTING

### 8.1 Soil Engineering Test

A programme of soil engineering testing was undertaken at a UKAS / MCERTS accredited laboratory associated with **CCG**. The programme comprised:

- Determination of soil moisture content in accordance with BS: 1377: Part 2: 1990
- Determination of Atterberg Limits in accordance with BS: 1377: Part 2: 1990
- Determination of pH and water-soluble sulphate content in accordance with BS 1377: Part 4: 1990

The soil engineering test results are presented in Appendix E.

### 8.2 Contamination Analyses

A programme of soil / groundwater chemical analyses was undertaken at a UKAS / MCERTS accredited laboratory:

- 6nr subsamples of made ground soils were analysed to a broad range of contaminants including metals, non-metals, speciated PAH's
- 6nr subsamples of made ground soils were analysed for hydrocarbons to the TPHCWG methodology
- 6nr subsamples of made ground soils were analysed for BTEX compounds
- 6nr subsamples of made ground soils were screened for asbestos contaminants
- 6nr subsamples of soil were analysed for pH and water-soluble sulphate content
- In the absence of recoverable volumes of water in standpipes, a leachate was prepared on soil recovered from made ground at WS2 and was analysed for a broad range of contaminants including metals, non-metals, heavy metals, speciated PAH's, and hydrocarbons to the TPHCWG methodology

The soil / soil leachate contamination test results and certificates are presented in Appendix F.

## 9.0 ASSESSMENT OF RISKS TO THE BUILT ENVIRONMENT

### 9.1 Specification of Buried Concrete

The data obtained in the investigations was assessed against the guidance given in BRE Special Digest 1: 2005, as summarised hereunder:

**Table 7: Design Chemical Class Based on Soil Data**

| CONCRETE SPECIFICATION DATA SHEET      |            |                                                     |
|----------------------------------------|------------|-----------------------------------------------------|
| Is the site Brownfield or Greenfield?  | Brownfield |                                                     |
| Is the water table static or mobile?   | Static     |                                                     |
| Highest water-soluble Sulphate results | 50mg/l     | Design Sulphate Class of                            |
| Lowest pH result                       | 7.3        | DS-1 Class of AC-1                                  |
| Intended Working Life                  | 50 years   | Adopt Design Chemical Classification of <b>DC-1</b> |

Based on the foregoing assessments, concrete in the ground should be specified to conform to the compositional requirements of Design Chemical Class **DC 1**, as defined in BRE Special Digest 1: 2005.

### 9.2 New Water Mains Supply

The assessment of requirements for new water mains within the investigation area was based on the criteria specified in Paper 10/WM/03/21 'Guidance for the selection of Water Supply Pipes to be used in Brownfield Sites' published by UK Water Industry Research (UKWIR) January 2011.

The preliminary findings indicate that the soil concentrations of pertinent hydrocarbon contaminant species are above the threshold concentrations specified by the UKWIR, indicating that ProtectaLine (PE/AL/PE) water mains should be deployed. Good practice requires that alkathene mains be laid in a remediated alignment comprising of clean granular fill extending to 600mm + pipe diameter and to 300mm below pipe underside.

Pipes should be laid in accordance with BS EN 12201-2 'Plastic piping systems for water supply, and for drainage and sewerage under pressure as stated in UKWIR guidance.

It should be noted that this recommendation is subject to the opinion of the water supplier, and in this instance the local water authority (**UNITED UTILITIES**) must be consulted to confirm that the proposals above accord with their interpretation of current guidance.

### 9.3 Assessment of Risk from Ground Gases

Standpipes were constructed such that response zones were within the permeable made ground strata. Using the data gathered in the monitoring programme, a gas risk assessment was undertaken in accordance with the ground gas risk assessment methodology (See Appendix I) employed by **CCG**. The ground gas risk assessment methodology conforms to current UK guidance on the assessment of risks posed by ground gases.

The potential sources of gas identified in the desk study were generally considered as sources of "Low" generation potential, but since the development is of high sensitivity, a programme of monitoring comprising of 6 rounds distributed over a 3-month period was adopted.

A gas risk assessment was undertaken in accordance with current UK guidelines set out in CIRCA C665 2007 "Assessing Risk Posed by Hazardous Gases to Buildings". The CIRIA risk assessment methodology uses typical maximum soil gas concentrations and worse case borehole flow rates to define a "Characteristic Situation" for the shallow gas regime.

The volumetric gas flow rate used by the risk assessment is termed "Gas Screening Value (GSV)" in the guidance and is defined below.

**Table 8: Gas Monitoring Data**

| Position               | WS1      | WS3  | BH6  |
|------------------------|----------|------|------|
| No Monitoring Visits   | 1        | 1    | 1    |
| CH <sub>4</sub> (%)    | Nil      | Nil  | Nil  |
| CO <sub>2</sub> (%)    | Nil      | Nil  | Nil  |
| O <sub>2</sub> (%)     | 20.0     | 20.0 | 20.1 |
| H <sub>2</sub> S (ppm) | Nil      | Nil  | Nil  |
| CO (ppm)               | Nil      | Nil  | Nil  |
| Flow (l/hr)            | <0.1     | <0.1 | <0.1 |
| Water Levels (m)       | 2.32     | Dry  | 2.21 |
| PID response           | 0.0      | 0.0  | 0.0  |
| Pressure Range (mb)    | 1004mbar |      |      |

After 1nr round of monitoring, a preliminary Gas Screening Value (GSV) of 0.0001l/hrs is calculated for CO<sub>2</sub>, and <0.0001l/hr for CH<sub>4</sub>.

Using these GSV values, the risk to the proposed development was assessed in line with Situation A as defined in CIRIA C665, and on this basis the site complies with Characteristic Situation 1 (CS1) and based on this classification gas protection measures are not required.

Notwithstanding the above, it must be borne in mind that a further 5nr rounds of monitoring are required to complete the ongoing gas monitoring programme .

## 10.0 HUMAN HEALTH RISK ASSESSMENT

### 10.1 Legislative Background to Contaminated Land Assessment

Current approaches (CLR11- 'Model Procedures for the Management of Land Contamination' and Part IIA of the Environmental Protection Act 1990) to risk assessment of contaminated land suggest the construction of a Preliminary Conceptual Model. The purpose of this model is to define all possible complete pollution linkages, where the requisite source – pathway – target elements are present; these elements being defined as:

- A contaminant (source) is a hazardous substance or agent, present at levels that have the potential to cause harm or damage a receptor
- A pathway is the means by or through which a contaminant meets, or otherwise affects, the receptor
- A receptor (target) is an entity (human being, aquatic environment, flora, and fauna etc) that is vulnerable to the adverse effects of the contaminant

This relationship is termed a “pollution linkage”. It should be recognised that for a health or environmental risk to exist, all three elements of the relationship or linkage must be present, *i.e.*

- If there is no contaminant, or contaminant present at levels below those considered to be harmful or damaging to a receptor, then there can be no adverse effect on a receptor
- If there is no receptor present that can be adversely affected by a contaminant, no harm or damage can arise
- Even where both a contaminant and a receptor are present, no harm or damage will occur if there is no pathway by or through which a linkage between the two can be established

## 10.2 Risk Assessment Methodologies

The risk assessment methodologies employed by **CCG** are based on the use of CLEA 1.06 and are detailed in Appendix I.

## 10.3 Basis of Assessment of Risk to Human Health

The Human Health Risk Assessment was carried out in accordance with the **CCG** methodology for assessing soil contamination data as contained in Appendix I, and since it is proposed that the site be redeveloped for residential land use, the assessment was based on criteria contained in publication LQM/CIEH S4UL's for Human Health Risk Assessment (2015) (**CCG** Licence No. S4UL3233), applicable to the “Residential With plant uptake` scenario. This document does not provide criteria for Lead, for which the results were compared to the C4SL (200mg/kg) published by DEFRA SP1010 Development of Category 4 Screening Levels.

## 10.4 Assessment of Contamination Data

Based on a Soil Organic Matter content of an average 2.5%, an assessment of the soil data was undertaken as summarised in the tabulations hereunder, and presented on the worksheets in Appendix G.

### 10.4.1 Assessment of Metal Data

The assessment of the metal data is presented hereunder:

Table 9: Assessment of Metal Data

| Contaminant | LQM / CIEH S4UL<br>(mg/kg) | Maximum<br>(mg/kg) | Exceedances                            |                                        |
|-------------|----------------------------|--------------------|----------------------------------------|----------------------------------------|
|             |                            |                    | (mg/kg)                                | Location                               |
| Cadmium     | 11                         | 1.1                |                                        |                                        |
| Chromium    | 910                        | 42.3               |                                        |                                        |
| Copper      | 240                        | 446                |                                        |                                        |
| <b>Lead</b> | <b>200</b>                 | <b>309</b>         | <b>305</b><br><b>309</b><br><b>234</b> | <b>WS1</b><br><b>WS2</b><br><b>WS5</b> |
| Mercury     | 1.2                        | 0.9                |                                        |                                        |
| Nickel      | 180                        | 55.0               |                                        |                                        |
| Zinc        | 3700                       | 322                |                                        |                                        |

The above assessment confirms the presence of Lead at 3nr sampling positions, hence a potential risk to human health is indicated

### 10.4.2 Assessment of Non-Metal Data

The assessment of the non-metal data is presented hereunder:

Table 10: Assessment of Non-Metal Data

| Contaminant    | LQM / CIEH S4UL<br>(mg/kg) | Maximum<br>(mg/kg) | Exceedances                             |                                        |
|----------------|----------------------------|--------------------|-----------------------------------------|----------------------------------------|
|                |                            |                    | (mg/kg)                                 | Location                               |
| <b>Arsenic</b> | <b>37</b>                  | <b>446</b>         | <b>446</b><br><b>439</b><br><b>37.1</b> | <b>WS1</b><br><b>WS2</b><br><b>WS3</b> |

|              |     |      |  |  |
|--------------|-----|------|--|--|
| Selenium     | 250 | 1.3  |  |  |
| Free Cyanide | 22  | <1.0 |  |  |

The above assessment confirms the presence of Arsenic at 3nr sampling positions, hence a potential risk to human health is indicated

#### 10.4.3 Assessment of PAH Data

The assessment of the non-metal data is presented hereunder:

Table 11: Assessment of PAH Data

| Contaminant                 | LQM / CIEH S4UL<br>(mg/kg) | Maximum<br>(mg/kg) | Exceedances               |                          |
|-----------------------------|----------------------------|--------------------|---------------------------|--------------------------|
|                             |                            |                    | (mg/kg)                   | Location                 |
| Naphthalene                 | 5.6                        | 5.0                |                           |                          |
| Acenaphthylene              | 420                        | 0.3                |                           |                          |
| Acenaphthene                | 510                        | 11.3               |                           |                          |
| Fluorene                    | 400                        | 7.1                |                           |                          |
| Phenanthrene                | 220                        | 83.7               |                           |                          |
| Anthracene                  | 5400                       | 16.2               |                           |                          |
| Fluoranthene                | 560                        | 130                |                           |                          |
| Pyrene                      | 1200                       | 112                |                           |                          |
| <b>Benz(a)anthracene</b>    | <b>11</b>                  | <b>41.6</b>        | <b>41.6</b>               | <b>WS1</b>               |
| <b>Chrysene</b>             | <b>22</b>                  | <b>49.7</b>        | <b>49.7</b>               | <b>WS1</b>               |
| <b>Benzo(b)fluoranthene</b> | <b>3.3</b>                 | <b>43.9</b>        | <b>43.9</b><br><b>8.6</b> | <b>WS1</b><br><b>WS2</b> |
| Benzo(k)fluoranthene        | 93                         | 33.9               |                           |                          |
| <b>Benzo(a)pyrene</b>       | <b>2.7</b>                 | <b>41.8</b>        | <b>41.8</b><br><b>8.5</b> | <b>WS1</b><br><b>WS2</b> |
| Indeno(123-cd)pyrene        | 36                         | 35.9               |                           |                          |
| <b>Dibenz(ah)anthracene</b> | <b>0.28</b>                | <b>7.8</b>         | <b>7.8</b><br><b>1.4</b>  | <b>WS1</b><br><b>WS2</b> |
| Benzo(ghi)perylene          | 340                        | 31.3               |                           |                          |

The above assessment confirms the presence of some PAH contaminants in soils recovered from boreholes WS1 and WS2 respectively, hence a potential risk to human health is indicated.

#### 10.4.4 Assessment of Petroleum Hydrocarbon Data

The assessment of the Petroleum Hydrocarbon (TPH) data is presented hereunder:

Table 12: Assessment of Hydrocarbon Data

| Contaminant         | LQM / CIEH S4UL<br>(mg/kg) | Maximum<br>(mg/kg) | Exceedances |          |
|---------------------|----------------------------|--------------------|-------------|----------|
|                     |                            |                    | (mg/kg)     | Location |
| Aromatic EC5-EC7    | 140                        | <0.01              |             |          |
| Aromatic EC7-EC8    | 290                        | <0.01              |             |          |
| Aromatic EC8-EC10   | 83                         | <1.0               |             |          |
| Aromatic EC10-EC12  | 180                        | 8.6                |             |          |
| Aromatic EC12-EC16  | 330                        | 51.3               |             |          |
| Aromatic EC16-EC21  | 540                        | 266                |             |          |
| Aromatic EC21-EC35  | 1500                       | 1100               |             |          |
| Aliphatic EC5-EC6   | 78                         | <0.01              |             |          |
| Aliphatic EC6-EC8   | 230                        | <0.01              |             |          |
| Aliphatic EC8-EC10  | 65                         | <1.0               |             |          |
| Aliphatic EC10-EC12 | 330                        | 1.8                |             |          |
| Aliphatic EC12-EC16 | 2400                       | 8.3                |             |          |
| Aliphatic EC16-EC35 | 92000                      | 115.4              |             |          |

The above assessment confirms that no soil hydrocarbon fraction exceeds its respective soil guideline criterion, hence no risk to human health is indicated.

#### 10.4.5 Assessment of Asbestos Data

Asbestos containing materials (ACM's) were not detected in any sample analysed and therefore no risk to human health is indicated

#### 10.4.6 Assessment of BTEX Data

The appended laboratory contamination results confirm that all BTEX compounds are below their limit of detection (LOD) and therefore no risk to human health is indicated.

#### 10.4.7 Summary of Human Health Assessment

The above human health risk assessment confirms presence of:

- Lead at 3nr sampling positions
- Arsenic at 2nr sampling positions
- Benz(a)anthracene at 1nr sampling position
- Chrysene at 1nr sampling position
- Benzo(b)fluoranthene at 2nr sampling positions
- Benzo(a)pyrene at 2nr sampling positions
- Dibenz(ah)anthracene at 2nr sampling position

These results indicate a potential risk to human health via the dermal and ingestion pathways and as such some remedial works are required to mitigate these risks. Suitable forms of remediation are discussed in Table 15 hereunder.

#### 11.0 CONTROLLED WATERS RISK ASSESSMENT

##### 11.1 Assessment of Soil Leachate Metals, Non-Metals & Polycyclic Aromatic Hydrocarbon (PAH) Data

In the absence of adequate groundwater, leachates prepared on soils recovered from 1nr borehole position (WS2) were analysed for a broad range of contaminants including speciated PAH and TPH concentrations. The results were assessed against Environmental Quality Standards (AA-EQS) for freshwater as shown hereunder.

**Table 13: Assessment of Soil Leachate Data**

| Contaminant          | WS2 Result (ug/l) | AA-EQS (ug/l) |
|----------------------|-------------------|---------------|
| Naphthalene          | 0.02              | 2.4           |
| Lead                 | <5                | 20            |
| Fluoranthene         | <0.01             | 0.1           |
| Phenanthrene         | 0.02              | -             |
| Anthracene           | <0.01             | -             |
| Acenaphthylene       | <0.01             | -             |
| Pyrene               | <0.01             | -             |
| Chrysene             | <0.01             | -             |
| Fluorene             | <0.01             | -             |
| Nickel               | <5                | 150           |
| Indeno(123-cd)pyrene | <0.01             | 0.02          |
| Benzo(ghi)perylene   | <0.01             | 0.02          |
| Copper               | 7                 | 40            |
| Benzo[a]pyrene       | <0.01             | 0.05          |
| Benzo[a]anthracene   | <0.01             | 0.05          |
| Benzo[k]fluoranthene | <0.01             | 0.03          |
| Benzo[b]fluoranthene | <0.01             | 0.03          |
| Boron                | 20                | 1000          |
| Cyanide              | <5                | -             |
| <b>Arsenic</b>       | <b>338</b>        | <b>25</b>     |
| Mercury              | <0.1              | 1             |
| Selenium             | <5                | -             |
| Cadmium              | <1                | 5             |
| pH<                  | 8.7               | -             |
| Sulphate             | 3                 | 400000        |

The above assessment confirms the presence of elevated concentrations of Arsenic when assessed against EQS Freshwater criteria and hence a potential risk to controlled waters is indicated.

##### 11.2 Assessment of Groundwater Hydrocarbon Data

Speciated hydrocarbon results were assessed by comparison with AA-EQS values for inland waters. In case of determinands not covered by AA-EQS values, results were compared to EQS Freshwater Criteria values or where no EQS Freshwater Criterion is available, then WHO guidelines for Drinking Water are adopted.

**Table 14: Assessment of Soil Leachate Hydrocarbon Data**

| Contaminant                       | WS2 Result (ug/l) | AA-EQS (ug/l) | WHO ug/l |
|-----------------------------------|-------------------|---------------|----------|
| Aromatic EC5-EC7 (benzene)        | <1.0              | 10            | 10       |
| Aromatic EC7-EC8 (toluene)        | <1.0              | -             | 700      |
| Aromatic EC8-EC10 (ethyl benzene) | <5.0              | -             | 300      |
| Aromatic EC10-EC12                | <5.0              | -             | 100      |
| Aromatic EC12-EC16                | 5.4               | -             | 100      |
| Aromatic EC16-EC21                | 5.5               | -             | 90       |
| Aromatic EC21-EC35                | <5.0              | -             | 90       |
| Aliphatic EC5-EC6                 | <1.0              | -             | 15000    |
| Aliphatic EC6-EC8                 | <1.0              | -             | 15000    |
| Aliphatic EC8-EC10                | 13.1              | -             | 300      |
| Aliphatic EC10-EC12               | 7.2               | -             | 300      |
| Aliphatic EC12-EC16               | 5.3               | -             | 300      |
| Aliphatic EC16-EC21               | <5.0              | -             | (300)*   |
| Aliphatic EC21-EC35               | 36.6              | -             | (300)*   |

The above assessment confirms that no hydrocarbon fraction exceeds its respective guideline criteria. Hence no risk to controlled waters and/or human health is indicated.

### 11.3 Summary of Controlled Waters Risk Assessment

The above assessment confirms the presence of elevated concentrations of Arsenic, hence a potential risk to controlled waters is indicated.

Notwithstanding the above assessment, given the absence of nearby sensitive receptors (*i.e. Principal Aquifer, water abstraction points, Source Protection Zones, surface water bodies etc.*) it is considered that the single exceedance poses an insignificant risk to controlled waters.

### 12.0 POST INVESTIGATION CONCEPTUAL MODEL

Based on the findings of the investigation, a post investigation conceptual model may be constructed illustrating proven pollution linkages and summarising the conceptual remediation recommendations discussed above, as tabulated hereunder.

**Table 15: Post Investigation Conceptual Model**

| Source                                                                                                                                              | Pathway                            | Receptor                                                     | Remedial Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The above human health risk assessment confirms presence of elevated concentrations of some contaminants, hence a risk to human health is indicated | Oral / ingestion / dermal pathways | Construction workers<br>Future residents (adults / children) | <p>No remedial works required under areas of permanent hard standing.</p> <p>Site levels in proposed rear gardens to be reduced by 600mm below finished garden levels and the levels restored by placement of 600mm clean imported topsoil.</p> <p>Cover placed in all gardens will be undertaken under a strict validation regime comprising a 1nr analyses per 50m<sup>3</sup> with a minimum of 4nr analyses per material source.</p> <p>Cover thickness is to be independently validated by excavation and photography for inclusion in a Validation Report.</p> <p>Imported soils are to comply with the analysis criteria contained in Appendix G.</p> <p>In addition to the recommendations given above, as with all developments, disturbance of the ground may uncover unanticipated features which may give rise to considerations of contamination insofar as the exposed conditions may have the potential to impact on receptors including inter alia humans, animals, controlled waters, or the fabric of buildings. Any such encounters will require the contractor to halt work, isolate the risk area, and summon <b>CCG</b> to site to determine the nature of the exposure and to determine an appropriate course of action. Any such incidents will be fully documented in a detailed site Remediation Report.</p> |

### 13.0 **PRELIMINARY WASTE CLASSIFICATION**

A waste classification exercise was undertaken in relation to potential offsite disposal of excavation arisings. The first stage entailed the assessment of the basic soil contamination data via the **HAZWASTE** online program. The output data from this basic assessment is provided in Appendix H. This program generates the baseline 'Hazardous / Non-Hazardous' classification of soils.

The appended **HAZWASTE** report classifies soils recovered from borehole WS1 to be 'Hazardous' by virtue of elevated concentrations of Total Petroleum Hydrocarbons (TPH) (1680mg/kg). All other soils analysed classify as being 'Non-Hazardous Waste'.

Notwithstanding the above, it should be noted that the final decision on waste classification is at the discretion of the accepting landfill, and it is recommended that consultation with landfill operators be undertaken during the development of the waste management plan.

### 14.0 **GEOTECHNICAL ASSESSMENT**

#### 14.1 **Introduction**

It is understood that an existing Police Station fronting on to Derby Street is to be retained and modified / converted for residential land use.

It is further proposed that the land to the rear of the Police Station is to be developed by the construction of 6nr 2.5-storey town houses constructed of traditional brick elevations under pitched roofing materials together with associated newly created hard paved access / egress roadway, off-road car parking facilities and front and rear private gardens.

The existing and proposed site layouts, together with elevations of the proposed development are shown on **PRIMA GROUP** architectural drawings contained herein.

#### 14.2 **Observed Ground Conditions**

This site investigation confirms the presence of bituminous paving and associated sub-base overlying made ground deposits generally comprising grey / brown clayey sands and gravel extending to depths varying between 0.15m - 0.7mbgl. The sequence thereafter continues in natural drift deposits comprising loose silty, locally gravelly, sands and soft becoming firm brown / grey clay deposits extending to depths varying between 1.5m – 2mbgl. Thereafter, the sequence continued in grey weathered mudstone locally interbedded with thin intact coal, recovered as firm becoming stiff clay and locally as dense sands and gravel.

Slight seepages were reported at some borehole positions during the intrusive investigation, with monitored standing water levels being in the order of 2.21m - 2.32mbgl during the ongoing gas – groundwater standpipe monitoring programme.

There was no visual and/or olfactory evidence of contamination and/or biodegradable materials affecting the made ground mass at any sampling position.

#### 14.3 **Foundations**

Reinforced strip foundations may be adopted for the proposed development but taking account of the variability in the shallow ground conditions, it is recommended that foundations of the new houses bear on the underlying weathered mudstone / siltstone formations at a notional depth of 2mbgl. Foundations set at this depth may be designed on a Presumed Bearing Value of 140kN/m<sup>2</sup>.

It is important that all foundation excavations be inspected by a competent ground engineer to ensure that the predicted founding strata has been encountered.

Foundation should comprise of strips of minimum thickness 300mm and be reinforced in the bottom third by A393 mesh.

Given the variable densities of shallow drift deposits and given the presence of some organic content in shallow clay deposits, as identified in boreholes WS2 and WS3, it is recommended that fully suspended passively vented block and beam floors be adopted.

Notwithstanding the above, taking into account the above CMRA, and given the potential for historical shallow underground coal mining activities, since there is a potential risk of surface instability at this site it is therefore recommended that a further intrusive investigation be carried out to probe for the presence / absence of mine related voids and/or broken ground at locations as annotated on **PRIMA GROUP** Drawing No. 102-013 'Existing & Proposed Site Plan' contained herein. The findings of the investigation should be used in the preparation of a further

interpretative report assessing the actual risks of surface instability, and if appropriate, making recommendations for preconstruction remedial works.

#### 14.5 Excavations

Excavations in the observed made ground and natural drift soils may be undertaken by light hydraulic excavators. Excavations in excess of 1.2mbgl will require side support.

#### 14.6 Groundwater Management

Slight seepages were reported at some borehole positions, with monitored standing water levels being in the order of 2.21m - 2.32mbgl during the ongoing gas – groundwater standpipe monitoring programme. Hence, a prudent contractor would allow for some pumping to maintain dry working conditions during foundation construction and/or service installations, particularly during periods of heavy / prolonged periods of precipitation.

#### 15.0 SUMMARY CONCLUSIONS

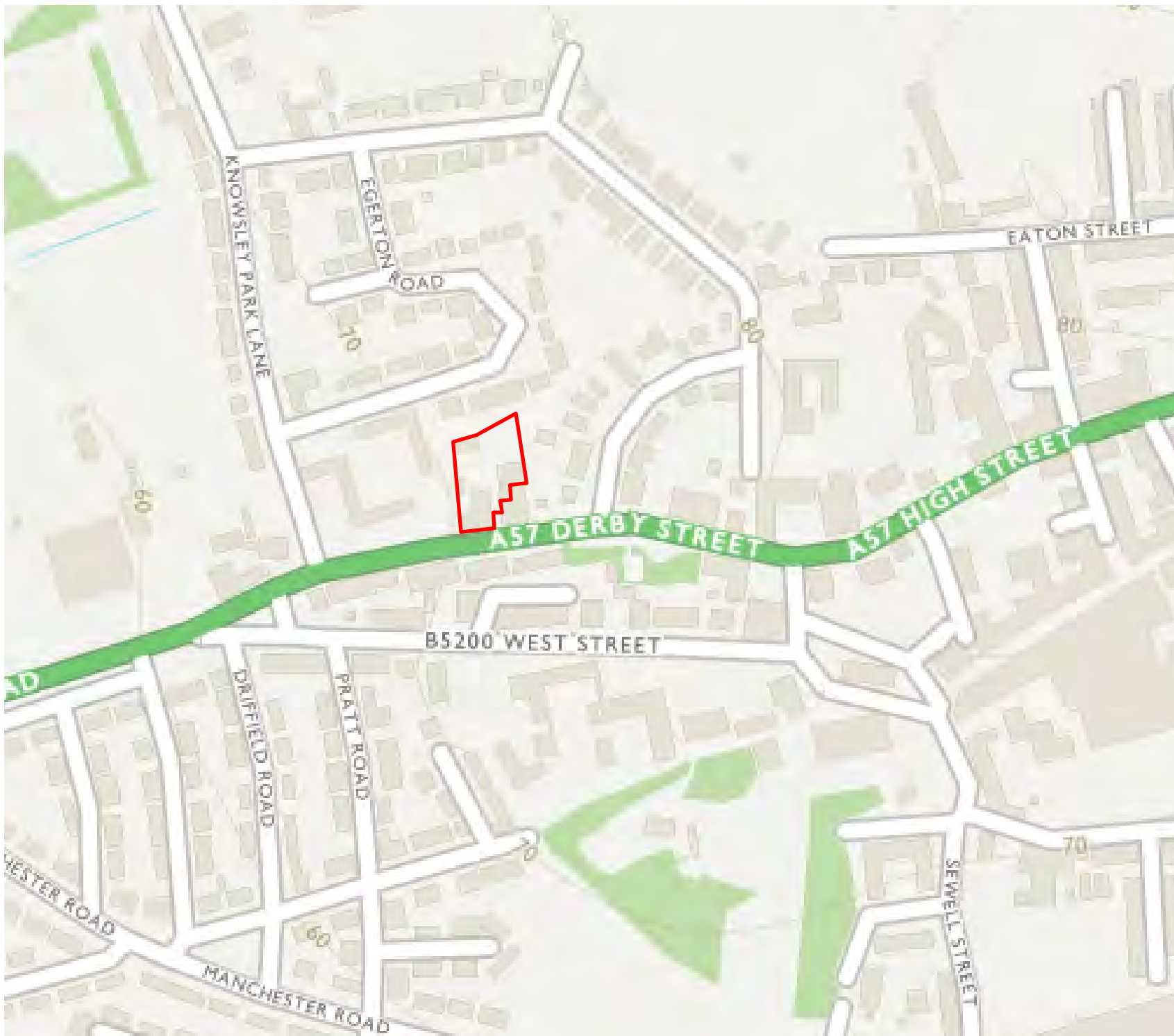
The recommendations hereunder are based on the salient sections of the report and should not be referred to in isolation of the relevant sections of the report. All recommendations are subject to Regulatory Local Authority review.

**Table 17: Summary of Conclusions**

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Soil Contamination &amp; Remediation</b> | No remedial works required under areas of permanent hard standing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                             | Site levels in proposed rear garden to be reduced by 600mm below finished garden levels and the levels restored by the placement of 600mm clean imported topsoil.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                             | Cover placed in all gardens will be undertaken under a strict validation regime comprising a 1nr analyses per 50m <sup>3</sup> with a minimum of 4nr analyses per material source.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                             | Cover thickness is to be independently validated by excavation and photography for inclusion in a Validation Report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                             | Imported soils are to comply with the analysis criteria contained in Appendix G.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Controlled waters</b>                    | In additional to the recommendations given above, as with all developments, disturbance of the ground may uncover unanticipated features which may give rise to considerations of contamination insofar as the exposed conditions may have the potential to impact on receptors including inter alia humans, animals, controlled waters, or the fabric of buildings. Any such encounters will require the contractor to halt work, isolate the risk area, and summon <b>CCG</b> to site to determine the nature of the exposure and to determine an appropriate course of action. Any such incidents will be fully documented in a detailed site Remediation Report. |
|                                             | The above assessment confirms the presence of elevated concentrations of Arsenic, hence a potential risk to controlled waters is indicated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Water Mains</b>                          | Notwithstanding the above assessment, given the absence of nearby sensitive receptors ( <i>i.e. Principal Aquifer, water abstraction points source protection zones nearby water courses etc.</i> ) and given that the impacted soils will be removed during site preparation works to allow for foundation construction and/or service installations, it is considered that the slight exceedance pose an insignificant risk to controlled waters.                                                                                                                                                                                                                  |
|                                             | The preliminary findings indicate that the soil concentrations of pertinent hydrocarbon contaminant species are above the threshold concentrations specified by the UKWIR, indicating that normal Protecta Line (PE/AL/PE) water mains may be deployed. Good practice requires that alkathene mains be laid in a remediated alignment comprising of clean granular fill extending to 600mm + pipe diameter and to 300mm below pipe underside.                                                                                                                                                                                                                        |
|                                             | Pipes should be laid in accordance with BS EN 12201-2 'Plastic piping systems for water supply, and for drainage and sewerage under pressure as stated in UKWIR guidance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Preliminary Waste Classification</b>     | It should be noted that this recommendation is subject to the opinion of the water supplier, and in this instance the local water authority ( <b>United Utilities</b> ) must be consulted to confirm that the proposals above accord with their interpretation of current guidance.                                                                                                                                                                                                                                                                                                                                                                                  |
|                                             | The appended <b>Hazwaste</b> report classifies soils recovered from borehole WS1 to be ' <b>Hazardous</b> ' by virtue of elevated concentrations of Total Petroleum Hydrocarbons (TPH) (1680mg/kg). All other soils analysed classify as being ' <b>Non-Hazardous Waste</b> '.                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Concrete specification</b>               | Notwithstanding the above, it should be noted that the final decision on waste classification is at the discretion of the accepting landfill, and it is recommended that consultation with landfill operators be undertaken during the development of the waste management plan.                                                                                                                                                                                                                                                                                                                                                                                     |
|                                             | Concrete in the ground should be specified to conform to the compositional requirements of <b>DC-1</b> as defined in BRE Special Digest 1: 2005                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Gas Risk Assessment</b>                  | After 1nr round of monitoring, a preliminary Gas Screening Value (GSV) of 0.0001l/hrs is calculated for CO <sub>2</sub> , and <0.0001/hr for CH <sub>4</sub> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                             | Using these GSV values, the risk to the proposed development was assessed in line with Situation A as defined in CIRIA C665, and on this basis the site complies with Characteristic Situation 1 (CS1) and based on this classification gas protection measures are not required.                                                                                                                                                                                                                                                                                                                                                                                    |

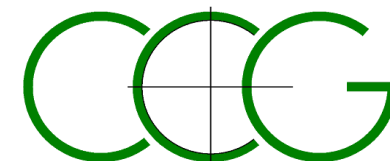
|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Foundation Design</b>   | See Section 14.0 for fuller discussion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Floor Slabs</b>         | See Section 14.0 for fuller discussion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Groundwater Control</b> | Slight seepages were reported at some borehole positions, with monitored standing water levels being in the order of 2.21m - 2.32mbgl during the ongoing gas – groundwater standpipe monitoring programme. Hence, a prudent contractor would allow for some pumping to maintain dry working conditions during foundation construction and/or service installations, particularly during periods of heavy / prolonged periods of precipitation.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Excavations</b>         | Light hydraulic excavators may Excavations in the observed made ground and natural drift soils may be undertaken by light hydraulic excavators.<br>Excavations in excess of 1.2mbgl will require side support.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Further work</b>        | <ul style="list-style-type: none"> <li>• Complete ongoing gas – groundwater monitoring programme</li> <li>• Update gas risk assessment</li> <li>• Prepare Phase III Remediation Strategy Report</li> <li>• Prepare Phase IV Validation Report</li> <li>• Undertake intrusive mining investigation – see below</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Ground Stability</b>    | <p>The referenced Coal Mine Risk Assessment confirms there is a potential for the presence of historical shallow coal mining activities beneath the site, hence the client is advised to commission a ground stability assessment</p> <p>Following the procurement of a Coal Authority permit to drill in productive coal measures, it is recommended that 3nr boreholes be sunk to a notional depth of 30mbgl using rotary open hole drilling methods to determine the presence / absence of mine related voids and/or broken ground with boreholes being grouted to rock head level on completion of works.</p> <p>It is further recommended that each borehole be monitored for mine related gases during fieldworks.</p> <p>The proposed location of the mining boreholes are annotated on <b>PRIMA GROUP</b> Drawing No. 102-013 'Existing &amp; Proposed Site Plan' contained herein.</p> |

APPENDIX A: DRAWINGS



DO NOT SCALE

Notes: Study Site



CC GEOTECHNICAL LIMITED  
UNIT 1 DELTIC WAY  
KNOWSLEY INDUSTRIAL ESTATE  
LIVERPOOL  
L33 7BA  
0151 545 2750

Client:  
Prima Group

Project:  
Phase I-II Geoenvironmental Report for Land at  
Former Prescott Police Station, Derby Road

Title:  
Aerial Photograph

Scale:  
NTS

Issue:  
01

Drawn by:  
DG

Date:  
August 2021

Project No.  
CCG-C-21-12518

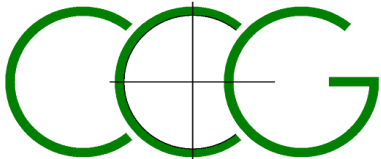
Drawing No.  
01

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DO NOT SCALE

Notes: Study Site



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UNIT 1 DELTIC WAY  
KNOWSLEY INDUSTRIAL ESTATE  
LIVERPOOL  
L33 7BA  
0151 545 2750

Client:  
Prima Group

Project:  
Phase I-II Geoenvironmental Report for Land at  
Former Prescott Police Station, Derby Road

Title:  
Aerial Photograph

Scale:  
NTS

Issue:  
01

Drawn by:  
DG

Date:  
August 2021

Project No.  
CCG-C-21-12518

Drawing No.  
02



EGERTON ROAD

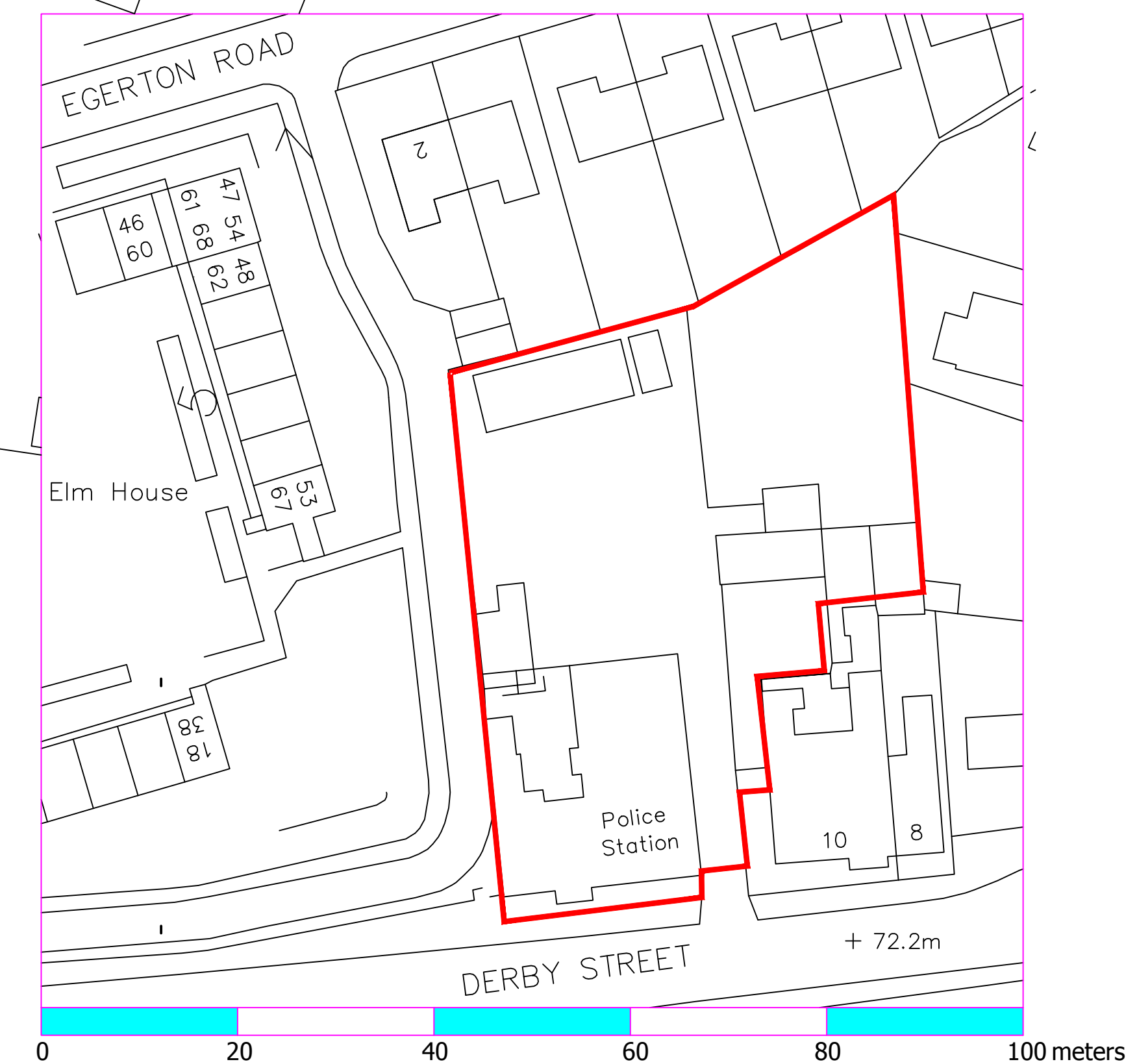
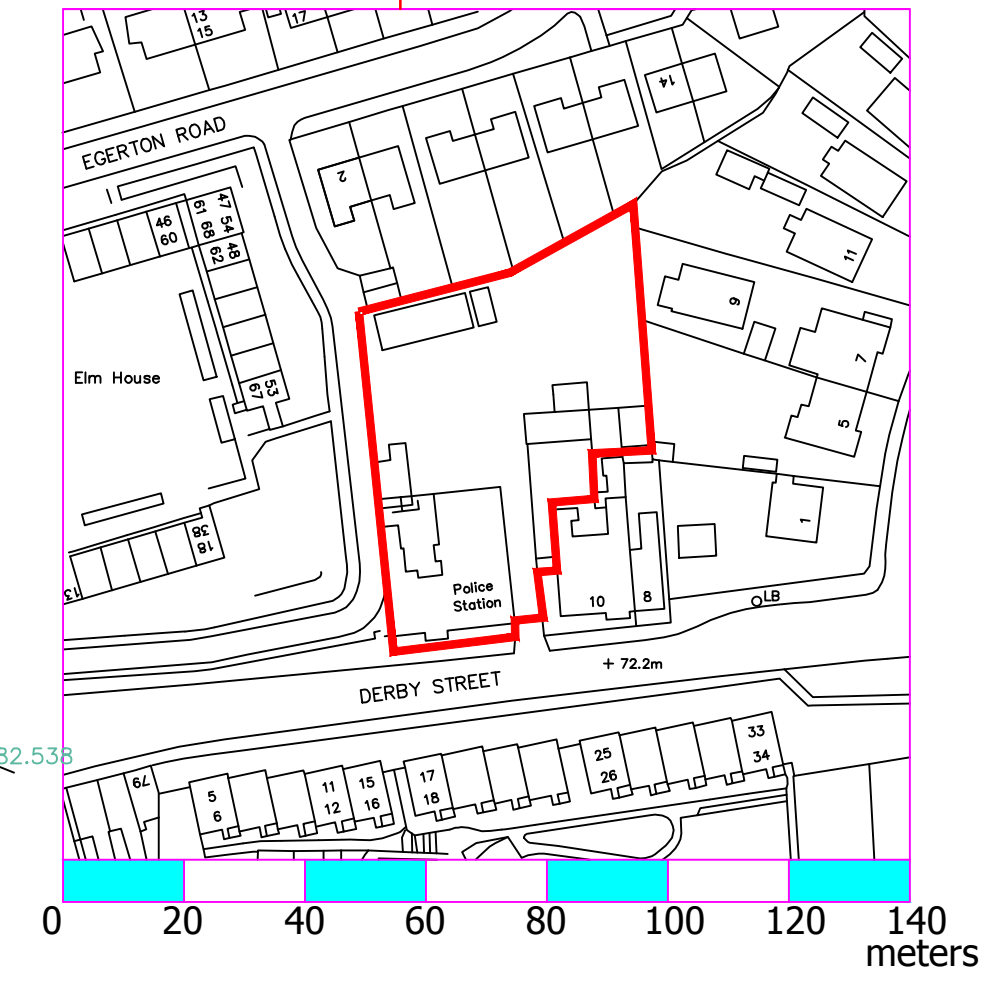
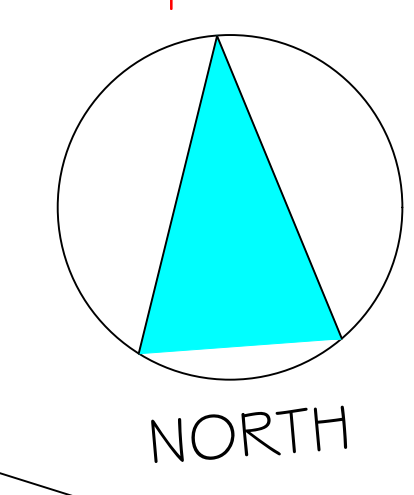
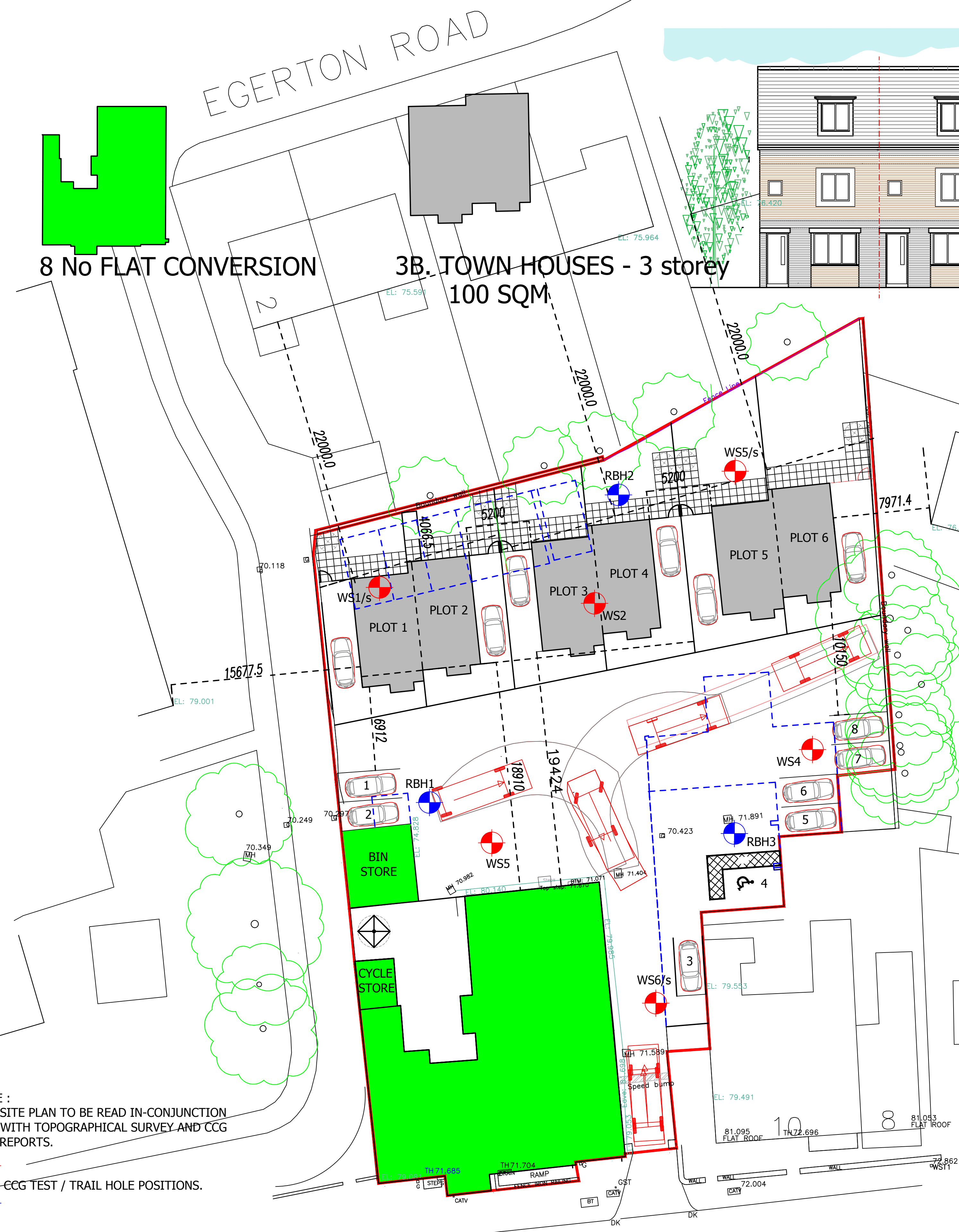
8 No FLAT CONVERSION

3B. TOWN HOUSES - 3 storey  
100 SQM



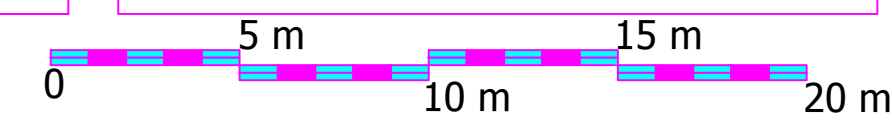
NOTE :  
SITE PLAN TO BE READ IN-CONJUNCTION  
WITH TOPOGRAPHICAL SURVEY AND CCG  
REPORTS.

CCG TEST / TRAIL HOLE POSITIONS.



# PROPOSED SITE PLAN. PRESCOT POLICE STATION

|              |                 |                                                             |                   |
|--------------|-----------------|-------------------------------------------------------------|-------------------|
| PRIMA GROUP. |                 | DWG TITLE EXISTING AND PROPOSED<br>SITE PLAN.               |                   |
|              |                 | JOB PRESCOT POLICE STATION,<br>DERBY ST , PRESCOT , L34 3LG |                   |
| DRAWN<br>DF. | DATE<br>OCT'20. | SCALE<br>1:200@A1.                                          | DWG No<br>102-01F |





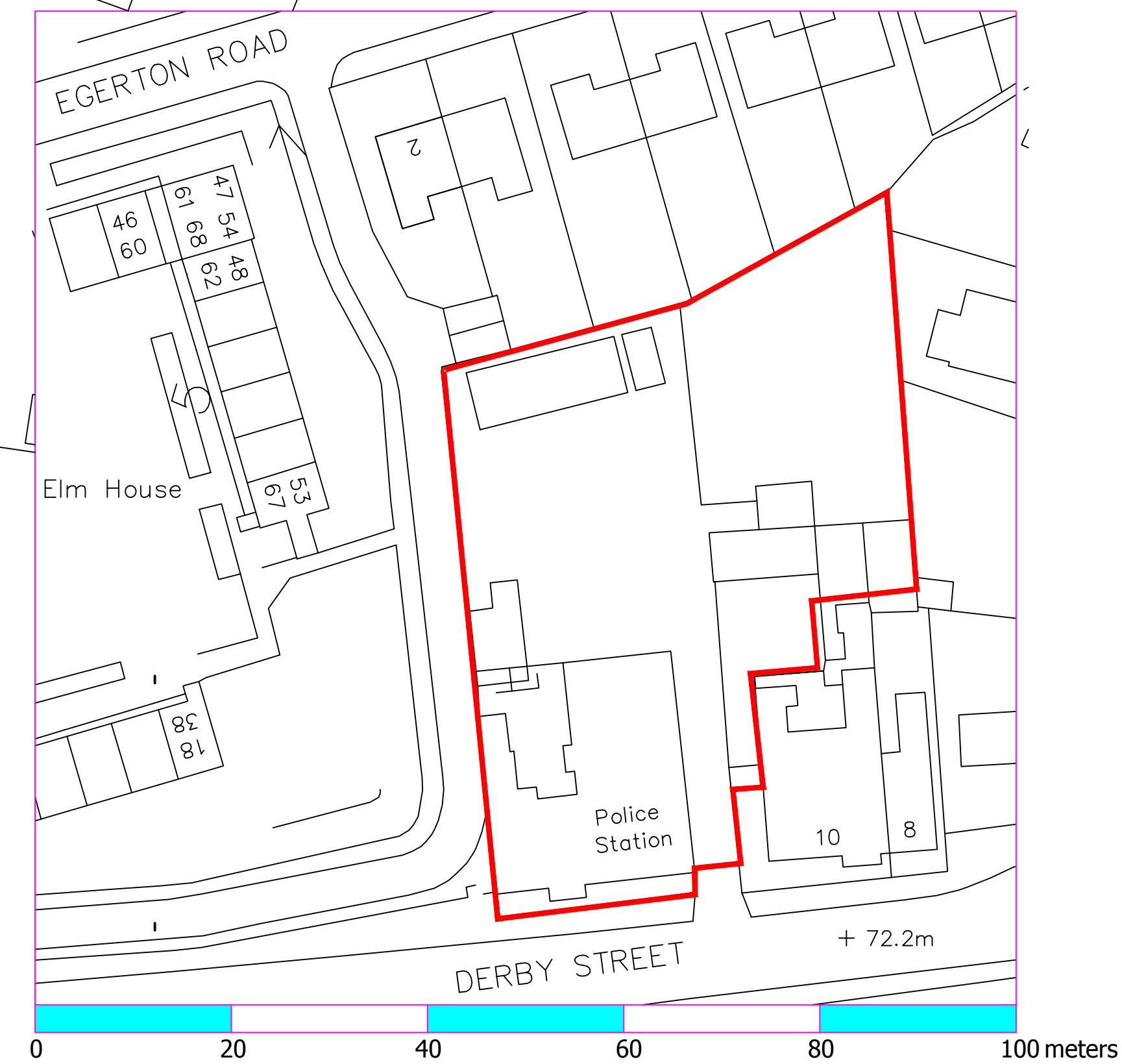
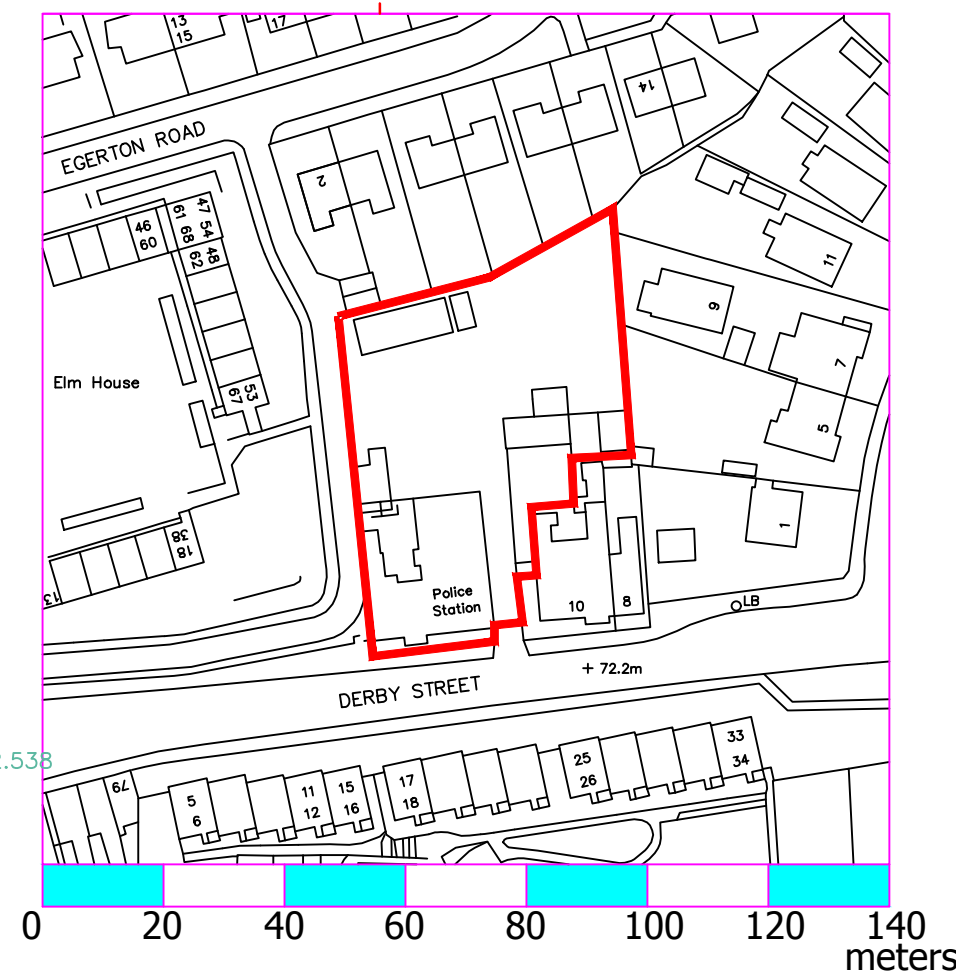
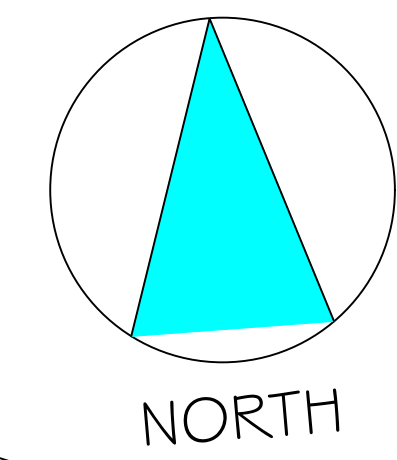
EGERTON ROAD

8 No FLAT CONVERSION

3B. TOWN HOUSES - 3 storey  
100 SQM



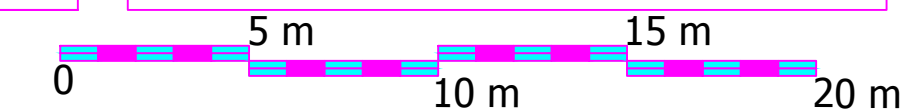
NOTE :  
SITE PLAN TO BE READ IN-CONJUNCTION  
WITH TOPOGRAPHICAL SURVEY AND CCG  
REPORTS.



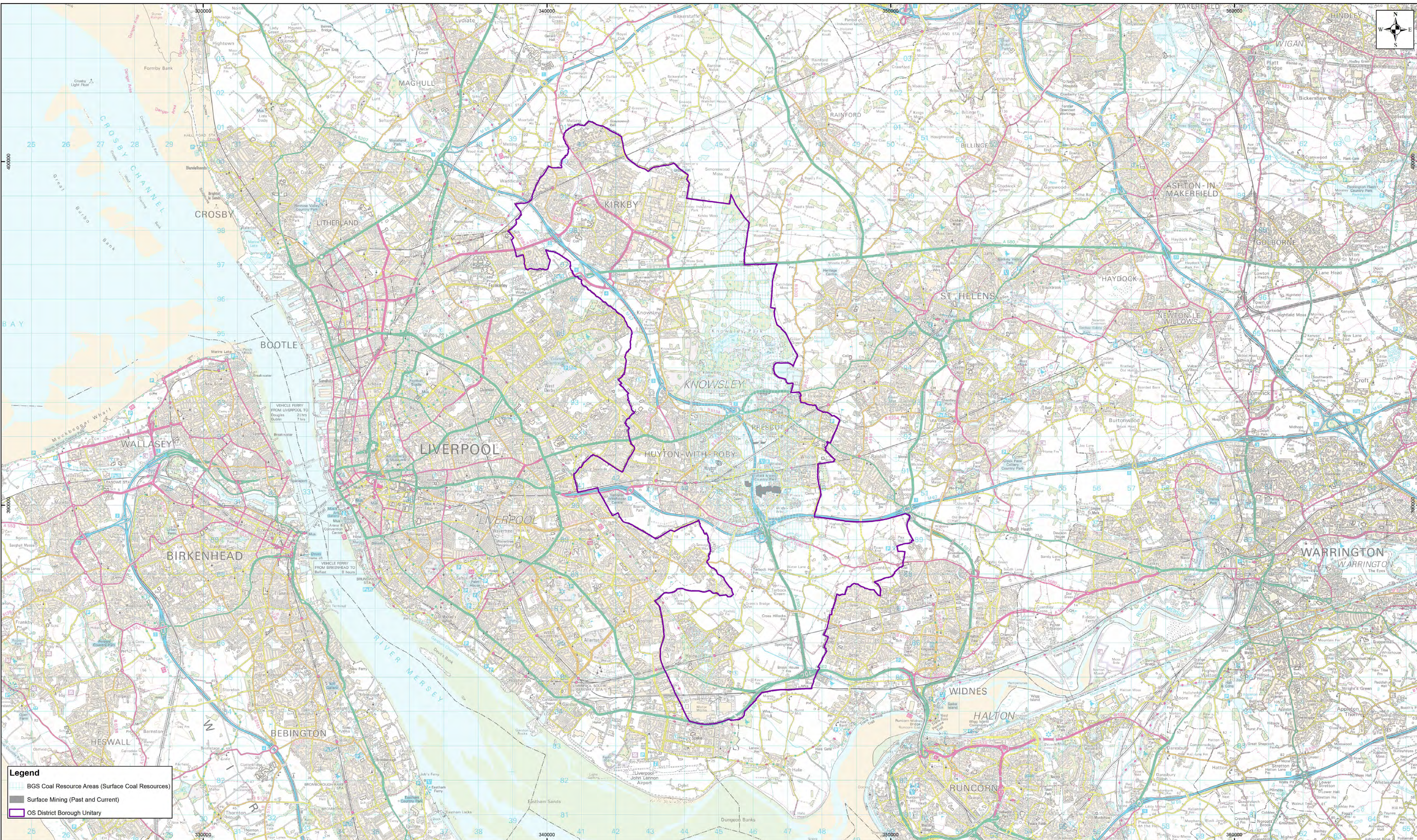
# PROPOSED SITE PLAN. PRESCOT POLICE STATION

DERBY STREET

|              |              |                                                          |                |
|--------------|--------------|----------------------------------------------------------|----------------|
| PRIMA GROUP. |              | DWG TITLE EXISTING AND PROPOSED SITE PLAN.               |                |
|              |              | JOB PRESCOT POLICE STATION, DERBY ST , PRESCOT , L34 3LG |                |
| DRAWN DF.    | DATE OCT'20. | SCALE 1:200@A1.                                          | DWG No 102-01F |



# Knowsley District (B) - Surface Coal Resource



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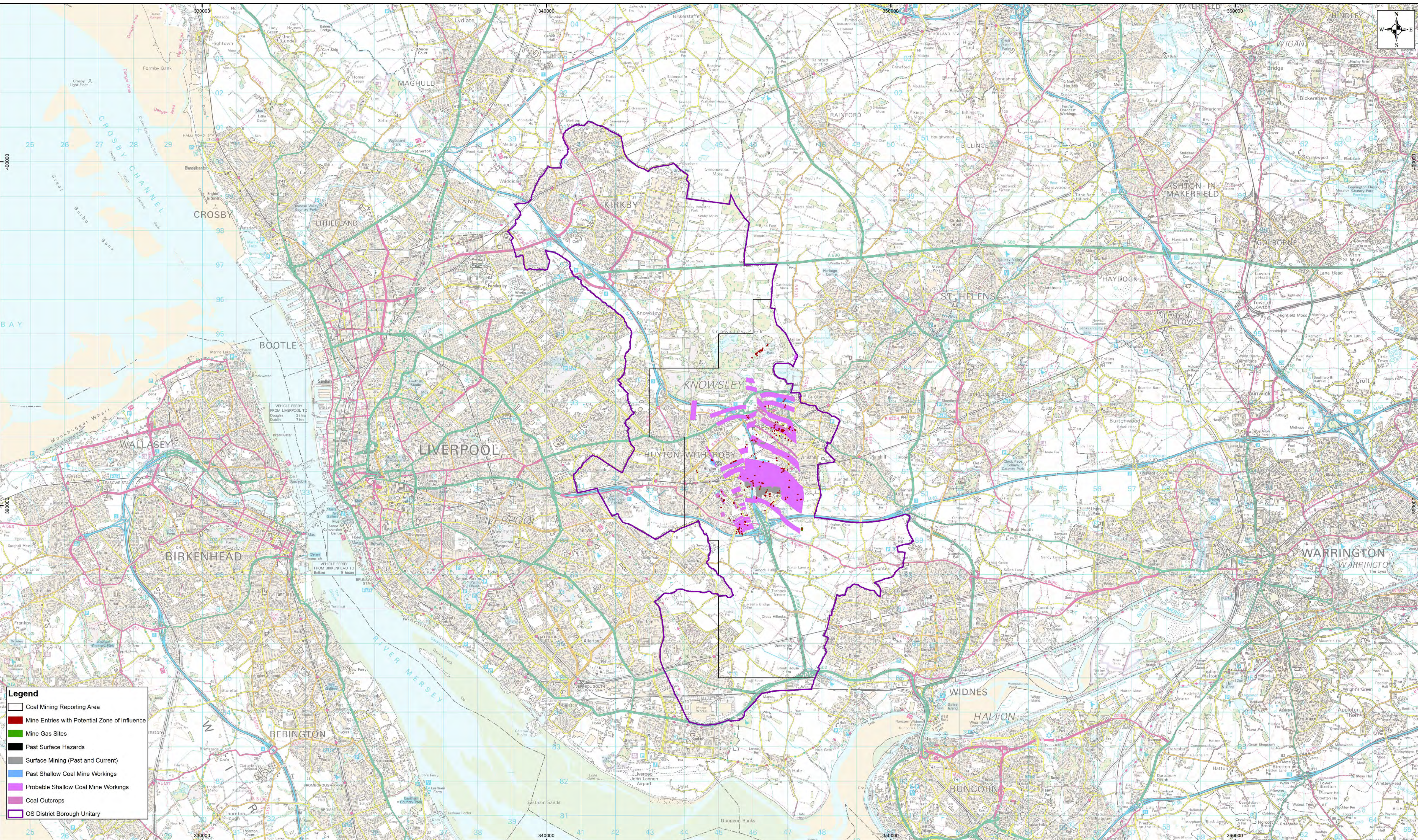
Scale 1:50000@A1

Published on: 07/06/2014



The Coal  
Authority

# Knowsley District (B) - Specific Risk



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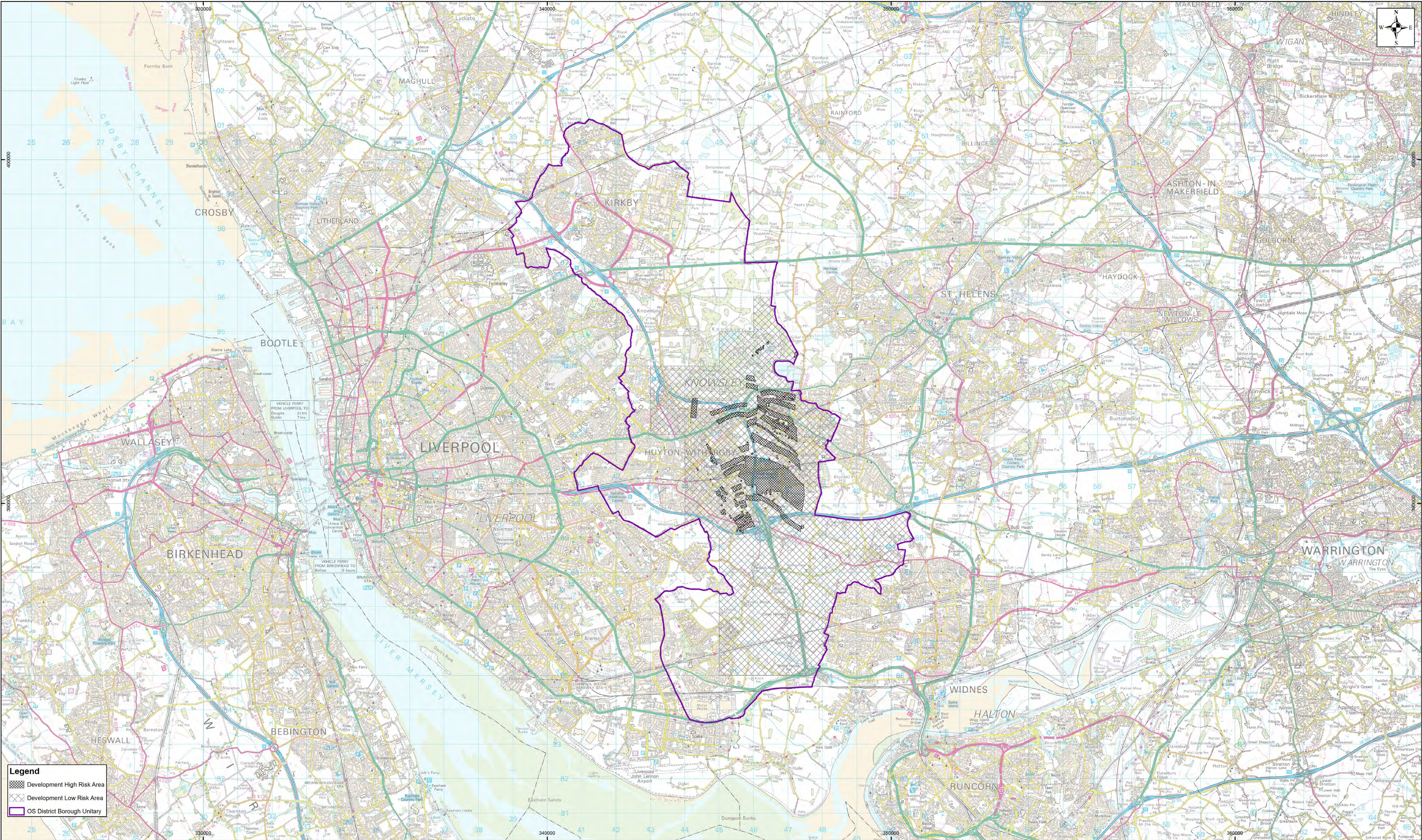
Scale 1:50000@A1

Published on: 12/06/2014



The Coal Authority

# Knowsley District (B) -Development Risk



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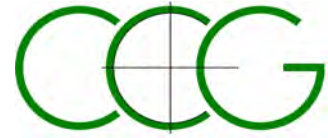
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Published on: 06/08/2014



The Coal  
Authority

**APPENDIX B: SAMPLING METHODOLOGIES**



## ***SAMPLING, SAMPLE TRANSPORTATION, AND FIELD MONITORING PROTOCOLS***

Soil, water and gas sampling and monitoring methodologies employed by **CC GEOTECHNICAL LTD** are presented hereunder.

### **SAMPLING OF SOIL FOR CHEMICAL ANALYSIS**

Soil samples may be recovered from a variety of intrusive investigation methods including *inter alia* dynamic sampling boreholes, cable percussion boreholes, machine or manual excavation of trial pits.

All equipment which has the potential to introduce extraneous materials into soils – borehole casings, sampling drilling rods, borehole sampling tools, hand tools such as trowels and spades etc. – must be cleaned by jet washing before initial use and between sampling positions.

#### **Cable Percussion Boreholes**

In this method of investigation disturbed bulk and small disturbed samples are recovered at regular depth increments throughout the length of the borehole. Each bulk/small disturbed sample is uniquely labelled with the Project Name / Project No / Borehole No / Depth / Date. Where possible, samples are immediately scanned by PID.

#### **Light Dynamic Sampling Boreholes**

In this method of investigation samples are recovered in relatively undisturbed 1m long Perspex liners. Each liner is uniquely labelled with the Project Name / Project No / Borehole No / Depth / Date. The liner tubes are sealed by air tight caps fitted at each end, and are temporarily stored out of sunlight. Where possible, samples are immediately split, scanned by PID, logged and subsampled. In the event that splitting and logging on site is not practicable, then the liners are immediately transported to the laboratory where they are immediately split, scanned by PID, logged and subsampled.

#### **Trial Pits**

Samples are to be taken from the bucket of an excavator and placed in appropriate airtight containers. Each container is uniquely labelled with the Project No / Trial Pit No / Depth / Date. The samples are then immediately placed in a cool box chilled by ice packs, and the boxes are sealed for transportation to the chemical laboratory.

#### **Sampling Containers**

Containers used to store soil samples are selected dependant on the required analysis. The testing laboratory will be consulted should there be any doubt as to the correct sampling container. Typically, a minimum of 1nr 1kg plastic tub, 1nr 500g plastic tub, 1nr 250g amber glass jar and 2nr glass vials are taken at each sample depth. Samples held on site awaiting same day courier collection are stored at 4°C in a cool box. Only in circumstances where same day collection cannot be arranged are samples held overnight, and in this event all samples are refrigerated at 4 °C either on site (if a refrigerator is available) or at CC GEOTECHNICAL soil laboratory. Courier collection is then arranged for immediate pick up the following day.

#### **Chain of Custody records**

A Chain of Custody Record (CoC) is to be sent with each batch of samples submitted to the testing laboratory. A copy of the CoC will be made available for inspection by the client, their agents, or any requesting regulatory authority.

### **HEADSPACE ANALYSES**

Duplicate subsamples of all soil samples selected for laboratory analysis may be taken for headspace analyses.

Headspace analysis is undertaken using a MiniRae 2000 Photo Ionisation Detector (PID). In the test method, an amber glass jar is half filled with soil, and the lid is sealed with aluminium foil secured by an elastic band. The jar and contents are agitated for 30 seconds and left for a minimum of 30 minutes out of direct sunlight for the headspace to achieve equilibrium. The PID then pierces the seal and the maximum reading is recorded. Prevailing weather conditions and ambient air temperature are also recorded.

The PID headspace results are recorded on the exploratory borehole or trial pit logs.

PID headspace data is then used to inform the chemical testing schedule for volatile organic compounds analyses.

### **SAMPLING OF GROUNDWATER FOR CHEMICAL ANALYSIS**

Groundwater is sampled from standpipes or piezometers installed during borehole drilling. On completion of the construction of the standpipe, the installation is initially developed by removing up to 10 x the internal volume of the

installation. The volume of water purged is recorded. The installation is then typically left for a week for hydraulic equilibrium to be restored.

Prior to sampling the standpipe, the depth to the water table, and the depth to the base of the installation are monitored using an electronic dipmeter. In circumstances where free phase product is suspected to be present, then an 'Interface Meter' is used to determine the free phase film thickness.

A minimum of 3 x the installation volume is then removed. The pH of the water is then monitored and the sample is taken when the change in pH between any two consecutive extracts is less than 10%. The volume of water removed is recorded.

A sample comprises of a minimum of 3 litres. Two litres are taken in amber glass bottles, and one litre in a plastic bottle.

To avoid cross-contamination one bailer is used per position.

The samples are uniquely labelled with Project Name / Project No / Borehole No / Depth / Date Sampled. They are placed in a cool box chilled by ice packs, and the containers are sealed for transportation to the laboratory.

Once the samples are received in the **CC GEOTECHNICAL LTD** laboratory, the samples are stored in a refrigerator and returned to the cool boxes once collected.

Water taken from the installations are taken back to the **CC GEOTECHNICAL LTD** laboratory and disposed.

Other data recorded in the sampling comprises:

- Volume of water removed during development of well
- Volume of water removed during purging of the well
- Results of on-site pH analyses
- Sample appearance – colour, suspended solids

## **MONITORING OF GAS**

Prior to embarking on a gas-monitoring round, all equipment is checked for functionality and the calibration status is confirmed.

At the commencement of the monitoring round, the prevailing weather conditions, air temperature, barometric pressure and direction of movement of barometric pressure are recorded.

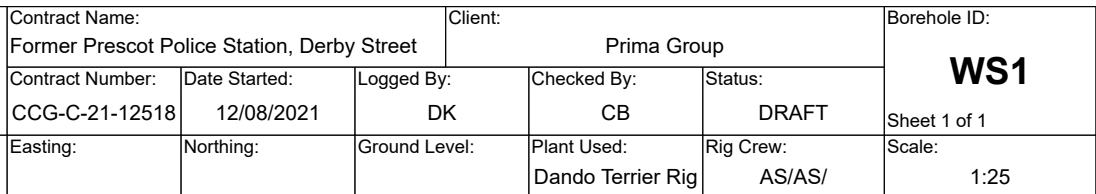
The flow meter is first attached to the standpipe valve, and the flow rate is measured (peak and steady flow) for 1 minute. The results are recorded in  $\text{l.hr}^{-1}$ . The flow meter tube is protected from the effects of wind by aligning the exhaust downwind.

Following measurement of borehole flow rate, the installation is left for a minimum of 10 minutes for the headspace to restore equilibrium.

Once the gas in the installation has regained equilibrium, the gas analyser is connected and monitoring commences. The peak and steady state readings for  $\text{CH}_4$ ,  $\text{CO}_2$ ,  $\text{CO}$ ,  $\text{H}_2\text{S}$  and  $\text{CO}$  are recorded. The steady state is monitored for a minimum of one minute, and possibly up to a maximum of 10 minutes where fluctuations continue.

When the monitoring is complete, the depth to the water table, and the depth to the base of the well are monitored using an electronic dipmeter. In circumstances where free phase product is suspected to be present, then an 'Interface Meter' is used to determine the free phase film thickness.

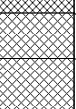
**APPENDIX C: BOREHOLE LOGS**



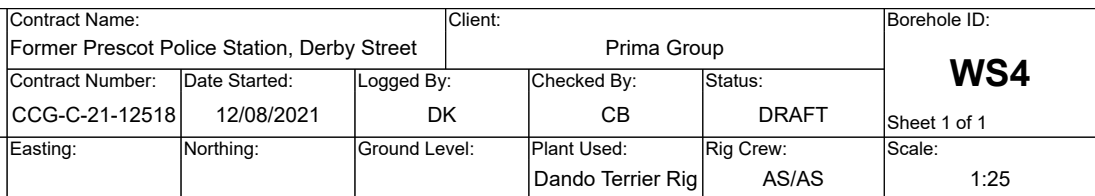
|                           |                |             |
|---------------------------|----------------|-------------|
| Samples & In Situ Testing | Strata Details | Groundwater |
|---------------------------|----------------|-------------|

[illegible]

| Start & End of Shift Observations                        |        |           |            |           | Borehole Diameter |          | Casing Diameter |          | Remarks:                                              |            |            |             |             |         |
|----------------------------------------------------------|--------|-----------|------------|-----------|-------------------|----------|-----------------|----------|-------------------------------------------------------|------------|------------|-------------|-------------|---------|
| Date                                                     | Time   | Depth (m) | Casing (m) | Water (m) | Depth (m)         | Dia (mm) | Depth (m)       | Dia (mm) | 1 hour hand excavating 1.20mbgl service avoidance pit |            |            |             |             |         |
|                                                          |        |           |            |           |                   |          |                 |          |                                                       |            |            |             |             |         |
|                                                          |        |           |            |           |                   |          |                 |          |                                                       |            |            |             |             |         |
| Chiselling                                               |        |           |            |           | Installation      |          |                 |          | Water Strikes                                         |            |            |             |             |         |
|                                                          |        |           |            |           |                   |          |                 |          | Strike (m)                                            | Casing (m) | Sealed (m) | Time (mins) | Rose to (m) | Remarks |
| From (m)                                                 | To (m) | Duration  | Remarks    |           | Top (m)           | Base (m) | Type            | Dia (mm) |                                                       |            |            |             |             |         |
|                                                          |        |           |            |           | 0.00              | 0.50     | PLAIN           |          |                                                       |            |            |             |             |         |
|                                                          |        |           |            |           | 0.50              | 3.00     | SLOTTED         |          |                                                       |            |            |             |             |         |
| CC GEOTECHNICAL LTD 0151 545 2750 www.ccgeotechnical.com |        |           |            |           |                   |          |                 |          |                                                       |            |            |             |             |         |

|                                                                                  |                                                                |                                      |                  |                                  |                                                                                   |                                                                                                                      |                            |                        |                                                       |
|----------------------------------------------------------------------------------|----------------------------------------------------------------|--------------------------------------|------------------|----------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------|-------------------------------------------------------|
|  | Contract Name:<br>Former Prescott Police Station, Derby Street |                                      |                  | Client:<br>Prima Group           |                                                                                   |                                                                                                                      | Borehole ID:<br><b>WS2</b> |                        |                                                       |
|                                                                                  | Contract Number:<br>CCG-C-21-12518                             | Date Started:<br>12/08/2021          | Logged By:<br>DK | Checked By:<br>CB                | Status:<br>DRAFT                                                                  | Sheet 1 of 1                                                                                                         |                            |                        |                                                       |
| Dynamic Sampling<br>Borehole Log                                                 | Easting:                                                       | Northing:                            | Ground Level:    | Plant Used:<br>Dando Terrier Rig | Rig Crew:<br>AS/AS                                                                | Scale:<br>1:25                                                                                                       |                            |                        |                                                       |
|                                                                                  | Weather:                                                       |                                      | Termination:     |                                  | SPT Hammer: N/R, Energy Ratio: N/R                                                |                                                                                                                      |                            |                        |                                                       |
| Samples & In Situ Testing                                                        |                                                                |                                      | Strata Details   |                                  |                                                                                   |                                                                                                                      | Groundwater                |                        |                                                       |
| Depth                                                                            | Sample ID                                                      | Test Result                          | Level (mAOD)     | Depth (m) (Thickness)            | Legend                                                                            | Strata Description                                                                                                   | Water Strike               | Backfill/ Installation |                                                       |
| 0.00 - 1.00                                                                      | U                                                              |                                      |                  | 0.05                             |  | TARMAC                                                                                                               |                            |                        |                                                       |
|                                                                                  |                                                                |                                      |                  | 0.20                             |                                                                                   | Dark grey sandy GRAVEL. Gravel is fine to coarse sub-angular limestone (MADE GROUND)                                 |                            |                        |                                                       |
|                                                                                  |                                                                |                                      |                  | (0.30)                           |                                                                                   | Black sandy GRAVEL. Gravel is fine to medium sub-angular cinders (MADE GROUND)                                       |                            |                        |                                                       |
| 0.50                                                                             | ES                                                             |                                      |                  | 0.50                             |  | Dark grey sandy slightly silty organic CLAY                                                                          |                            |                        |                                                       |
|                                                                                  |                                                                |                                      |                  | (0.40)                           |                                                                                   |                                                                                                                      |                            |                        |                                                       |
|                                                                                  |                                                                |                                      |                  | 0.90                             |                                                                                   | Light brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium sub-angular mudstone and siltstone |                            |                        |                                                       |
| 1.00 - 2.00                                                                      | U                                                              | SPT(S)N=6 (1,0/1,0,3,2)              |                  | (0.30)                           |  |                                                                                                                      | 1                          |                        |                                                       |
|                                                                                  |                                                                | HVP=110                              |                  | 1.20                             |                                                                                   |                                                                                                                      |                            |                        |                                                       |
|                                                                                  |                                                                | HVP=100                              |                  | (0.70)                           |                                                                                   |                                                                                                                      |                            |                        |                                                       |
| 2.00 - 2.60                                                                      | U                                                              | SPT(S)N=18 (4,4/4,5,4,5)             |                  | 1.90                             |  |                                                                                                                      | 2                          |                        |                                                       |
|                                                                                  |                                                                |                                      |                  | (0.70)                           |                                                                                   |                                                                                                                      |                            |                        |                                                       |
|                                                                                  |                                                                | SPT(S)50 (25 for 110mm/50 for 170mm) |                  | 2.60                             |                                                                                   | End of Borehole at 2.60m                                                                                             |                            |                        |                                                       |
|                                                                                  |                                                                |                                      |                  |                                  |                                                                                   |                                                                                                                      | 3                          |                        |                                                       |
|                                                                                  |                                                                |                                      |                  |                                  |                                                                                   |                                                                                                                      | 4                          |                        |                                                       |
|                                                                                  |                                                                |                                      |                  |                                  |                                                                                   |                                                                                                                      | 5                          |                        |                                                       |
| Start & End of Shift Observations                                                |                                                                |                                      |                  |                                  | Borehole Diameter                                                                 |                                                                                                                      | Casing Diameter            |                        | Remarks:                                              |
| Date                                                                             | Time                                                           | Depth (m)                            | Casing (m)       | Water (m)                        | Depth (m)                                                                         | Dia (mm)                                                                                                             | Depth (m)                  | Dia (mm)               | 1 hour hand excavating 1.20mbgl service avoidance pit |
|                                                                                  |                                                                |                                      |                  |                                  |                                                                                   |                                                                                                                      |                            |                        |                                                       |
| Chiselling                                                                       |                                                                |                                      |                  |                                  | Installation                                                                      |                                                                                                                      |                            |                        | Water Strikes                                         |
| From (m)                                                                         | To (m)                                                         | Duration                             | Remarks          | Top (m)                          | Base (m)                                                                          | Type                                                                                                                 | Dia (mm)                   | Strike (m)             | Casing (m)                                            |
|                                                                                  |                                                                |                                      |                  |                                  |                                                                                   |                                                                                                                      |                            | 1.80                   |                                                       |
|                                                                                  |                                                                |                                      |                  |                                  |                                                                                   |                                                                                                                      |                            | Sealed (m)             | Time (mins)                                           |
|                                                                                  |                                                                |                                      |                  |                                  |                                                                                   |                                                                                                                      |                            | 0                      |                                                       |
|                                                                                  |                                                                |                                      |                  |                                  |                                                                                   |                                                                                                                      |                            | Rose to (m)            | Remarks                                               |
|                                                                                  |                                                                |                                      |                  |                                  |                                                                                   |                                                                                                                      |                            |                        |                                                       |
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|                                                                                  |                                                                |                               |                                                                                   |                            |                                                                                    |                                                                                                               |                                    |                            |                                                       |                                                                                   |
|----------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------|----------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------------|-------------------------------------------------------|-----------------------------------------------------------------------------------|
|  | Contract Name:<br>Former Prescott Police Station, Derby Street |                               |                                                                                   |                            | Client:<br>Prima Group                                                             |                                                                                                               |                                    | Borehole ID:<br><b>WS3</b> |                                                       |                                                                                   |
|                                                                                  | Contract Number:<br>CCG-C-21-12518                             |                               | Date Started:<br>12/08/2021                                                       |                            | Logged By:<br>DK                                                                   |                                                                                                               | Checked By:<br>CB                  |                            | Status:<br>DRAFT                                      |                                                                                   |
|                                                                                  | Easting:                                                       |                               | Northing:                                                                         |                            | Ground Level:                                                                      |                                                                                                               | Plant Used:<br>Dando Terrier Rig   |                            | Rig Crew:<br>AS/AS                                    |                                                                                   |
| Dynamic Sampling<br>Borehole Log                                                 |                                                                |                               |                                                                                   |                            |                                                                                    |                                                                                                               |                                    | Scale:<br>1:25             |                                                       |                                                                                   |
| Weather:                                                                         |                                                                |                               |                                                                                   | Termination:               |                                                                                    |                                                                                                               | SPT Hammer: N/R, Energy Ratio: N/R |                            |                                                       |                                                                                   |
| Samples & In Situ Testing                                                        |                                                                |                               |                                                                                   | Strata Details             |                                                                                    |                                                                                                               |                                    |                            | Groundwater                                           |                                                                                   |
| Depth                                                                            | Sample ID                                                      | Test Result                   | Level (mAOD)                                                                      | Depth (m) (Thickness)      | Legend                                                                             | Strata Description                                                                                            |                                    |                            | Water Strike                                          | Backfill/Installation                                                             |
| 0.00 - 1.00                                                                      | U                                                              | SPT(S)N=10 (1,2/2,3,2,3)      |                                                                                   | 0.05                       |   | TARMAC                                                                                                        | 1                                  |                            |                                                       |                                                                                   |
| 0.50                                                                             | ES                                                             |                               |                                                                                   | 0.15                       |   | Grey slightly sandy GRAVEL. Gravel is fine to medium sub-angular limestone (MADE GROUND)                      |                                    |                            |                                                       |                                                                                   |
|                                                                                  |                                                                |                               |                                                                                   |                            |   | Greyish brown slightly sandy silty CLAY                                                                       |                                    |                            |                                                       |                                                                                   |
|                                                                                  |                                                                |                               |                                                                                   | 0.35                       |   | Black slightly sandy slightly gravelly silty organic CLAY. Gravel is fine to medium sub-angular coal          |                                    |                            |                                                       |                                                                                   |
| 1.00 - 2.00                                                                      | U                                                              |                               |                                                                                   | SPT(S)N=43 (1,3/7,7,13,16) |                                                                                    | 0.50                                                                                                          |                                    |                            |                                                       |  |
|                                                                                  |                                                                | (0.35)                        |                                                                                   |                            |                                                                                    |                                                                                                               |                                    |                            |                                                       |                                                                                   |
|                                                                                  |                                                                | 0.85                          |  |                            |                                                                                    | Firm grey slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium sub-angular coal and mudstone |                                    |                            |                                                       |                                                                                   |
| 2.00 - 3.00                                                                      | U                                                              | SPT(S)N=50 (7,9/50 for 265mm) |                                                                                   | 2.10                       |  | Grey weathered MUDSTONE recovered at the surface as dense very clayey sands and gravel                        | 3                                  |                            |                                                       |                                                                                   |
|                                                                                  |                                                                |                               |                                                                                   | (0.90)                     |                                                                                    |                                                                                                               |                                    |                            |                                                       |                                                                                   |
|                                                                                  |                                                                |                               |                                                                                   | 3.00                       |                                                                                    | End of Borehole at 3.00m                                                                                      |                                    |                            |                                                       |                                                                                   |
|                                                                                  |                                                                |                               |                                                                                   |                            |                                                                                    |                                                                                                               | 4                                  |                            |                                                       |                                                                                   |
|                                                                                  |                                                                |                               |                                                                                   |                            |                                                                                    |                                                                                                               | 5                                  |                            |                                                       |                                                                                   |
| Start & End of Shift Observations                                                |                                                                |                               |                                                                                   |                            | Borehole Diameter                                                                  |                                                                                                               | Casing Diameter                    |                            | Remarks:                                              |                                                                                   |
| Date                                                                             | Time                                                           | Depth (m)                     | Casing (m)                                                                        | Water (m)                  | Depth (m)                                                                          | Dia (mm)                                                                                                      | Depth (m)                          | Dia (mm)                   | 1 hour hand excavating 1.20mbgl service avoidance pit |                                                                                   |
|                                                                                  |                                                                |                               |                                                                                   |                            |                                                                                    |                                                                                                               |                                    |                            |                                                       |                                                                                   |
| Chiselling                                                                       |                                                                |                               |                                                                                   |                            | Installation                                                                       |                                                                                                               |                                    |                            | Water Strikes                                         |                                                                                   |
| From (m)                                                                         | To (m)                                                         | Duration                      | Remarks                                                                           | Top (m)                    | Base (m)                                                                           | Type                                                                                                          | Dia (mm)                           | Strike (m)                 | Casing (m)                                            | Sealed (m)                                                                        |
|                                                                                  |                                                                |                               |                                                                                   | 0.00                       | 0.50                                                                               | PLAIN                                                                                                         |                                    |                            |                                                       |                                                                                   |
|                                                                                  |                                                                |                               |                                                                                   | 0.50                       | 2.50                                                                               | SLOTTED                                                                                                       |                                    |                            |                                                       |                                                                                   |
|                                                                                  |                                                                |                               |                                                                                   |                            |                                                                                    |                                                                                                               |                                    |                            | Time (mins)                                           | Rose to (m)                                                                       |
|                                                                                  |                                                                |                               |                                                                                   |                            |                                                                                    |                                                                                                               |                                    |                            | 0                                                     |                                                                                   |
|                                                                                  |                                                                |                               |                                                                                   |                            |                                                                                    |                                                                                                               |                                    |                            | Borehole dry                                          |                                                                                   |
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|          |              |                                    |
|----------|--------------|------------------------------------|
| Weather: | Termination: | SPT Hammer: N/R, Energy Ratio: N/R |
|----------|--------------|------------------------------------|

| Samples & In Situ Testing |           |                                      |                 | Strata Details           |        |                                                                                                         |  |  |  | Groundwater     |                           |
|---------------------------|-----------|--------------------------------------|-----------------|--------------------------|--------|---------------------------------------------------------------------------------------------------------|--|--|--|-----------------|---------------------------|
| Depth                     | Sample ID | Test Result                          | Level<br>(mAOD) | Depth (m)<br>(Thickness) | Legend | Strata Description                                                                                      |  |  |  | Water<br>Strike | Backfill/<br>Installation |
| 0.00 - 1.00               | U         |                                      |                 | 0.10                     |        | Grey GRAVEL. Gravel is fine to coarse sub-angular limestone and tarmac (MADE GROUND)                    |  |  |  |                 |                           |
| 0.50                      | ES        |                                      |                 | (0.80)                   |        |                                                                                                         |  |  |  |                 |                           |
| 1.00 - 2.00               | U         | SPT(S)N=11 (1,2/3,3,3,2)             |                 | 0.90                     |        | Firm grey slightly sandy silty CLAY                                                                     |  |  |  | 1               |                           |
|                           |           |                                      |                 | (0.45)                   |        | Medium dense brown very clayey GRAVEL. Gravel is fine to medium sub-angular to sub-rounded mudstone     |  |  |  |                 |                           |
|                           |           |                                      |                 | 1.35                     |        | Firm grey slightly sandy silty friable CLAY (possible weathered MUDSTONE)                               |  |  |  |                 |                           |
|                           |           |                                      |                 | 1.50                     |        |                                                                                                         |  |  |  |                 |                           |
|                           |           |                                      |                 | (0.50)                   |        |                                                                                                         |  |  |  |                 |                           |
| -2.00 - 2.70              | U         | SPT(S)N=22 (3,4/4,4,7,7)             |                 | 2.00                     |        | Grey weathered MUDSTONE recovered at the surface as medium dense becoming dense clayey sands and gravel |  |  |  | 2               |                           |
|                           |           |                                      |                 | (0.70)                   |        |                                                                                                         |  |  |  |                 |                           |
|                           |           |                                      |                 | 2.70                     |        | End of Borehole at 2.70m                                                                                |  |  |  |                 |                           |
|                           |           | SPT(S)50 (25 for 125mm/50 for 165mm) |                 |                          |        |                                                                                                         |  |  |  | 3               |                           |
|                           |           |                                      |                 |                          |        |                                                                                                         |  |  |  | 4               |                           |
|                           |           |                                      |                 |                          |        |                                                                                                         |  |  |  | 5               |                           |

| Start & End of Shift Observations                        |        |           |            |           | Borehole Diameter |          | Casing Diameter |          | Remarks:      |            |            |             |             |         |
|----------------------------------------------------------|--------|-----------|------------|-----------|-------------------|----------|-----------------|----------|---------------|------------|------------|-------------|-------------|---------|
| Date                                                     | Time   | Depth (m) | Casing (m) | Water (m) | Depth (m)         | Dia (mm) | Depth (m)       | Dia (mm) |               |            |            |             |             |         |
|                                                          |        |           |            |           |                   |          |                 |          |               |            |            |             |             |         |
|                                                          |        |           |            |           |                   |          |                 |          |               |            |            |             |             |         |
| Chiselling                                               |        |           |            |           | Installation      |          |                 |          | Water Strikes |            |            |             |             |         |
| From (m)                                                 | To (m) | Duration  | Remarks    |           | Top (m)           | Base (m) | Type            | Dia (mm) | Strike (m)    | Casing (m) | Sealed (m) | Time (mins) | Rose to (m) | Remarks |
|                                                          |        |           |            |           |                   |          |                 |          | 1.70          |            |            | 0           |             |         |
|                                                          |        |           |            |           |                   |          |                 |          |               |            |            |             |             |         |
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|                                                                                  |                                                                |                               |                                                                                   |                                                                                                                   |                                                                                                                                                |                                                 |                            |              |                                                       |            |
|----------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------------------|--------------|-------------------------------------------------------|------------|
|  | Contract Name:<br>Former Prescott Police Station, Derby Street |                               |                                                                                   | Client:<br>Prima Group                                                                                            |                                                                                                                                                |                                                 | Borehole ID:<br><b>WS5</b> |              |                                                       |            |
|                                                                                  | Contract Number:<br>CCG-C-21-12518                             | Date Started:<br>12/08/2021   | Logged By:<br>DK                                                                  | Checked By:<br>CB                                                                                                 | Status:<br>DRAFT                                                                                                                               |                                                 |                            |              |                                                       |            |
| Dynamic Sampling<br>Borehole Log                                                 | Easting:                                                       | Northing:                     | Ground Level:                                                                     | Plant Used:<br>Dando Terrier Rig                                                                                  | Rig Crew:<br>A/AS                                                                                                                              | Scale:<br>1:25                                  |                            |              |                                                       |            |
|                                                                                  | Weather:                                                       |                               | Termination:                                                                      |                                                                                                                   | SPT Hammer: N/R, Energy Ratio: N/R                                                                                                             |                                                 |                            |              |                                                       |            |
| Samples & In Situ Testing                                                        |                                                                |                               | Strata Details                                                                    |                                                                                                                   |                                                                                                                                                |                                                 |                            | Groundwater  |                                                       |            |
| Depth                                                                            | Sample ID                                                      | Test Result                   | Level (mAOD)                                                                      | Depth (m) (Thickness)                                                                                             | Legend                                                                                                                                         | Strata Description                              |                            | Water Strike | Backfill/Installation                                 |            |
| 0.00 - 1.00                                                                      | U                                                              | SPT(S)N=7 (1,2/1,2,2,2)       |                                                                                   | 0.05                                                                                                              |                                                               | TARMAC                                          | 1                          |              |                                                       |            |
|                                                                                  |                                                                |                               | 0.20                                                                              | Dark grey sandy GRAVEL. Gravel is fine to coarse sub-angular cinders, limestone and tarmac (MADE GROUND)          |                                                                                                                                                |                                                 |                            |              |                                                       |            |
| 0.50                                                                             | ES                                                             |                               | (0.50)                                                                            | Dark brown very clayey very gravelly SAND. Gravel is fine to coarse sub-angular sandstone and brick (MADE GROUND) |                                                                                                                                                |                                                 |                            |              |                                                       |            |
|                                                                                  |                                                                |                               | 0.70                                                                              |                                  | Brown slightly sandy slightly gravelly silty CLAY with frequent pockets of sand. Gravel is fine to medium sub-angular to sub-rounded sandstone |                                                 |                            |              |                                                       |            |
| 1.00 - 2.00                                                                      | U                                                              |                               | (0.45)                                                                            |                                                                                                                   | Soft grey slightly sandy silty CLAY with occasional pockets of coal gravel                                                                     |                                                 |                            |              |                                                       |            |
|                                                                                  |                                                                | 1.15                          |  | Dark grey clayey GRAVEL. Gravel is fine to coarse mudstone                                                        | 2                                                                                                                                              |                                                 |                            |              |                                                       |            |
|                                                                                  |                                                                | (0.45)                        |                                                                                   | Grey weathered MUDSTONE recovered at the surface as stiff gravelly clay                                           |                                                                                                                                                |                                                 |                            |              |                                                       |            |
| 2.00 - 3.00                                                                      | U                                                              | SPT(S)N=20 (4,3/5,4,4,7)      |                                                                                   | 2.00                                                                                                              |                                                              | Black intact COAL recovered as sands and gravel | 3                          |              |                                                       |            |
|                                                                                  |                                                                |                               | 2.45                                                                              | Grey weathered MUDSTONE recovered at the surface as dense clayey gravel                                           |                                                                                                                                                |                                                 |                            |              |                                                       |            |
|                                                                                  |                                                                | SPT(S)N=50 (4,8/50 for 255mm) |                                                                                   | 2.60                                                                                                              |                                                             | End of Borehole at 3.00m                        | 4                          |              |                                                       |            |
|                                                                                  |                                                                |                               | (0.40)                                                                            |                                                                                                                   |                                                                                                                                                |                                                 |                            |              |                                                       |            |
|                                                                                  |                                                                |                               |                                                                                   | 3.00                                                                                                              |                                                                                                                                                |                                                 | 5                          |              |                                                       |            |
| Start & End of Shift Observations                                                |                                                                |                               | Borehole Diameter                                                                 |                                                                                                                   | Casing Diameter                                                                                                                                |                                                 | Remarks:                   |              |                                                       |            |
| Date                                                                             | Time                                                           | Depth (m)                     | Casing (m)                                                                        | Water (m)                                                                                                         | Depth (m)                                                                                                                                      | Dia (mm)                                        | Depth (m)                  | Dia (mm)     | 1 hour hand excavating 1.20mbgl service avoidance pit |            |
|                                                                                  |                                                                |                               |                                                                                   |                                                                                                                   |                                                                                                                                                |                                                 |                            |              |                                                       |            |
| Chiselling                                                                       |                                                                |                               |                                                                                   |                                                                                                                   | Installation                                                                                                                                   |                                                 |                            |              | Water Strikes                                         |            |
| From (m)                                                                         | To (m)                                                         | Duration                      | Remarks                                                                           | Top (m)                                                                                                           | Base (m)                                                                                                                                       | Type                                            | Dia (mm)                   | Strike (m)   | Casing (m)                                            | Sealed (m) |
|                                                                                  |                                                                |                               |                                                                                   |                                                                                                                   |                                                                                                                                                |                                                 |                            | 2.50         |                                                       |            |
|                                                                                  |                                                                |                               |                                                                                   |                                                                                                                   |                                                                                                                                                |                                                 |                            | Time (mins)  | Rose to (m)                                           | Remarks    |
|                                                                                  |                                                                |                               |                                                                                   |                                                                                                                   |                                                                                                                                                |                                                 |                            | 0            |                                                       |            |
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|                                                                                  |                                                                |                            |                             |                       |                                                                                                                       |                                                                                                                                           |                                  |                                    |                                                       |                                                                                       |             |             |         |
|----------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------|-----------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------------|-------------|-------------|---------|
|  | Contract Name:<br>Former Prescott Police Station, Derby Street |                            |                             |                       | Client:<br>Prima Group                                                                                                |                                                                                                                                           |                                  | Borehole ID:<br><b>WS6</b>         |                                                       |                                                                                       |             |             |         |
|                                                                                  | Contract Number:<br>CCG-C-21-12518                             |                            | Date Started:<br>12/08/2021 |                       | Logged By:<br>DK                                                                                                      |                                                                                                                                           | Checked By:<br>CB                |                                    | Status:<br>DRAFT                                      |                                                                                       |             |             |         |
|                                                                                  | Easting:                                                       |                            | Northing:                   |                       | Ground Level:                                                                                                         |                                                                                                                                           | Plant Used:<br>Dando Terrier Rig |                                    | Rig Crew:<br>AS/AS/                                   |                                                                                       |             |             |         |
| Dynamic Sampling<br>Borehole Log                                                 |                                                                |                            |                             |                       |                                                                                                                       |                                                                                                                                           |                                  | Scale:<br>1:25                     |                                                       |                                                                                       |             |             |         |
| Weather:                                                                         |                                                                |                            |                             | Termination:          |                                                                                                                       |                                                                                                                                           |                                  | SPT Hammer: N/R, Energy Ratio: N/R |                                                       |                                                                                       |             |             |         |
| Samples & In Situ Testing                                                        |                                                                |                            |                             | Strata Details        |                                                                                                                       |                                                                                                                                           |                                  |                                    | Groundwater                                           |                                                                                       |             |             |         |
| Depth                                                                            | Sample ID                                                      | Test Result                | Level (mAOD)                | Depth (m) (Thickness) | Legend                                                                                                                | Strata Description                                                                                                                        |                                  |                                    | Water Strike                                          | Backfill/ Installation                                                                |             |             |         |
| 0.00 - 1.00                                                                      | U                                                              |                            |                             | 0.05                  |                                      | TARMAC                                                                                                                                    |                                  |                                    |                                                       |    |             |             |         |
|                                                                                  |                                                                |                            |                             | 0.25                  |                                                                                                                       | Dark grey GRAVEL. Gravel is fine to medium sub-angular cinders and limestone (MADE GROUND)                                                |                                  |                                    |                                                       |                                                                                       |             |             |         |
| 0.50                                                                             | ES                                                             |                            |                             | (0.30)                | Dark brown very clayey gravelly SAND. Gravel is fine to coarse sub-angular brick, cinders and sandstone (MADE GROUND) |                                                                                                                                           |                                  |                                    |                                                       |                                                                                       |             |             |         |
|                                                                                  |                                                                |                            |                             | 0.55                  |                                      | Medium dense brown very gravelly silty SAND with occasional pockets of clay. Gravel is fine to coarse sub-angular siltstone and sandstone |                                  |                                    | 1                                                     |  |             |             |         |
| 1.00 - 2.00                                                                      | U                                                              | SPT(S)N=16 (1,3/4,4,4,4)   | (1.30)                      |                       |                                                                                                                       |                                                                                                                                           |                                  |                                    |                                                       |                                                                                       |             |             |         |
|                                                                                  |                                                                |                            |                             | 1.85                  |                                      | Dense grey slightly sandy GRAVEL. Gravel is fine to coarse sub-angular sandstone                                                          |                                  |                                    | 2                                                     |                                                                                       |             |             |         |
| 2.00 - 2.80                                                                      | U                                                              | SPT(S)N=39 (4,3/4,6,12,17) | (0.55)                      |                       |                                                                                                                       |                                                                                                                                           |                                  |                                    |                                                       |                                                                                       |             |             |         |
|                                                                                  |                                                                |                            |                             | 2.40                  |                                    | Brown / grey weathered SILTSTONE recovered at the surface as dense silty GRAVEL                                                           |                                  |                                    |                                                       |                                                                                       |             |             |         |
|                                                                                  |                                                                |                            |                             | (0.40)                |                                                                                                                       |                                                                                                                                           |                                  |                                    |                                                       |                                                                                       |             |             |         |
|                                                                                  |                                                                |                            |                             | 2.80                  | End of Borehole at 2.80m                                                                                              |                                                                                                                                           |                                  |                                    |                                                       | 3                                                                                     |             |             |         |
|                                                                                  |                                                                |                            |                             |                       |                                                                                                                       |                                                                                                                                           |                                  |                                    |                                                       |                                                                                       |             |             |         |
|                                                                                  |                                                                |                            |                             |                       |                                                                                                                       |                                                                                                                                           |                                  |                                    |                                                       | 4                                                                                     |             |             |         |
|                                                                                  |                                                                |                            |                             |                       |                                                                                                                       |                                                                                                                                           |                                  |                                    |                                                       |                                                                                       |             |             |         |
|                                                                                  |                                                                |                            |                             |                       |                                                                                                                       |                                                                                                                                           |                                  |                                    |                                                       | 5                                                                                     |             |             |         |
|                                                                                  |                                                                |                            |                             |                       |                                                                                                                       |                                                                                                                                           |                                  |                                    |                                                       |                                                                                       |             |             |         |
| Start & End of Shift Observations                                                |                                                                |                            |                             |                       | Borehole Diameter                                                                                                     |                                                                                                                                           | Casing Diameter                  |                                    | Remarks:                                              |                                                                                       |             |             |         |
| Date                                                                             | Time                                                           | Depth (m)                  | Casing (m)                  | Water (m)             | Depth (m)                                                                                                             | Dia (mm)                                                                                                                                  | Depth (m)                        | Dia (mm)                           | 1 hour hand excavating 1.20mbgl service avoidance pit |                                                                                       |             |             |         |
|                                                                                  |                                                                |                            |                             |                       |                                                                                                                       |                                                                                                                                           |                                  |                                    |                                                       |                                                                                       |             |             |         |
|                                                                                  |                                                                |                            |                             |                       |                                                                                                                       |                                                                                                                                           |                                  |                                    |                                                       |                                                                                       |             |             |         |
| Chiselling                                                                       |                                                                |                            |                             |                       | Installation                                                                                                          |                                                                                                                                           | Water Strikes                    |                                    |                                                       |                                                                                       |             |             |         |
| From (m)                                                                         | To (m)                                                         | Duration                   | Remarks                     | Top (m)               | Base (m)                                                                                                              | Type                                                                                                                                      | Dia (mm)                         | Strike (m)                         | Casing (m)                                            | Sealed (m)                                                                            | Time (mins) | Rose to (m) | Remarks |
|                                                                                  |                                                                |                            |                             | 0.00                  | 0.50                                                                                                                  | PLAIN                                                                                                                                     |                                  | 2.50                               |                                                       |                                                                                       | 0           |             |         |
|                                                                                  |                                                                |                            |                             | 0.50                  | 2.80                                                                                                                  | SLOTTED                                                                                                                                   |                                  |                                    |                                                       |                                                                                       |             |             |         |
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**APPENDIX D: GAS – GROUNDWATER MONITORING**

# GAS AND WATER MONITORING RESULTS



|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |
|-----|---------------------|--------------|--|--|--|--|--|--|--|--|--|--|--|
|     | Date:               | 19-Aug-21    |  |  |  |  |  |  |  |  |  |  |  |
|     | Visit Number        | 1            |  |  |  |  |  |  |  |  |  |  |  |
|     | Atmos Press mb      | 1004         |  |  |  |  |  |  |  |  |  |  |  |
|     | Pressure Trend      |              |  |  |  |  |  |  |  |  |  |  |  |
|     | Air Temp °C         | 16           |  |  |  |  |  |  |  |  |  |  |  |
|     | Cloud cover         | Overcast     |  |  |  |  |  |  |  |  |  |  |  |
|     | Wind velocity       | Light breeze |  |  |  |  |  |  |  |  |  |  |  |
|     | Precipitation       | Rain         |  |  |  |  |  |  |  |  |  |  |  |
| WS1 | State of Ground     | Wet          |  |  |  |  |  |  |  |  |  |  |  |
|     | CH4 (%):            | Nil          |  |  |  |  |  |  |  |  |  |  |  |
|     | CO2 (%):            | Nil          |  |  |  |  |  |  |  |  |  |  |  |
|     | O2 (%):             | 20.0         |  |  |  |  |  |  |  |  |  |  |  |
|     | H2S (ppm):          | Nil          |  |  |  |  |  |  |  |  |  |  |  |
|     | CO (ppm):           | Nil          |  |  |  |  |  |  |  |  |  |  |  |
|     | PID (ppm):          | 0.0          |  |  |  |  |  |  |  |  |  |  |  |
|     | Flow (l/hr):        | <0.1         |  |  |  |  |  |  |  |  |  |  |  |
| WS3 | Water Level (mbgl): | 2.32         |  |  |  |  |  |  |  |  |  |  |  |
|     | CH4 (%):            | Nil          |  |  |  |  |  |  |  |  |  |  |  |
|     | CO2 (%):            | Nil          |  |  |  |  |  |  |  |  |  |  |  |
|     | O2 (%):             | 20.0         |  |  |  |  |  |  |  |  |  |  |  |
|     | H2S (ppm):          | Nil          |  |  |  |  |  |  |  |  |  |  |  |
|     | CO (ppm):           | Nil          |  |  |  |  |  |  |  |  |  |  |  |
|     | PID (ppm):          | 0.0          |  |  |  |  |  |  |  |  |  |  |  |
|     | Flow (l/hr):        | <0.1         |  |  |  |  |  |  |  |  |  |  |  |
| WS6 | Water Level (mbgl): | Dry          |  |  |  |  |  |  |  |  |  |  |  |
|     | CH4 (%):            | Nil          |  |  |  |  |  |  |  |  |  |  |  |
|     | CO2 (%):            | Nil          |  |  |  |  |  |  |  |  |  |  |  |
|     | O2 (%):             | 20.1         |  |  |  |  |  |  |  |  |  |  |  |
|     | H2S (ppm):          | Nil          |  |  |  |  |  |  |  |  |  |  |  |
|     | CO (ppm):           | Nil          |  |  |  |  |  |  |  |  |  |  |  |
|     | PID (ppm):          | 0.0          |  |  |  |  |  |  |  |  |  |  |  |
|     | Flow (l/hr):        | <0.1         |  |  |  |  |  |  |  |  |  |  |  |
|     | Water Level (mbgl): | 2.21         |  |  |  |  |  |  |  |  |  |  |  |
|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |
|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |
|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |
|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |
|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |
|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |
|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |
|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |
|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |
|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |
|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |
|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |
|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |
|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |
|     |                     |              |  |  |  |  |  |  |  |  |  |  |  |

CCG-CMS-FO-129

Issue 2

Job No: CCG-C-21-12517

Site: Former Prescott Police Station

Instrument:

GFM436

| TEST DATE AND CONDITIONS |  |            |    |
|--------------------------|--|------------|----|
| Date                     |  | 09/03/2021 |    |
| Atmospheric Pressure     |  | 1001       | mB |
| Ambient Temperature      |  | 22.3       | °C |
| EnviroNics Serial No.    |  | 5089       |    |

**GFM436 Final Inspection & Calibration  
Check Certificate**

**GAS DATA LTD**

Unit 4, Fairfield Court

Seven Stars Estate

Wheler Rd

Coventry

CV3 4LJ

Tel 02476303311

Fax 02476307711



|                    |                  |
|--------------------|------------------|
| Customer           | C C Geotechnical |
| Certificate Number | 122336           |
| Order Number       | 327973           |

|                  |                   |
|------------------|-------------------|
| Serial Number    | 12667             |
| Software Version | G436-00.0027/0010 |

|                        |
|------------------------|
| Recalibration DUE Date |
| 09/03/22               |

| Instrument Checks   |     |                     |                    |     |                     |
|---------------------|-----|---------------------|--------------------|-----|---------------------|
| Keyboard            | ✓   |                     | Display Contrast   | ✓   |                     |
| Pump Flow In        | 450 | Accept > 200 cc/min | Pump Flow @ -200mB | 300 | Accept > 200 cc/min |
| Clock Set / Running | ✓   |                     | Labels Fitted      | ✓   |                     |

| Gas Checks                       |                 |                  |                 |                  |                |                  |
|----------------------------------|-----------------|------------------|-----------------|------------------|----------------|------------------|
| Sensor                           | CH <sub>4</sub> |                  | CO <sub>2</sub> |                  | O <sub>2</sub> |                  |
|                                  | Instrument Gas  | True Gas Value % | Instrument Gas  | True Gas Value % | Instrument Gas | True Gas Value % |
|                                  | Readings %      |                  | Readings %      |                  | Readings %     |                  |
|                                  | 59.7            | 60               | 40              | 40               | 20.9           | 20.9             |
|                                  | Accept ±3.0     |                  | Accept ±3.0     |                  | Accept ±0.5    |                  |
|                                  | 5               | 5                | 4.9             | 5                | 6              | 6                |
|                                  | Accept ±0.3     |                  | Accept ±0.3     |                  | Accept ±0.3    |                  |
| Zero Reading 100% N <sub>2</sub> | 0               | 0                | 0               | 0                | 0              | 0                |
|                                  | Accept ±0.0     |                  | Accept ±0.0     |                  | Accept ±0.1    |                  |

| Optional Gas Checks |             |                              |                           |             |                        |              |
|---------------------|-------------|------------------------------|---------------------------|-------------|------------------------|--------------|
| Applied Gas & Range |             | Concentration Tested @ (ppm) | Instrument Readings (ppm) |             |                        |              |
| Gas Type            | Range (ppm) |                              | Zero Reading              |             | Instrument Gas Reading |              |
| H <sub>2</sub> S    | 5000        | 1500                         | 0                         | Accept ±0.0 | 1500                   | Accept ±5.0  |
| CO                  | 2000        | 1000                         | 0                         | Accept ±0.0 | 999                    | Accept ±5.0  |
| Hexane              | 2.0%        | 2.0%                         | 0                         | Accept ±0.0 | 1.99                   | Accept ±10.0 |

| Cross Gas Effects |               |                           |     |          |    |          |  |  |  |
|-------------------|---------------|---------------------------|-----|----------|----|----------|--|--|--|
| Applied Gas (ppm) |               | Instrument Readings (ppm) |     |          |    |          |  |  |  |
| Gas Type          | Concentration | Toxic 1:                  | H2S | Toxic 2: | CO | Toxic 3: |  |  |  |
| H2S               | 1500          | 1500                      |     | 0        |    | 0        |  |  |  |
| CO                | 1000          | 40                        |     | 999      |    | 0        |  |  |  |
| Hexane            | 2.0%          | 0                         |     | 0        |    | 1.99     |  |  |  |

| Pressure Checks                   |         |                                              |                  |
|-----------------------------------|---------|----------------------------------------------|------------------|
| Atmospheric Pressure [AP] (mB)    |         |                                              |                  |
| Current Atmospheric Pressure (mB) |         | Instrument Atmospheric Pressure Reading (mB) |                  |
| AP Open Ports                     |         | 1001                                         | Accept $\pm 2.0$ |
| AP Port (Internal)                | +800 mB | 800                                          | Accept $\pm 5.0$ |
|                                   | +1200mB | 1200                                         | Accept $\pm 5.0$ |

| Flow Checks           |                          |                  |                       |                         |                  |
|-----------------------|--------------------------|------------------|-----------------------|-------------------------|------------------|
| Borehole Flow         |                          |                  | Differential Pressure |                         |                  |
| Applied Reading (l/h) | Instrument Reading (l/h) |                  | Applied Pressure (Pa) | Instrument Reading (Pa) |                  |
| -30                   | -30                      | Accept $\pm 3.0$ | -476                  | -484                    | Accept $\pm 50$  |
| -3                    | -3                       | Accept $\pm 1.0$ | -17                   | -17                     | Accept $\pm 6.0$ |
| 0                     | 0                        | Accept $\pm 0.0$ | 0                     | 0                       | Accept $\pm 0.5$ |
| 3                     | 3                        | Accept $\pm 0.5$ | 13                    | 12                      | Accept $\pm 3.0$ |
| 30                    | 29.7                     | Accept $\pm 3.0$ | 314                   | 312                     | Accept $\pm 50$  |
| 60                    | 59.5                     | Accept $\pm 6.0$ | 962                   | 953                     | Accept $\pm 130$ |
| 90                    | 90.6                     | Accept $\pm 9.0$ | 1915                  | 1951                    | Accept $\pm 250$ |

| Temperature Checks                     |                                                   |                  |
|----------------------------------------|---------------------------------------------------|------------------|
| Calibration Temperature                | Instrument Temperature Reading $^{\circ}\text{C}$ |                  |
| Applied Temperature $^{\circ}\text{C}$ |                                                   |                  |
| -10                                    | -10                                               | Accept $\pm 2.0$ |
| 0                                      | 0                                                 | Accept $\pm 1.0$ |
| 30                                     | 30                                                | Accept $\pm 1.0$ |
| 60                                     | 60                                                | Accept $\pm 1.0$ |
| 100                                    | 100                                               | Accept $\pm 1.0$ |

|             |              |
|-------------|--------------|
| Technician: | Date Tested: |
| Les Treece  | 10/03/2021   |

The instrument identified by the serial number stated above has been tested by Gas Data personnel for calibration accuracy on the date and under the ambient conditions stated. Gas Data Ltd internal BS EN ISO9001:2015 compliant workshop procedures were followed to apply known calibration test gases, gas flow rates, pressures and temperatures of the values stated. The results displayed on the instrument at each stage are recorded above.



Life-saving solutions

## CERTIFICATE OF CALIBRATION

Phocheck Tiger

**CALIBRATION CERTIFICATE NO: 71067**

ISSUED BY: SHAWCITY LIMITED  
DATE: 01-Jun-21  
APPROVED SIGNATORY:   
NAME: Dave Godfrey  
CUSTOMER: CC Geotechnical Ltd  
INSTRUMENT: PhoCheck Tiger  
SERIAL NUMBER: T-110194  
CALIBRATION METHOD: CM03  
AMBIENT CONDITIONS: 20°C ± 2°C and 50% (± 20%) RH

Prior to calibration the instrument was allowed to stabilise in the laboratory for at least 30 minutes.  
The instrument was calibrated by exposing the sensor to known values of gas concentrations.  
All gases were sampled through the complete probe and in line filter, where applicable.  
The reference value is that generated by the certified source and the indicated value is that measured by the instrument.

### CALIBRATION RESULTS

| GAS         | LOT No     | REF. VALUE | INDICATED VALUE |
|-------------|------------|------------|-----------------|
| Isobutylene | WO297301-1 | 100 ppm    | 100 ppm         |
| Isobutylene | WO188023-1 | 5000 ppm   | 5000 ppm        |

#### COMMENTS:

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ .  
This provides a level of confidence of uncertainty of approximately 95%.  
The uncertainty of measurement is  $\pm 2\%$   
The results indicate that the instrument conforms to the applicable parts of the published specification.

### HEALTH & SAFETY, OCCUPATIONAL HYGIENE AND ENVIRONMENTAL MONITORING INSTRUMENTS

Tel: 01793 780622  
[www.shawcity.co.uk](http://www.shawcity.co.uk)

Instrument House, 91-92 Shrivenham Hundred Business Park  
Watchfield, Oxfordshire, SN6 8TY

Fax: 01793 784466  
[service@shawcity.co.uk](mailto:service@shawcity.co.uk)

**PARTS REQUIRED FOR JOB NUMBER: 71067**

| DESCRIPTION                  | PART NO.  | QTY | Serial No. | LOC     |
|------------------------------|-----------|-----|------------|---------|
| 10.6 Lamp                    | LA4TM600  |     |            | S4H B1  |
| Lamp Stack                   | A-846267  | 1   | 070614     | S4H B3  |
| PTFE Filter Disk             | A-861632  | 1   |            | S4H B2  |
| Probe O-Ring                 | 5/OV-02   |     |            | S4H B4  |
| Sensor seal                  | A-861214  | 1   |            | S4H B1  |
| Probe                        | 880207    |     |            | S4E B1  |
| Probe Kit                    | A-880210  |     |            | S4H B4  |
| Filter Clamp (black)         | 880201    |     |            | S4E B1  |
| Probe Seal                   | 880202    |     |            | S4E B5  |
| Filter Clamp (clear)         | 861219    |     |            | S4H B6  |
| Pump                         | A-861298  |     |            | S4F B2  |
| Manifold                     | 861213    |     |            | S4E B6  |
| Outlet Barbs                 | 5/JHS-03  |     |            | S4E B6  |
| Nozzle O-Ring                | 5/OV-04   |     |            | S4H B2  |
| Probe pipe                   | A-861286a |     |            | S4G B5  |
| Tubing Inv Cone              | 5/JO-01   |     |            | S4D B1  |
| Tiger Battery                | A-861240  |     |            | S4G B1  |
| Inlet Outlet Seal            | 861215    | 2   |            | S4H B5  |
| Display                      | 1/OM-05   |     |            | S4E B3  |
| Battery Charging Cradle/Dock | A-861220  |     |            | S4F B2  |
| Charger Lead                 | 1/VS-22   |     |            | S4F B3  |
| Fuse FU100/101/103/105/106   | 1/FB-10   |     |            | S4G B3  |
| FU1 fuse                     | 1/FB-12   |     |            | S3A B1  |
| Standard Top Housing         | A-861551  |     |            | service |
| LT Top Housing               | A-880218  |     |            |         |
| Charging Dock Magnet         | 2/AP-08   |     |            | S4C B2  |
| Bottom Housing               | 861203-2  |     |            | S4F B4  |
| Pneumatics Kit               | A-861509  |     |            | S4F B3  |
| Tiger Battery                | A-861240  |     |            | S4G B1  |
| Sensor PCB                   | A-861103  |     |            | S4E B5  |
| Orange stack for Tiger LT    | A-846496  | 1   |            | S4C B1  |
| PAT Test                     | PAT 1     | 1   |            |         |
| Mainboard Assembly           | A-861120  |     |            |         |



## Life-saving solutions

Instrument House  
91-92 Shrivenham Hundred Business Park  
Watchfield  
Oxfordshire  
SN6 8TY  
Fax: 01793 784466  
[service@shawcity.co.uk](mailto:service@shawcity.co.uk)

## SERVICE / INSPECTION SHEET

JOB NUMBER: 71067  
INSTRUMENT: Phocheck Tiger

SERIAL NUMBER: T-110194  
DATE RECEIVED: 28/05/2021

FIRMWARE: 5.12

CUSTOMER: CC Geotechnical Ltd

[illegible]

| TESTS                            | Pre Service | Post Service |
|----------------------------------|-------------|--------------|
| Charger Test                     |             | Ok           |
| Battery charge Test              |             | Ok           |
| Lamp Test                        |             | Ok           |
| Air Flow Test ≥<br>220ml/min     |             | 274ml/min    |
| Block Flow Test ≤<br>15ml/min    |             | 10 ml/min    |
| Moisture Sensitivity =<br>0.0ppm |             | 0.0 ppm      |
| Switch Test                      |             | Ok           |
| Sensor Test                      |             | Ok           |
| Alarm Test                       |             | Ok           |
| PC Comms Test                    |             | Ok           |
| Datalog Test                     |             | Ok           |
| Display Test                     |             | Ok           |
| Physical Inspection              |             | Ok           |
| PAT Test                         |             | Ok           |
| Firmware Upgrade                 | n/a         |              |
| Software Upgrade (usb)           | n/a         |              |
| Function Test                    |             | Ok           |
| Run time                         | 20hr49      |              |

**Comments:**

Real Time Clock set  
Replaced sensor stack and seal, PTFE filter and inlet/outlet seals as per annual maintenance  
Replaced lamp as per biennial scheduled service.  
Flow rate measured at 274 ml/min  
Instrument calibrated and bump tested  
Moisture sensitivity 0.0 ppm  
Datalogging and pc transfer tested  
Power supply output 11.95Vdc. PAT tested and labelled  
Charger cradle output 5.52Vdc.o/cct

Please note: Zero at Power on is set to OFF, as received.

TECHNICIAN: Dave Godfrey

DATE: 01/06/2021

**APPENDIX E: SOIL CLASSIFICATION REPORT**

**APPENDIX F: SOIL CONTAMINATION REPORT**



Unit A2  
Windmill Road  
Ponswood Industrial Estate  
St Leonards on Sea  
East Sussex  
TN38 9BY  
Telephone: (01424) 718618

[cs@elab-uk.co.uk](mailto:cs@elab-uk.co.uk)  
[info@elab-uk.co.uk](mailto:info@elab-uk.co.uk)

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## THE ENVIRONMENTAL LABORATORY LTD

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**Analytical Report Number:** 21-35429

**Issue:** 1

**Date of Issue:** 23/08/2021

**Contact:** Tony Gerrard

**Customer Details:** CC Geotechnical Ltd  
Unit 1 & 2 Deltic Place  
Deltic Way  
Liverpool  
Merseyside L33 7BA

**Quotation No:** Q14-00045

**Order No:** Not Supplied

**Customer Reference:** CCG-C-21-12518

**Date Received:** 16/08/2021

**Date Approved:** 23/08/2021

**Details:** Former Prescott Police Station, Derby St', Prescott

**Approved by:**

Mike Varley, Technical Manager

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Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

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## Sample Summary

Report No.: 21-35429, issue number 1

| Elab No. | Client's Ref. | Date Sampled | Date Scheduled | Description       | Deviations |
|----------|---------------|--------------|----------------|-------------------|------------|
| 247916   | WS1 0.40      | 12/08/2021   | 16/08/2021     | Sandy silty loam  |            |
| 247917   | WS2 0.50      | 12/08/2021   | 16/08/2021     | Sandy silty loam  |            |
| 247918   | WS3 0.50      | 12/08/2021   | 16/08/2021     | Silty loam        |            |
| 247919   | WS4 0.50      | 12/08/2021   | 16/08/2021     | Silty clayey loam |            |
| 247920   | WS5 0.50      | 12/08/2021   | 16/08/2021     | Sandy silty loam  |            |
| 247921   | WS6 0.40      | 12/08/2021   | 16/08/2021     | Sandy silty loam  |            |

# Results Summary

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Report No.: 21-35429, issue number 1

| ELAB Reference                            |       |          |      | 247916               | 247917               | 247918     | 247919     |
|-------------------------------------------|-------|----------|------|----------------------|----------------------|------------|------------|
| Customer Reference                        |       |          |      |                      |                      |            |            |
| Sample ID                                 |       |          |      |                      |                      |            |            |
| Sample Type                               |       |          |      | SOIL                 | SOIL                 | SOIL       | SOIL       |
| Sample Location                           |       |          |      | WS1                  | WS2                  | WS3        | WS4        |
| Sample Depth (m)                          |       |          |      | 0.40                 | 0.50                 | 0.50       | 0.50       |
| Sampling Date                             |       |          |      | 12/08/2021           | 12/08/2021           | 12/08/2021 | 12/08/2021 |
| Determinand                               | Codes | Units    | LOD  |                      |                      |            |            |
| <b>Soil sample preparation parameters</b> |       |          |      |                      |                      |            |            |
| Material removed                          | N     | %        | 0.1  | 23.1                 | 31.0                 | < 0.1      | < 0.1      |
| Description of Inert material removed     | N     |          | 0    | Stones,brick,clinker | Stones,brick,clinker | None       | None       |
| <b>Metals</b>                             |       |          |      |                      |                      |            |            |
| Arsenic                                   | M     | mg/kg    | 1    | 446                  | 439                  | 37.1       | 14.5       |
| Cadmium                                   | M     | mg/kg    | 0.5  | 1.1                  | 0.5                  | < 0.5      | < 0.5      |
| Chromium                                  | M     | mg/kg    | 5    | 25.6                 | 22.0                 | 35.8       | 42.3       |
| Copper                                    | M     | mg/kg    | 5    | 410                  | 446                  | 66.8       | 36.7       |
| Lead                                      | M     | mg/kg    | 5    | 305                  | 309                  | 145        | 18.4       |
| Mercury                                   | M     | mg/kg    | 0.5  | 0.6                  | 0.7                  | < 0.5      | < 0.5      |
| Nickel                                    | M     | mg/kg    | 5    | 36.6                 | 35.1                 | 38.2       | 55.0       |
| Selenium                                  | M     | mg/kg    | 1    | < 1.0                | < 1.0                | 1.3        | < 1.0      |
| Zinc                                      | M     | mg/kg    | 5    | 322                  | 199                  | 40.3       | 82.2       |
| <b>Anions</b>                             |       |          |      |                      |                      |            |            |
| Water Soluble Sulphate                    | M     | g/l      | 0.02 | 0.05                 | 0.05                 | 0.03       | 0.05       |
| <b>Inorganics</b>                         |       |          |      |                      |                      |            |            |
| Free Cyanide                              | N     | mg/kg    | 1    | < 1.0                | < 1.0                | < 1.0      | < 1.0      |
| Hexavalent Chromium                       | N     | mg/kg    | 0.8  | < 0.8                | < 0.8                | < 0.8      | < 0.8      |
| Total Sulphide                            | N     | mg/kg    | 2    | < 2                  | < 2                  | < 2        | < 2        |
| Acid Soluble Sulphate (SO4)               | U     | %        | 0.02 | 0.04                 | 0.05                 | 0.04       | 0.07       |
| Water Soluble Boron                       | N     | mg/kg    | 0.5  | < 0.5                | 1.1                  | < 0.5      | < 0.5      |
| <b>Miscellaneous</b>                      |       |          |      |                      |                      |            |            |
| pH                                        | M     | pH units | 0.1  | 8.1                  | 7.3                  | 7.3        | 7.8        |
| Soil Organic Matter                       | U     | %        | 0.1  | 6.3                  | 5.8                  | 8.1        | 0.7        |



## Results Summary

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Report No.: 21-35429, issue number 1

| ELAB Reference                   |       |       |      | 247916     | 247917     | 247918     | 247919     |
|----------------------------------|-------|-------|------|------------|------------|------------|------------|
| Customer Reference               |       |       |      |            |            |            |            |
| Sample ID                        |       |       |      |            |            |            |            |
| Sample Type                      |       |       |      | SOIL       | SOIL       | SOIL       | SOIL       |
| Sample Location                  |       |       |      | WS1        | WS2        | WS3        | WS4        |
| Sample Depth (m)                 |       |       |      | 0.40       | 0.50       | 0.50       | 0.50       |
| Sampling Date                    |       |       |      | 12/08/2021 | 12/08/2021 | 12/08/2021 | 12/08/2021 |
| Determinand                      | Codes | Units | LOD  |            |            |            |            |
| <b>Polyaromatic hydrocarbons</b> |       |       |      |            |            |            |            |
| Naphthalene                      | M     | mg/kg | 0.1  | 5.0        | 0.2        | < 0.1      | < 0.1      |
| Acenaphthylene                   | M     | mg/kg | 0.1  | 0.3        | < 0.1      | < 0.1      | < 0.1      |
| Acenaphthene                     | M     | mg/kg | 0.1  | 11.3       | 0.7        | < 0.1      | < 0.1      |
| Fluorene                         | M     | mg/kg | 0.1  | 7.1        | 0.5        | < 0.1      | < 0.1      |
| Phenanthrene                     | M     | mg/kg | 0.1  | 83.7       | 7.0        | < 0.1      | < 0.1      |
| Anthracene                       | M     | mg/kg | 0.1  | 16.2       | 1.8        | < 0.1      | < 0.1      |
| Fluoranthene                     | M     | mg/kg | 0.1  | 130        | 18.2       | < 0.1      | < 0.1      |
| Pyrene                           | M     | mg/kg | 0.1  | 112        | 15.7       | < 0.1      | < 0.1      |
| Benzo(a)anthracene               | M     | mg/kg | 0.1  | 41.6       | 8.5        | < 0.1      | < 0.1      |
| Chrysene                         | M     | mg/kg | 0.1  | 49.7       | 9.7        | < 0.1      | < 0.1      |
| Benzo(b)fluoranthene             | M     | mg/kg | 0.1  | 43.9       | 8.6        | < 0.1      | < 0.1      |
| Benzo(k)fluoranthene             | M     | mg/kg | 0.1  | 33.9       | 7.5        | < 0.1      | < 0.1      |
| Benzo(a)pyrene                   | M     | mg/kg | 0.1  | 41.8       | 8.5        | < 0.1      | < 0.1      |
| Indeno(1,2,3-cd)pyrene           | M     | mg/kg | 0.1  | 35.9       | 6.4        | < 0.1      | < 0.1      |
| Dibenzo(a,h)anthracene           | M     | mg/kg | 0.1  | 7.8        | 1.4        | < 0.1      | < 0.1      |
| Benzo[g,h,i]perylene             | M     | mg/kg | 0.1  | 31.3       | 5.0        | < 0.1      | < 0.1      |
| Total PAH(16)                    | M     | mg/kg | 0.4  | 651        | 99.8       | < 0.4      | < 0.4      |
| <b>BTEX</b>                      |       |       |      |            |            |            |            |
| Benzene                          | M     | ug/kg | 10   | < 10.0     | < 10.0     | < 10.0     | < 10.0     |
| Toluene                          | M     | ug/kg | 10   | < 10.0     | < 10.0     | < 10.0     | < 10.0     |
| Ethylbenzene                     | M     | ug/kg | 10   | < 10.0     | < 10.0     | < 10.0     | < 10.0     |
| Xylenes                          | M     | ug/kg | 10   | < 10.0     | < 10.0     | < 10.0     | < 10.0     |
| <b>TPH CWG</b>                   |       |       |      |            |            |            |            |
| >C5-C6 Aliphatic                 | N     | mg/kg | 0.01 | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| >C6-C8 Aliphatic                 | N     | mg/kg | 0.01 | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| >C8-C10 Aliphatic                | N     | mg/kg | 1    | < 1.0      | < 1.0      | < 1.0      | < 1.0      |
| >C10-C12 Aliphatic               | N     | mg/kg | 1    | 1.8        | < 1.0      | < 1.0      | < 1.0      |
| >C12-C16 Aliphatic               | N     | mg/kg | 1    | 8.3        | < 1.0      | 1.3        | < 1.0      |
| >C16-C21 Aliphatic               | N     | mg/kg | 1    | 23.9       | < 1.0      | 1.7        | < 1.0      |
| >C21-C35 Aliphatic               | N     | mg/kg | 1    | 91.5       | 3.7        | < 1.0      | < 1.0      |
| >C35-C40 Aliphatic               | N     | mg/kg | 1    | 3.1        | < 1.0      | < 1.0      | < 1.0      |
| >C5-C7 Aromatic                  | N     | mg/kg | 0.01 | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| >C7-C8 Aromatic                  | N     | mg/kg | 0.01 | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| >C8-C10 Aromatic                 | N     | mg/kg | 1    | < 1.0      | < 1.0      | < 1.0      | < 1.0      |
| >C10-C12 Aromatic                | N     | mg/kg | 1    | 8.6        | < 1.0      | < 1.0      | < 1.0      |
| >C12-C16 Aromatic                | N     | mg/kg | 1    | 51.3       | < 1.0      | < 1.0      | < 1.0      |
| >C16-C21 Aromatic                | N     | mg/kg | 1    | 266        | 8.4        | < 1.0      | < 1.0      |
| >C21-C35 Aromatic                | N     | mg/kg | 1    | 1100       | 80.6       | 4.4        | < 1.0      |
| >C35-C40 Aromatic                | N     | mg/kg | 1    | 122        | 23.7       | 4.8        | < 1.0      |
| Total (>C5-C40) Ali/Aro          | N     | mg/kg | 1    | 1680       | 116        | 12.3       | < 1.0      |



## Results Summary

2683

Report No.: 21-35429, issue number 1

|                    |            |            |
|--------------------|------------|------------|
| ELAB Reference     | 247920     | 247921     |
| Customer Reference |            |            |
| Sample ID          |            |            |
| Sample Type        | SOIL       | SOIL       |
| Sample Location    | WS5        | WS6        |
| Sample Depth (m)   | 0.50       | 0.40       |
| Sampling Date      | 12/08/2021 | 12/08/2021 |

| Determinand                               | Codes | Units    | LOD  |       |        |
|-------------------------------------------|-------|----------|------|-------|--------|
| <b>Soil sample preparation parameters</b> |       |          |      |       |        |
| Material removed                          | N     | %        | 0.1  | < 0.1 | < 0.1  |
| Description of Inert material removed     | N     |          | 0    | None  | None   |
| <b>Metals</b>                             |       |          |      |       |        |
| Arsenic                                   | M     | mg/kg    | 1    | 22.3  | 15.4   |
| Cadmium                                   | M     | mg/kg    | 0.5  | < 0.5 | < 0.5  |
| Chromium                                  | M     | mg/kg    | 5    | 20.9  | 21.9   |
| Copper                                    | M     | mg/kg    | 5    | 179   | 71.1   |
| Lead                                      | M     | mg/kg    | 5    | 234   | 89.6   |
| Mercury                                   | M     | mg/kg    | 0.5  | 0.9   | < 0.5  |
| Nickel                                    | M     | mg/kg    | 5    | 41.7  | 33.7   |
| Selenium                                  | M     | mg/kg    | 1    | < 1.0 | < 1.0  |
| Zinc                                      | M     | mg/kg    | 5    | 124   | 90.4   |
| <b>Anions</b>                             |       |          |      |       |        |
| Water Soluble Sulphate                    | M     | g/l      | 0.02 | 0.02  | < 0.02 |
| <b>Inorganics</b>                         |       |          |      |       |        |
| Free Cyanide                              | N     | mg/kg    | 1    | < 1.0 | < 1.0  |
| Hexavalent Chromium                       | N     | mg/kg    | 0.8  | < 0.8 | < 0.8  |
| Total Sulphide                            | N     | mg/kg    | 2    | < 2   | < 2    |
| Acid Soluble Sulphate (SO4)               | U     | %        | 0.02 | 0.04  | 0.02   |
| Water Soluble Boron                       | N     | mg/kg    | 0.5  | 0.6   | < 0.5  |
| <b>Miscellaneous</b>                      |       |          |      |       |        |
| pH                                        | M     | pH units | 0.1  | 7.7   | 7.8    |
| Soil Organic Matter                       | U     | %        | 0.1  | 4.4   | 3.0    |



## Results Summary

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|                    |            |            |
|--------------------|------------|------------|
| ELAB Reference     | 247920     | 247921     |
| Customer Reference |            |            |
| Sample ID          |            |            |
| Sample Type        | SOIL       | SOIL       |
| Sample Location    | WS5        | WS6        |
| Sample Depth (m)   | 0.50       | 0.40       |
| Sampling Date      | 12/08/2021 | 12/08/2021 |

| Determinand                      | Codes | Units | LOD  |        |        |
|----------------------------------|-------|-------|------|--------|--------|
| <b>Polyaromatic hydrocarbons</b> |       |       |      |        |        |
| Naphthalene                      | M     | mg/kg | 0.1  | < 0.1  | < 0.1  |
| Acenaphthylene                   | M     | mg/kg | 0.1  | < 0.1  | < 0.1  |
| Acenaphthene                     | M     | mg/kg | 0.1  | < 0.1  | < 0.1  |
| Fluorene                         | M     | mg/kg | 0.1  | < 0.1  | < 0.1  |
| Phenanthrene                     | M     | mg/kg | 0.1  | 0.1    | 0.2    |
| Anthracene                       | M     | mg/kg | 0.1  | < 0.1  | < 0.1  |
| Fluoranthene                     | M     | mg/kg | 0.1  | 0.2    | 0.6    |
| Pyrene                           | M     | mg/kg | 0.1  | 0.2    | 0.7    |
| Benzo(a)anthracene               | M     | mg/kg | 0.1  | 0.1    | 0.5    |
| Chrysene                         | M     | mg/kg | 0.1  | 0.2    | 0.5    |
| Benzo(b)fluoranthene             | M     | mg/kg | 0.1  | 0.2    | 0.9    |
| Benzo(k)fluoranthene             | M     | mg/kg | 0.1  | 0.2    | 0.8    |
| Benzo(a)pyrene                   | M     | mg/kg | 0.1  | 0.2    | 0.9    |
| Indeno(1,2,3-cd)pyrene           | M     | mg/kg | 0.1  | 0.2    | 0.8    |
| Dibenzo(a,h)anthracene           | M     | mg/kg | 0.1  | < 0.1  | 0.2    |
| Benzo[g,h,i]perylene             | M     | mg/kg | 0.1  | 0.1    | 0.5    |
| Total PAH(16)                    | M     | mg/kg | 0.4  | 1.9    | 6.6    |
| <b>BTEX</b>                      |       |       |      |        |        |
| Benzene                          | M     | ug/kg | 10   | < 10.0 | < 10.0 |
| Toluene                          | M     | ug/kg | 10   | < 10.0 | < 10.0 |
| Ethylbenzene                     | M     | ug/kg | 10   | < 10.0 | < 10.0 |
| Xylenes                          | M     | ug/kg | 10   | < 10.0 | < 10.0 |
| <b>TPH CWG</b>                   |       |       |      |        |        |
| >C5-C6 Aliphatic                 | N     | mg/kg | 0.01 | < 0.01 | < 0.01 |
| >C6-C8 Aliphatic                 | N     | mg/kg | 0.01 | < 0.01 | < 0.01 |
| >C8-C10 Aliphatic                | N     | mg/kg | 1    | < 1.0  | < 1.0  |
| >C10-C12 Aliphatic               | N     | mg/kg | 1    | < 1.0  | < 1.0  |
| >C12-C16 Aliphatic               | N     | mg/kg | 1    | < 1.0  | < 1.0  |
| >C16-C21 Aliphatic               | N     | mg/kg | 1    | < 1.0  | < 1.0  |
| >C21-C35 Aliphatic               | N     | mg/kg | 1    | < 1.0  | < 1.0  |
| >C35-C40 Aliphatic               | N     | mg/kg | 1    | < 1.0  | < 1.0  |
| >C5-C7 Aromatic                  | N     | mg/kg | 0.01 | < 0.01 | < 0.01 |
| >C7-C8 Aromatic                  | N     | mg/kg | 0.01 | < 0.01 | < 0.01 |
| >C8-C10 Aromatic                 | N     | mg/kg | 1    | < 1.0  | < 1.0  |
| >C10-C12 Aromatic                | N     | mg/kg | 1    | < 1.0  | < 1.0  |
| >C12-C16 Aromatic                | N     | mg/kg | 1    | < 1.0  | < 1.0  |
| >C16-C21 Aromatic                | N     | mg/kg | 1    | < 1.0  | < 1.0  |
| >C21-C35 Aromatic                | N     | mg/kg | 1    | < 1.0  | 10.5   |
| >C35-C40 Aromatic                | N     | mg/kg | 1    | < 1.0  | 1.6    |
| Total (>C5-C40) Ali/Aro          | N     | mg/kg | 1    | < 1.0  | 12.0   |



## Results Summary

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|                    |            |
|--------------------|------------|
| ELAB Reference     | 247917     |
| Customer Reference |            |
| Sample ID          |            |
| Sample Type        | SOIL       |
| Sample Location    | WS2        |
| Sample Depth (m)   | 0.50       |
| Sampling Date      | 12/08/2021 |

| Determinand                            | Codes | Units                  | LOD  |        |
|----------------------------------------|-------|------------------------|------|--------|
| <b>Metals</b>                          |       |                        |      |        |
| Arsenic 10:1 extract                   | N     | ug/l                   | 5    | 338    |
| Boron 10:1 extract                     | N     | ug/l                   | 5    | 20     |
| Cadmium 10:1 extract                   | N     | ug/l                   | 1    | < 1    |
| Calcium 10:1 extract                   | N     | ug/l                   | 100  | 5890   |
| Chromium 10:1 extract                  | N     | ug/l                   | 5    | < 5    |
| Copper 10:1 extract                    | N     | ug/l                   | 5    | 7      |
| Lead 10:1 extract                      | N     | ug/l                   | 5    | < 5    |
| Magnesium 10:1 extract                 | N     | ug/l                   | 100  | 1220   |
| Mercury 10:1 extract                   | N     | ug/l                   | 0.1  | < 0.1  |
| Nickel 10:1 extract                    | N     | ug/l                   | 5    | < 5    |
| Selenium 10:1 extract                  | N     | ug/l                   | 5    | < 5    |
| Zinc 10:1 extract                      | N     | ug/l                   | 5    | 5      |
| <b>Anions</b>                          |       |                        |      |        |
| Sulphate 10:1 extract                  | N     | mg/l                   | 1    | 3      |
| <b>Inorganics</b>                      |       |                        |      |        |
| Free Cyanide                           | N     | ug/l                   | 5    | < 5    |
| Sulphide 10:1 extract                  | N     | mg/l                   | 0.1  | < 0.1  |
| <b>Miscellaneous</b>                   |       |                        |      |        |
| Dissolved organic carbon               | N     | mg/l                   | 1.5  | 15.8   |
| pH (10:1 extract)                      | N     | pH units               | 0.1  | 8.7    |
| Hardness ( CaCO <sub>3</sub> )         | N     | mg/l CaCO <sub>3</sub> | 0.1  | 20     |
| <b>Polyaromatic hydrocarbons</b>       |       |                        |      |        |
| Naphthalene Leachate GCMS              | N     | ug/l                   | 0.01 | 0.02   |
| Acenaphthylene Leachate GCMS           | N     | ug/l                   | 0.01 | < 0.01 |
| Acenaphthene Leachate GCMS             | N     | ug/l                   | 0.01 | 0.02   |
| Fluorene Leachate GCMS                 | N     | ug/l                   | 0.01 | < 0.01 |
| Phenanthrene Leachate GCMS             | N     | ug/l                   | 0.01 | 0.02   |
| Anthracene Leachate GCMS               | N     | ug/l                   | 0.01 | < 0.01 |
| Fluoranthene Leachate GCMS             | N     | ug/l                   | 0.01 | < 0.01 |
| Pyrene Leachate GCMS                   | N     | ug/l                   | 0.01 | < 0.01 |
| Benzo (a) anthracene Leachate GCMS     | N     | ug/l                   | 0.01 | < 0.01 |
| Chrysene Leachate GCMS                 | N     | ug/l                   | 0.01 | < 0.01 |
| Benzo (b) fluoranthene Leachate GCMS   | N     | ug/l                   | 0.01 | < 0.01 |
| Benzo (k) fluoranthene Leachate GCMS   | N     | ug/l                   | 0.01 | < 0.01 |
| Benzo (a) pyrene Leachate GCMS         | N     | ug/l                   | 0.01 | < 0.01 |
| Indeno (1,2,3-cd) pyrene Leachate GCMS | N     | ug/l                   | 0.01 | < 0.01 |
| Dibenzo(a,h)anthracene Leachate GCMS   | N     | ug/l                   | 0.01 | < 0.01 |
| Benzo(ghi)perylene Leachate GCMS       | N     | ug/l                   | 0.01 | < 0.01 |
| Total PAH(16) Leachate GCMS            | N     | ug/l                   | 0.01 | 0.14   |



## Results Summary

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|                    |            |
|--------------------|------------|
| ELAB Reference     | 247917     |
| Customer Reference |            |
| Sample ID          |            |
| Sample Type        | SOIL       |
| Sample Location    | WS2        |
| Sample Depth (m)   | 0.50       |
| Sampling Date      | 12/08/2021 |

| Determinand                        | Codes | Units | LOD |       |
|------------------------------------|-------|-------|-----|-------|
| <b>TPH CWG</b>                     |       |       |     |       |
| >C5-C6 Aliphatic in Leachate       | N     | ug/l  | 1   | < 1.0 |
| >C6-C8 Aliphatic in Leachate       | N     | ug/l  | 1   | < 1.0 |
| >C8-C10 Aliphatic Leachate         | N     | ug/l  | 5   | 13.1  |
| >C10-C12 Aliphatic Leachate        | N     | ug/l  | 5   | 7.2   |
| >C12-C16 Aliphatic Leachate        | N     | ug/l  | 5   | 5.3   |
| >C16-C21 Aliphatic Leachate        | N     | ug/l  | 5   | < 5.0 |
| >C21-C35 Aliphatic Leachate        | N     | ug/l  | 5   | 11.0  |
| >C35-C40 Aliphatic Leachate        | N     | ug/l  | 5   | < 5.0 |
| Total (>C5-C40) Aliphatic Leachate | N     | ug/l  | 5   | 36.6  |
| >C5-C7 Aromatic in Leachate        | N     | ug/l  | 1   | < 1.0 |
| >C7-C8 Aromatic in Leachate        | N     | ug/l  | 1   | < 1.0 |
| >C8-C10 Aromatic Leachate          | N     | ug/l  | 5   | < 5.0 |
| >C10-C12 Aromatic Leachate         | N     | ug/l  | 5   | < 5.0 |
| >C12-C16 Aromatic Leachate         | N     | ug/l  | 5   | 5.4   |
| >C16-C21 Aromatic Leachate         | N     | ug/l  | 5   | 5.5   |
| >C21-C35 Aromatic Leachate         | N     | ug/l  | 5   | < 5.0 |
| >C35-C40 Aromatic Leachate         | N     | ug/l  | 5   | < 5.0 |
| Total (>C5-C40) Aromatic Leachate  | N     | ug/l  | 5   | 10.9  |
| Total (>C5-C40) Ali/Aro Leachate   | N     | ug/l  | 5   | 47.5  |



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Results Summary

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Asbestos Results

Analytical result only applies to the sample as submitted by the client. Any comments, opinions or interpretations (marked #)  
in this report are outside UKAS accreditation (Accreditation No2683). They are subjective comments only which must be verified by the client.

| Elab No | Depth (m) | Clients Reference | Description of Sample Matrix #                          | Asbestos Identification | Gravimetric Analysis Total (%) | Gravimetric Analysis by ACM Type (%) | Free Fibre Analysis (%) | Total Asbestos (%) |
|---------|-----------|-------------------|---------------------------------------------------------|-------------------------|--------------------------------|--------------------------------------|-------------------------|--------------------|
| 247916  | 0.40      | WS1               | Brown sandy soil, stones, concrete, brick, clinker, tar | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                |
| 247917  | 0.50      | WS2               | Grey sandy soil, stones, concrete, brick, clinker       | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                |
| 247918  | 0.50      | WS3               | Grey sandy soil, stones, concrete, clinker              | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                |
| 247919  | 0.50      | WS4               | Grey/Brown sandy soil, stones                           | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                |
| 247920  | 0.50      | WS5               | Brown sandy soil, stones, brick, clinker, glass         | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                |
| 247921  | 0.40      | WS6               | Brown sandy soil, stones, concrete, brick, clinker      | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                |

## Method Summary

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| Parameter                                | Codes | Analysis Undertaken On | Date Tested | Method Number | Technique          |
|------------------------------------------|-------|------------------------|-------------|---------------|--------------------|
| <b>Soil</b>                              |       |                        |             |               |                    |
| Aliphatic hydrocarbons in leachate       | N     |                        | 19/08/2021  |               | GC-FID             |
| Aliphatic/Aromatic hydrocarbons in leach | N     |                        | 20/08/2021  |               | GC-FID             |
| Aromatic hydrocarbons in leachate        | N     |                        | 19/08/2021  |               | GC-FID             |
| Carbon in leachates                      | N     |                        | 19/08/2021  |               | IR                 |
| Leachate cyanide 10:1 extract            | N     |                        | 18/08/2021  |               | Colorimetry        |
| Leachate sulphide 10:1 extract           | N     |                        | 20/08/2021  |               | Colorimetry        |
| pH of leachates                          | N     |                        | 18/08/2021  |               | Electromeric       |
| Free cyanide                             | N     | As submitted sample    | 19/08/2021  | 107           | Colorimetry        |
| Sulphide                                 | N     | As submitted sample    | 18/08/2021  | 109           | Colorimetry        |
| Hexavalent chromium                      | N     | As submitted sample    | 18/08/2021  | 110           | Colorimetry        |
| pH                                       | M     | Air dried sample       | 19/08/2021  | 113           | Electromeric       |
| Acid Soluble Sulphate                    | U     | Air dried sample       | 19/08/2021  | 115           | Ion Chromatography |
| PAH (GC-FID)                             | M     | As submitted sample    | 18/08/2021  | 133           | GC-FID             |
| PAHs and/or PCBs in leachates            | N     |                        | 19/08/2021  | 135           | GC-MS              |
| Water soluble anions                     | M     | Air dried sample       | 18/08/2021  | 172           | Ion Chromatography |
| Low range Aliphatic hydrocarbons soil    | N     | As submitted sample    | 19/08/2021  | 181           | GC-MS              |
| Low range Aromatic hydrocarbons soil     | N     | As submitted sample    | 19/08/2021  | 181           | GC-MS              |
| BTEX in solids                           | M     | As submitted sample    | 19/08/2021  | 181A          | GC-MS              |
| Low range Aliphatic hydrocarbons leachat | N     |                        | 20/08/2021  | 200           | GC-MS              |
| Low range Aromatic hydrocarbons leachate | N     |                        | 20/08/2021  | 200           | GC-MS              |
| Water soluble boron                      | N     | Air dried sample       | 18/08/2021  | 202           | Colorimetry        |
| Aliphatic hydrocarbons in soil           | N     | As submitted sample    | 18/08/2021  | 214           | GC-FID             |
| Aliphatic/Aromatic hydrocarbons in soil  | N     | As submitted sample    | 23/08/2021  | 214           | GC-FID             |
| Aromatic hydrocarbons in soil            | N     | As submitted sample    | 18/08/2021  | 214           | GC-FID             |
| Anions in leachates                      | N     |                        | 18/08/2021  | 270           | Ion Chromatography |
| Asbestos identification                  | U     | Air dried sample       | 19/08/2021  | 280           | Microscopy         |
| Aqua regia extractable metals            | M     | Air dried sample       | 18/08/2021  | 300           | ICPMS              |
| Leachate metals 10:1 extract             | N     |                        | 18/08/2021  | 301           | ICPMS              |
| Soil organic matter                      | U     | Air dried sample       | 18/08/2021  | BS1377:P3     | Titrimetry         |
| <b>Water</b>                             |       |                        |             |               |                    |
| Hardness in soil leachates               | N     |                        | 19/08/2021  | APHA          | ICPMS              |

Tests marked N are not UKAS accredited

## Report Information

Report No.: 21-35429, issue number 1

### Key

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|     |                                                                             |
|-----|-----------------------------------------------------------------------------|
| U   | hold UKAS accreditation                                                     |
| M   | hold MCERTS and UKAS accreditation                                          |
| N   | do not currently hold UKAS accreditation                                    |
| ^   | MCERTS accreditation not applicable for sample matrix                       |
| *   | UKAS accreditation not applicable for sample matrix                         |
| S   | Subcontracted to approved laboratory UKAS Accredited for the test           |
| SM  | Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test    |
| NS  | Subcontracted to approved laboratory. UKAS accreditation is not applicable. |
| I/S | Insufficient Sample                                                         |
| U/S | Unsuitable sample                                                           |
| n/t | Not tested                                                                  |
| <   | means "less than"                                                           |
| >   | means "greater than"                                                        |

LOD LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination.  
Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed.  
ELAB are unable to provide an interpretation or opinion on the content of this report.  
The results relate only to the sample received.  
PCB congener results may include any coeluting PCBs  
Uncertainty of measurement for the determinands tested are available upon request  
Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

### Deviation Codes

- 
- |   |                                                          |
|---|----------------------------------------------------------|
| a | No date of sampling supplied                             |
| b | No time of sampling supplied (Waters Only)               |
| c | Sample not received in appropriate containers            |
| d | Sample not received in cooled condition                  |
| e | The container has been incorrectly filled                |
| f | Sample age exceeds stability time (sampling to receipt)  |
| g | Sample age exceeds stability time (sampling to analysis) |

Where a sample has a deviation code, the applicable test result may be invalid.

### Sample Retention and Disposal

---

All soil samples will be retained for a period of one month  
All water samples will be retained for 7 days following the date of the test report  
Charges may apply to extended sample storage

APPENDIX G: SOIL CONTAMINATION SUMMARY TABLES

# SOIL ASSESSMENT CRITERIA FOR RESIDENTIAL LAND USE (WITH HOME GROWN PRODUCE)

| Contaminant                                   | Assessment Criteria for Residential at 1% SOM (mg/kg) | Assessment Criteria for Residential at 2.5% SOM (mg/kg) | Assessment Criteria for Residential at 6% SOM (mg/kg) |
|-----------------------------------------------|-------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------|
| <b><u>Metals</u></b>                          |                                                       |                                                         |                                                       |
| Arsenic                                       | 37                                                    | 37                                                      | 37                                                    |
| Boron                                         | 290                                                   | 290                                                     | 290                                                   |
| Cadmium                                       | 11                                                    | 11                                                      | 11                                                    |
| Chromium III                                  | 910                                                   | 910                                                     | 910                                                   |
| Chromium VI                                   | 6                                                     | 6                                                       | 6                                                     |
| Copper                                        | 240                                                   | 240                                                     | 240                                                   |
| *Lead                                         | 200                                                   | 200                                                     | 200                                                   |
| Mercury                                       | 1.2                                                   | 1.2                                                     | 1.2                                                   |
| Nickel                                        | 180                                                   | 180                                                     | 180                                                   |
| Selenium                                      | 250                                                   | 250                                                     | 250                                                   |
| Vanadium                                      | 410                                                   | 410                                                     | 410                                                   |
| Zinc                                          | 3700                                                  | 3700                                                    | 3700                                                  |
| <b><u>Non-Metals</u></b>                      |                                                       |                                                         |                                                       |
| Phenol                                        | 280                                                   | 550                                                     | 1100                                                  |
| <b><u>Polyaromatic Hydrocarbons (PAH)</u></b> |                                                       |                                                         |                                                       |
| Acenaphthene                                  | 210                                                   | 510                                                     | 1100                                                  |
| Acenaphthylene                                | 170                                                   | 420                                                     | 920                                                   |
| Anthracene                                    | 2400                                                  | 5400                                                    | 11000                                                 |
| Benz[a]anthracene                             | 7.2                                                   | 11                                                      | 13                                                    |
| Benzo[a]pyrene                                | 2.2                                                   | 2.7                                                     | 3.0                                                   |
| Benzo[b]fluoranthene                          | 2.6                                                   | 3.3                                                     | 3.7                                                   |
| Benzo[ghi]perylene                            | 320                                                   | 340                                                     | 350                                                   |
| Benzo[k]fluoranthene                          | 77                                                    | 93                                                      | 100                                                   |
| Chrysene                                      | 15                                                    | 22                                                      | 27                                                    |
| Dibenz[ah]anthracene                          | 0.24                                                  | 0.28                                                    | 0.3                                                   |
| Fluoranthene                                  | 280                                                   | 560                                                     | 890                                                   |
| Fluorene                                      | 170                                                   | 400                                                     | 860                                                   |
| Indeno[123-cd]pyrene                          | 27                                                    | 36                                                      | 41                                                    |
| Naphthalene                                   | 2.3                                                   | 5.6                                                     | 13                                                    |
| Phenanthrene                                  | 95                                                    | 220                                                     | 440                                                   |
| Pyrene                                        | 620                                                   | 1200                                                    | 2000                                                  |
| Coal Tar [Bap as surrogate marker]            | 0.79                                                  | 0.98                                                    | 1.1                                                   |
| <b><u>Petroleum Hydrocarbons</u></b>          |                                                       |                                                         |                                                       |
| Aliphatic EC 5-6                              | 42                                                    | 78                                                      | 160                                                   |
| Aliphatic EC >6-8                             | 100                                                   | 230                                                     | 530                                                   |
| Aliphatic EC >8-10                            | 27                                                    | 65                                                      | 150                                                   |
| Aliphatic EC >10-12                           | 130                                                   | 330                                                     | 760                                                   |
| Aliphatic EC >12-16                           | 1100                                                  | 2400                                                    | 4300                                                  |
| Aliphatic EC >16-35                           | 65000                                                 | 92000                                                   | 110000                                                |
| Aliphatic EC >35-44                           | 65000                                                 | 92000                                                   | 110000                                                |
| Aromatic EC 5-7 (Benzene)                     | 70                                                    | 140                                                     | 300                                                   |
| Aromatic EC >7-8 (Toluene)                    | 130                                                   | 290                                                     | 660                                                   |
| Aromatic EC >8-10                             | 34                                                    | 83                                                      | 190                                                   |
| Aromatic EC >10-12                            | 74                                                    | 180                                                     | 380                                                   |
| Aromatic EC >12-16                            | 140                                                   | 330                                                     | 660                                                   |
| Aromatic EC >16-21                            | 260                                                   | 540                                                     | 930                                                   |
| Aromatic EC >21-35                            | 1100                                                  | 1500                                                    | 1700                                                  |
| Aromatic EC >35-44                            | 1100                                                  | 1500                                                    | 1700                                                  |
| Aliphatic – Aromatic EC >44-70                | 1600                                                  | 1800                                                    | 1900                                                  |

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The above is based on criteria contained in publication LQM/CIEH S4UL's for Human Health Risk Assessment (2015) (CCG Licence No. S4UL3233), applicable to the "Residential" land use (with home grown produce) scenario for soil organic matter (SOM) content of 1% - 6%.

\*This document does not provide criteria for Lead, for which the results were compared to the C4SL published by DEFRA SP1010 Development of Category 4 Screening Levels.



## METALS DATA SUMMARY AND RISK ASSESSMENT SHEET

Job number: 21-12518

Site name: Former Prescott Police Station

Prepared by: TG

Authorised by: CB

Proposed land use: Residential with plant uptake

SOM % used: 2.5

  = Threshold exceeded

  = Below Limit of detection

n/t = Not tested

| Contaminants                       |                  |             | Metals  |              |             |        |       |                     |        |       |
|------------------------------------|------------------|-------------|---------|--------------|-------------|--------|-------|---------------------|--------|-------|
|                                    |                  |             | Cadmium | Chromium III | Chromium VI | Copper | Lead  | Mercury (elemental) | Nickel | Zinc  |
| Units                              |                  |             | mg/kg   | mg/kg        | mg/kg       | mg/kg  | mg/kg | mg/kg               | mg/kg  | mg/kg |
| Limit of Detection                 |                  |             | 0.5     | 5.0          | 0.8         | 5.0    | 5.0   | 0.5                 | 5.0    | 5.0   |
| Human Health Risk Assessment (GAC) |                  |             | 11      | 910          | 6           | 2400   | 200   | 1.2                 | 180    | 3700  |
| Sample Location                    | Sample Depth (m) | Sample type |         |              |             |        |       |                     |        |       |
| WS1                                | 0.40             | SOIL        | 1.1     | 25.6         | < 0.8       | 410    | 305   | 0.6                 | 36.6   | 322   |
| WS2                                | 0.50             | SOIL        | 0.5     | 22           | < 0.8       | 446    | 309   | 0.7                 | 35.1   | 199   |
| WS3                                | 0.50             | SOIL        | < 0.5   | 35.8         | < 0.8       | 66.8   | 145   | < 0.5               | 38.2   | 40.3  |
| WS4                                | 0.50             | SOIL        | < 0.5   | 42.3         | < 0.8       | 36.7   | 18.4  | < 0.5               | 55     | 82.2  |
| WS5                                | 0.50             | SOIL        | < 0.5   | 20.9         | < 0.8       | 179    | 234   | 0.9                 | 41.7   | 124   |
| WS6                                | 0.40             | SOIL        | < 0.5   | 21.9         | < 0.8       | 71.1   | 89.6  | < 0.5               | 33.7   | 90.4  |
| Human Health Risk Assessment (GAC) |                  |             | 11      | 910          | 6           | 2400   | 200   | 1.2                 | 180    | 3700  |



## SEMI-METALS, NON-METALS, INORGANICS AND OTHER DATA SUMMARY AND RISK ASSESSMENT SHEET

Job number: **21-12518**

Site name: **Former Prescott Police Station**

Prepared by: **TG**

Authorised by: **CB**

Proposed land use: **Residential with plant uptake**

SOM % used: **2.5**

  = **Threshold exceeded**

  = **Below Limit of detection**

n/t = **Not tested**

|                                    |                  |             | Semi/non-metals |       | Inorganics |                |                          | Other                    |            |                       |
|------------------------------------|------------------|-------------|-----------------|-------|------------|----------------|--------------------------|--------------------------|------------|-----------------------|
| Contaminants                       |                  |             | Arsenic         | Boron | Selenium   | Cyanide (free) | Sulphate (water soluble) | Sulphate (water soluble) | pH (units) | Soil Organic Matter % |
| Units                              |                  |             | mg/kg           | mg/kg | mg/kg      | mg/kg          | g/l                      | mg/l                     | units      | units                 |
| Limit of Detection                 |                  |             | 1.0             | 0.5   | 1.0        | 1.0            | 0.02                     | 20.0                     | 0.1        | 0.1                   |
| Human Health Risk Assessment (GAC) |                  |             | 37              | 290   | 250        | 22             | NA                       | NA                       | NA         | NA                    |
| Sample Location                    | Sample Depth (m) | Sample type |                 |       |            |                |                          |                          |            |                       |
| WS1                                | 0.40             | SOIL        | 446             | < 0.5 | < 1.0      | < 1.0          | 0.05                     | n/t                      | 8.1        | 6.3                   |
| WS2                                | 0.50             | SOIL        | 439             | 1.1   | < 1.0      | < 1.0          | 0.05                     | n/t                      | 7.3        | 5.8                   |
| WS3                                | 0.50             | SOIL        | 37.1            | < 0.5 | 1.3        | < 1.0          | 0.03                     | n/t                      | 7.3        | 8.1                   |
| WS4                                | 0.50             | SOIL        | 14.5            | < 0.5 | < 1.0      | < 1.0          | 0.05                     | n/t                      | 7.8        | 0.7                   |
| WS5                                | 0.50             | SOIL        | 22.3            | 0.6   | < 1.0      | < 1.0          | 0.02                     | n/t                      | 7.7        | 4.4                   |
| WS6                                | 0.40             | SOIL        | 15.4            | < 0.5 | < 1.0      | < 1.0          | < 0.02                   | n/t                      | 7.8        | 3                     |
| Human Health Risk Assessment (GAC) |                  |             | 37              | 290   | 11         | 22             | NA                       | NA                       | NA         | NA                    |



## SPECIATED PAH'S DATA SUMMARY AND RISK ASSESSMENT SHEET

Job number: 21-12518

Site name: Former Prescott Police Station

Prepared by: TG

Authorised by: CB

Proposed land use: Residential with plant uptake

SOM % used: 2.5

 = Threshold exceeded

 = Below Limit of detection

 = Not tested

## Contaminants

## PAH's

| Contaminants                       |                  |             | Acenaphthene | Acenaphthylene | Anthracene | Benz[a]anthracene | Benzo[a]pyrene | Benzo[b]fluoranthene | Benzo[ghi]perylene | Benzo[k]fluoranthene | Chrysene | Dibenzo[ah]anthracene | fluoranthene | fluorene | Indeno[123-cd]pyrene | Napthalene | Pheanthrene | Pyrene | Total PAH's |
|------------------------------------|------------------|-------------|--------------|----------------|------------|-------------------|----------------|----------------------|--------------------|----------------------|----------|-----------------------|--------------|----------|----------------------|------------|-------------|--------|-------------|
| Units                              |                  |             | mg/kg        | mg/kg          | mg/kg      | mg/kg             | mg/kg          | mg/kg                | mg/kg              | mg/kg                | mg/kg    | mg/kg                 | mg/kg        | mg/kg    | mg/kg                | mg/kg      | mg/kg       | mg/kg  | mg/kg       |
| Limit of Detection                 |                  |             | 0.1          | 0.1            | 0.1        | 0.1               | 0.1            | 0.1                  | 0.1                | 0.1                  | 0.1      | 0.1                   | 0.1          | 0.1      | 0.1                  | 0.1        | 0.1         | 0.1    | 0.4         |
| Human Health Risk Assessment (GAC) |                  |             | 510          | 420            | 5400       | 11                | 2.7            | 3.3                  | 340                | 93                   | 22       | 0.28                  | 560          | 400      | 36                   | 5.6        | 220         | 1200   | NA          |
| Sample Location                    | Sample Depth (m) | Sample type |              |                |            |                   |                |                      |                    |                      |          |                       |              |          |                      |            |             |        |             |
| WS1                                | 0.40             | SOIL        | 11.3         | 0.3            | 16.2       | 41.6              | 41.8           | 43.9                 | 31.3               | 33.9                 | 49.7     | 7.8                   | 130          | 7.1      | 35.9                 | 5          | 83.7        | 112    | 651         |
| WS2                                | 0.50             | SOIL        | 0.7          | < 0.1          | 1.8        | 8.5               | 8.5            | 8.6                  | 5                  | 7.5                  | 9.7      | 1.4                   | 18.2         | 0.5      | 6.4                  | 0.2        | 7           | 15.7   | 99.8        |
| WS3                                | 0.50             | SOIL        | < 0.1        | < 0.1          | < 0.1      | < 0.1             | < 0.1          | < 0.1                | < 0.1              | < 0.1                | < 0.1    | < 0.1                 | < 0.1        | < 0.1    | < 0.1                | < 0.1      | < 0.1       | < 0.1  | < 0.4       |
| WS4                                | 0.50             | SOIL        | < 0.1        | < 0.1          | < 0.1      | < 0.1             | < 0.1          | < 0.1                | < 0.1              | < 0.1                | < 0.1    | < 0.1                 | < 0.1        | < 0.1    | < 0.1                | < 0.1      | < 0.1       | < 0.1  | < 0.4       |
| WS5                                | 0.50             | SOIL        | < 0.1        | < 0.1          | < 0.1      | 0.1               | 0.2            | 0.2                  | 0.1                | 0.2                  | 0.2      | < 0.1                 | 0.2          | < 0.1    | 0.2                  | < 0.1      | 0.1         | 0.2    | 1.9         |
| WS6                                | 0.40             | SOIL        | < 0.1        | < 0.1          | < 0.1      | 0.5               | 0.9            | 0.9                  | 0.5                | 0.8                  | 0.5      | 0.2                   | 0.6          | < 0.1    | 0.8                  | < 0.1      | 0.2         | 0.7    | 6.6         |
| Human Health Risk Assessment (GAC) |                  |             | 510          | 420            | 11         | 11                | 2.7            | 3.3                  | 340                | 93                   | 22       | 0.28                  | 560          | 400      | 36                   | 5.6        | 220         | 1200   | NA          |



## SPECIATED TPH'S DATA SUMMARY AND RISK ASSESSMENT SHEET

Job number: 21-12518

Site name: Former Prescott Police Station

Prepared by: TG

Authorised by: CB

Proposed land use: Residential with plant uptake

SOM % used: 2.5

|                                                                   |   |                          |
|-------------------------------------------------------------------|---|--------------------------|
| <span style="background-color: red; color: black;"> </span>       | = | Threshold exceeded       |
| <span style="background-color: lightgrey; color: black;"> </span> | = | Below Limit of detection |
| n/t                                                               | = | Not tested               |

|                                    |                  |             | Speciated TPH's |        |        |         |         |         |         |            |        |        |        |         |         |         |         |             |
|------------------------------------|------------------|-------------|-----------------|--------|--------|---------|---------|---------|---------|------------|--------|--------|--------|---------|---------|---------|---------|-------------|
|                                    |                  |             | Aromatics       |        |        |         |         |         |         | Aliphatics |        |        |        |         |         |         |         |             |
| Contaminants                       |                  |             | EC5-7           | EC7-8  | EC8-10 | EC10-12 | EC12-16 | EC16-21 | EC21-35 | EC35-44    | EC5-6  | EC6-8  | EC8-10 | EC10-12 | EC12-16 | EC16-35 | EC35-44 | TOTAL TPH'S |
| Units                              |                  |             | mg/kg           | mg/kg  | mg/kg  | mg/kg   | mg/kg   | mg/kg   | mg/kg   | mg/kg      | mg/kg  | mg/kg  | mg/kg  | mg/kg   | mg/kg   | mg/kg   | mg/kg   | mg/kg       |
| Limit of Detection                 |                  |             | 0.01            | 0.01   | 1.0    | 1.0     | 1.0     | 1.0     | 1.0     | 1.0        | 0.01   | 0.01   | 1.0    | 1.0     | 1.0     | 1.0     | 1.0     | 1.0         |
| Human Health Risk Assessment (GAC) |                  |             | 140             | 290    | 83     | 180     | 330     | 540     | 1500    | 1500       | 78     | 230    | 65     | 330     | 2400    | 92000   | 92000   | NA          |
| Sample Location                    | Sample Depth (m) | Sample type |                 |        |        |         |         |         |         |            |        |        |        |         |         |         |         |             |
| WS1                                | 0.40             | SOIL        | < 0.01          | < 0.01 | < 1.0  | 8.6     | 51.3    | 266     | 1100    | 122        | < 0.01 | < 0.01 | < 1.0  | 1.8     | 8.3     | 115.4   | 3.1     | 1680        |
| WS2                                | 0.50             | SOIL        | < 0.01          | < 0.01 | < 1.0  | < 1.0   | < 1.0   | 8.4     | 80.6    | 23.7       | < 0.01 | < 0.01 | < 1.0  | < 1.0   | < 1.0   | 3.7     | < 1.0   | 116         |
| WS3                                | 0.50             | SOIL        | < 0.01          | < 0.01 | < 1.0  | < 1.0   | < 1.0   | < 1.0   | 4.4     | 4.8        | < 0.01 | < 0.01 | < 1.0  | < 1.0   | 1.3     | 1.7     | < 1.0   | 12.3        |
| WS4                                | 0.50             | SOIL        | < 0.01          | < 0.01 | < 1.0  | < 1.0   | < 1.0   | < 1.0   | < 1.0   | < 1.0      | < 0.01 | < 0.01 | < 1.0  | < 1.0   | < 1.0   | < 1.0   | < 1.0   | < 1.0       |
| WS5                                | 0.50             | SOIL        | < 0.01          | < 0.01 | < 1.0  | < 1.0   | < 1.0   | < 1.0   | < 1.0   | < 1.0      | < 0.01 | < 0.01 | < 1.0  | < 1.0   | < 1.0   | < 1.0   | < 1.0   | < 1.0       |
| WS6                                | 0.40             | SOIL        | < 0.01          | < 0.01 | < 1.0  | < 1.0   | < 1.0   | < 1.0   | 10.5    | 1.6        | < 0.01 | < 0.01 | < 1.0  | < 1.0   | < 1.0   | < 1.0   | < 1.0   | 12          |
| Human Health Risk Assessment (GAC) |                  |             | 140             | 290    | 11     | 180     | 330     | 540     | 1500    | 1500       | 78     | 230    | 65     | 330     | 2400    | 92000   | 92000   | NA          |



## BTEX DATA SUMMARY AND RISK ASSESSMENT SHEET

Job number: **21-12518**

Site name: **Former Prescott Police Station**

Prepared by: **TG**

Authorised by: **CB**

Proposed land use: **Residential with plant uptake**

SOM % used: **2.5**

  = **Threshold exceeded**

  = **Below Limit of detection**

n/t = **Not tested**

|                                    |                  |             | BTEX    |         |              |               |
|------------------------------------|------------------|-------------|---------|---------|--------------|---------------|
| Contaminants                       |                  |             | Benzene | Toluene | Ethylbenzene | Total Xylenes |
| Units                              |                  |             | µg/kg   | µg/kg   | µg/kg        | µg/kg         |
| Limit of Detection                 |                  |             | 10      | 10      | 10           | 10            |
| Human Health Risk Assessment (GAC) |                  |             | 170     | 290000  | 110000       | 130000        |
| Sample Location                    | Sample Depth (m) | Sample type |         |         |              |               |
| WS1                                | 0.40             | SOIL        | < 10.0  | < 10.0  | < 10.0       | < 10.0        |
| WS2                                | 0.50             | SOIL        | < 10.0  | < 10.0  | < 10.0       | < 10.0        |
| WS3                                | 0.50             | SOIL        | < 10.0  | < 10.0  | < 10.0       | < 10.0        |
| WS4                                | 0.50             | SOIL        | < 10.0  | < 10.0  | < 10.0       | < 10.0        |
| WS5                                | 0.50             | SOIL        | < 10.0  | < 10.0  | < 10.0       | < 10.0        |
| WS6                                | 0.40             | SOIL        | < 10.0  | < 10.0  | < 10.0       | < 10.0        |
| Human Health Risk Assessment (GAC) |                  |             | 170     | 11      | 110000       | 130000        |

## ASBESTOS ASSESSMENT SHEET

**Job number: 21-12518**

**Site name: Former Prescott Police Station**

**Prepared by: TG**

**Authorised by: CB**

| Sample Location | Sample Depth (m) | Asbestos Identification | Gravimetric Analysis Total (%) | Gravimetric Analysis by ACM Type (%) | Free Fibre Analysis (%) | Total Asbestos (%) | Assessment           |
|-----------------|------------------|-------------------------|--------------------------------|--------------------------------------|-------------------------|--------------------|----------------------|
| WS1             | 0.40             | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                | No asbestos detected |
| WS2             | 0.50             | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                | No asbestos detected |
| WS3             | 0.50             | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                | No asbestos detected |
| WS4             | 0.50             | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                | No asbestos detected |
| WS5             | 0.50             | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                | No asbestos detected |
| WS6             | 0.40             | No asbestos detected    | n/t                            | n/t                                  | n/t                     | n/t                | No asbestos detected |



**APPENDIX H: PRELIMINARY WASTE CLASSIFICATION REPORT**



## Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



17R42-ZVWER-BO340

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in **pale yellow**.

### Job name

Former Police Station, Prescott

### Description/Comments

### Project

### Site

### Classified by

Name: **Tony Gerrard**  
Date: **31 Aug 2021 09:28 GMT**  
Telephone: **0151 545 2750**  
Company: **CC Geotechnical Ltd**

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

### HazWasteOnline™ Certification:

Course: **Hazardous Waste Classification**

Date

### Job summary

| # | Sample name | Depth [m] | Classification Result | Hazard properties    | Page |
|---|-------------|-----------|-----------------------|----------------------|------|
| 1 | WS1         | 0.40      | Hazardous             | HP 3(i), HP 7, HP 11 | 2    |
| 2 | WS2         | 0.50      | Non Hazardous         |                      | 7    |
| 3 | WS3         | 0.50      | Non Hazardous         |                      | 12   |
| 4 | WS4         | 0.50      | Non Hazardous         |                      | 17   |
| 5 | WS5         | 0.50      | Non Hazardous         |                      | 21   |
| 6 | WS6         | 0.40      | Non Hazardous         |                      | 25   |

### Related documents

| # | Name            | Description                                   |
|---|-----------------|-----------------------------------------------|
| 1 | CCG SOIL A 2020 | waste stream template used to create this Job |

### Report

Created by: Tony Gerrard

Created date: 31 Aug 2021 09:28 GMT

| Appendices                                              | Page |
|---------------------------------------------------------|------|
| Appendix A: Classifier defined and non CLP determinands | 30   |
| Appendix B: Rationale for selection of metal species    | 34   |
| Appendix C: Version                                     | 34   |



## Classification of sample: WS1

 **Hazardous Waste**  
Classified as **17 05 03 \***  
in the List of Waste

## Sample details

|               |                                                                                                    |
|---------------|----------------------------------------------------------------------------------------------------|
| Sample name:  | LoW Code:                                                                                          |
| <b>WS1</b>    | Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth: | Entry: 17 05 03 * (Soil and stones containing hazardous substances)                                |
| <b>0.40 m</b> |                                                                                                    |

## Hazard properties

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.168%)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.168%)

## Hazard properties (substances considered hazardous until shown otherwise)

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.168%)

## Determinands

Moisture content: **0% No Moisture Correction applied (MC)**

| # | Determinand                                                                                                                                                  |              |            | CLP Note  | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------|-----------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|   | CLP index number                                                                                                                                             | EC Number    | CAS Number |           |                   |       |              |                |       |                      |            |                |
| 1 |  arsenic { arsenic trioxide }                                             | 033-003-00-0 | 215-481-4  | 1327-53-3 | 446               | mg/kg | 1.32         | 588.865        | mg/kg | 0.0589 %             |            |                |
| 2 |  cadmium { cadmium oxide }                                                | 048-002-00-0 | 215-146-2  | 1306-19-0 |                   |       |              |                |       |                      |            |                |
| 3 |  chromium in chromium(III) compounds { chromium(III) oxide (worst case) } | 215-160-9    | 1308-38-9  |           | 25.6              | mg/kg | 1.462        | 37.416         | mg/kg | 0.00374 %            |            |                |
| 4 |  copper { dicopper oxide; copper (I) oxide }                              | 029-002-00-X | 215-270-7  | 1317-39-1 |                   |       |              |                |       |                      |            |                |
| 5 |  lead { lead chromate }                                                   | 082-004-00-2 | 231-846-0  | 7758-97-6 | 305               | mg/kg | 1.56         | 475.744        | mg/kg | 0.0305 %             |            |                |



| #  | Determinand                                                                                                                                                                            |           |            | CLP Note | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|----------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                                                                                                                                                       | EC Number | CAS Number |          |                   |       |              |                |       |                      |            |                |
| 6  | mercury { mercury dichloride }                                                                                                                                                         |           |            |          | 0.6               | mg/kg | 1.353        | 0.812          | mg/kg | 0.0000812 %          |            |                |
|    | 080-010-00-X                                                                                                                                                                           | 231-299-8 | 7487-94-7  |          |                   |       |              |                |       |                      |            |                |
| 7  | nickel { nickel chromate }                                                                                                                                                             |           |            |          | 36.6              | mg/kg | 2.976        | 108.931        | mg/kg | 0.0109 %             |            |                |
|    | 028-035-00-7                                                                                                                                                                           | 238-766-5 | 14721-18-7 |          |                   |       |              |                |       |                      |            |                |
| 8  | selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }                                                               |           |            |          | <1                | mg/kg | 1.405        | <1.405         | mg/kg | <0.000141 %          |            | <LOD           |
|    | 034-002-00-8                                                                                                                                                                           |           |            |          |                   |       |              |                |       |                      |            |                |
| 9  | zinc { zinc chromate }                                                                                                                                                                 |           |            |          | 322               | mg/kg | 2.774        | 893.275        | mg/kg | 0.0893 %             |            |                |
|    | 024-007-00-3                                                                                                                                                                           | 236-878-9 | 13530-65-9 |          |                   |       |              |                |       |                      |            |                |
| 10 | cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } |           |            |          | <1                | mg/kg | 1.884        | <1.884         | mg/kg | <0.000188 %          |            | <LOD           |
|    | 006-007-00-5                                                                                                                                                                           |           |            |          |                   |       |              |                |       |                      |            |                |
| 11 | chromium in chromium(VI) compounds { chromium(VI) oxide }                                                                                                                              |           |            |          | <0.8              | mg/kg | 1.923        | <1.538         | mg/kg | <0.000154 %          |            | <LOD           |
|    | 024-001-00-0                                                                                                                                                                           | 215-607-8 | 1333-82-0  |          |                   |       |              |                |       |                      |            |                |
| 12 | boron { diboron trioxide; boric oxide }                                                                                                                                                |           |            |          | <0.5              | mg/kg | 3.22         | <1.61          | mg/kg | <0.000161 %          |            | <LOD           |
|    | 005-008-00-8                                                                                                                                                                           | 215-125-8 | 1303-86-2  |          |                   |       |              |                |       |                      |            |                |
| 13 | pH                                                                                                                                                                                     |           | PH         |          | 8.1               | pH    |              | 8.1            | pH    | 8.1 pH               |            |                |
| 14 | phenol                                                                                                                                                                                 |           |            |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 604-001-00-2                                                                                                                                                                           | 203-632-7 | 108-95-2   |          |                   |       |              |                |       |                      |            |                |
| 15 | naphthalene                                                                                                                                                                            |           |            |          | 5                 | mg/kg |              | 5              | mg/kg | 0.0005 %             |            |                |
|    | 601-052-00-2                                                                                                                                                                           | 202-049-5 | 91-20-3    |          |                   |       |              |                |       |                      |            |                |
| 16 | acenaphthylene                                                                                                                                                                         |           |            |          | 0.3               | mg/kg |              | 0.3            | mg/kg | 0.00003 %            |            |                |
|    |                                                                                                                                                                                        | 205-917-1 | 208-96-8   |          |                   |       |              |                |       |                      |            |                |
| 17 | acenaphthene                                                                                                                                                                           |           |            |          | 11.3              | mg/kg |              | 11.3           | mg/kg | 0.00113 %            |            |                |
|    |                                                                                                                                                                                        | 201-469-6 | 83-32-9    |          |                   |       |              |                |       |                      |            |                |
| 18 | fluorene                                                                                                                                                                               |           |            |          | 7.1               | mg/kg |              | 7.1            | mg/kg | 0.00071 %            |            |                |
|    |                                                                                                                                                                                        | 201-695-5 | 86-73-7    |          |                   |       |              |                |       |                      |            |                |
| 19 | phenanthrene                                                                                                                                                                           |           |            |          | 83.7              | mg/kg |              | 83.7           | mg/kg | 0.00837 %            |            |                |
|    |                                                                                                                                                                                        | 201-581-5 | 85-01-8    |          |                   |       |              |                |       |                      |            |                |
| 20 | anthracene                                                                                                                                                                             |           |            |          | 16.2              | mg/kg |              | 16.2           | mg/kg | 0.00162 %            |            |                |
|    |                                                                                                                                                                                        | 204-371-1 | 120-12-7   |          |                   |       |              |                |       |                      |            |                |
| 21 | fluoranthene                                                                                                                                                                           |           |            |          | 130               | mg/kg |              | 130            | mg/kg | 0.013 %              |            |                |
|    |                                                                                                                                                                                        | 205-912-4 | 206-44-0   |          |                   |       |              |                |       |                      |            |                |
| 22 | pyrene                                                                                                                                                                                 |           |            |          | 112               | mg/kg |              | 112            | mg/kg | 0.0112 %             |            |                |
|    |                                                                                                                                                                                        | 204-927-3 | 129-00-0   |          |                   |       |              |                |       |                      |            |                |
| 23 | benzo[a]anthracene                                                                                                                                                                     |           |            |          | 41.6              | mg/kg |              | 41.6           | mg/kg | 0.00416 %            |            |                |
|    | 601-033-00-9                                                                                                                                                                           | 200-280-6 | 56-55-3    |          |                   |       |              |                |       |                      |            |                |
| 24 | chrysene                                                                                                                                                                               |           |            |          | 49.7              | mg/kg |              | 49.7           | mg/kg | 0.00497 %            |            |                |
|    | 601-048-00-0                                                                                                                                                                           | 205-923-4 | 218-01-9   |          |                   |       |              |                |       |                      |            |                |
| 25 | benzo[b]fluoranthene                                                                                                                                                                   |           |            |          | 43.9              | mg/kg |              | 43.9           | mg/kg | 0.00439 %            |            |                |
|    | 601-034-00-4                                                                                                                                                                           | 205-911-9 | 205-99-2   |          |                   |       |              |                |       |                      |            |                |
| 26 | benzo[k]fluoranthene                                                                                                                                                                   |           |            |          | 33.9              | mg/kg |              | 33.9           | mg/kg | 0.00339 %            |            |                |
|    | 601-036-00-5                                                                                                                                                                           | 205-916-6 | 207-08-9   |          |                   |       |              |                |       |                      |            |                |
| 27 | benzo[a]pyrene; benzo[def]chrysene                                                                                                                                                     |           |            |          | 41.8              | mg/kg |              | 41.8           | mg/kg | 0.00418 %            |            |                |
|    | 601-032-00-3                                                                                                                                                                           | 200-028-5 | 50-32-8    |          |                   |       |              |                |       |                      |            |                |
| 28 | indeno[123-cd]pyrene                                                                                                                                                                   |           |            |          | 35.9              | mg/kg |              | 35.9           | mg/kg | 0.00359 %            |            |                |
|    |                                                                                                                                                                                        | 205-893-2 | 193-39-5   |          |                   |       |              |                |       |                      |            |                |
| 29 | dibenz[a,h]anthracene                                                                                                                                                                  |           |            |          | 7.8               | mg/kg |              | 7.8            | mg/kg | 0.00078 %            |            |                |
|    | 601-041-00-2                                                                                                                                                                           | 200-181-8 | 53-70-3    |          |                   |       |              |                |       |                      |            |                |
| 30 | benzo[ghi]perylene                                                                                                                                                                     |           |            |          | 31.3              | mg/kg |              | 31.3           | mg/kg | 0.00313 %            |            |                |
|    |                                                                                                                                                                                        | 205-883-8 | 191-24-2   |          |                   |       |              |                |       |                      |            |                |
| 31 | benzene                                                                                                                                                                                |           |            |          | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
|    | 601-020-00-8                                                                                                                                                                           | 200-753-7 | 71-43-2    |          |                   |       |              |                |       |                      |            |                |
| 32 | toluene                                                                                                                                                                                |           |            |          | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
|    | 601-021-00-3                                                                                                                                                                           | 203-625-9 | 108-88-3   |          |                   |       |              |                |       |                      |            |                |



| #  | Determinand                                                                                                                                   |                                                                  |                                                                                                 | CLP Note | User entered data | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|----------|-------------------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                                                                                                              | EC Number                                                        | CAS Number                                                                                      |          |                   |              |                |       |                      |            |                |
| 33 | ethylbenzene<br>601-023-00-4                                                                                                                  | 202-849-4                                                        | 100-41-4                                                                                        |          | <0.01 mg/kg       |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 34 | xylene<br>601-022-00-9                                                                                                                        | 202-422-2 [1]<br>203-396-5 [2]<br>203-576-3 [3]<br>215-535-7 [4] | 95-47-6 [1]<br>106-42-3 [2]<br>108-38-3 [3]<br>1330-20-7 [4]                                    |          | <0.01 mg/kg       |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 35 | TPH (C6 to C40) petroleum group<br>TPH                                                                                                        |                                                                  |                                                                                                 |          | 1680 mg/kg        |              | 1680           | mg/kg | 0.168 %              |            |                |
| 36 | confirm TPH has NOT arisen from diesel or petrol                                                                                              |                                                                  |                                                                                                 |          | .1                |              | .1             |       |                      |            | <LOD           |
| 37 | tert-butyl methyl ether; MTBE;<br>2-methoxy-2-methylpropane<br>603-181-00-X                                                                   | 216-653-1                                                        | 1634-04-4                                                                                       |          | <0.1 mg/kg        |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 38 | polychlorobiphenyls; PCB<br>602-039-00-4                                                                                                      | 215-648-1                                                        | 1336-36-3                                                                                       |          | <0.1 mg/kg        |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 39 | asbestos<br>650-013-00-6                                                                                                                      | -----                                                            | 12001-28-4<br>132207-32-0<br>12172-73-5<br>77536-66-4<br>77536-68-6<br>77536-67-5<br>12001-29-5 |          | <0.1 mg/kg        |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 40 | antimony { antimony trioxide }<br>051-005-00-X                                                                                                | 215-175-0                                                        | 1309-64-4                                                                                       |          | <0.1 mg/kg        | 1.197        | <0.12          | mg/kg | <0.000012 %          |            | <LOD           |
| 41 | beryllium { beryllium oxide }<br>004-003-00-8                                                                                                 | 215-133-1                                                        | 1304-56-9                                                                                       |          | <0.1 mg/kg        | 2.775        | <0.278         | mg/kg | <0.0000278 %         |            | <LOD           |
| 42 | manganese { manganese sulphate }<br>025-003-00-4                                                                                              | 232-089-9                                                        | 7785-87-7                                                                                       |          | <0.1 mg/kg        | 2.749        | <0.275         | mg/kg | <0.0000275 %         |            | <LOD           |
| 43 | molybdenum { molybdenum(VI) oxide }<br>042-001-00-9                                                                                           | 215-204-7                                                        | 1313-27-5                                                                                       |          | <0.1 mg/kg        | 1.5          | <0.15          | mg/kg | <0.000015 %          |            | <LOD           |
| 44 | 1,1-dichloroethane and 1,2-dichloroethane (combined)<br>203-458-1,<br>200-863-5                                                               |                                                                  | 107-06-2, 75-34-3                                                                               |          | <0.01 mg/kg       |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 45 | tetrachloroethylene<br>602-028-00-4                                                                                                           | 204-825-9                                                        | 127-18-4                                                                                        |          | <0.01 mg/kg       |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 46 | carbon tetrachloride; tetrachloromethane<br>602-008-00-5                                                                                      | 200-262-8                                                        | 56-23-5                                                                                         |          | <0.01 mg/kg       |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 47 | trichloroethylene; trichloroethene<br>602-027-00-9                                                                                            | 201-167-4                                                        | 79-01-6                                                                                         |          | <0.01 mg/kg       |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 48 | vinyl chloride; chloroethylene<br>602-023-00-7                                                                                                | 200-831-0                                                        | 75-01-4                                                                                         |          | <0.1 mg/kg        |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 49 | DDT (ISO); clofenotane (INN); dicophane;<br>1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane;<br>dichlorodiphenyltrichloroethane<br>602-045-00-7 | 200-024-3                                                        | 50-29-3                                                                                         |          | <0.1 mg/kg        |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 50 | chlordan (ISO);<br>1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-4,7-methanoindan<br>602-047-00-8                                           | 200-349-0                                                        | 57-74-9                                                                                         |          | <0.1 mg/kg        |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 51 | hexachlorocyclohexanes, including lindane<br>602-043-00-6                                                                                     | 210-168-9,<br>200-401-2,<br>206-270-8,<br>206-271-3              | 58-89-9, 319-84-6,<br>319-85-7, 608-73-1                                                        |          | <0.1 mg/kg        |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 52 | dieldrin (ISO)<br>602-049-00-9                                                                                                                | 200-484-5                                                        | 60-57-1                                                                                         |          | <0.1 mg/kg        |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 53 | endrin (ISO);<br>1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4:5,8-dimethanonaphthalene<br>602-051-00-X                  | 200-775-7                                                        | 72-20-8                                                                                         |          | <0.1 mg/kg        |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |



| #  | Determinand                                                                                                                          |           |                            | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|    | CLP index number                                                                                                                     | EC Number | CAS Number                 |          |                   |              |                |                      |            |                |
| 54 | heptachlor (ISO);<br>1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene                                                |           |                            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-046-00-2                                                                                                                         | 200-962-3 | 76-44-8                    |          |                   |              |                |                      |            |                |
| 55 | hexachlorobenzene                                                                                                                    |           |                            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-065-00-6                                                                                                                         | 204-273-9 | 118-74-1                   |          |                   |              |                |                      |            |                |
| 56 | chlordecone (ISO);<br>perchloropentacyclo[5,3,0,02,6,03,9,04,8]decan-5-one;<br>decachloropentacyclo[5,2,1,02,6,03,9,05,8]decan-4-one |           |                            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 606-019-00-6                                                                                                                         | 205-601-3 | 143-50-0                   |          |                   |              |                |                      |            |                |
| 57 | aldrin (ISO)                                                                                                                         |           |                            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-048-00-3                                                                                                                         | 206-215-8 | 309-00-2                   |          |                   |              |                |                      |            |                |
| 58 | pentachlorobenzene                                                                                                                   |           |                            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-074-00-5                                                                                                                         | 210-172-0 | 608-93-5                   |          |                   |              |                |                      |            |                |
| 59 | dodecachloropentacyclo[5.2.1.02.6.03.9.05.8]decane;<br>mirex                                                                         |           |                            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-077-00-1                                                                                                                         | 219-196-6 | 2385-85-5                  |          |                   |              |                |                      |            |                |
| 60 | camphechlor (ISO); toxaphene                                                                                                         |           |                            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-044-00-1                                                                                                                         | 232-283-3 | 8001-35-2                  |          |                   |              |                |                      |            |                |
| 61 | hexabromobiphenyl                                                                                                                    |           |                            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    |                                                                                                                                      | 252-994-2 | 36355-01-8                 |          |                   |              |                |                      |            |                |
| 62 | 2,3,7,8-TeCDD                                                                                                                        |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      | 217-122-7 | 1746-01-6                  |          |                   |              |                |                      |            |                |
| 63 | 1,2,3,7,8-PeCDD                                                                                                                      |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 40321-76-4                 |          |                   |              |                |                      |            |                |
| 64 | 1,2,3,4,7,8-HxCDD                                                                                                                    |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 39227-28-6                 |          |                   |              |                |                      |            |                |
| 65 | 1,2,3,6,7,8-HxCDD                                                                                                                    |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 57653-85-7                 |          |                   |              |                |                      |            |                |
| 66 | 1,2,3,7,8,9-HxCDD                                                                                                                    |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 19408-74-3                 |          |                   |              |                |                      |            |                |
| 67 | 1,2,3,4,6,7,8-HpCDD                                                                                                                  |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 35822-46-9                 |          |                   |              |                |                      |            |                |
| 68 | OCDD                                                                                                                                 |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 3268-87-9                  |          |                   |              |                |                      |            |                |
| 69 | 2,3,7,8-TeCDF                                                                                                                        |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 51207-31-9                 |          |                   |              |                |                      |            |                |
| 70 | 1,2,3,7,8-PeCDF                                                                                                                      |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 57117-41-6                 |          |                   |              |                |                      |            |                |
| 71 | 2,3,4,7,8-PeCDF                                                                                                                      |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 57117-31-4                 |          |                   |              |                |                      |            |                |
| 72 | 1,2,3,4,7,8-HxCDF                                                                                                                    |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 70648-26-9                 |          |                   |              |                |                      |            |                |
| 73 | 1,2,3,6,7,8-HxCDF                                                                                                                    |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 57117-44-9                 |          |                   |              |                |                      |            |                |
| 74 | 1,2,3,7,8,9-HxCDF                                                                                                                    |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 72918-21-9                 |          |                   |              |                |                      |            |                |
| 75 | 2,3,4,6,7,8-HxCDF                                                                                                                    |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 60851-34-5                 |          |                   |              |                |                      |            |                |
| 76 | 1,2,3,4,6,7,8-HpCDF                                                                                                                  |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 67562-39-4                 |          |                   |              |                |                      |            |                |
| 77 | 1,2,3,4,7,8,9-HpCDF                                                                                                                  |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 55673-89-7                 |          |                   |              |                |                      |            |                |
| 78 | OCDF                                                                                                                                 |           |                            |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |           | 39001-02-0                 |          |                   |              |                |                      |            |                |
| 79 | petrol (gasoline) petroleum group                                                                                                    |           |                            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    |                                                                                                                                      |           |                            |          |                   |              |                |                      |            |                |
| 80 | diesel petroleum group                                                                                                               |           |                            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    |                                                                                                                                      |           | 68334-30-5,<br>68476-34-6, |          |                   |              |                |                      |            |                |



| #      | Determinand                                                                                                                    |                                       |                                         | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|--------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|        | CLP index number                                                                                                               | EC Number                             | CAS Number                              |          |                   |              |                |                      |            |                |
|        |                                                                                                                                |                                       | 94114-59-7,<br>1159170-26-9             |          |                   |              |                |                      |            |                |
| 81     | heavy/residual fuel oils petroleum group                                                                                       |                                       |                                         |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 82     | crude oils petroleum group                                                                                                     |                                       |                                         |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 83     | kerosine petroleum group including kerosine (petroleum); kerosine (petroleum) hydrosulphurised; kerosine (petroleum) sweetened |                                       |                                         |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|        |                                                                                                                                | 232-366-4;<br>265-184-9;<br>294-799-5 | 8008-20-6;<br>64742-81-0;<br>91770-15-9 |          |                   |              |                |                      |            |                |
| Total: |                                                                                                                                |                                       |                                         |          |                   |              |                | 0.474 %              |            |                |

#### Key

|             |                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
|             | User supplied data                                                                                                              |
|             | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
|             | Hazardous result                                                                                                                |
|             | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
|             | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <LOD        | Below limit of detection                                                                                                        |
| ND          | Not detected                                                                                                                    |
| CLP: Note 1 | Only the metal concentration has been used for classification                                                                   |



## Classification of sample: WS2

✔ **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

Sample name: **WS2** LoW Code: Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)  
Sample Depth: **0.50 m** Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

## Hazard properties

None identified

## Determinands

Moisture content: 0% No Moisture Correction applied (MC)

| #  | Determinand                                                                                                                                                                            |           |            | CLP Note | User entered data | Conv. Factor | Compound conc. |             | Classification value | MC Applied | Conc. Not Used |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|----------|-------------------|--------------|----------------|-------------|----------------------|------------|----------------|
|    | CLP index number                                                                                                                                                                       | EC Number | CAS Number |          |                   |              |                |             |                      |            |                |
| 1  | arsenic { arsenic trioxide }                                                                                                                                                           |           |            |          | 439 mg/kg         | 1.32         | 579.623 mg/kg  | 0.058 %     |                      |            |                |
|    | 033-003-00-0                                                                                                                                                                           | 215-481-4 | 1327-53-3  |          |                   |              |                |             |                      |            |                |
| 2  | cadmium { cadmium oxide }                                                                                                                                                              |           |            |          | 0.5 mg/kg         | 1.142        | 0.571 mg/kg    | 0.0000571 % |                      |            |                |
|    | 048-002-00-0                                                                                                                                                                           | 215-146-2 | 1306-19-0  |          |                   |              |                |             |                      |            |                |
| 3  | chromium in chromium(III) compounds { chromium(III) oxide (worst case) }                                                                                                               |           |            |          | 22 mg/kg          | 1.462        | 32.154 mg/kg   | 0.00322 %   |                      |            |                |
|    |                                                                                                                                                                                        | 215-160-9 | 1308-38-9  |          |                   |              |                |             |                      |            |                |
| 4  | copper { dicopper oxide; copper (I) oxide }                                                                                                                                            |           |            |          | 446 mg/kg         | 1.126        | 502.146 mg/kg  | 0.0502 %    |                      |            |                |
|    | 029-002-00-X                                                                                                                                                                           | 215-270-7 | 1317-39-1  |          |                   |              |                |             |                      |            |                |
| 5  | lead { lead chromate }                                                                                                                                                                 |           |            | 1        | 309 mg/kg         | 1.56         | 481.983 mg/kg  | 0.0309 %    |                      |            |                |
|    | 082-004-00-2                                                                                                                                                                           | 231-846-0 | 7758-97-6  |          |                   |              |                |             |                      |            |                |
| 6  | mercury { mercury dichloride }                                                                                                                                                         |           |            |          | 0.7 mg/kg         | 1.353        | 0.947 mg/kg    | 0.0000947 % |                      |            |                |
|    | 080-010-00-X                                                                                                                                                                           | 231-299-8 | 7487-94-7  |          |                   |              |                |             |                      |            |                |
| 7  | nickel { nickel chromate }                                                                                                                                                             |           |            |          | 35.1 mg/kg        | 2.976        | 104.467 mg/kg  | 0.0104 %    |                      |            |                |
|    | 028-035-00-7                                                                                                                                                                           | 238-766-5 | 14721-18-7 |          |                   |              |                |             |                      |            |                |
| 8  | selenium { selenium compounds with the exception of cadmium selenide and those specified elsewhere in this Annex }                                                                     |           |            |          | <1 mg/kg          | 1.405        | <1.405 mg/kg   | <0.000141 % |                      |            | <LOD           |
|    | 034-002-00-8                                                                                                                                                                           |           |            |          |                   |              |                |             |                      |            |                |
| 9  | zinc { zinc chromate }                                                                                                                                                                 |           |            |          | 199 mg/kg         | 2.774        | 552.055 mg/kg  | 0.0552 %    |                      |            |                |
|    | 024-007-00-3                                                                                                                                                                           | 236-878-9 | 13530-65-9 |          |                   |              |                |             |                      |            |                |
| 10 | cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } |           |            |          | <1 mg/kg          | 1.884        | <1.884 mg/kg   | <0.000188 % |                      |            | <LOD           |
|    | 006-007-00-5                                                                                                                                                                           |           |            |          |                   |              |                |             |                      |            |                |
| 11 | chromium in chromium(VI) compounds { chromium(VI) oxide }                                                                                                                              |           |            |          | <0.8 mg/kg        | 1.923        | <1.538 mg/kg   | <0.000154 % |                      |            | <LOD           |
|    | 024-001-00-0                                                                                                                                                                           | 215-607-8 | 1333-82-0  |          |                   |              |                |             |                      |            |                |
| 12 | boron { diboron trioxide; boric oxide }                                                                                                                                                |           |            |          | 1.1 mg/kg         | 3.22         | 3.542 mg/kg    | 0.000354 %  |                      |            |                |
|    | 005-008-00-8                                                                                                                                                                           | 215-125-8 | 1303-86-2  |          |                   |              |                |             |                      |            |                |
| 13 | pH                                                                                                                                                                                     |           |            |          | 7.3 pH            |              | 7.3 pH         | 7.3 pH      |                      |            |                |
|    |                                                                                                                                                                                        |           |            |          |                   |              |                |             |                      |            |                |
| 14 | phenol                                                                                                                                                                                 |           |            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %  |                      |            | <LOD           |
|    | 604-001-00-2                                                                                                                                                                           | 203-632-7 | 108-95-2   |          |                   |              |                |             |                      |            |                |
| 15 | naphthalene                                                                                                                                                                            |           |            |          | 0.2 mg/kg         |              | 0.2 mg/kg      | 0.00002 %   |                      |            |                |
|    | 601-052-00-2                                                                                                                                                                           | 202-049-5 | 91-20-3    |          |                   |              |                |             |                      |            |                |



| #  | Determinand                                              |              |                                                                                                          | CLP Note                                                     | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|----------------------------------------------------------|--------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                         | EC Number    | CAS Number                                                                                               |                                                              |                   |       |              |                |       |                      |            |                |
| 16 | acenaphthylene                                           | 205-917-1    | 208-96-8                                                                                                 |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 17 | acenaphthene                                             | 201-469-6    | 83-32-9                                                                                                  |                                                              | 0.7               | mg/kg |              | 0.7            | mg/kg | 0.00007 %            |            |                |
| 18 | fluorene                                                 | 201-695-5    | 86-73-7                                                                                                  |                                                              | 0.5               | mg/kg |              | 0.5            | mg/kg | 0.00005 %            |            |                |
| 19 | phenanthrene                                             | 201-581-5    | 85-01-8                                                                                                  |                                                              | 7                 | mg/kg |              | 7              | mg/kg | 0.0007 %             |            |                |
| 20 | anthracene                                               | 204-371-1    | 120-12-7                                                                                                 |                                                              | 1.8               | mg/kg |              | 1.8            | mg/kg | 0.00018 %            |            |                |
| 21 | fluoranthene                                             | 205-912-4    | 206-44-0                                                                                                 |                                                              | 18.2              | mg/kg |              | 18.2           | mg/kg | 0.00182 %            |            |                |
| 22 | pyrene                                                   | 204-927-3    | 129-00-0                                                                                                 |                                                              | 15.7              | mg/kg |              | 15.7           | mg/kg | 0.00157 %            |            |                |
| 23 | benzo[a]anthracene                                       | 601-033-00-9 | 200-280-6                                                                                                | 56-55-3                                                      | 8.5               | mg/kg |              | 8.5            | mg/kg | 0.00085 %            |            |                |
| 24 | chrysene                                                 | 601-048-00-0 | 205-923-4                                                                                                | 218-01-9                                                     | 9.7               | mg/kg |              | 9.7            | mg/kg | 0.00097 %            |            |                |
| 25 | benzo[b]fluoranthene                                     | 601-034-00-4 | 205-911-9                                                                                                | 205-99-2                                                     | 8.6               | mg/kg |              | 8.6            | mg/kg | 0.00086 %            |            |                |
| 26 | benzo[k]fluoranthene                                     | 601-036-00-5 | 205-916-6                                                                                                | 207-08-9                                                     | 7.5               | mg/kg |              | 7.5            | mg/kg | 0.00075 %            |            |                |
| 27 | benzo[a]pyrene; benzo[def]chrysene                       | 601-032-00-3 | 200-028-5                                                                                                | 50-32-8                                                      | 8.5               | mg/kg |              | 8.5            | mg/kg | 0.00085 %            |            |                |
| 28 | indeno[123-cd]pyrene                                     | 205-893-2    | 193-39-5                                                                                                 |                                                              | 6.4               | mg/kg |              | 6.4            | mg/kg | 0.00064 %            |            |                |
| 29 | dibenz[a,h]anthracene                                    | 601-041-00-2 | 200-181-8                                                                                                | 53-70-3                                                      | 1.4               | mg/kg |              | 1.4            | mg/kg | 0.00014 %            |            |                |
| 30 | benzo[ghi]perylene                                       | 205-883-8    | 191-24-2                                                                                                 |                                                              | 5                 | mg/kg |              | 5              | mg/kg | 0.0005 %             |            |                |
| 31 | benzene                                                  | 601-020-00-8 | 200-753-7                                                                                                | 71-43-2                                                      | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 32 | toluene                                                  | 601-021-00-3 | 203-625-9                                                                                                | 108-88-3                                                     | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 33 | ethylbenzene                                             | 601-023-00-4 | 202-849-4                                                                                                | 100-41-4                                                     | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 34 | xylene                                                   | 601-022-00-9 | 202-422-2 [1]<br>203-396-5 [2]<br>203-576-3 [3]<br>215-535-7 [4]                                         | 95-47-6 [1]<br>106-42-3 [2]<br>108-38-3 [3]<br>1330-20-7 [4] | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 35 | TPH (C6 to C40) petroleum group                          |              | TPH                                                                                                      |                                                              | 116               | mg/kg |              | 116            | mg/kg | 0.0116 %             |            |                |
| 36 | confirm TPH has NOT arisen from diesel or petrol         |              |                                                                                                          |                                                              | .1                |       |              | .1             |       |                      |            | <LOD           |
| 37 | tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane | 603-181-00-X | 216-653-1                                                                                                | 1634-04-4                                                    | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 38 | polychlorobiphenyls; PCB                                 | 602-039-00-4 | 215-648-1                                                                                                | 1336-36-3                                                    | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 39 | asbestos                                                 | 650-013-00-6 | -----<br>12001-28-4<br>132207-32-0<br>12172-73-5<br>77536-66-4<br>77536-68-6<br>77536-67-5<br>12001-29-5 |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 40 | antimony { antimony trioxide }                           | 051-005-00-X | 215-175-0                                                                                                | 1309-64-4                                                    | <0.1              | mg/kg | 1.197        | <0.12          | mg/kg | <0.000012 %          |            | <LOD           |
| 41 | beryllium { beryllium oxide }                            | 004-003-00-8 | 215-133-1                                                                                                | 1304-56-9                                                    | <0.1              | mg/kg | 2.775        | <0.278         | mg/kg | <0.0000278 %         |            | <LOD           |



| #  | Determinand                                                                                                                    |                                            |                                       | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|    | CLP index number                                                                                                               | EC Number                                  | CAS Number                            |          |                   |              |                |                      |            |                |
| 42 | manganese { manganese sulphate }                                                                                               |                                            |                                       |          | <0.1 mg/kg        | 2.749        | <0.275 mg/kg   | <0.0000275 %         |            | <LOD           |
|    | 025-003-00-4                                                                                                                   | 232-089-9                                  | 7785-87-7                             |          |                   |              |                |                      |            |                |
| 43 | molybdenum { molybdenum(VI) oxide }                                                                                            |                                            |                                       |          | <0.1 mg/kg        | 1.5          | <0.15 mg/kg    | <0.000015 %          |            | <LOD           |
|    | 042-001-00-9                                                                                                                   | 215-204-7                                  | 1313-27-5                             |          |                   |              |                |                      |            |                |
| 44 | 1,1-dichloroethane and 1,2-dichloroethane (combined)                                                                           |                                            |                                       |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    |                                                                                                                                | 203-458-1, 200-863-5                       | 107-06-2, 75-34-3                     |          |                   |              |                |                      |            |                |
| 45 | tetrachloroethylene                                                                                                            |                                            |                                       |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    | 602-028-00-4                                                                                                                   | 204-825-9                                  | 127-18-4                              |          |                   |              |                |                      |            |                |
| 46 | carbon tetrachloride; tetrachloromethane                                                                                       |                                            |                                       |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    | 602-008-00-5                                                                                                                   | 200-262-8                                  | 56-23-5                               |          |                   |              |                |                      |            |                |
| 47 | trichloroethylene; trichloroethene                                                                                             |                                            |                                       |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    | 602-027-00-9                                                                                                                   | 201-167-4                                  | 79-01-6                               |          |                   |              |                |                      |            |                |
| 48 | vinyl chloride; chloroethylene                                                                                                 |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-023-00-7                                                                                                                   | 200-831-0                                  | 75-01-4                               |          |                   |              |                |                      |            |                |
| 49 | DDT (ISO); clofenotane (INN); dicophane; 1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane; dichlorodiphenyltrichloroethane        |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-045-00-7                                                                                                                   | 200-024-3                                  | 50-29-3                               |          |                   |              |                |                      |            |                |
| 50 | chlordan (ISO); 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-4,7-methanoindan                                               |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-047-00-8                                                                                                                   | 200-349-0                                  | 57-74-9                               |          |                   |              |                |                      |            |                |
| 51 | hexachlorocyclohexanes, including lindane                                                                                      |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-043-00-6                                                                                                                   | 210-168-9, 200-401-2, 206-270-8, 206-271-3 | 58-89-9, 319-84-6, 319-85-7, 608-73-1 |          |                   |              |                |                      |            |                |
| 52 | dieldrin (ISO)                                                                                                                 |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-049-00-9                                                                                                                   | 200-484-5                                  | 60-57-1                               |          |                   |              |                |                      |            |                |
| 53 | endrin (ISO); 1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4:5,8-dimethanonaphthalene                      |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-051-00-X                                                                                                                   | 200-775-7                                  | 72-20-8                               |          |                   |              |                |                      |            |                |
| 54 | heptachlor (ISO); 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene                                             |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-046-00-2                                                                                                                   | 200-962-3                                  | 76-44-8                               |          |                   |              |                |                      |            |                |
| 55 | hexachlorobenzene                                                                                                              |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-065-00-6                                                                                                                   | 204-273-9                                  | 118-74-1                              |          |                   |              |                |                      |            |                |
| 56 | chlordecone (ISO); perchloropentacyclo[5,3,0,02,6,03,9,04,8]decan-5-one; decachloropentacyclo[5,2,1,02,6,03,9,05,8]decan-4-one |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 606-019-00-6                                                                                                                   | 205-601-3                                  | 143-50-0                              |          |                   |              |                |                      |            |                |
| 57 | aldrin (ISO)                                                                                                                   |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-048-00-3                                                                                                                   | 206-215-8                                  | 309-00-2                              |          |                   |              |                |                      |            |                |
| 58 | pentachlorobenzene                                                                                                             |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-074-00-5                                                                                                                   | 210-172-0                                  | 608-93-5                              |          |                   |              |                |                      |            |                |
| 59 | dodecachloropentacyclo[5.2.1.02,6.03,9.05,8]decane; mirex                                                                      |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-077-00-1                                                                                                                   | 219-196-6                                  | 2385-85-5                             |          |                   |              |                |                      |            |                |
| 60 | camphechlor (ISO); toxaphene                                                                                                   |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-044-00-1                                                                                                                   | 232-283-3                                  | 8001-35-2                             |          |                   |              |                |                      |            |                |
| 61 | hexabromobiphenyl                                                                                                              |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    |                                                                                                                                | 252-994-2                                  | 36355-01-8                            |          |                   |              |                |                      |            |                |
| 62 | 2,3,7,8-TeCDD                                                                                                                  |                                            |                                       |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                | 217-122-7                                  | 1746-01-6                             |          |                   |              |                |                      |            |                |
| 63 | 1,2,3,7,8-PeCDD                                                                                                                |                                            |                                       |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                |                                            | 40321-76-4                            |          |                   |              |                |                      |            |                |
| 64 | 1,2,3,4,7,8-HxCDD                                                                                                              |                                            |                                       |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                |                                            | 39227-28-6                            |          |                   |              |                |                      |            |                |
| 65 | 1,2,3,6,7,8-HxCDD                                                                                                              |                                            |                                       |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                |                                            | 57653-85-7                            |          |                   |              |                |                      |            |                |



| #      | Determinand                                                                                                                    |                                       |                                                           | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|--------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|        | CLP index number                                                                                                               | EC Number                             | CAS Number                                                |          |                   |              |                |                      |            |                |
| 66     | 1,2,3,7,8,9-HxCDD                                                                                                              |                                       | 19408-74-3                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 67     | 1,2,3,4,6,7,8-HpCDD                                                                                                            |                                       | 35822-46-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 68     | OCDD                                                                                                                           |                                       | 3268-87-9                                                 |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 69     | 2,3,7,8-TeCDF                                                                                                                  |                                       | 51207-31-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 70     | 1,2,3,7,8-PeCDF                                                                                                                |                                       | 57117-41-6                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 71     | 2,3,4,7,8-PeCDF                                                                                                                |                                       | 57117-31-4                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 72     | 1,2,3,4,7,8-HxCDF                                                                                                              |                                       | 70648-26-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 73     | 1,2,3,6,7,8-HxCDF                                                                                                              |                                       | 57117-44-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 74     | 1,2,3,7,8,9-HxCDF                                                                                                              |                                       | 72918-21-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 75     | 2,3,4,6,7,8-HxCDF                                                                                                              |                                       | 60851-34-5                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 76     | 1,2,3,4,6,7,8-HpCDF                                                                                                            |                                       | 67562-39-4                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 77     | 1,2,3,4,7,8,9-HpCDF                                                                                                            |                                       | 55673-89-7                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 78     | OCDF                                                                                                                           |                                       | 39001-02-0                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 79     | petrol (gasoline) petroleum group                                                                                              |                                       |                                                           |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 80     | diesel petroleum group                                                                                                         |                                       | 68334-30-5,<br>68476-34-6,<br>94114-59-7,<br>1159170-26-9 |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 81     | heavy/residual fuel oils petroleum group                                                                                       |                                       |                                                           |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 82     | crude oils petroleum group                                                                                                     |                                       |                                                           |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 83     | kerosine petroleum group including kerosine (petroleum); kerosine (petroleum) hydrosulphurised; kerosine (petroleum) sweetened | 232-366-4;<br>265-184-9;<br>294-799-5 | 8008-20-6;<br>64742-81-0;<br>91770-15-9                   |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| Total: |                                                                                                                                |                                       |                                                           |          |                   |              |                | 0.231 %              |            |                |

#### Key

|             |                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
|             | User supplied data                                                                                                              |
|             | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
|             | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
|             | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <LOD        | Below limit of detection                                                                                                        |
| ND          | Not detected                                                                                                                    |
| CLP: Note 1 | Only the metal concentration has been used for classification                                                                   |

#### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Concentrations too low to be considered flammable risk



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Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

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Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0116%)



## Classification of sample: WS3

✔ **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

|               |                                                                                                    |
|---------------|----------------------------------------------------------------------------------------------------|
| Sample name:  | LoW Code:                                                                                          |
| <b>WS3</b>    | Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth: | Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)                           |
| <b>0.50 m</b> |                                                                                                    |

## Hazard properties

None identified

## Determinands

Moisture content: 0% No Moisture Correction applied (MC)

| #  | Determinand                                                                                                                                                                            |           |            | CLP Note | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|----------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                                                                                                                                                       | EC Number | CAS Number |          |                   |       |              |                |       |                      |            |                |
| 1  | arsenic { arsenic trioxide }                                                                                                                                                           |           |            |          | 37.1              | mg/kg | 1.32         | 48.984         | mg/kg | 0.0049 %             |            |                |
|    | 033-003-00-0                                                                                                                                                                           | 215-481-4 | 1327-53-3  |          |                   |       |              |                |       |                      |            |                |
| 2  | cadmium { cadmium oxide }                                                                                                                                                              |           |            |          | <0.5              | mg/kg | 1.142        | <0.571         | mg/kg | <0.0000571 %         |            | <LOD           |
|    | 048-002-00-0                                                                                                                                                                           | 215-146-2 | 1306-19-0  |          |                   |       |              |                |       |                      |            |                |
| 3  | chromium in chromium(III) compounds { chromium(III) oxide (worst case) }                                                                                                               |           |            |          | 35.8              | mg/kg | 1.462        | 52.324         | mg/kg | 0.00523 %            |            |                |
|    |                                                                                                                                                                                        | 215-160-9 | 1308-38-9  |          |                   |       |              |                |       |                      |            |                |
| 4  | copper { dicopper oxide; copper (I) oxide }                                                                                                                                            |           |            |          | 66.8              | mg/kg | 1.126        | 75.209         | mg/kg | 0.00752 %            |            |                |
|    | 029-002-00-X                                                                                                                                                                           | 215-270-7 | 1317-39-1  |          |                   |       |              |                |       |                      |            |                |
| 5  | lead { lead chromate }                                                                                                                                                                 |           |            | 1        | 145               | mg/kg | 1.56         | 226.173        | mg/kg | 0.0145 %             |            |                |
|    | 082-004-00-2                                                                                                                                                                           | 231-846-0 | 7758-97-6  |          |                   |       |              |                |       |                      |            |                |
| 6  | mercury { mercury dichloride }                                                                                                                                                         |           |            |          | <0.5              | mg/kg | 1.353        | <0.677         | mg/kg | <0.0000677 %         |            | <LOD           |
|    | 080-010-00-X                                                                                                                                                                           | 231-299-8 | 7487-94-7  |          |                   |       |              |                |       |                      |            |                |
| 7  | nickel { nickel chromate }                                                                                                                                                             |           |            |          | 38.2              | mg/kg | 2.976        | 113.693        | mg/kg | 0.0114 %             |            |                |
|    | 028-035-00-7                                                                                                                                                                           | 238-766-5 | 14721-18-7 |          |                   |       |              |                |       |                      |            |                |
| 8  | selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }                                                               |           |            |          | 1.3               | mg/kg | 1.405        | 1.827          | mg/kg | 0.000183 %           |            |                |
|    | 034-002-00-8                                                                                                                                                                           |           |            |          |                   |       |              |                |       |                      |            |                |
| 9  | zinc { zinc chromate }                                                                                                                                                                 |           |            |          | 40.3              | mg/kg | 2.774        | 111.798        | mg/kg | 0.0112 %             |            |                |
|    | 024-007-00-3                                                                                                                                                                           | 236-878-9 | 13530-65-9 |          |                   |       |              |                |       |                      |            |                |
| 10 | cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } |           |            |          | <1                | mg/kg | 1.884        | <1.884         | mg/kg | <0.000188 %          |            | <LOD           |
|    | 006-007-00-5                                                                                                                                                                           |           |            |          |                   |       |              |                |       |                      |            |                |
| 11 | chromium in chromium(VI) compounds { chromium(VI) oxide }                                                                                                                              |           |            |          | <0.8              | mg/kg | 1.923        | <1.538         | mg/kg | <0.000154 %          |            | <LOD           |
|    | 024-001-00-0                                                                                                                                                                           | 215-607-8 | 1333-82-0  |          |                   |       |              |                |       |                      |            |                |
| 12 | boron { diboron trioxide; boric oxide }                                                                                                                                                |           |            |          | <0.5              | mg/kg | 3.22         | <1.61          | mg/kg | <0.000161 %          |            | <LOD           |
|    | 005-008-00-8                                                                                                                                                                           | 215-125-8 | 1303-86-2  |          |                   |       |              |                |       |                      |            |                |
| 13 | pH                                                                                                                                                                                     |           |            |          | 7.3               | pH    |              | 7.3            | pH    | 7.3 pH               |            |                |
|    |                                                                                                                                                                                        |           |            |          |                   |       |              |                |       |                      |            |                |
| 14 | phenol                                                                                                                                                                                 |           |            |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 604-001-00-2                                                                                                                                                                           | 203-632-7 | 108-95-2   |          |                   |       |              |                |       |                      |            |                |
| 15 | naphthalene                                                                                                                                                                            |           |            |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 601-052-00-2                                                                                                                                                                           | 202-049-5 | 91-20-3    |          |                   |       |              |                |       |                      |            |                |



| #  | Determinand                                              |              |                                                                                                 | CLP Note | User entered data | Conv. Factor | Compound conc. |              | Classification value | MC Applied | Conc. Not Used |
|----|----------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------------|----------|-------------------|--------------|----------------|--------------|----------------------|------------|----------------|
|    | CLP index number                                         | EC Number    | CAS Number                                                                                      |          |                   |              |                |              |                      |            |                |
| 16 | acenaphthylene                                           | 205-917-1    | 208-96-8                                                                                        |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 17 | acenaphthene                                             | 201-469-6    | 83-32-9                                                                                         |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 18 | fluorene                                                 | 201-695-5    | 86-73-7                                                                                         |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 19 | phenanthrene                                             | 201-581-5    | 85-01-8                                                                                         |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 20 | anthracene                                               | 204-371-1    | 120-12-7                                                                                        |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 21 | fluoranthene                                             | 205-912-4    | 206-44-0                                                                                        |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 22 | pyrene                                                   | 204-927-3    | 129-00-0                                                                                        |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 23 | benzo[a]anthracene                                       | 601-033-00-9 | 200-280-6                                                                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 24 | chrysene                                                 | 601-048-00-0 | 205-923-4                                                                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 25 | benzo[b]fluoranthene                                     | 601-034-00-4 | 205-911-9                                                                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 26 | benzo[k]fluoranthene                                     | 601-036-00-5 | 205-916-6                                                                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 27 | benzo[a]pyrene; benzo[def]chrysene                       | 601-032-00-3 | 200-028-5                                                                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 28 | indeno[123-cd]pyrene                                     | 205-893-2    | 193-39-5                                                                                        |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 29 | dibenz[a,h]anthracene                                    | 601-041-00-2 | 200-181-8                                                                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 30 | benzo[ghi]perylene                                       | 205-883-8    | 191-24-2                                                                                        |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 31 | benzene                                                  | 601-020-00-8 | 200-753-7                                                                                       |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %  |                      |            | <LOD           |
| 32 | toluene                                                  | 601-021-00-3 | 203-625-9                                                                                       |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %  |                      |            | <LOD           |
| 33 | ethylbenzene                                             | 601-023-00-4 | 202-849-4                                                                                       |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %  |                      |            | <LOD           |
| 34 | xylene                                                   | 601-022-00-9 | 202-422-2 [1]<br>203-396-5 [2]<br>203-576-3 [3]<br>215-535-7 [4]                                |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %  |                      |            | <LOD           |
| 35 | TPH (C6 to C40) petroleum group                          |              | TPH                                                                                             |          | 12.3 mg/kg        |              | 12.3 mg/kg     | 0.00123 %    |                      |            |                |
| 36 | confirm TPH has NOT arisen from diesel or petrol         |              |                                                                                                 |          | .1                |              | .1             |              |                      |            | <LOD           |
| 37 | tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane | 603-181-00-X | 216-653-1                                                                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 38 | polychlorobiphenyls; PCB                                 | 602-039-00-4 | 215-648-1                                                                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 39 | asbestos                                                 | 650-013-00-6 | 12001-28-4<br>132207-32-0<br>12172-73-5<br>77536-66-4<br>77536-68-6<br>77536-67-5<br>12001-29-5 |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
| 40 | antimony { antimony trioxide }                           | 051-005-00-X | 215-175-0                                                                                       |          | <0.1 mg/kg        | 1.197        | <0.12 mg/kg    | <0.000012 %  |                      |            | <LOD           |
| 41 | beryllium { beryllium oxide }                            | 004-003-00-8 | 215-133-1                                                                                       |          | <0.1 mg/kg        | 2.775        | <0.278 mg/kg   | <0.0000278 % |                      |            | <LOD           |



| #  | Determinand                                                                                                                    |                                            |                                       | CLP Note | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------------------|----------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                                                                                               | EC Number                                  | CAS Number                            |          |                   |       |              |                |       |                      |            |                |
| 42 | manganese { manganese sulphate }                                                                                               |                                            |                                       |          | <0.1              | mg/kg | 2.749        | <0.275         | mg/kg | <0.0000275 %         |            | <LOD           |
|    | 025-003-00-4                                                                                                                   | 232-089-9                                  | 7785-87-7                             |          |                   |       |              |                |       |                      |            |                |
| 43 | molybdenum { molybdenum(VI) oxide }                                                                                            |                                            |                                       |          | <0.1              | mg/kg | 1.5          | <0.15          | mg/kg | <0.000015 %          |            | <LOD           |
|    | 042-001-00-9                                                                                                                   | 215-204-7                                  | 1313-27-5                             |          |                   |       |              |                |       |                      |            |                |
| 44 | 1,1-dichloroethane and 1,2-dichloroethane (combined)                                                                           |                                            |                                       |          | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
|    |                                                                                                                                | 203-458-1, 200-863-5                       | 107-06-2, 75-34-3                     |          |                   |       |              |                |       |                      |            |                |
| 45 | tetrachloroethylene                                                                                                            |                                            |                                       |          | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
|    | 602-028-00-4                                                                                                                   | 204-825-9                                  | 127-18-4                              |          |                   |       |              |                |       |                      |            |                |
| 46 | carbon tetrachloride; tetrachloromethane                                                                                       |                                            |                                       |          | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
|    | 602-008-00-5                                                                                                                   | 200-262-8                                  | 56-23-5                               |          |                   |       |              |                |       |                      |            |                |
| 47 | trichloroethylene; trichloroethene                                                                                             |                                            |                                       |          | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
|    | 602-027-00-9                                                                                                                   | 201-167-4                                  | 79-01-6                               |          |                   |       |              |                |       |                      |            |                |
| 48 | vinyl chloride; chloroethylene                                                                                                 |                                            |                                       |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 602-023-00-7                                                                                                                   | 200-831-0                                  | 75-01-4                               |          |                   |       |              |                |       |                      |            |                |
| 49 | DDT (ISO); clofenotane (INN); dicophane; 1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane; dichlorodiphenyltrichloroethane        |                                            |                                       |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 602-045-00-7                                                                                                                   | 200-024-3                                  | 50-29-3                               |          |                   |       |              |                |       |                      |            |                |
| 50 | chlordan (ISO); 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-4,7-methanoindan                                               |                                            |                                       |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 602-047-00-8                                                                                                                   | 200-349-0                                  | 57-74-9                               |          |                   |       |              |                |       |                      |            |                |
| 51 | hexachlorocyclohexanes, including lindane                                                                                      |                                            |                                       |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 602-043-00-6                                                                                                                   | 210-168-9, 200-401-2, 206-270-8, 206-271-3 | 58-89-9, 319-84-6, 319-85-7, 608-73-1 |          |                   |       |              |                |       |                      |            |                |
| 52 | dieldrin (ISO)                                                                                                                 |                                            |                                       |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 602-049-00-9                                                                                                                   | 200-484-5                                  | 60-57-1                               |          |                   |       |              |                |       |                      |            |                |
| 53 | endrin (ISO); 1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4:5,8-dimethanonaphthalene                      |                                            |                                       |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 602-051-00-X                                                                                                                   | 200-775-7                                  | 72-20-8                               |          |                   |       |              |                |       |                      |            |                |
| 54 | heptachlor (ISO); 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene                                             |                                            |                                       |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 602-046-00-2                                                                                                                   | 200-962-3                                  | 76-44-8                               |          |                   |       |              |                |       |                      |            |                |
| 55 | hexachlorobenzene                                                                                                              |                                            |                                       |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 602-065-00-6                                                                                                                   | 204-273-9                                  | 118-74-1                              |          |                   |       |              |                |       |                      |            |                |
| 56 | chlordecone (ISO); perchloropentacyclo[5,3,0,02,6,03,9,04,8]decan-5-one; decachloropentacyclo[5,2,1,02,6,03,9,05,8]decan-4-one |                                            |                                       |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 606-019-00-6                                                                                                                   | 205-601-3                                  | 143-50-0                              |          |                   |       |              |                |       |                      |            |                |
| 57 | aldrin (ISO)                                                                                                                   |                                            |                                       |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 602-048-00-3                                                                                                                   | 206-215-8                                  | 309-00-2                              |          |                   |       |              |                |       |                      |            |                |
| 58 | pentachlorobenzene                                                                                                             |                                            |                                       |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 602-074-00-5                                                                                                                   | 210-172-0                                  | 608-93-5                              |          |                   |       |              |                |       |                      |            |                |
| 59 | dodecachloropentacyclo[5.2.1.02,6.03,9.05,8]decane; mirex                                                                      |                                            |                                       |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 602-077-00-1                                                                                                                   | 219-196-6                                  | 2385-85-5                             |          |                   |       |              |                |       |                      |            |                |
| 60 | camphechlor (ISO); toxaphene                                                                                                   |                                            |                                       |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    | 602-044-00-1                                                                                                                   | 232-283-3                                  | 8001-35-2                             |          |                   |       |              |                |       |                      |            |                |
| 61 | hexabromobiphenyl                                                                                                              |                                            |                                       |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    |                                                                                                                                | 252-994-2                                  | 36355-01-8                            |          |                   |       |              |                |       |                      |            |                |
| 62 | 2,3,7,8-TeCDD                                                                                                                  |                                            |                                       |          | <0.1              | ng/kg |              | <1.0e-07       | mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                | 217-122-7                                  | 1746-01-6                             |          |                   |       |              |                |       |                      |            |                |
| 63 | 1,2,3,7,8-PeCDD                                                                                                                |                                            |                                       |          | <0.1              | ng/kg |              | <1.0e-07       | mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                |                                            | 40321-76-4                            |          |                   |       |              |                |       |                      |            |                |
| 64 | 1,2,3,4,7,8-HxCDD                                                                                                              |                                            |                                       |          | <0.1              | ng/kg |              | <1.0e-07       | mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                |                                            | 39227-28-6                            |          |                   |       |              |                |       |                      |            |                |
| 65 | 1,2,3,6,7,8-HxCDD                                                                                                              |                                            |                                       |          | <0.1              | ng/kg |              | <1.0e-07       | mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                |                                            | 57653-85-7                            |          |                   |       |              |                |       |                      |            |                |



| #      | Determinand                                                                                                                    |                                       |                                                           | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|--------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|        | CLP index number                                                                                                               | EC Number                             | CAS Number                                                |          |                   |              |                |                      |            |                |
| 66     | 1,2,3,7,8,9-HxCDD                                                                                                              |                                       | 19408-74-3                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 67     | 1,2,3,4,6,7,8-HpCDD                                                                                                            |                                       | 35822-46-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 68     | OCDD                                                                                                                           |                                       | 3268-87-9                                                 |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 69     | 2,3,7,8-TeCDF                                                                                                                  |                                       | 51207-31-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 70     | 1,2,3,7,8-PeCDF                                                                                                                |                                       | 57117-41-6                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 71     | 2,3,4,7,8-PeCDF                                                                                                                |                                       | 57117-31-4                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 72     | 1,2,3,4,7,8-HxCDF                                                                                                              |                                       | 70648-26-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 73     | 1,2,3,6,7,8-HxCDF                                                                                                              |                                       | 57117-44-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 74     | 1,2,3,7,8,9-HxCDF                                                                                                              |                                       | 72918-21-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 75     | 2,3,4,6,7,8-HxCDF                                                                                                              |                                       | 60851-34-5                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 76     | 1,2,3,4,6,7,8-HpCDF                                                                                                            |                                       | 67562-39-4                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 77     | 1,2,3,4,7,8,9-HpCDF                                                                                                            |                                       | 55673-89-7                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 78     | OCDF                                                                                                                           |                                       | 39001-02-0                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 79     | petrol (gasoline) petroleum group                                                                                              |                                       |                                                           |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 80     | diesel petroleum group                                                                                                         |                                       | 68334-30-5;<br>68476-34-6;<br>94114-59-7;<br>1159170-26-9 |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 81     | heavy/residual fuel oils petroleum group                                                                                       |                                       |                                                           |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 82     | crude oils petroleum group                                                                                                     |                                       |                                                           |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 83     | kerosine petroleum group including kerosine (petroleum); kerosine (petroleum) hydrosulphurised; kerosine (petroleum) sweetened | 232-366-4;<br>265-184-9;<br>294-799-5 | 8008-20-6;<br>64742-81-0;<br>91770-15-9                   |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| Total: |                                                                                                                                |                                       |                                                           |          |                   |              |                | 0.0572 %             |            |                |

#### Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- ND Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

#### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because Concentrations too low to be considered flammable risk



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Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00123%)



## Classification of sample: WS4

✔ **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

|               |                                                                                                    |
|---------------|----------------------------------------------------------------------------------------------------|
| Sample name:  | LoW Code:                                                                                          |
| <b>WS4</b>    | Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth: | Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)                           |
| <b>0.50 m</b> |                                                                                                    |

## Hazard properties

None identified

## Determinands

Moisture content: 0% No Moisture Correction applied (MC)

| #  | Determinand                                                                                                                                                                            |           |            | CLP Note | User entered data | Conv. Factor | Compound conc. |              | Classification value | MC Applied | Conc. Not Used |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|----------|-------------------|--------------|----------------|--------------|----------------------|------------|----------------|
|    | CLP index number                                                                                                                                                                       | EC Number | CAS Number |          |                   |              |                |              |                      |            |                |
| 1  | arsenic { arsenic trioxide }                                                                                                                                                           |           |            |          | 14.5 mg/kg        | 1.32         | 19.145 mg/kg   | 0.00191 %    |                      |            |                |
|    | 033-003-00-0                                                                                                                                                                           | 215-481-4 | 1327-53-3  |          |                   |              |                |              |                      |            |                |
| 2  | cadmium { cadmium oxide }                                                                                                                                                              |           |            |          | <0.5 mg/kg        | 1.142        | <0.571 mg/kg   | <0.0000571 % |                      |            | <LOD           |
|    | 048-002-00-0                                                                                                                                                                           | 215-146-2 | 1306-19-0  |          |                   |              |                |              |                      |            |                |
| 3  | chromium in chromium(III) compounds { chromium(III) oxide (worst case) }                                                                                                               |           |            |          | 42.3 mg/kg        | 1.462        | 61.824 mg/kg   | 0.00618 %    |                      |            |                |
|    |                                                                                                                                                                                        | 215-160-9 | 1308-38-9  |          |                   |              |                |              |                      |            |                |
| 4  | copper { dicopper oxide; copper (I) oxide }                                                                                                                                            |           |            |          | 36.7 mg/kg        | 1.126        | 41.32 mg/kg    | 0.00413 %    |                      |            |                |
|    | 029-002-00-X                                                                                                                                                                           | 215-270-7 | 1317-39-1  |          |                   |              |                |              |                      |            |                |
| 5  | lead { lead chromate }                                                                                                                                                                 |           |            | 1        | 18.4 mg/kg        | 1.56         | 28.701 mg/kg   | 0.00184 %    |                      |            |                |
|    | 082-004-00-2                                                                                                                                                                           | 231-846-0 | 7758-97-6  |          |                   |              |                |              |                      |            |                |
| 6  | mercury { mercury dichloride }                                                                                                                                                         |           |            |          | <0.5 mg/kg        | 1.353        | <0.677 mg/kg   | <0.0000677 % |                      |            | <LOD           |
|    | 080-010-00-X                                                                                                                                                                           | 231-299-8 | 7487-94-7  |          |                   |              |                |              |                      |            |                |
| 7  | nickel { nickel chromate }                                                                                                                                                             |           |            |          | 55 mg/kg          | 2.976        | 163.695 mg/kg  | 0.0164 %     |                      |            |                |
|    | 028-035-00-7                                                                                                                                                                           | 238-766-5 | 14721-18-7 |          |                   |              |                |              |                      |            |                |
| 8  | selenium { selenium compounds with the exception of cadmium selenide and those specified elsewhere in this Annex }                                                                     |           |            |          | <1 mg/kg          | 1.405        | <1.405 mg/kg   | <0.000141 %  |                      |            | <LOD           |
|    | 034-002-00-8                                                                                                                                                                           |           |            |          |                   |              |                |              |                      |            |                |
| 9  | zinc { zinc chromate }                                                                                                                                                                 |           |            |          | 82.2 mg/kg        | 2.774        | 228.035 mg/kg  | 0.0228 %     |                      |            |                |
|    | 024-007-00-3                                                                                                                                                                           | 236-878-9 | 13530-65-9 |          |                   |              |                |              |                      |            |                |
| 10 | cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } |           |            |          | <1 mg/kg          | 1.884        | <1.884 mg/kg   | <0.000188 %  |                      |            | <LOD           |
|    | 006-007-00-5                                                                                                                                                                           |           |            |          |                   |              |                |              |                      |            |                |
| 11 | chromium in chromium(VI) compounds { chromium(VI) oxide }                                                                                                                              |           |            |          | <0.8 mg/kg        | 1.923        | <1.538 mg/kg   | <0.000154 %  |                      |            | <LOD           |
|    | 024-001-00-0                                                                                                                                                                           | 215-607-8 | 1333-82-0  |          |                   |              |                |              |                      |            |                |
| 12 | boron { diboron trioxide; boric oxide }                                                                                                                                                |           |            |          | <0.5 mg/kg        | 3.22         | <1.61 mg/kg    | <0.000161 %  |                      |            | <LOD           |
|    | 005-008-00-8                                                                                                                                                                           | 215-125-8 | 1303-86-2  |          |                   |              |                |              |                      |            |                |
| 13 | pH                                                                                                                                                                                     |           |            |          | 7.8 pH            |              | 7.8 pH         | 7.8 pH       |                      |            |                |
|    |                                                                                                                                                                                        |           |            |          |                   |              |                |              |                      |            |                |
| 14 | phenol                                                                                                                                                                                 |           |            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
|    | 604-001-00-2                                                                                                                                                                           | 203-632-7 | 108-95-2   |          |                   |              |                |              |                      |            |                |
| 15 | naphthalene                                                                                                                                                                            |           |            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
|    | 601-052-00-2                                                                                                                                                                           | 202-049-5 | 91-20-3    |          |                   |              |                |              |                      |            |                |



| #  | Determinand                                              |              |                                                                                                          | CLP Note                                                     | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|----------------------------------------------------------|--------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                         | EC Number    | CAS Number                                                                                               |                                                              |                   |       |              |                |       |                      |            |                |
| 16 | acenaphthylene                                           | 205-917-1    | 208-96-8                                                                                                 |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 17 | acenaphthene                                             | 201-469-6    | 83-32-9                                                                                                  |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 18 | fluorene                                                 | 201-695-5    | 86-73-7                                                                                                  |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 19 | phenanthrene                                             | 201-581-5    | 85-01-8                                                                                                  |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 20 | anthracene                                               | 204-371-1    | 120-12-7                                                                                                 |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 21 | fluoranthene                                             | 205-912-4    | 206-44-0                                                                                                 |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 22 | pyrene                                                   | 204-927-3    | 129-00-0                                                                                                 |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 23 | benzo[a]anthracene                                       | 601-033-00-9 | 200-280-6                                                                                                | 56-55-3                                                      | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 24 | chrysene                                                 | 601-048-00-0 | 205-923-4                                                                                                | 218-01-9                                                     | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 25 | benzo[b]fluoranthene                                     | 601-034-00-4 | 205-911-9                                                                                                | 205-99-2                                                     | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 26 | benzo[k]fluoranthene                                     | 601-036-00-5 | 205-916-6                                                                                                | 207-08-9                                                     | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 27 | benzo[a]pyrene; benzo[def]chrysene                       | 601-032-00-3 | 200-028-5                                                                                                | 50-32-8                                                      | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 28 | indeno[123-cd]pyrene                                     | 205-893-2    | 193-39-5                                                                                                 |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 29 | dibenz[a,h]anthracene                                    | 601-041-00-2 | 200-181-8                                                                                                | 53-70-3                                                      | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 30 | benzo[ghi]perylene                                       | 205-883-8    | 191-24-2                                                                                                 |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 31 | benzene                                                  | 601-020-00-8 | 200-753-7                                                                                                | 71-43-2                                                      | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 32 | toluene                                                  | 601-021-00-3 | 203-625-9                                                                                                | 108-88-3                                                     | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 33 | ethylbenzene                                             | 601-023-00-4 | 202-849-4                                                                                                | 100-41-4                                                     | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 34 | xylene                                                   | 601-022-00-9 | 202-422-2 [1]<br>203-396-5 [2]<br>203-576-3 [3]<br>215-535-7 [4]                                         | 95-47-6 [1]<br>106-42-3 [2]<br>108-38-3 [3]<br>1330-20-7 [4] | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 35 | TPH (C6 to C40) petroleum group                          |              | TPH                                                                                                      |                                                              | <1                | mg/kg |              | <1             | mg/kg | <0.0001 %            |            | <LOD           |
| 36 | confirm TPH has NOT arisen from diesel or petrol         |              |                                                                                                          |                                                              | .1                |       |              | .1             |       |                      |            | <LOD           |
| 37 | tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane | 603-181-00-X | 216-653-1                                                                                                | 1634-04-4                                                    | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 38 | polychlorobiphenyls; PCB                                 | 602-039-00-4 | 215-648-1                                                                                                | 1336-36-3                                                    | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 39 | asbestos                                                 | 650-013-00-6 | -----<br>12001-28-4<br>132207-32-0<br>12172-73-5<br>77536-66-4<br>77536-68-6<br>77536-67-5<br>12001-29-5 |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 40 | antimony { antimony trioxide }                           | 051-005-00-X | 215-175-0                                                                                                | 1309-64-4                                                    | <0.1              | mg/kg | 1.197        | <0.12          | mg/kg | <0.000012 %          |            | <LOD           |
| 41 | beryllium { beryllium oxide }                            | 004-003-00-8 | 215-133-1                                                                                                | 1304-56-9                                                    | <0.1              | mg/kg | 2.775        | <0.278         | mg/kg | <0.0000278 %         |            | <LOD           |



| #  | Determinand                                                                                                                    |                                            |                                       | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|    | CLP index number                                                                                                               | EC Number                                  | CAS Number                            |          |                   |              |                |                      |            |                |
| 42 | manganese { manganese sulphate }                                                                                               |                                            |                                       |          | <0.1 mg/kg        | 2.749        | <0.275 mg/kg   | <0.0000275 %         |            | <LOD           |
|    | 025-003-00-4                                                                                                                   | 232-089-9                                  | 7785-87-7                             |          |                   |              |                |                      |            |                |
| 43 | molybdenum { molybdenum(VI) oxide }                                                                                            |                                            |                                       |          | <0.1 mg/kg        | 1.5          | <0.15 mg/kg    | <0.000015 %          |            | <LOD           |
|    | 042-001-00-9                                                                                                                   | 215-204-7                                  | 1313-27-5                             |          |                   |              |                |                      |            |                |
| 44 | 1,1-dichloroethane and 1,2-dichloroethane (combined)                                                                           |                                            |                                       |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    |                                                                                                                                | 203-458-1, 200-863-5                       | 107-06-2, 75-34-3                     |          |                   |              |                |                      |            |                |
| 45 | tetrachloroethylene                                                                                                            |                                            |                                       |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    | 602-028-00-4                                                                                                                   | 204-825-9                                  | 127-18-4                              |          |                   |              |                |                      |            |                |
| 46 | carbon tetrachloride; tetrachloromethane                                                                                       |                                            |                                       |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    | 602-008-00-5                                                                                                                   | 200-262-8                                  | 56-23-5                               |          |                   |              |                |                      |            |                |
| 47 | trichloroethylene; trichloroethene                                                                                             |                                            |                                       |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    | 602-027-00-9                                                                                                                   | 201-167-4                                  | 79-01-6                               |          |                   |              |                |                      |            |                |
| 48 | vinyl chloride; chloroethylene                                                                                                 |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-023-00-7                                                                                                                   | 200-831-0                                  | 75-01-4                               |          |                   |              |                |                      |            |                |
| 49 | DDT (ISO); clofenotane (INN); dicophane; 1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane; dichlorodiphenyltrichloroethane        |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-045-00-7                                                                                                                   | 200-024-3                                  | 50-29-3                               |          |                   |              |                |                      |            |                |
| 50 | chlordan (ISO); 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-4,7-methanoindan                                               |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-047-00-8                                                                                                                   | 200-349-0                                  | 57-74-9                               |          |                   |              |                |                      |            |                |
| 51 | hexachlorocyclohexanes, including lindane                                                                                      |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-043-00-6                                                                                                                   | 210-168-9, 200-401-2, 206-270-8, 206-271-3 | 58-89-9, 319-84-6, 319-85-7, 608-73-1 |          |                   |              |                |                      |            |                |
| 52 | dieldrin (ISO)                                                                                                                 |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-049-00-9                                                                                                                   | 200-484-5                                  | 60-57-1                               |          |                   |              |                |                      |            |                |
| 53 | endrin (ISO); 1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4:5,8-dimethanonaphthalene                      |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-051-00-X                                                                                                                   | 200-775-7                                  | 72-20-8                               |          |                   |              |                |                      |            |                |
| 54 | heptachlor (ISO); 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene                                             |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-046-00-2                                                                                                                   | 200-962-3                                  | 76-44-8                               |          |                   |              |                |                      |            |                |
| 55 | hexachlorobenzene                                                                                                              |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-065-00-6                                                                                                                   | 204-273-9                                  | 118-74-1                              |          |                   |              |                |                      |            |                |
| 56 | chlordecone (ISO); perchloropentacyclo[5,3,0,02,6,03,9,04,8]decan-5-one; decachloropentacyclo[5,2,1,02,6,03,9,05,8]decan-4-one |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 606-019-00-6                                                                                                                   | 205-601-3                                  | 143-50-0                              |          |                   |              |                |                      |            |                |
| 57 | aldrin (ISO)                                                                                                                   |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-048-00-3                                                                                                                   | 206-215-8                                  | 309-00-2                              |          |                   |              |                |                      |            |                |
| 58 | pentachlorobenzene                                                                                                             |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-074-00-5                                                                                                                   | 210-172-0                                  | 608-93-5                              |          |                   |              |                |                      |            |                |
| 59 | dodecachloropentacyclo[5.2.1.02,6.03,9.05,8]decane; mirex                                                                      |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-077-00-1                                                                                                                   | 219-196-6                                  | 2385-85-5                             |          |                   |              |                |                      |            |                |
| 60 | camphechlor (ISO); toxaphene                                                                                                   |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-044-00-1                                                                                                                   | 232-283-3                                  | 8001-35-2                             |          |                   |              |                |                      |            |                |
| 61 | hexabromobiphenyl                                                                                                              |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    |                                                                                                                                | 252-994-2                                  | 36355-01-8                            |          |                   |              |                |                      |            |                |
| 62 | 2,3,7,8-TeCDD                                                                                                                  |                                            |                                       |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                | 217-122-7                                  | 1746-01-6                             |          |                   |              |                |                      |            |                |
| 63 | 1,2,3,7,8-PeCDD                                                                                                                |                                            |                                       |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                |                                            | 40321-76-4                            |          |                   |              |                |                      |            |                |
| 64 | 1,2,3,4,7,8-HxCDD                                                                                                              |                                            |                                       |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                |                                            | 39227-28-6                            |          |                   |              |                |                      |            |                |
| 65 | 1,2,3,6,7,8-HxCDD                                                                                                              |                                            |                                       |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                |                                            | 57653-85-7                            |          |                   |              |                |                      |            |                |



| #      | Determinand                                                                                                                    |                                       |                                                           | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|--------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|        | CLP index number                                                                                                               | EC Number                             | CAS Number                                                |          |                   |              |                |                      |            |                |
| 66     | 1,2,3,7,8,9-HxCDD                                                                                                              |                                       | 19408-74-3                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 67     | 1,2,3,4,6,7,8-HpCDD                                                                                                            |                                       | 35822-46-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 68     | OCDD                                                                                                                           |                                       | 3268-87-9                                                 |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 69     | 2,3,7,8-TeCDF                                                                                                                  |                                       | 51207-31-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 70     | 1,2,3,7,8-PeCDF                                                                                                                |                                       | 57117-41-6                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 71     | 2,3,4,7,8-PeCDF                                                                                                                |                                       | 57117-31-4                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 72     | 1,2,3,4,7,8-HxCDF                                                                                                              |                                       | 70648-26-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 73     | 1,2,3,6,7,8-HxCDF                                                                                                              |                                       | 57117-44-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 74     | 1,2,3,7,8,9-HxCDF                                                                                                              |                                       | 72918-21-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 75     | 2,3,4,6,7,8-HxCDF                                                                                                              |                                       | 60851-34-5                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 76     | 1,2,3,4,6,7,8-HpCDF                                                                                                            |                                       | 67562-39-4                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 77     | 1,2,3,4,7,8,9-HpCDF                                                                                                            |                                       | 55673-89-7                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 78     | OCDF                                                                                                                           |                                       | 39001-02-0                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 79     | petrol (gasoline) petroleum group                                                                                              |                                       |                                                           |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 80     | diesel petroleum group                                                                                                         |                                       | 68334-30-5,<br>68476-34-6,<br>94114-59-7,<br>1159170-26-9 |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 81     | heavy/residual fuel oils petroleum group                                                                                       |                                       |                                                           |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 82     | crude oils petroleum group                                                                                                     |                                       |                                                           |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 83     | kerosine petroleum group including kerosine (petroleum); kerosine (petroleum) hydrosulphurised; kerosine (petroleum) sweetened | 232-366-4;<br>265-184-9;<br>294-799-5 | 8008-20-6;<br>64742-81-0;<br>91770-15-9                   |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| Total: |                                                                                                                                |                                       |                                                           |          |                   |              |                | 0.0546 %             |            |                |

#### Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- ND** Not detected
- CLP: Note 1 Only the metal concentration has been used for classification



## Classification of sample: WS5

✔ **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

|               |                                                                                                    |
|---------------|----------------------------------------------------------------------------------------------------|
| Sample name:  | LoW Code:                                                                                          |
| <b>WS5</b>    | Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth: | Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)                           |
| <b>0.50 m</b> |                                                                                                    |

## Hazard properties

None identified

## Determinands

Moisture content: 0% No Moisture Correction applied (MC)

| #  | Determinand                                                                                                                                                                            |           |            | CLP Note | User entered data | Conv. Factor | Compound conc. |              | Classification value | MC Applied | Conc. Not Used |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|----------|-------------------|--------------|----------------|--------------|----------------------|------------|----------------|
|    | CLP index number                                                                                                                                                                       | EC Number | CAS Number |          |                   |              |                |              |                      |            |                |
| 1  | arsenic { arsenic trioxide }                                                                                                                                                           |           |            |          | 22.3 mg/kg        | 1.32         | 29.443 mg/kg   | 0.00294 %    |                      |            |                |
|    | 033-003-00-0                                                                                                                                                                           | 215-481-4 | 1327-53-3  |          |                   |              |                |              |                      |            |                |
| 2  | cadmium { cadmium oxide }                                                                                                                                                              |           |            |          | <0.5 mg/kg        | 1.142        | <0.571 mg/kg   | <0.0000571 % |                      |            | <LOD           |
|    | 048-002-00-0                                                                                                                                                                           | 215-146-2 | 1306-19-0  |          |                   |              |                |              |                      |            |                |
| 3  | chromium in chromium(III) compounds { chromium(III) oxide (worst case) }                                                                                                               |           |            |          | 20.9 mg/kg        | 1.462        | 30.547 mg/kg   | 0.00305 %    |                      |            |                |
|    |                                                                                                                                                                                        | 215-160-9 | 1308-38-9  |          |                   |              |                |              |                      |            |                |
| 4  | copper { dicopper oxide; copper (I) oxide }                                                                                                                                            |           |            |          | 179 mg/kg         | 1.126        | 201.534 mg/kg  | 0.0202 %     |                      |            |                |
|    | 029-002-00-X                                                                                                                                                                           | 215-270-7 | 1317-39-1  |          |                   |              |                |              |                      |            |                |
| 5  | lead { lead chromate }                                                                                                                                                                 |           |            | 1        | 234 mg/kg         | 1.56         | 364.997 mg/kg  | 0.0234 %     |                      |            |                |
|    | 082-004-00-2                                                                                                                                                                           | 231-846-0 | 7758-97-6  |          |                   |              |                |              |                      |            |                |
| 6  | mercury { mercury dichloride }                                                                                                                                                         |           |            |          | 0.9 mg/kg         | 1.353        | 1.218 mg/kg    | 0.000122 %   |                      |            |                |
|    | 080-010-00-X                                                                                                                                                                           | 231-299-8 | 7487-94-7  |          |                   |              |                |              |                      |            |                |
| 7  | nickel { nickel chromate }                                                                                                                                                             |           |            |          | 41.7 mg/kg        | 2.976        | 124.11 mg/kg   | 0.0124 %     |                      |            |                |
|    | 028-035-00-7                                                                                                                                                                           | 238-766-5 | 14721-18-7 |          |                   |              |                |              |                      |            |                |
| 8  | selenium { selenium compounds with the exception of cadmium selenide and those specified elsewhere in this Annex }                                                                     |           |            |          | <1 mg/kg          | 1.405        | <1.405 mg/kg   | <0.000141 %  |                      |            | <LOD           |
|    | 034-002-00-8                                                                                                                                                                           |           |            |          |                   |              |                |              |                      |            |                |
| 9  | zinc { zinc chromate }                                                                                                                                                                 |           |            |          | 124 mg/kg         | 2.774        | 343.994 mg/kg  | 0.0344 %     |                      |            |                |
|    | 024-007-00-3                                                                                                                                                                           | 236-878-9 | 13530-65-9 |          |                   |              |                |              |                      |            |                |
| 10 | cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } |           |            |          | <1 mg/kg          | 1.884        | <1.884 mg/kg   | <0.000188 %  |                      |            | <LOD           |
|    | 006-007-00-5                                                                                                                                                                           |           |            |          |                   |              |                |              |                      |            |                |
| 11 | chromium in chromium(VI) compounds { chromium(VI) oxide }                                                                                                                              |           |            |          | <0.8 mg/kg        | 1.923        | <1.538 mg/kg   | <0.000154 %  |                      |            | <LOD           |
|    | 024-001-00-0                                                                                                                                                                           | 215-607-8 | 1333-82-0  |          |                   |              |                |              |                      |            |                |
| 12 | boron { diboron trioxide; boric oxide }                                                                                                                                                |           |            |          | 0.6 mg/kg         | 3.22         | 1.932 mg/kg    | 0.000193 %   |                      |            |                |
|    | 005-008-00-8                                                                                                                                                                           | 215-125-8 | 1303-86-2  |          |                   |              |                |              |                      |            |                |
| 13 | pH                                                                                                                                                                                     |           |            |          | 7.7 pH            |              | 7.7 pH         | 7.7 pH       |                      |            |                |
|    |                                                                                                                                                                                        |           |            |          |                   |              |                |              |                      |            |                |
| 14 | phenol                                                                                                                                                                                 |           |            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
|    | 604-001-00-2                                                                                                                                                                           | 203-632-7 | 108-95-2   |          |                   |              |                |              |                      |            |                |
| 15 | naphthalene                                                                                                                                                                            |           |            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
|    | 601-052-00-2                                                                                                                                                                           | 202-049-5 | 91-20-3    |          |                   |              |                |              |                      |            |                |



| #  | Determinand                                              |              |                                                                                                          | CLP Note                                                     | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|----------------------------------------------------------|--------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                         | EC Number    | CAS Number                                                                                               |                                                              |                   |       |              |                |       |                      |            |                |
| 16 | acenaphthylene                                           | 205-917-1    | 208-96-8                                                                                                 |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 17 | acenaphthene                                             | 201-469-6    | 83-32-9                                                                                                  |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 18 | fluorene                                                 | 201-695-5    | 86-73-7                                                                                                  |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 19 | phenanthrene                                             | 201-581-5    | 85-01-8                                                                                                  |                                                              | 0.1               | mg/kg |              | 0.1            | mg/kg | 0.00001 %            |            |                |
| 20 | anthracene                                               | 204-371-1    | 120-12-7                                                                                                 |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 21 | fluoranthene                                             | 205-912-4    | 206-44-0                                                                                                 |                                                              | 0.2               | mg/kg |              | 0.2            | mg/kg | 0.00002 %            |            |                |
| 22 | pyrene                                                   | 204-927-3    | 129-00-0                                                                                                 |                                                              | 0.2               | mg/kg |              | 0.2            | mg/kg | 0.00002 %            |            |                |
| 23 | benzo[a]anthracene                                       | 601-033-00-9 | 200-280-6                                                                                                | 56-55-3                                                      | 0.1               | mg/kg |              | 0.1            | mg/kg | 0.00001 %            |            |                |
| 24 | chrysene                                                 | 601-048-00-0 | 205-923-4                                                                                                | 218-01-9                                                     | 0.2               | mg/kg |              | 0.2            | mg/kg | 0.00002 %            |            |                |
| 25 | benzo[b]fluoranthene                                     | 601-034-00-4 | 205-911-9                                                                                                | 205-99-2                                                     | 0.2               | mg/kg |              | 0.2            | mg/kg | 0.00002 %            |            |                |
| 26 | benzo[k]fluoranthene                                     | 601-036-00-5 | 205-916-6                                                                                                | 207-08-9                                                     | 0.2               | mg/kg |              | 0.2            | mg/kg | 0.00002 %            |            |                |
| 27 | benzo[a]pyrene; benzo[def]chrysene                       | 601-032-00-3 | 200-028-5                                                                                                | 50-32-8                                                      | 0.2               | mg/kg |              | 0.2            | mg/kg | 0.00002 %            |            |                |
| 28 | indeno[123-cd]pyrene                                     | 205-893-2    | 193-39-5                                                                                                 |                                                              | 0.2               | mg/kg |              | 0.2            | mg/kg | 0.00002 %            |            |                |
| 29 | dibenz[a,h]anthracene                                    | 601-041-00-2 | 200-181-8                                                                                                | 53-70-3                                                      | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 30 | benzo[ghi]perylene                                       | 205-883-8    | 191-24-2                                                                                                 |                                                              | 0.1               | mg/kg |              | 0.1            | mg/kg | 0.00001 %            |            |                |
| 31 | benzene                                                  | 601-020-00-8 | 200-753-7                                                                                                | 71-43-2                                                      | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 32 | toluene                                                  | 601-021-00-3 | 203-625-9                                                                                                | 108-88-3                                                     | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 33 | ethylbenzene                                             | 601-023-00-4 | 202-849-4                                                                                                | 100-41-4                                                     | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 34 | xylene                                                   | 601-022-00-9 | 202-422-2 [1]<br>203-396-5 [2]<br>203-576-3 [3]<br>215-535-7 [4]                                         | 95-47-6 [1]<br>106-42-3 [2]<br>108-38-3 [3]<br>1330-20-7 [4] | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 35 | TPH (C6 to C40) petroleum group                          |              | TPH                                                                                                      |                                                              | <1                | mg/kg |              | <1             | mg/kg | <0.0001 %            |            | <LOD           |
| 36 | confirm TPH has NOT arisen from diesel or petrol         |              |                                                                                                          |                                                              | .1                |       |              | .1             |       |                      |            | <LOD           |
| 37 | tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane | 603-181-00-X | 216-653-1                                                                                                | 1634-04-4                                                    | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 38 | polychlorobiphenyls; PCB                                 | 602-039-00-4 | 215-648-1                                                                                                | 1336-36-3                                                    | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 39 | asbestos                                                 | 650-013-00-6 | -----<br>12001-28-4<br>132207-32-0<br>12172-73-5<br>77536-66-4<br>77536-68-6<br>77536-67-5<br>12001-29-5 |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 40 | antimony { antimony trioxide }                           | 051-005-00-X | 215-175-0                                                                                                | 1309-64-4                                                    | <0.1              | mg/kg | 1.197        | <0.12          | mg/kg | <0.000012 %          |            | <LOD           |
| 41 | beryllium { beryllium oxide }                            | 004-003-00-8 | 215-133-1                                                                                                | 1304-56-9                                                    | <0.1              | mg/kg | 2.775        | <0.278         | mg/kg | <0.0000278 %         |            | <LOD           |



| #  | Determinand                                                                                                                          |                                                     |                                          | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|    | CLP index number                                                                                                                     | EC Number                                           | CAS Number                               |          |                   |              |                |                      |            |                |
| 42 | manganese { manganese sulphate }                                                                                                     |                                                     |                                          |          | <0.1 mg/kg        | 2.749        | <0.275 mg/kg   | <0.0000275 %         |            | <LOD           |
|    | 025-003-00-4                                                                                                                         | 232-089-9                                           | 7785-87-7                                |          |                   |              |                |                      |            |                |
| 43 | molybdenum { molybdenum(VI) oxide }                                                                                                  |                                                     |                                          |          | <0.1 mg/kg        | 1.5          | <0.15 mg/kg    | <0.000015 %          |            | <LOD           |
|    | 042-001-00-9                                                                                                                         | 215-204-7                                           | 1313-27-5                                |          |                   |              |                |                      |            |                |
| 44 | 1,1-dichloroethane and 1,2-dichloroethane (combined)                                                                                 |                                                     |                                          |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    |                                                                                                                                      | 203-458-1,<br>200-863-5                             | 107-06-2, 75-34-3                        |          |                   |              |                |                      |            |                |
| 45 | tetrachloroethylene                                                                                                                  |                                                     |                                          |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    | 602-028-00-4                                                                                                                         | 204-825-9                                           | 127-18-4                                 |          |                   |              |                |                      |            |                |
| 46 | carbon tetrachloride; tetrachloromethane                                                                                             |                                                     |                                          |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    | 602-008-00-5                                                                                                                         | 200-262-8                                           | 56-23-5                                  |          |                   |              |                |                      |            |                |
| 47 | trichloroethylene; trichloroethene                                                                                                   |                                                     |                                          |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    | 602-027-00-9                                                                                                                         | 201-167-4                                           | 79-01-6                                  |          |                   |              |                |                      |            |                |
| 48 | vinyl chloride; chloroethylene                                                                                                       |                                                     |                                          |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-023-00-7                                                                                                                         | 200-831-0                                           | 75-01-4                                  |          |                   |              |                |                      |            |                |
| 49 | DDT (ISO); clofenotane (INN); dicophane;<br>1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane;<br>dichlorodiphenyltrichloroethane        |                                                     |                                          |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-045-00-7                                                                                                                         | 200-024-3                                           | 50-29-3                                  |          |                   |              |                |                      |            |                |
| 50 | chlordan (ISO);<br>1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-4,7-methanoindan                                                  |                                                     |                                          |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-047-00-8                                                                                                                         | 200-349-0                                           | 57-74-9                                  |          |                   |              |                |                      |            |                |
| 51 | hexachlorocyclohexanes, including lindane                                                                                            |                                                     |                                          |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-043-00-6                                                                                                                         | 210-168-9,<br>200-401-2,<br>206-270-8,<br>206-271-3 | 58-89-9, 319-84-6,<br>319-85-7, 608-73-1 |          |                   |              |                |                      |            |                |
| 52 | dieldrin (ISO)                                                                                                                       |                                                     |                                          |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-049-00-9                                                                                                                         | 200-484-5                                           | 60-57-1                                  |          |                   |              |                |                      |            |                |
| 53 | endrin (ISO);<br>1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4:5,8-dimethanonaphthalene                         |                                                     |                                          |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-051-00-X                                                                                                                         | 200-775-7                                           | 72-20-8                                  |          |                   |              |                |                      |            |                |
| 54 | heptachlor (ISO);<br>1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene                                                |                                                     |                                          |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-046-00-2                                                                                                                         | 200-962-3                                           | 76-44-8                                  |          |                   |              |                |                      |            |                |
| 55 | hexachlorobenzene                                                                                                                    |                                                     |                                          |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-065-00-6                                                                                                                         | 204-273-9                                           | 118-74-1                                 |          |                   |              |                |                      |            |                |
| 56 | chlordecone (ISO);<br>perchloropentacyclo[5,3,0,02,6,03,9,04,8]decan-5-one;<br>decachloropentacyclo[5,2,1,02,6,03,9,05,8]decan-4-one |                                                     |                                          |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 606-019-00-6                                                                                                                         | 205-601-3                                           | 143-50-0                                 |          |                   |              |                |                      |            |                |
| 57 | aldrin (ISO)                                                                                                                         |                                                     |                                          |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-048-00-3                                                                                                                         | 206-215-8                                           | 309-00-2                                 |          |                   |              |                |                      |            |                |
| 58 | pentachlorobenzene                                                                                                                   |                                                     |                                          |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-074-00-5                                                                                                                         | 210-172-0                                           | 608-93-5                                 |          |                   |              |                |                      |            |                |
| 59 | dodecachloropentacyclo[5.2.1.02,6.03,9.05,8]decane;<br>mirex                                                                         |                                                     |                                          |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-077-00-1                                                                                                                         | 219-196-6                                           | 2385-85-5                                |          |                   |              |                |                      |            |                |
| 60 | camphechlor (ISO); toxaphene                                                                                                         |                                                     |                                          |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-044-00-1                                                                                                                         | 232-283-3                                           | 8001-35-2                                |          |                   |              |                |                      |            |                |
| 61 | hexabromobiphenyl                                                                                                                    |                                                     |                                          |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    |                                                                                                                                      | 252-994-2                                           | 36355-01-8                               |          |                   |              |                |                      |            |                |
| 62 | 2,3,7,8-TeCDD                                                                                                                        |                                                     |                                          |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      | 217-122-7                                           | 1746-01-6                                |          |                   |              |                |                      |            |                |
| 63 | 1,2,3,7,8-PeCDD                                                                                                                      |                                                     |                                          |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |                                                     | 40321-76-4                               |          |                   |              |                |                      |            |                |
| 64 | 1,2,3,4,7,8-HxCDD                                                                                                                    |                                                     |                                          |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |                                                     | 39227-28-6                               |          |                   |              |                |                      |            |                |
| 65 | 1,2,3,6,7,8-HxCDD                                                                                                                    |                                                     |                                          |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                      |                                                     | 57653-85-7                               |          |                   |              |                |                      |            |                |



| #      | Determinand                                                                                                                    |                                       |                                                           | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|--------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|        | CLP index number                                                                                                               | EC Number                             | CAS Number                                                |          |                   |              |                |                      |            |                |
| 66     | 1,2,3,7,8,9-HxCDD                                                                                                              |                                       | 19408-74-3                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 67     | 1,2,3,4,6,7,8-HpCDD                                                                                                            |                                       | 35822-46-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 68     | OCDD                                                                                                                           |                                       | 3268-87-9                                                 |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 69     | 2,3,7,8-TeCDF                                                                                                                  |                                       | 51207-31-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 70     | 1,2,3,7,8-PeCDF                                                                                                                |                                       | 57117-41-6                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 71     | 2,3,4,7,8-PeCDF                                                                                                                |                                       | 57117-31-4                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 72     | 1,2,3,4,7,8-HxCDF                                                                                                              |                                       | 70648-26-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 73     | 1,2,3,6,7,8-HxCDF                                                                                                              |                                       | 57117-44-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 74     | 1,2,3,7,8,9-HxCDF                                                                                                              |                                       | 72918-21-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 75     | 2,3,4,6,7,8-HxCDF                                                                                                              |                                       | 60851-34-5                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 76     | 1,2,3,4,6,7,8-HpCDF                                                                                                            |                                       | 67562-39-4                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 77     | 1,2,3,4,7,8,9-HpCDF                                                                                                            |                                       | 55673-89-7                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 78     | OCDF                                                                                                                           |                                       | 39001-02-0                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 79     | petrol (gasoline) petroleum group                                                                                              |                                       |                                                           |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 80     | diesel petroleum group                                                                                                         |                                       | 68334-30-5,<br>68476-34-6,<br>94114-59-7,<br>1159170-26-9 |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 81     | heavy/residual fuel oils petroleum group                                                                                       |                                       |                                                           |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 82     | crude oils petroleum group                                                                                                     |                                       |                                                           |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 83     | kerosine petroleum group including kerosine (petroleum); kerosine (petroleum) hydrosulphurised; kerosine (petroleum) sweetened | 232-366-4;<br>265-184-9;<br>294-799-5 | 8008-20-6;<br>64742-81-0;<br>91770-15-9                   |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| Total: |                                                                                                                                |                                       |                                                           |          |                   |              |                | 0.0979 %             |            |                |

#### Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- ND** Not detected
- CLP: Note 1 Only the metal concentration has been used for classification



## Classification of sample: WS6

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

|               |                                                                                                    |
|---------------|----------------------------------------------------------------------------------------------------|
| Sample name:  | LoW Code:                                                                                          |
| <b>WS6</b>    | Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth: | Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)                           |
| <b>0.40 m</b> |                                                                                                    |

## Hazard properties

None identified

## Determinands

Moisture content: 0% No Moisture Correction applied (MC)

| #  | Determinand                                                                                                                                                                            |           |            | CLP Note | User entered data | Conv. Factor | Compound conc. |              | Classification value | MC Applied | Conc. Not Used |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|----------|-------------------|--------------|----------------|--------------|----------------------|------------|----------------|
|    | CLP index number                                                                                                                                                                       | EC Number | CAS Number |          |                   |              |                |              |                      |            |                |
| 1  | arsenic { arsenic trioxide }                                                                                                                                                           |           |            |          | 15.4 mg/kg        | 1.32         | 20.333 mg/kg   | 0.00203 %    |                      |            |                |
|    | 033-003-00-0                                                                                                                                                                           | 215-481-4 | 1327-53-3  |          |                   |              |                |              |                      |            |                |
| 2  | cadmium { cadmium oxide }                                                                                                                                                              |           |            |          | <0.5 mg/kg        | 1.142        | <0.571 mg/kg   | <0.0000571 % |                      |            | <LOD           |
|    | 048-002-00-0                                                                                                                                                                           | 215-146-2 | 1306-19-0  |          |                   |              |                |              |                      |            |                |
| 3  | chromium in chromium(III) compounds { chromium(III) oxide (worst case) }                                                                                                               |           |            |          | 21.9 mg/kg        | 1.462        | 32.008 mg/kg   | 0.0032 %     |                      |            |                |
|    |                                                                                                                                                                                        | 215-160-9 | 1308-38-9  |          |                   |              |                |              |                      |            |                |
| 4  | copper { dicopper oxide; copper (I) oxide }                                                                                                                                            |           |            |          | 71.1 mg/kg        | 1.126        | 80.051 mg/kg   | 0.00801 %    |                      |            |                |
|    | 029-002-00-X                                                                                                                                                                           | 215-270-7 | 1317-39-1  |          |                   |              |                |              |                      |            |                |
| 5  | lead { lead chromate }                                                                                                                                                                 |           |            | 1        | 89.6 mg/kg        | 1.56         | 139.759 mg/kg  | 0.00896 %    |                      |            |                |
|    | 082-004-00-2                                                                                                                                                                           | 231-846-0 | 7758-97-6  |          |                   |              |                |              |                      |            |                |
| 6  | mercury { mercury dichloride }                                                                                                                                                         |           |            |          | <0.5 mg/kg        | 1.353        | <0.677 mg/kg   | <0.0000677 % |                      |            | <LOD           |
|    | 080-010-00-X                                                                                                                                                                           | 231-299-8 | 7487-94-7  |          |                   |              |                |              |                      |            |                |
| 7  | nickel { nickel chromate }                                                                                                                                                             |           |            |          | 33.7 mg/kg        | 2.976        | 100.3 mg/kg    | 0.01 %       |                      |            |                |
|    | 028-035-00-7                                                                                                                                                                           | 238-766-5 | 14721-18-7 |          |                   |              |                |              |                      |            |                |
| 8  | selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }                                                               |           |            |          | <1 mg/kg          | 1.405        | <1.405 mg/kg   | <0.000141 %  |                      |            | <LOD           |
|    | 034-002-00-8                                                                                                                                                                           |           |            |          |                   |              |                |              |                      |            |                |
| 9  | zinc { zinc chromate }                                                                                                                                                                 |           |            |          | 90.4 mg/kg        | 2.774        | 250.783 mg/kg  | 0.0251 %     |                      |            |                |
|    | 024-007-00-3                                                                                                                                                                           | 236-878-9 | 13530-65-9 |          |                   |              |                |              |                      |            |                |
| 10 | cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } |           |            |          | <1 mg/kg          | 1.884        | <1.884 mg/kg   | <0.000188 %  |                      |            | <LOD           |
|    | 006-007-00-5                                                                                                                                                                           |           |            |          |                   |              |                |              |                      |            |                |
| 11 | chromium in chromium(VI) compounds { chromium(VI) oxide }                                                                                                                              |           |            |          | <0.8 mg/kg        | 1.923        | <1.538 mg/kg   | <0.000154 %  |                      |            | <LOD           |
|    | 024-001-00-0                                                                                                                                                                           | 215-607-8 | 1333-82-0  |          |                   |              |                |              |                      |            |                |
| 12 | boron { diboron trioxide; boric oxide }                                                                                                                                                |           |            |          | <0.5 mg/kg        | 3.22         | <1.61 mg/kg    | <0.000161 %  |                      |            | <LOD           |
|    | 005-008-00-8                                                                                                                                                                           | 215-125-8 | 1303-86-2  |          |                   |              |                |              |                      |            |                |
| 13 | pH                                                                                                                                                                                     |           |            |          | 7.8 pH            |              | 7.8 pH         | 7.8 pH       |                      |            |                |
|    |                                                                                                                                                                                        |           |            |          |                   |              |                |              |                      |            |                |
| 14 | phenol                                                                                                                                                                                 |           |            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
|    | 604-001-00-2                                                                                                                                                                           | 203-632-7 | 108-95-2   |          |                   |              |                |              |                      |            |                |
| 15 | naphthalene                                                                                                                                                                            |           |            |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %   |                      |            | <LOD           |
|    | 601-052-00-2                                                                                                                                                                           | 202-049-5 | 91-20-3    |          |                   |              |                |              |                      |            |                |



| #  | Determinand                                              |              |                                                                                                          | CLP Note                                                     | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|----------------------------------------------------------|--------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                         | EC Number    | CAS Number                                                                                               |                                                              |                   |       |              |                |       |                      |            |                |
| 16 | acenaphthylene                                           | 205-917-1    | 208-96-8                                                                                                 |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 17 | acenaphthene                                             | 201-469-6    | 83-32-9                                                                                                  |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 18 | fluorene                                                 | 201-695-5    | 86-73-7                                                                                                  |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 19 | phenanthrene                                             | 201-581-5    | 85-01-8                                                                                                  |                                                              | 0.2               | mg/kg |              | 0.2            | mg/kg | 0.00002 %            |            |                |
| 20 | anthracene                                               | 204-371-1    | 120-12-7                                                                                                 |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 21 | fluoranthene                                             | 205-912-4    | 206-44-0                                                                                                 |                                                              | 0.6               | mg/kg |              | 0.6            | mg/kg | 0.00006 %            |            |                |
| 22 | pyrene                                                   | 204-927-3    | 129-00-0                                                                                                 |                                                              | 0.7               | mg/kg |              | 0.7            | mg/kg | 0.00007 %            |            |                |
| 23 | benzo[a]anthracene                                       | 601-033-00-9 | 200-280-6                                                                                                | 56-55-3                                                      | 0.5               | mg/kg |              | 0.5            | mg/kg | 0.00005 %            |            |                |
| 24 | chrysene                                                 | 601-048-00-0 | 205-923-4                                                                                                | 218-01-9                                                     | 0.5               | mg/kg |              | 0.5            | mg/kg | 0.00005 %            |            |                |
| 25 | benzo[b]fluoranthene                                     | 601-034-00-4 | 205-911-9                                                                                                | 205-99-2                                                     | 0.9               | mg/kg |              | 0.9            | mg/kg | 0.00009 %            |            |                |
| 26 | benzo[k]fluoranthene                                     | 601-036-00-5 | 205-916-6                                                                                                | 207-08-9                                                     | 0.8               | mg/kg |              | 0.8            | mg/kg | 0.00008 %            |            |                |
| 27 | benzo[a]pyrene; benzo[def]chrysene                       | 601-032-00-3 | 200-028-5                                                                                                | 50-32-8                                                      | 0.9               | mg/kg |              | 0.9            | mg/kg | 0.00009 %            |            |                |
| 28 | indeno[123-cd]pyrene                                     | 205-893-2    | 193-39-5                                                                                                 |                                                              | 0.8               | mg/kg |              | 0.8            | mg/kg | 0.00008 %            |            |                |
| 29 | dibenz[a,h]anthracene                                    | 601-041-00-2 | 200-181-8                                                                                                | 53-70-3                                                      | 0.2               | mg/kg |              | 0.2            | mg/kg | 0.00002 %            |            |                |
| 30 | benzo[ghi]perylene                                       | 205-883-8    | 191-24-2                                                                                                 |                                                              | 0.5               | mg/kg |              | 0.5            | mg/kg | 0.00005 %            |            |                |
| 31 | benzene                                                  | 601-020-00-8 | 200-753-7                                                                                                | 71-43-2                                                      | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 32 | toluene                                                  | 601-021-00-3 | 203-625-9                                                                                                | 108-88-3                                                     | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 33 | ethylbenzene                                             | 601-023-00-4 | 202-849-4                                                                                                | 100-41-4                                                     | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 34 | xylene                                                   | 601-022-00-9 | 202-422-2 [1]<br>203-396-5 [2]<br>203-576-3 [3]<br>215-535-7 [4]                                         | 95-47-6 [1]<br>106-42-3 [2]<br>108-38-3 [3]<br>1330-20-7 [4] | <0.01             | mg/kg |              | <0.01          | mg/kg | <0.000001 %          |            | <LOD           |
| 35 | TPH (C6 to C40) petroleum group                          |              | TPH                                                                                                      |                                                              | 12                | mg/kg |              | 12             | mg/kg | 0.0012 %             |            |                |
| 36 | confirm TPH has NOT arisen from diesel or petrol         |              |                                                                                                          |                                                              | .1                |       |              | .1             |       |                      |            | <LOD           |
| 37 | tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane | 603-181-00-X | 216-653-1                                                                                                | 1634-04-4                                                    | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 38 | polychlorobiphenyls; PCB                                 | 602-039-00-4 | 215-648-1                                                                                                | 1336-36-3                                                    | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 39 | asbestos                                                 | 650-013-00-6 | -----<br>12001-28-4<br>132207-32-0<br>12172-73-5<br>77536-66-4<br>77536-68-6<br>77536-67-5<br>12001-29-5 |                                                              | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
| 40 | antimony { antimony trioxide }                           | 051-005-00-X | 215-175-0                                                                                                | 1309-64-4                                                    | <0.1              | mg/kg | 1.197        | <0.12          | mg/kg | <0.000012 %          |            | <LOD           |
| 41 | beryllium { beryllium oxide }                            | 004-003-00-8 | 215-133-1                                                                                                | 1304-56-9                                                    | <0.1              | mg/kg | 2.775        | <0.278         | mg/kg | <0.0000278 %         |            | <LOD           |



| #  | Determinand                                                                                                                    |                                            |                                       | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|    | CLP index number                                                                                                               | EC Number                                  | CAS Number                            |          |                   |              |                |                      |            |                |
| 42 | manganese { manganese sulphate }                                                                                               |                                            |                                       |          | <0.1 mg/kg        | 2.749        | <0.275 mg/kg   | <0.0000275 %         |            | <LOD           |
|    | 025-003-00-4                                                                                                                   | 232-089-9                                  | 7785-87-7                             |          |                   |              |                |                      |            |                |
| 43 | molybdenum { molybdenum(VI) oxide }                                                                                            |                                            |                                       |          | <0.1 mg/kg        | 1.5          | <0.15 mg/kg    | <0.000015 %          |            | <LOD           |
|    | 042-001-00-9                                                                                                                   | 215-204-7                                  | 1313-27-5                             |          |                   |              |                |                      |            |                |
| 44 | 1,1-dichloroethane and 1,2-dichloroethane (combined)                                                                           |                                            |                                       |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    |                                                                                                                                | 203-458-1, 200-863-5                       | 107-06-2, 75-34-3                     |          |                   |              |                |                      |            |                |
| 45 | tetrachloroethylene                                                                                                            |                                            |                                       |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    | 602-028-00-4                                                                                                                   | 204-825-9                                  | 127-18-4                              |          |                   |              |                |                      |            |                |
| 46 | carbon tetrachloride; tetrachloromethane                                                                                       |                                            |                                       |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    | 602-008-00-5                                                                                                                   | 200-262-8                                  | 56-23-5                               |          |                   |              |                |                      |            |                |
| 47 | trichloroethylene; trichloroethene                                                                                             |                                            |                                       |          | <0.01 mg/kg       |              | <0.01 mg/kg    | <0.000001 %          |            | <LOD           |
|    | 602-027-00-9                                                                                                                   | 201-167-4                                  | 79-01-6                               |          |                   |              |                |                      |            |                |
| 48 | vinyl chloride; chloroethylene                                                                                                 |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-023-00-7                                                                                                                   | 200-831-0                                  | 75-01-4                               |          |                   |              |                |                      |            |                |
| 49 | DDT (ISO); clofenotane (INN); dicophane; 1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane; dichlorodiphenyltrichloroethane        |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-045-00-7                                                                                                                   | 200-024-3                                  | 50-29-3                               |          |                   |              |                |                      |            |                |
| 50 | chlordan (ISO); 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-4,7-methanoindan                                               |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-047-00-8                                                                                                                   | 200-349-0                                  | 57-74-9                               |          |                   |              |                |                      |            |                |
| 51 | hexachlorocyclohexanes, including lindane                                                                                      |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-043-00-6                                                                                                                   | 210-168-9, 200-401-2, 206-270-8, 206-271-3 | 58-89-9, 319-84-6, 319-85-7, 608-73-1 |          |                   |              |                |                      |            |                |
| 52 | dieldrin (ISO)                                                                                                                 |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-049-00-9                                                                                                                   | 200-484-5                                  | 60-57-1                               |          |                   |              |                |                      |            |                |
| 53 | endrin (ISO); 1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4:5,8-dimethanonaphthalene                      |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-051-00-X                                                                                                                   | 200-775-7                                  | 72-20-8                               |          |                   |              |                |                      |            |                |
| 54 | heptachlor (ISO); 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene                                             |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-046-00-2                                                                                                                   | 200-962-3                                  | 76-44-8                               |          |                   |              |                |                      |            |                |
| 55 | hexachlorobenzene                                                                                                              |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-065-00-6                                                                                                                   | 204-273-9                                  | 118-74-1                              |          |                   |              |                |                      |            |                |
| 56 | chlordecone (ISO); perchloropentacyclo[5,3,0,02,6,03,9,04,8]decan-5-one; decachloropentacyclo[5,2,1,02,6,03,9,05,8]decan-4-one |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 606-019-00-6                                                                                                                   | 205-601-3                                  | 143-50-0                              |          |                   |              |                |                      |            |                |
| 57 | aldrin (ISO)                                                                                                                   |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-048-00-3                                                                                                                   | 206-215-8                                  | 309-00-2                              |          |                   |              |                |                      |            |                |
| 58 | pentachlorobenzene                                                                                                             |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-074-00-5                                                                                                                   | 210-172-0                                  | 608-93-5                              |          |                   |              |                |                      |            |                |
| 59 | dodecachloropentacyclo[5.2.1.02,6.03,9.05,8]decane; mirex                                                                      |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-077-00-1                                                                                                                   | 219-196-6                                  | 2385-85-5                             |          |                   |              |                |                      |            |                |
| 60 | camphechlor (ISO); toxaphene                                                                                                   |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    | 602-044-00-1                                                                                                                   | 232-283-3                                  | 8001-35-2                             |          |                   |              |                |                      |            |                |
| 61 | hexabromobiphenyl                                                                                                              |                                            |                                       |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
|    |                                                                                                                                | 252-994-2                                  | 36355-01-8                            |          |                   |              |                |                      |            |                |
| 62 | 2,3,7,8-TeCDD                                                                                                                  |                                            |                                       |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                | 217-122-7                                  | 1746-01-6                             |          |                   |              |                |                      |            |                |
| 63 | 1,2,3,7,8-PeCDD                                                                                                                |                                            |                                       |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                |                                            | 40321-76-4                            |          |                   |              |                |                      |            |                |
| 64 | 1,2,3,4,7,8-HxCDD                                                                                                              |                                            |                                       |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                |                                            | 39227-28-6                            |          |                   |              |                |                      |            |                |
| 65 | 1,2,3,6,7,8-HxCDD                                                                                                              |                                            |                                       |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
|    |                                                                                                                                |                                            | 57653-85-7                            |          |                   |              |                |                      |            |                |



| #      | Determinand                                                                                                                    |                                       |                                                           | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|--------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|        | CLP index number                                                                                                               | EC Number                             | CAS Number                                                |          |                   |              |                |                      |            |                |
| 66     | 1,2,3,7,8,9-HxCDD                                                                                                              |                                       | 19408-74-3                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 67     | 1,2,3,4,6,7,8-HpCDD                                                                                                            |                                       | 35822-46-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 68     | OCDD                                                                                                                           |                                       | 3268-87-9                                                 |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 69     | 2,3,7,8-TeCDF                                                                                                                  |                                       | 51207-31-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 70     | 1,2,3,7,8-PeCDF                                                                                                                |                                       | 57117-41-6                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 71     | 2,3,4,7,8-PeCDF                                                                                                                |                                       | 57117-31-4                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 72     | 1,2,3,4,7,8-HxCDF                                                                                                              |                                       | 70648-26-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 73     | 1,2,3,6,7,8-HxCDF                                                                                                              |                                       | 57117-44-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 74     | 1,2,3,7,8,9-HxCDF                                                                                                              |                                       | 72918-21-9                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 75     | 2,3,4,6,7,8-HxCDF                                                                                                              |                                       | 60851-34-5                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 76     | 1,2,3,4,6,7,8-HpCDF                                                                                                            |                                       | 67562-39-4                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 77     | 1,2,3,4,7,8,9-HpCDF                                                                                                            |                                       | 55673-89-7                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 78     | OCDF                                                                                                                           |                                       | 39001-02-0                                                |          | <0.1 ng/kg        |              | <1.0e-07 mg/kg | <1.0e-11 %           |            | <LOD           |
| 79     | petrol (gasoline) petroleum group                                                                                              |                                       |                                                           |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 80     | diesel petroleum group                                                                                                         |                                       | 68334-30-5,<br>68476-34-6,<br>94114-59-7,<br>1159170-26-9 |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 81     | heavy/residual fuel oils petroleum group                                                                                       |                                       |                                                           |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 82     | crude oils petroleum group                                                                                                     |                                       |                                                           |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| 83     | kerosine petroleum group including kerosine (petroleum); kerosine (petroleum) hydrosulphurised; kerosine (petroleum) sweetened | 232-366-4;<br>265-184-9;<br>294-799-5 | 8008-20-6;<br>64742-81-0;<br>91770-15-9                   |          | <0.1 mg/kg        |              | <0.1 mg/kg     | <0.00001 %           |            | <LOD           |
| Total: |                                                                                                                                |                                       |                                                           |          |                   |              |                | 0.0603 %             |            |                |

#### Key

|             |                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
|             | User supplied data                                                                                                              |
|             | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
|             | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
|             | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <LOD        | Below limit of detection                                                                                                        |
| ND          | Not detected                                                                                                                    |
| CLP: Note 1 | Only the metal concentration has been used for classification                                                                   |

#### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Concentrations too low to be considered flammable risk



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Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

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Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0012%)



## Appendix A: Classifier defined and non CLP determinands

### ■ **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4 H332 , Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Resp. Sens. 1 H334 , Skin Sens. 1 H317 , Repr. 1B H360FD , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

### ■ **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

CLP index number: 006-007-00-5

Description/Comments: Conversion factor based on a worst case compound: sodium cyanide

Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)

Additional Hazard Statement(s): EUH032 >= 0.2 %

Reason for additional Hazards Statement(s):

14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

### ■ **pH** (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

### ■ **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4 H302 , Acute Tox. 1 H330 , Acute Tox. 1 H310 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315

### ■ **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Aquatic Chronic 2 H411

### ■ **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

### ■ **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Carc. 2 H351 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Skin Irrit. 2 H315

### ■ **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

### ■ **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Acute Tox. 4 H302 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

### ■ **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Skin Irrit. 2 H315 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410



▪ **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Carc. 2 H351

▪ **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 23 Jul 2015

Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

▪ **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4

Description/Comments:

Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)

Additional Hazard Statement(s): Carc. 2 H351

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

▪ **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Flam. Liq. 3 H226 , Asp. Tox. 1 H304 , STOT RE 2 H373 , Muta. 1B H340 , Carc. 1B H350 , Repr. 2 H361d , Aquatic Chronic 2 H411

▪ **confirm TPH has NOT arisen from diesel or petrol**

Description/Comments: Chapter 3, section 4b requires a positive confirmation for benzo[a]pyrene to be used as a marker in evaluating Carc. 1B; H350 (HP 7) and Muta. 1B; H340 (HP 11)

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

▪ **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

CLP index number: 602-039-00-4

Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.

Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)

Additional Hazard Statement(s): Carc. 1A H350

Reason for additional Hazards Statement(s):

29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

▪ **1,1-dichloroethane and 1,2-dichloroethane (combined)** (EC Number: 203-458-1, 200-863-5, CAS Number: 107-06-2, 75-34-3)

Description/Comments: Combines the hazard statements and risk phrases for 1,1-dichloroethane and 1,2-dichloroethane

Data source: N/a

Data source date: 14 Oct 2016

Hazard Statements: Flam. Liq. 2 H225 , Acute Tox. 4 H302 , Skin Irrit. 2 H315 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Carc. 1B H350 , Aquatic Chronic 3 H412

▪ **hexabromobiphenyl** (EC Number: 252-994-2, CAS Number: 36355-01-8)

Description/Comments:

Data source: POP specific threshold from ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004).

Data source date: 01 Jul 2013

Hazard Statements: POP >= 0.005 %

▪ **2,3,7,8-TeCDD** (EC Number: 217-122-7, CAS Number: 1746-01-6)

Description/Comments: 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)

Data source date: 24 Aug 2010

Hazard Statements: PCDD/PCDF (TEF=1)



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■ **1,2,3,7,8-PeCDD** (CAS Number: 40321-76-4)

Description/Comments: 1,2,3,7,8-pentachlorodibenzo-p-dioxin  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=1)

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■ **1,2,3,4,7,8-HxCDD** (CAS Number: 39227-28-6)

Description/Comments: 1,2,3,4,7,8-hexachlorodibenzo-p-dioxin  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=0.1)

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■ **1,2,3,6,7,8-HxCDD** (CAS Number: 57653-85-7)

Description/Comments: 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=0.1)

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■ **1,2,3,7,8,9-HxCDD** (CAS Number: 19408-74-3)

Description/Comments: 1,2,3,7,8,9-hexachlorodibenzo-p-dioxin  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=0.1)

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■ **1,2,3,4,6,7,8-HpCDD** (CAS Number: 35822-46-9)

Description/Comments: 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=0.01)

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■ **OCDD** (CAS Number: 3268-87-9)

Description/Comments: octachlorodibenzo-p-dioxin  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=0.0003)

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■ **2,3,7,8-TeCDF** (CAS Number: 51207-31-9)

Description/Comments: 2,3,7,8-tetrachlorodibenzofuran  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=0.1)

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■ **1,2,3,7,8-PeCDF** (CAS Number: 57117-41-6)

Description/Comments: 1,2,3,7,8-pentachlorodibenzofuran  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=0.03)

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■ **2,3,4,7,8-PeCDF** (CAS Number: 57117-31-4)

Description/Comments: 2,3,4,7,8-pentachlorodibenzofuran  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=0.3)

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■ **1,2,3,4,7,8-HxCDF** (CAS Number: 70648-26-9)

Description/Comments: 1,2,3,4,7,8-hexachlorodibenzofuran  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=0.1)

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■ **1,2,3,6,7,8-HxCDF** (CAS Number: 57117-44-9)

Description/Comments: 1,2,3,6,7,8-hexachlorodibenzofuran  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=0.1)



▪ **1,2,3,7,8,9-HxCDF** (CAS Number: 72918-21-9)

Description/Comments: 1,2,3,7,8,9-hexachlorodibenzofuran  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=0.1)

▪ **2,3,4,6,7,8-HxCDF** (CAS Number: 60851-34-5)

Description/Comments: 2,3,4,6,7,8-hexachlorodibenzofuran  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=0.1)

▪ **1,2,3,4,6,7,8-HpCDF** (CAS Number: 67562-39-4)

Description/Comments: 1,2,3,4,6,7,8-heptachlorodibenzofuran  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=0.01)

▪ **1,2,3,4,7,8,9-HpCDF** (CAS Number: 55673-89-7)

Description/Comments: 1,2,3,4,7,8,9-heptachlorodibenzofuran  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=0.01)

▪ **OCDF** (CAS Number: 39001-02-0)

Description/Comments: octachlorodibenzo[b,d]furan  
Data source: ATP1 (Regulation (EU) 756/2010) to POPs Regulation (Regulation (EC) 850/2004)  
Data source date: 24 Aug 2010  
Hazard Statements: PCDD/PCDF (TEF=0.0003)

▪ **petrol (gasoline) petroleum group**

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013  
Data source: WM3 1st Edition 2015  
Data source date: 25 May 2015  
Hazard Statements: Flam. Liq. 1 H224 , Skin Irrit. 2 H315 , Muta. 1B H340 , Carc. 1B H350 , Repr. 2 H361d , STOT SE 3 H336 , Asp. Tox. 1 H304 , Aquatic Chronic 2 H411

▪ **diesel petroleum group** (CAS Number: 68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013  
Data source: WM3 1st Edition 2015  
Data source date: 25 May 2015  
Hazard Statements: Flam. Liq. 3 H226 , Skin Irrit. 2 H315 , Acute Tox. 4 H332 , Carc. 2 H351 , Asp. Tox. 1 H304 , STOT RE 2 H373 , Aquatic Chronic 2 H411

▪ **heavy/residual fuel oils petroleum group**

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013  
Data source: WM3 1st Edition 2015  
Data source date: 25 May 2015  
Hazard Statements: Muta. 1B H340 , Carc. 1B H350 , Acute Tox. 4 H332 , Repr. 2 H361d , STOT RE 2 H373 , Aquatic Chronic 2 H411

▪ **crude oils petroleum group**

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013  
Data source: WM3 1st Edition 2015  
Data source date: 25 May 2015  
Hazard Statements: Flam. Liq. 2 H225 , Carc. 1B H350 , Eye Irrit. 2 H319 , Asp. Tox. 1 H304 , STOT RE 2 H373 , STOT SE 3 H336 , Aquatic Chronic 2 H411

▪ **kerosine petroleum group including kerosine (petroleum); kerosine (petroleum) hydrosulphurised; kerosine (petroleum) sweetened** (EC Number: 232-366-4; 265-184-9; 294-799-5, CAS Number: 8008-20-6; 64742-81-0; 91770-15-9)

Description/Comments: Review of ECHA Registered Substances database; Concawe report: hazard classification and labelling of petroleum substances in the European Economic Area - 2012; REACH compliant SDS from Total, Petrobras; Petrochem; Shell; ESS  
Data source: <http://echa.europa.eu/information-on-chemicals/registered-substances>; Hazard classification and labelling of petroleum substances in the European Economic Area - 2012 (CONCAWE); SDS: company websites  
Data source date: 21 Jan 2014  
Hazard Statements: Flam. Liq. 3 H226 , Skin Irrit. 2 H315 , Asp. Tox. 1 H304 , Aquatic Chronic 2 H411



## Appendix B: Rationale for selection of metal species

### arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

### cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

### chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

### copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worst case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

### lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

### mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

### nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

### selenium {selenium compounds with the exception of cadmium sulposelenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulposelenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil. (edit as required)

### zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

### cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

### chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments (edit as required)

### boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass (edit as required)

### antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings (edit as required)

### beryllium {beryllium oxide}

Reasonable case CLP species based on hazard statements/molecular weight. Industrial sources include: most common (non alloy) form, used in ceramics (edit as required)

### manganese {manganese sulphate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

### molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

## Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018  
HazWasteOnline Classification Engine Version: 2021.222.4848.9214 (10 Aug 2021)  
HazWasteOnline Database: 2021.222.4848.9214 (10 Aug 2021)



This classification utilises the following guidance and legislation:

**WM3 v1.1 - Waste Classification** - 1st Edition v1.1 - May 2018

**CLP Regulation** - Regulation 1272/2008/EC of 16 December 2008

**1st ATP** - Regulation 790/2009/EC of 10 August 2009

**2nd ATP** - Regulation 286/2011/EC of 10 March 2011

**3rd ATP** - Regulation 618/2012/EU of 10 July 2012

**4th ATP** - Regulation 487/2013/EU of 8 May 2013

**Correction to 1st ATP** - Regulation 758/2013/EU of 7 August 2013

**5th ATP** - Regulation 944/2013/EU of 2 October 2013

**6th ATP** - Regulation 605/2014/EU of 5 June 2014

**WFD Annex III replacement** - Regulation 1357/2014/EU of 18 December 2014

**Revised List of Waste 2014** - Decision 2014/955/EU of 18 December 2014

**7th ATP** - Regulation 2015/1221/EU of 24 July 2015

**8th ATP** - Regulation (EU) 2016/918 of 19 May 2016

**9th ATP** - Regulation (EU) 2016/1179 of 19 July 2016

**10th ATP** - Regulation (EU) 2017/776 of 4 May 2017

**HP14 amendment** - Regulation (EU) 2017/997 of 8 June 2017

**13th ATP** - Regulation (EU) 2018/1480 of 4 October 2018

**14th ATP** - Regulation (EU) 2020/217 of 4 October 2019

**15th ATP** - Regulation (EU) 2020/1182 of 19 May 2020

**The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)**

**Regulations 2019** - UK: 2019 No. 720 of 27th March 2019

**The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)**

**Regulations 2020** - UK: 2020 No. 1567 of 16th December 2020

**The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020** - UK:

2020 No. 1540 of 16th December 2020

**POPs Regulation 2019** - Regulation (EU) 2019/1021 of 20 June 2019

**APPENDIX I: CURRENT GUIDANCE & LEGISLATIONS**

## **CURRENT CONTAMINATED LAND LEGISLATION / GUIDANCE & ENVIRONMENTAL RISK ASSESSMENT** **METHODOLOGY**

### **LEGISLATION OVERVIEW**

This report includes hazard identification and risk assessment in line with the risk-based methods referred to in relevant UK legislation and guidance. Government environmental policy is based upon a "suitable for use approach". When considering the current use of land, Part IIA of the Environment Protection Act 1990 (EPA 1990) provides the regulatory regime, which was introduced by Section 57 of the Environment Act 1995, which came into force in England on 1 April 2000. The main objective of introducing the Part IIA regime is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment given the current use and circumstances of the land.

Part IIA provides a statutory definition of contaminated land under Section 78A(2) as:

"any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on, or under the land, that:

- (a) Significant harm is being caused or there is a significant possibility of such harm being caused;
- or
- (b) Pollution of controlled waters is being, or is likely to be, caused."

Part IIA provides a statutory definition of the pollution of controlled waters under Section 78A(9) as:

*"the entry into controlled waters of **any** poisonous, noxious or polluting matter or **any** solid waste matter".*

In order to assist in establishing if there is a "significant possibility of significant harm" there must be a "significant pollutant linkage" for potential harm to exist. That means there must be a source(s) of contamination, sensitive receptors present and a connection or pathway between the two. This combination of source-pathway-receptor is termed a "pollutant linkage or SPR linkage."

Part IIA of The Environmental Protection Act 1990 is supported by a substantial quantity of guidance and other Regulations, especially DEFRA Circular 01/2006 Contaminated Land (this replaces DETR Circular 02/2000). Part IIA defines the duties of Local Authorities in dealing with it. With the exception of situations of very high pollution risk, Part IIA places contaminated land responsibility on the planning and redevelopment process. In situations where there is very high pollution risk direct action from the Local Authority is usually necessary. Planning Policy Statement 23 (PPS23) provides guidance on the planning process and requires that sites which have been developed shall not be capable of being determined "contaminated land" under Part IIA.

The criteria for assessing levels of pollutants and hence determining whether a site represents a hazard are based on a range of techniques, models and guidance. Within this context it is relevant to note that Government objectives are:

- (a) to identify and remove unacceptable risks to human health and the environment;
- (b) to seek to bring damaged land back into beneficial use;
- (c) to seek to ensure that the cost burdens faced by individuals, companies and society as a whole are proportionate, manageable and economically sustainable.

These three objectives underlie the "suitable for use" approach to remediation of contaminated land. The "suitable for use" approach focuses on the risks caused by land contamination. The approach recognises that the risks presented by any given level of contamination will vary greatly according to the use of the land and a wide range of other factors, such as the underlying geology of the site. Risks therefore should be assessed on a site-by-site basis.

The "suitable for use" approach then consists of three elements:

- (a) ensuring that land is suitable for its current use - in other words, identifying any land where contamination is causing unacceptable risks to human health and the environment, assessed on the basis of the current use and circumstances of the land, and returning such land to a condition where such risks no longer arise; the contaminated land regime provides the regulatory mechanisms to achieve this;
- (b) ensuring that land is made suitable for any new use, as planning permission is given for that new use - in other words, assessing the potential risks from contamination, on the basis of the proposed future use and circumstances, before official permission is given for the development and, where necessary to avoid unacceptable risks to human health and the environment, remediating the land before the new use commences; this is the role of the town and country planning and building control regimes; and
- (c) limiting requirements for remediation to the work necessary to prevent unacceptable risks to human health or the environment in relation to the current use or future use of the land for which planning permission is being sought - in other words, recognising that the risks from contaminated land can be satisfactorily assessed only in the context of specific uses of the land (whether current or proposed), and that any attempt to guess what might be needed at some time in the future for other uses is likely to result either in premature work (thereby running the risk of distorting social, economic and environmental priorities) or in unnecessary work (thereby wasting resources).

The mere presence of pollutants does not therefore necessarily warrant action, and consideration must be given to the scale of risk involved for the current and proposed end use of the site.

## RISK ASSESSMENT METHODOLOGY

Current practice recommends that the determination of potential liabilities that could arise from land contamination be carried out using the process of risk assessment, whereby "risk" is defined as:

- "(a) The probability, or frequency, or occurrence of a defined hazard; and
- (b) The magnitude (including the seriousness) of the consequences."

The UK's approach to the assessment of environmental risk is set out in by the Department of the Environment (2000) publication "A Guide to Risk Assessment and Risk Management for Environmental Protection." This established an iterative, systematic staged process which comprises:

- (a) Hazard identification
- (b) Hazard assessment
- (c) Risk estimation
- (d) Risk evaluation
- (e) Risk Assessment

At each stage during the investigation process the above steps are repeated as more detailed information becomes available for the site.

CLR11- 'Model Procedures for the Management of Land Contamination', a document published by the Department for Environment, Food and Rural Affairs (DEFRA) and the Environment Agency (EA) outlines a tiered approach to the assessment of risks posed by contaminated land, as summarised hereunder:

### Tier 1: Preliminary Risk Assessment

A Preliminary Risk Assessment is usually undertaken as part of a desk study, outlines potential risks posed by potential contamination to all receptors by defining plausible "pollution linkages" and developing a preliminary conceptual model (PCM). The purpose of this model is to define all possible complete pollution linkages, where the requisite source – pathway – target elements are present, and these elements being defined as:

- a contaminant (source) is a hazardous substance or agent, present at levels that have the potential to cause harm or damage a receptor
- a pathway is the means by or through which a contaminant comes into contact with, or otherwise affects, the receptor
- a receptor (target) is an entity (human being, aquatic environment, flora and fauna etc) that is vulnerable to the adverse effects of the contaminant

This relationship is termed a "pollution linkage". It should be recognised that for a health or environmental risk to exist, all three elements of the relationship or linkage must be present, i.e.

- if there is no contaminant, or contaminant present at levels below those considered to be harmful or damaging to a receptor, then there can be no adverse effect on a receptor
- if there is no receptor present that can be adversely affected by a contaminant, no harm or damage can arise
- even where both a contaminant and a receptor are present, no harm or damage will occur if there is no pathway by or through which a linkage between the two can be established

The absence of one or more of each component (source, pathway, receptor) would prevent a pollutant linkage being established and there would be no significant environmental risk.

The PCM is subject to continual refinement as additional data becomes available. As part of a Phase I Investigation (Desk Study and site walk over) a PCM is formed. Based on the PCM, potential pollutant linkages can be assessed. If the PCM and hazard assessment indicate that a pollution linkage is not of significance then no further assessment or action is required due to this linkage. For each significant and possible linkage a risk assessment is carried out. The linkages which potentially pose significant risks may require a variety of responses ranging from immediate remedial action or risk management or, more commonly, further investigation and risk assessment. This next stage is usually termed a Phase II Main Site Investigation and should provide additional data to allow refinement of the PCM and assess the level of risk from each pollutant linkage. Risk assessment will usually include Tier 2 Generic Quantitative Risk Assessment and / or, if necessary, a Tier 3 Detailed Quantitative Risk Assessment.

### Tier 2: Generic Quantitative Risk Assessment (GQRA)

GQRA requires an intrusive investigation in order to characterise the site assisting in the re-assessment of the source-pathway receptor linkage. The conceptual model should be refined accordingly.

Upon completion of an intrusive investigation it must be decided whether Generic Assessment Criteria (GAC) are suitable for assessing the risk posed by potential contamination at the site. If GAC are deemed unacceptable for risk assessment purposes or cannot be developed a Tier 3 Detailed Quantitative Risk Assessment (DQRA) is required.

If GQRA reveals that unacceptable risks are not present then no further action is required. If GQRA identifies a possibility of risk, a decision must be made whether further work is required or necessary for the purposes of risk assessment. If further risk assessment is deemed not suitable not required an Options Appraisal should be undertaken. If further risk assessment is required, the scope nature of further risk assessment must be decided – it is possible that a Tier 3 DQRA will be undertaken in this scenario.

Where the Environment Agency have published an SGV for a contaminant, this will be used in lieu, if the SGV is suitable for the subject site, of the GAC derived by **CC GEOTECHNICAL LTD.** For contaminants where an SGV has not been published

and a GAC has been published by LQM, then this GAC will be used. In house derived GAC's will only be used for contaminants where there is no SGV or LQM GAC.

### Tier 3: Detailed Quantitative Risk Assessment (DQRA)

DQRA is used when pollutant linkages require further assessment. DQRA is often undertaken for pollutant linkages where GAC are unavailable or inappropriate for or more conservative than the actual circumstances of the site. Site specific data is used to create Site Specific Assessment Criteria (SSAC) and enable a more accurate assessment of the risks. Further investigation may or may not be required to formulate SSAC depending on the site specific conditions and information already obtained.

If DQRA reveals that unacceptable risks are not present then no further action is required. If DQRA identifies a possibility of risk, a decision must be made whether further work is required or necessary for the purposes of risk assessment. If further risk assessment is deemed not suitable not required an Options Appraisal should be undertaken. If further risk assessment is required, the scope and nature of further risk assessment must be decided at this point.

**NOTE:** A Tier 1 Preliminary Risk Assessment is undertaken as part of a Desk Study Report and a Preliminary Conceptual Model is developed for all pollutant linkages. However, the methodologies for assessing the risks to human health, risks to controlled waters and risk posed by ground gas using quantitative techniques vary considerably, therefore GQRA and DQRA for human health, controlled waters and ground gas must be undertaken separately. The risk assessment methodologies where quantitative assessment is used for risks to human health, risks to controlled waters and risks posed by ground gas, if relevant, are described hereunder.

## **BACKGROUND INFORMATION, CURRENT GUIDANCE AND RISK ASSESSMENT METHODOLOGY FOR RISKS POSED TO HUMAN HEALTH**

### **Background**

In March 2002, the Department for Environment, Food and Rural Affairs (DEFRA) and the EA published the Contaminated Land Exposure Assessment (CLEA) Model and a series of related reports. These were designed to provide a scientifically based framework for the assessment of chronic risks to human health from contaminated land. These reports (CLR7-10) together with associated "SGV" documents have since been withdrawn (August 2008) and the following documents have been published as revised guidance to the CLEA assessment:

- Environment Agency : 2008: Updated Technical Background to the CLEA model Science Report SC050021/SR3
- Environment Agency : 2008: Human Health Toxicological Assessment of Contaminants in Soil SC050021/SR2

Additional guidance on statistical assessment replacing CLR 7 is provided in:

- CL:AIRE :2008 Guidance on Comparing Data With a Critical Concentration

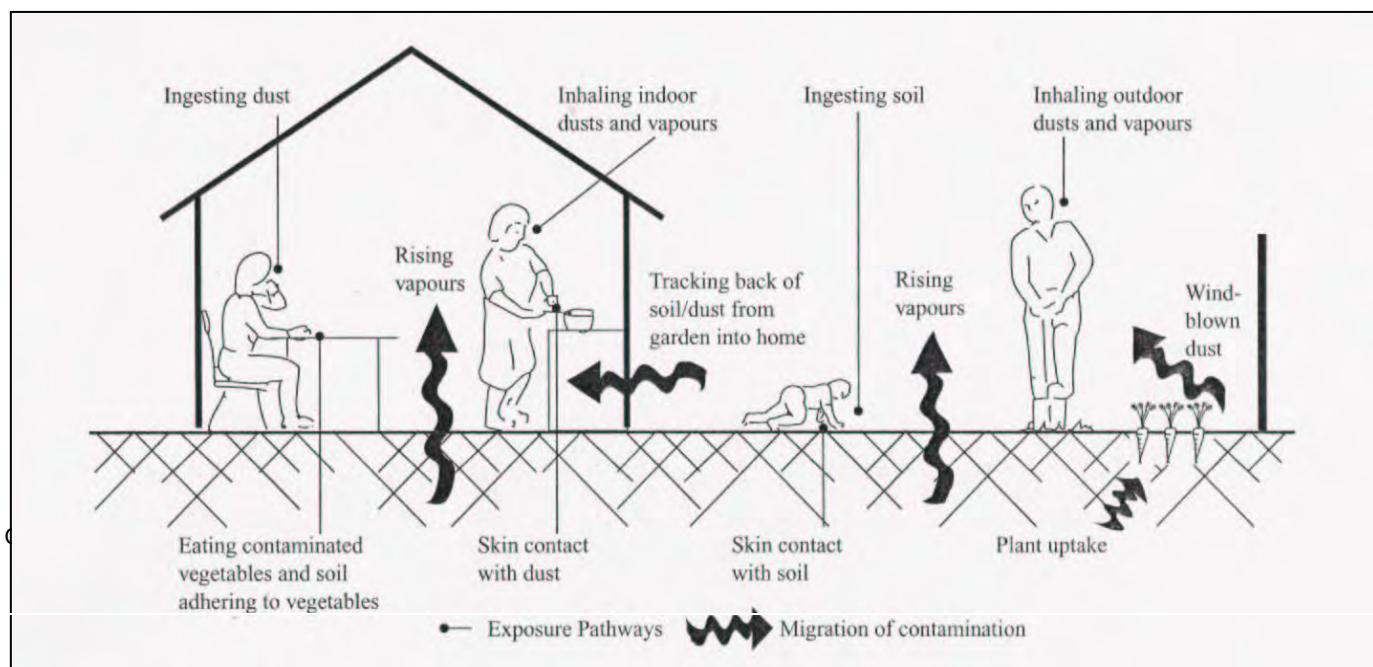
Other guidance/software used in spatial / statistical assessment is provided in:

- USEPA 2006: Data Quality Assessment: Statistical Methods for Practitioners
- Spatial Analysis and Decision Assistance (SADA) – The University of Tennessee

A different approach to the statistical appraisal of data is required depending on whether the assessment of risk is to assess whether land is Contaminated Land in accordance with regulations, or whether the assessment is to determine whether the site is suitable for new development in according with Planning guidance. This is discussed further in CL:AIRE :2008 "Guidance on Comparing Data With a Critical Concentration".

A program for the derivation of GAC's based on the above guidance is provided by the Environment Agency and is entitled "CLEA Software Version 1.06".

The CLEA model has been developed to calculate an estimated tolerable daily soil intake (TDSI) for site users given a set 'default' exposure pathways. Ten human exposure pathways are covered in the CLEA model as presented below:



### **Ingestion**

- ingestion of outdoor soil
- ingestion of indoor dust
- ingestion of home grown produce
- ingestion of soil attached to home grown produce

### **Dermal Contact**

- dermal contact with outdoor soil
- dermal contact with indoor dust

### **Inhalation**

- inhalation of outdoor dust
- inhalation of indoor dust
- inhalation of outdoor soil vapour
- inhalation of indoor soil vapour

It should be noted that there are other potential exposure pathways on some sites not included in the CLEA model e.g. certain organic compounds can pass through plastic water pipes into drinking water supply.

Where contaminated water is present at a depth less than 2.00mbgl and there is a potential risk of inhalation of vapours (only when volatile compounds are present) the risk from inhalation of vapours from soil water will be assessed using a UK compliant version of BP Risc v4.02.

The presence and/or significance of each of the above exposure pathways are dependent on the type of land use being considered and the nature of the contaminant under scrutiny. Accordingly, the CLEA model considers for principle 'default' land use types and makes a series of 'default' assumptions with regard to human exposure frequency, duration and critical human target groups for each land use considered:

- residential
- allotments
- commercial / industrial land use

The above land use categories defined in the CLEA are detailed below:

**Residential:** This generic scenario assumes a typical residential property consisting of a two-storey house built on a ground-bearing slab with a private garden consisting of lawn, flowerbeds, and a small fruit and vegetable patch. The occupants are assumed to be parents with young children, who make regular use of the garden area.

**Allotments:** This generic scenario assumes a plot of open space (about 250 m<sup>2</sup>), commonly made available by the local authority to tenants to grow fruit and vegetables for their own consumption. There are usually several plots to a site and the overall site area may cover more than a hectare. The tenants are assumed to be parents or grandparents and that young children make occasional accompanied visits to the plot.

**Commercial/Industrial:** There are many different kinds of workplace and work-related activities. This generic scenario assumes a typical commercial or light industrial property consisting of a threestorey building at which employees spend most time indoors and are involved in officebased or relatively light physical work.

### **Human Health Risk Assessment Methodology**

Assessment of risk for the protection of human health is undertaken using the methodology as outlined previously, and summarised hereunder:

- Tier 1 Preliminary Risk Assessment
- Tier 2 Generic Quantitative Risk Assessment
- Tier 3 Detailed Quantitative Risk Assessment

The Tier 1 Preliminary Risk Assessment is undertaken as part of the desk study report and includes the development of a Preliminary Conceptual Model. Tier 2 and Tier 3 Quantitative Risk Assessments are undertaken in order to develop and refine the Preliminary Conceptual Model aiding a more detailed assessment of the risk posed by contaminants revealed by site investigation and soil / soil water chemical analyses.

The methods used by **CC GEOTECHNICAL LTD** to derive assessment criteria, to statistically analyse chemical data and to compare chemical data to the derived assessment criteria are discussed herunder.

### **Derivation of Generic Assessment Criteria (GAC) and Site Specific Assessment Criteria (SSAC)**

GAC's are derived on the basis of the proposed land use and the associated applicable exposure pathways. It should be noted that there are difficulties in establishing soil concentrations of contaminants beyond which risks from exposure to these contaminants would be 'unacceptable' and the GAC value does not necessarily equate to the level for "significant possibility of significant harm" as defined in Part IIA of The Environmental Protection Act (1990) to determine whether land is "contaminated." This ultimately requires detailed 'toxicological' information of the health effects of individual contaminants and also a scientific judgement on what constitutes an 'unacceptable' risk. The primary purpose of the CLEA derived GAC's are as 'minimal risk thresholds' for the assessment of human health risks in relation to land use.

Minimal risk thresholds calculated using generic input parameters for each of the above land uses are termed Generic Assessment Criteria (GAC) and are used for Generic Quantitative Risk Assessment (GQRA). However, further assessment may be required taking into consideration site specific factors such as the way the land is used, the soil type, the building

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characteristics and the exact nature of the receptor, to determine whether there is a significant possibility of risk to human health to site users. Such an assessment is known as a Detailed Quantitative Risk Assessment (DQRA) and the resultant threshold concentrations are known as Site Specific Assessment Criteria (SSAC). Such assessments should be conducted with the agreement of the local authority (or the Environment Agency) since it is the authority that determines whether land is Contaminated Land or whether Planning Permission for a new development may be granted.

For the purposes of this report, assessment criteria have been derived in accordance with current guidance based on the conceptual model for the proposed land use using the CLEA v1.06 software. These criteria are not intended to indicate whether the site may be contaminated land nor do they replace any published soil guideline values. However, the values are intended to provide guidance for the local authority on whether the site may be considered uncontaminated. If, based on the site's proposed future use, the site would be considered by the local authority to be uncontaminated and therefore, on the basis of soil concentrations, fit for purpose, then no further risk assessment based on soil concentrations and the risk to human health would be necessary. However, should these criteria be exceeded or the conceptual site model vary from the model used in the risk assessment to derive these values then the risk assessment should be updated accordingly.

For contaminants routinely analysed where inhalation is a significant pathway (naphthalene, phenanthrene, Aromatic EC5-EC7, Aromatic EC7-EC8, Aromatic EC8-EC10, Aromatic EC10-EC12, Aromatic EC12-EC16, Aliphatic EC5-EC6, Aliphatic EC8-EC10, Aliphatic EC10-EC12, Aliphatic EC12-EC16), plots of the GAC as a function of Soil Organic Matter (SOM) are used to determine if they pose a potential risk to human health, which are presented hereunder. Where there is an exceedance further assessment may be undertaken.

### **Statistical Assessment of Soil Contamination Data & Comparison of Contamination Data to Threshold Values**

In any site investigation only a small fraction of the soil on the site is analysed. Therefore the mean derived from the contamination data for a contaminant may not be the same as the true mean for the contaminant distribution on the site. To improve the reliability of any assessment a statistical analysis is undertaken in line with the CL:AIRE document "Guidance on Comparing Soil Contamination Data with a Critical Concentration".

Statistical assessment of soil data is undertaken using programs based on the guidance in the CL:AIRE document or the USEPA software ProUCL v4.0.

Where the number of results in a dataset is less than four, a statistical assessment is not undertaken, and the assessment is performed by comparison of the maximum value(s) with a Health Criteria Value (HCV), such as Generic Assessment Criteria value(s).

For the Planning situation, the regulator needs to check whether the concentration of contaminants is low compared to the HCV. This decision is based on whether there is at least a 95% confidence level that the true mean of the dataset is lower than the HCV.

For the Part IIA scenario the regulator needs to determine whether the concentration of contaminants is greater than the HCV. This decision is based on whether there is at least a 95% confidence level that the true mean of the dataset is higher than the HCV. However, the regulator may proceed with determination if there is just a 51% probability, "on the balance of probabilities".

The Outlier Test used in the statistical assessment may not be able to identify separate populations if numerous populations are present. In order to ensure that this is not the case a spatial assessment of the data will be undertaken using SADA.

If the screening levels are exceeded then more sophisticated quantitative risk assessment or remedial action may be undertaken. The benefits of undertaking a quantitative risk assessment must be weighed against the likelihood that it will bring about cost savings in the proposed remediation.

## **BACKGROUND INFORMATION, CURRENT GUIDANCE AND RISK ASSESSMENT METHODOLOGY FOR RISKS POSED TO CONTROLLED WATER**

### **Definition of Controlled Waters**

The term 'controlled waters' is defined in Section 104 of the Water Resources Act 1991 as:

*"Territorial Waters...which extend seawards for three miles..., coastal waters..., inland freshwaters, waters in any relevant lake or pond or of so much of any relevant river or watercourse as is above the freshwater limit, and ground waters, that is to say, any waters contained in underground strata."*

Note that the definition of groundwater under the Water Resources Act 1991 includes all water within underground strata (including soil / pore water in the unsaturated zone). The definition of groundwater under the Groundwater Directive however is limited to water in the saturated zone. For the purposes of Part IIA of the Environmental Protection Act 1990, the Environment Agency recommends that the groundwater within the saturated zone only is considered as the receptor (rather than soil / pore water).

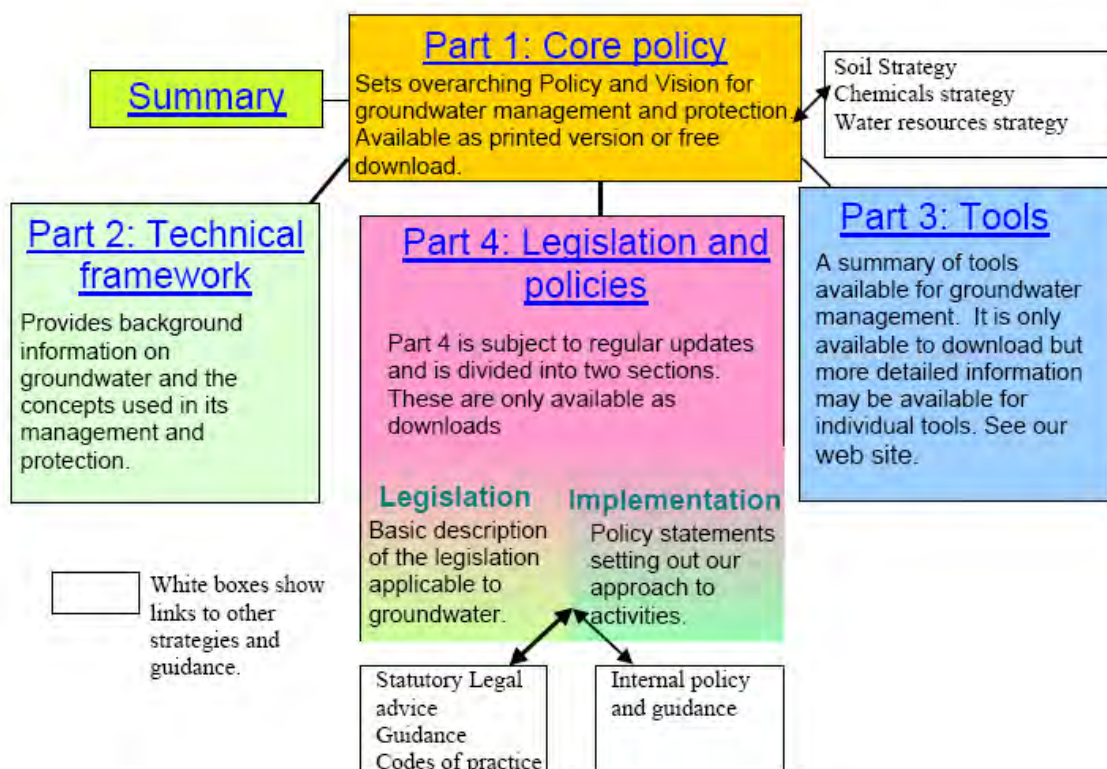
### **Environment Agency Guidance**

Legislation and guidance surrounding the protection of controlled waters in the UK is abundant and can be complex. The Environment Agency's overall position on groundwater is *"To protect and manage groundwater resources for present and future generation in ways that are appropriate for the risks that we identify"* (Groundwater Protection : Policy and Practice GP3, 2006). In brief, the core objectives of the existing legislation serve to enforce this position.

In 1992, the National Rivers Authority published their Policy and Practice for the Protection of Groundwater (PPPG), this document was influential as it provided a focus for key developments such as Source Protection Zones (SPZs) and

Groundwater Vulnerability Maps. The Policy was then revised in 1998, since which there have been substantial changes in legislation, driven by Europe. Key European Directives relating to groundwater include the Groundwater Directive (80/68/EEC) and the Water Framework Directive (2000/60/EC). Aspects of these directives are controlled by primary UK legislation such as the Water Resources Act 1991. Further to legislative changes, gaps identified in the 1998 PPPG required addressing. These changes are reflected in the forthcoming Environment Agency Policy document entitled *Groundwater Protection : Policy and Practice (GP3)*, a draft version of which was available for public consultation (Parts 1 to 3) ending July 2006 with Part 4 issued in March 2008. Part 4 includes a section on key groundwater legislation and the Environment Agency's interpretation of it.

The following gives a breakdown of the structure of the document (taken from the Environment Agency GP3 draft consultation document, 2006)



### Controlled Water Risk Assessment Methodology

The risk posed to controlled water is assessed by **CC GEOTECHNICAL** in accordance with current guidance as outlined hereunder.

In order for a developer of a potentially contaminated site to fulfil their obligations under the legislation, a site assessment would be required to be undertaken in order to identify any potential risks to controlled waters and to derive suitable clean-up criteria if necessary to ensure the protection of controlled waters. The general approach for Groundwater Protection is detailed further in Part 3 of GP3.

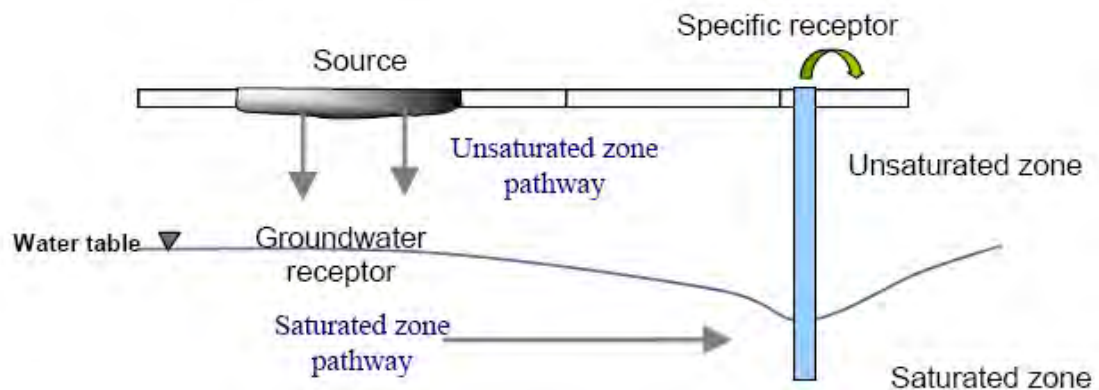
When assessing groundwater impact the Environment Agency advocate the application of their framework methodology "Remedial Targets Methodology – Hydrogeological Risk Assessment for Land Contamination" Environment Agency (2006). The methodology has four levels of assessment as described below:

- **Level 1** considers whether contaminant concentrations in "pore water" in contaminated soil are sufficient to impact on the receptor, ignoring dilution, dispersion and attenuation along the pathway. The "pore water" concentration is determined from:
  - i) measured "pore water" concentrations or perched water quality
  - ii) soil leaching tests
  - iii) theoretical calculations based on soil/water partitioning equations
- **Level 2** considers dilution by the receiving groundwater or surface water body and whether this is sufficient to reduce contaminant concentrations to acceptable levels. The remedial target is defined as the target concentration multiplied by a dilution factor (DF).
- **Levels 3 and 4** consider whether natural attenuation (including dispersion, retardation and degradation) of the contaminant as it moves through the unsaturated and saturated zones to the receptor are sufficient to reduce contaminant concentrations to acceptable levels. The remedial target is defined as target concentration multiplied by a dilution factor (DF) and attenuation factor (AF). In **Level 3** simple analytical models are used to calculate the significance of attenuation. The Environment Agency has released a "Remedial targets worksheet v3.1" to carry out basic calculations using a conservative approach up to **Level 3** using basic principles assuming a simple migration of contaminants from the

source zone into the aquifer receptor. **Level 4** assessment uses more sophisticated numerical models, and allows for the introduction of additional geological horizons and is used mainly to determine whether soil contaminants will reach their target within a specified timeframe. Use of such software should only be used once agreement has been obtained from the Environment Agency.

Three main stages apply to any risk assessment of controlled waters, these are:

- 1. Risk Screening (Tier 1 Preliminary Risk Assessment):** The understanding of the Conceptual Site Model (CSM) is the key to assessing any site. Using a robust CSM, potential pathways or receptors may be screened out from any further assessment at an early stage. For example if the pathway through the unsaturated zone is blocked by the presence of a significant thickness of low permeability clay. A greater understanding of the CSM is achieved with each tier of risk assessment. An example of a basic CSM is given below (taken from the Environment Agency GP3 draft consultation document, 2006):



- 2. Generic Hydrogeological Risk Assessment (EA Remedial Targets Methodology Level 1):** When undertaking the Generic Hydrogeological Risk Assessment (EA Remedial Targets Methodology Tier 1), comparison of chemical analytical results is made with screening criteria. Published values of screening criteria with which chemical test results can be compared are published in the following guidance:

- Water Supply (Water Quality) Regulations 2000
- The Private Water Supplies Regulations 1991
- Environmental Quality Standards for surface waters based on The EC Dangerous Substances Directive (76/464/EEC and Daughter Directives)
- The Surface Waters (Abstraction for Drinking Water Classification) Regulations 1996
- World Health Organisation Drinking Water Standards 2004

Should the Level 1 assessment indicate threshold levels to be exceeded, then there are three alternative ways in which to proceed:

- To devise suitable remedial solutions
- To carry out more investigation, sampling and analysis
- To conduct a site specific Detailed Quantitative Risk Assessment (DQRA) to determine if the materials are suitable for their proposed use, or devise site specific clean-up level

- 3. Detailed Quantitative Risk Assessment (EA Remedial Targets Methodology Levels 2 to 4):** The decision to carry out a DQRA will be dependant on the extent and implications of the initial qualitative and generic assessment. The scope of any such assessment will be accurately defined by the outcomes of the previous levels of assessment. The conceptual model will be sufficiently refined by this stage that only certain contaminants of concern, certain pathways and certain receptors will require further assessment, the remainder having been screened out.

Additional site specific data is normally required for this stage of assessment, as explained above, more processes that are capable of affecting contaminant concentrations are considered (such as dilution and attenuation).

Remediation criteria, if derived, will therefore be specific to each site and will be based on a detailed assessment of the potential impact at the identified receptor or *compliance point*. A greater level of confidence can be placed on the predicted impact on the compliance point following a DQRA.

## BACKGROUND INFORMATION, CURRENT GUIDANCE AND RISK ASSESSMENT METHODOLOGY FOR RISKS POSED BY GROUND GAS

### Background

#### Origin of Ground and Landfill Gases

When carrying out a ground gas risk assessment, the origin or source of the gases is important as potential risks will vary depending on the source. This Appendix relates to the risk of the two main ground gases of concern; methane and carbon dioxide, and does not apply to other ground gases (e.g. radon or vapours from hydrocarbon spills). Methane and carbon dioxide are major constituents of landfill gas but can also occur from a variety of anthropogenic and natural sources, as summarised in Table 5 below:

| Gas                         | Source                                                                                                                                                                                                                                                                                                                                                      | Comments                                                                                                                                                                                                                                                             |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Landfill Gas                | Anaerobic decomposition of degradable waste within landfill sites. Typically 60% methane and 40% carbon dioxide during methanogenic phase.                                                                                                                                                                                                                  | Composition varies over time, particularly in early stages. Contains a range of minor constituents (particularly carbon monoxide and hydrogen sulphide).                                                                                                             |
| Landfill Associated Gases   | <ul style="list-style-type: none"> <li>- Anaerobic degradation of leachate external to the site;</li> <li>- Degassing of dissolved gases in groundwater;</li> <li>- Evolution of gases following interaction between leachate and groundwater</li> </ul>                                                                                                    | Can result in secondary (external) production of methane or carbon dioxide.                                                                                                                                                                                          |
| Made Ground                 | Anaerobic degradation of organic components                                                                                                                                                                                                                                                                                                                 | Very variable depending on source                                                                                                                                                                                                                                    |
| Sewer Gas, Cess Pits        | Anaerobic degradation of organic components of sewage producing methane and carbon dioxide.                                                                                                                                                                                                                                                                 | Often characterised by hydrogen sulphide odour.                                                                                                                                                                                                                      |
| Mains Gas                   | Leakage from underground pipework or storage tanks. Mainly methane but often contains higher alkanes.                                                                                                                                                                                                                                                       | An odouriser is added to permit detection of leaks. Typically 90% CH <sub>4</sub> , but 1 to 27% C <sub>2</sub> -C <sub>4</sub> alkanes, May also contain other trace gases e.g. CO, helium and CO <sub>2</sub> (from degradation of CH <sub>4</sub> in the ground). |
| Other Anthropogenic Sources | <ul style="list-style-type: none"> <li>- Degradation of leaked or spilled hydrocarbons or other industrial chemicals;</li> <li>- Anaerobic degradation of organic contaminants in groundwaters (e.g. silage liquor);</li> <li>- Reactions between monitoring well construction components and environment;</li> <li>- Burial grounds/cemeteries.</li> </ul> | Hydrocarbon spillages often have an 'oily' odour. Fuel spillages common – Petrol or Diesel and can contain a wide range of VOC's. Can degrade to produce methane / carbon dioxide.                                                                                   |
| Alluvium / Marsh / Peat Gas | Anaerobic microbial degradation of organic material (usually waterlogged vegetation / peat). Often associated with the presence of alluvial deposits or dredgings.                                                                                                                                                                                          |                                                                                                                                                                                                                                                                      |
| Geogenic Gas                | Natural seepages of carbon dioxide and hydrocarbon gases derived from geologic sources such as coal seams and deep oil / gas source formations. Can be present in solution in groundwaters.                                                                                                                                                                 | Methane most common but can contain carbon dioxide and higher alkanes.                                                                                                                                                                                               |
| Mine Gases                  | Various types. Most common is "fire damp" with high methane, produced by the desorption of gas trapped in coal. "Black damp" (Stythe gas) with high carbon dioxide and denser than air. "White damp" is high in carbon monoxide.                                                                                                                            | Methane most common. Can contain higher alkanes, carbon dioxide and carbon monoxide. Often low in oxygen.                                                                                                                                                            |
| Natural Shallow Ground Gas  | Various types <ul style="list-style-type: none"> <li>- high carbon dioxide formed by subsurface aerobic activity leading to depleted oxygen and elevated carbon dioxide;</li> <li>- chemical degradation of rocks (e.g. carbonates) producing carbon dioxide;</li> <li>- carbon dioxide production in root zone of soils by plants.</li> </ul>              | Gases can be emitted from ground under falling barometric pressure conditions.                                                                                                                                                                                       |

**Table 5. Potential Sources of Ground Gases**

This Appendix does not provide guidance for the assessment of risk when other gases are present due to 'Other Sources' from the above table (particularly organic compounds such as BTEX and VOC's or for the risk from radon or hydrogen sulphide).

To determine the origin of the gas a range of factors must be considered together, including;

1. Proximity of likely sources
2. Ground conditions (geology, hydrogeology, anthropogenic pathways etc)
3. Properties of gases present including:
  - Chemical composition
  - Physical properties
  - Ratios of components e.g. methane : carbon dioxide
4. Timeframe of activities such as infilling periods, capping works, installation of gas control systems etc

Identification of the originating source may be problematic given that there may be more than one source present and trace gas analysis may be required. Identification of the sources of the gases encountered during monitoring is usually carried out through a process of eliminating the most unlikely potential sources (given the site setting) and selecting those which are most likely.

#### Hazards Associated with Presence of Methane

Methane gas is combustible and potentially explosive. When the concentration of methane in air is between the limits of 5.0%v/v and 15.0%v/v an explosive mixture is formed. The Lower Explosive Limit (LEL) of methane is 5.0%v/v, which is equivalent to 100% LEL. The 15.0%v/v limit is known as the Upper Explosive Limit (UEL), but concentrations above this level cannot be assumed to represent safe concentrations. Further, the LEL and UEL will vary (up and down) depending upon the proportion of other gases (including oxygen). However, the fact that methane is a colourless, odourless gas means that there

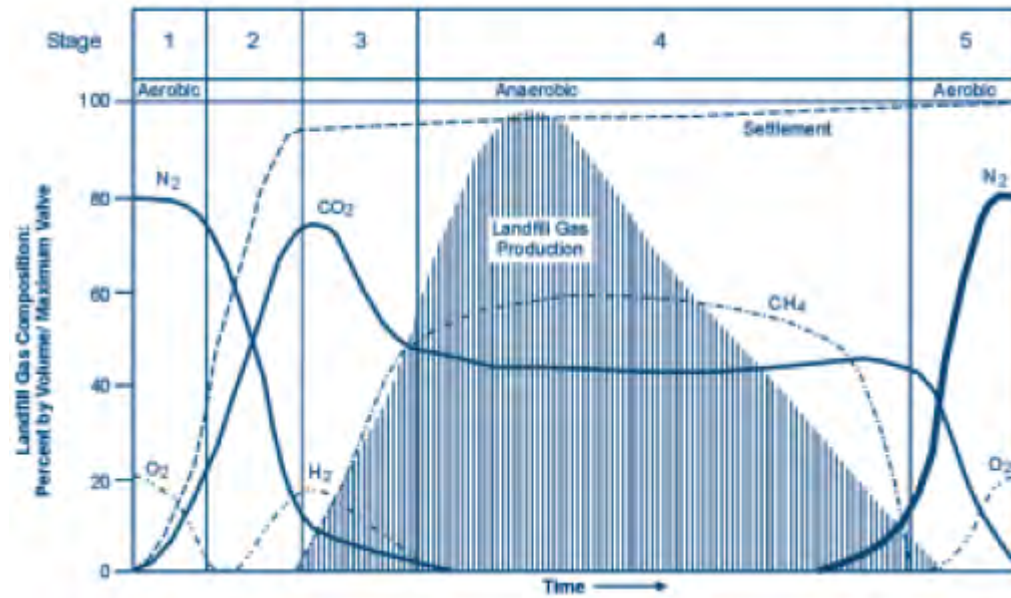
is no simple indicator of the presence of the gas until such a time as explosive limits are reached and an incident occurs. Methane is lighter than air and has a low toxicity. However, at high concentrations it can result in asphyxiation due to oxygen displacement.

#### Hazards Associated with Presence of Carbon Dioxide

Carbon dioxide is a colourless, odourless gas, which, although non-flammable, is both toxic and an asphyxiant. As carbon dioxide is denser than air, it will collect in low points and depressions. The UK Health & Safety Executive (HSE) has published information relating to concentrations of carbon dioxide that humans may be exposed to, which uses concentrations contained in the Control of Substances Hazardous to Health Regulations 2002 (as amended). These are the Long Term Occupational Exposure Limit (LTOEL, 8 hour period) and the Short Term Occupational Exposure Limit (STOEL, 15 minute period), which are 0.5% and 1.5% carbon dioxide, respectively.

#### Parameters Influencing the Rate of Ground Gas Production

The figure below is taken from EA guidance document LFTGN 03 illustrates typical ground gas generation curves from biodegradable materials:



The production of methane and carbon dioxide at a landfill site may be expected to be considerable and ongoing. Concentrations of methane will eventually decrease, followed by concentrations of carbon dioxide, but the duration and rate of gas production can vary markedly between sites. Five distinct phases of gas production occur during the process which are, in order of event as marked above, as follows:

1. An aerobic phase involving oxygen depletion and temperature increase through aerobic respiration;
2. The establishment of anaerobic conditions and the evolution of carbon dioxide and hydrogen through acidogenic activity;
3. Commencement of methanogenic activity; the establishment of populations of methanogenic bacteria;
4. A phase of stable methanogenic activity, which may go on for many tens of years;
5. A phase of decreasing methanogenic activity, representing depletion of the organic material and a return to aerobic conditions.

The time scale for the return to the normal ground gas concentrations will be highly variable, depending upon the types and quantities of materials present. In addition, the optimum parameters influencing the rate of decomposition and ground gas production within the ground at a site are as follows:

- High water content with adequate rainfall and water infiltration to provide moisture content between approximately 20 to 26%;
- Conditions that either are or are very close to anaerobic;
- High proportion of biodegradable materials;
- A pH between 6.5 and 8.5, ideally verging slightly on the acidic between pH 6 to 7;
- Temperature between 25°C and 55°C;
- The ratio of the biochemical and chemical oxygen demands (BOD:COD);
- High permeability;
- Small particle size, as finer subsurface materials possess a greater surface area to provide a growing 'face' for the micro-organisms but high fines levels reduces permeability and reduces decomposition rate.

For this reason, it is vital that sources of methane and carbon dioxide are identified prior to the commencement of any work on a construction site, and that the ground gas regime is characterised at the worst temporal conditions a site may experience. From this, a risk assessment is carried out to identify the risk at the site from ground gases so that suitable protection measures can be designed and incorporated into a development to prevent a dangerous build-up of gas occurring.

#### Factors Influencing the Migration and Behaviour of Ground Gases

There are many factors that influence the migration of ground gases which can effect the risk from a gassing source:

- driving force – pressure differential along a pathway, diffusion and dissolved in solution;
- meteorological conditions – short term and seasonal conditions including atmospheric pressure changes (e.g. rapidly falling pressure causes gas to expand increasing emission rates), rainfall, frozen ground and thawing, temperature;
- geological and groundwater conditions – these can have the over riding influence on the direction/pathways and quantity of migrating gas;
- anthropogenic influences – man-made pathways include mine shafts, service runs/drains, foundation piles, underground voids/pits/basements, foundation/building design/construction

### Current Guidance

Previous versions of Building Regulations Approved Document C provided statutory guidance stating that consideration should be given to appropriate action and / or specific solutions in situations where methane concentration exceeded 1%v/v or carbon dioxide concentrations exceeded 5%v/v. The latest Building Regulations Approved Document C (DoE 2004) no longer endorses this approach and recommends the use of a risk based approach to interpreting a gas monitoring survey. This is in line with current EA guidance for landfill gas (LFTGN 03, 2004) which recommends the use of a structured risk based approach similar to that outlined in CLR 11. On this basis, recent guidance has been produced in 2006 and 2007 with the aim of providing up to date advice in relation to residential and commercial development. The guidance does not address issues associated with gas derived from landfills, for this refer to "*Guidance on the Management of Landfill Gas*" (Environment Agency 2004) for an overview.

Recent guidance relevant to gas assessments for residential and commercial development includes;

- **Wilson et al. (CIRIA C665, December 2007) "Assessing Risks Posed by Hazardous Ground Gases for Buildings."**  
This document provides up to date advice on all aspects of ground gas risk assessment such as investigation, monitoring programmes, data collection and interpretation. The guidance presents separate methodologies for the characterisation of:
  - All development types except low rise housing with gardens (Situation A)
  - Low rise housing with gardens (Situation B)
- **Boyle and Witherington (NHBC / RSK Group, Report 10627-R01(04) January 2007) "Guidance on the Evaluation of Development Proposals on Sites where Methane and Carbon Dioxide are Present."**  
This document presents the "Traffic Lights System" detailed below and is relevant only for low rise properties (e.g. bungalows and town houses) that have a ventilated sub-floor void (i.e. Situation B as described in CIRIA C665).
- **British Standard (BS 8485, December 2007) "Code of Practice for the Characterization and Remediation from Ground Gas in Affected Developments"**  
This document provides an overview of gas characterisation and assessment. The Standard is intended to be used by designers of gas protection measures and regulators involved in the assessment of design solutions.

Further guidance, **Wilson and Card (CIEH) "Ground Gas Handbook for Designers and Regulators"** providing practical guidance on ground gas assessments and the design and evaluation of protection measures, is expected to be published in March 2009.

Each of these documents continues to highlight the importance of, and give further guidance towards, carrying out a tiered risk-based decision-making process in accord with government policy on dealing with contamination from historic or natural sources and highlight the importance of the Conceptual Model in site characterisation.

### Ground Gas Risk Assessment Methodology

Assessment of risk posed by ground gas is undertaken using the methodology as outlined previously, and summarised hereunder:

- Tier 1 Preliminary Risk Assessment
- Tier 2 Generic Quantitative Risk Assessment
- Tier 3 Detailed Quantitative Risk Assessment

The methodology used in each of the above assessments with concern to ground gas is discussed hereunder.

#### Tier 1 Preliminary Risk Assessment

All potential sources of methane and carbon dioxide are identified in the Preliminary Conceptual Model and the generation potential determined. The background information discussed earlier is referred to in order to determine the potential for a source to generate ground gas.

CIRIA C665 provides idealised monitoring frequency / period dependant upon generation potential of gas source and sensitivity of the proposed land use as below:

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### Idealised Frequency and Period of Monitoring (after Table 5.5a and 5.5b, CIRIA C665)

|                            |                                           | Generation Potential of Source |     |          |       |           |
|----------------------------|-------------------------------------------|--------------------------------|-----|----------|-------|-----------|
|                            |                                           | Very Low                       | Low | Moderate | High  | Very High |
| Sensitivity of Development | <b>Low</b><br>(Commercial)                | 4/1                            | 6/2 | 6/3      | 12/6  | 12/12     |
|                            | <b>Moderate</b><br>(Flats)                | 6/2                            | 6/3 | 9/6      | 12/12 | 24/24     |
|                            | <b>High</b><br>(Residential with Gardens) | 6/3                            | 9/6 | 12/6     | 24/12 | 24/24     |

#### Notes

1. First number is the number of readings and the second is the minimum period in months (e.g. 6/2 – six sets of readings over two months).
2. At least two sets of readings must be at low (preferably under 1,000 mb) and falling pressure.

The monitoring programme is decided using the above table prior to the intrusive site investigation. However, if the intrusive investigation reveals that a the potential source is better or worse than anticipated the monitoring programme should be modified accordingly. For example, if the made ground contains no evidence of organic material and comprises entirely granular brick fill, the potential for that made ground to generate ground gas is reduced considerably.

#### Tier 2 Generic Quantitative Risk Assessment

Generic Quantitative Risk Assessment is undertaken upon completion of the required gas monitoring period.

All three current guidance documents propose that both ground gas concentrations and flow rates are used to calculate the limiting gas well gas volume flow rates for methane and carbon dioxide, based on the ground gas conditions monitored for during the worse-case temporal conditions. This limiting gas well volume flow rate is termed the Gas Screening Value (GSV, note that this was termed borehole gas volume flow), and is calculated as follows:

$$GSV \text{ (l/hr)} = \frac{[\text{gas well gas concentration (\%v/v)}] \times [\text{gas well flow rate (l/hr)}]}{100}$$

GSV's are compared to typical max concentrations and limiting gas screening values derived for either Situation A - All development except low rise housing with gardens, or Situation B low rise housing with gardens (NHBC Traffic Light System). Table 8.5 from CIRIA C665 is used for comparison of gas screening values for "Situation A Developments" and is presented hereunder:

| Characteristic Situation (CIRIA R149) | Comparable Partners in Technology gas Regime (see Box 8.2) | Risk Classification   | Gas Screening Value (CH <sub>4</sub> or CO <sub>2</sub> ) (l/hr) <sup>1</sup> | Additional Factors                                                                                     | Typical Source of Generation                                               |
|---------------------------------------|------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| 1                                     | A                                                          | Very low risk         | <0.07                                                                         | Typically methane ≤ 1% and/or carbon dioxide ≤ 5%. Otherwise consider increase to Situation 2          | Natural soils with low organic content "Typical" made ground               |
| 2                                     | B                                                          | Low risk              | <0.7                                                                          | Borehole air flow rate not to exceed 70l/hr. Otherwise consider increase to characteristic Situation 3 | Natural soil, high peat/organic content. "Typical" made ground             |
| 3                                     | C                                                          | Moderate risk         | <3.5                                                                          |                                                                                                        | Old landfill, inert waste, mineworking flooded                             |
| 4                                     | D                                                          | Moderate to high risk | <15                                                                           | Quantitative risk assessment required to evaluate scope of protective measures.                        | Mineworking susceptible to flooding, completed landfill (WMP 26B criteria) |
| 5                                     | E                                                          | High risk             | <70                                                                           |                                                                                                        | Mineworking unflooded inactive with shallow workings near surface          |
| 6                                     | F                                                          | Very high risk        | >70                                                                           |                                                                                                        | Recent landfill site                                                       |

**Table 8.5 from CIRIA C665 Modified Wilson and Card Classification**

Table 8.7 is used for comparison of gas screening values for "Situation B Developments" and is presented herunder:

| Traffic Light | Methane <sup>1</sup>                                 |                                                  | Carbon Dioxide <sup>2</sup>                          |                                                  |
|---------------|------------------------------------------------------|--------------------------------------------------|------------------------------------------------------|--------------------------------------------------|
|               | Typical max concentration <sup>3</sup> (% by volume) | Gas screening value <sup>2,4</sup> (litres/hour) | Typical max concentration <sup>3</sup> (% by volume) | Gas screening value <sup>2,4</sup> (litres/hour) |
| Green         |                                                      |                                                  |                                                      |                                                  |
| Amber 1       | 1                                                    | 0.13                                             | 5                                                    | 0.78                                             |
| Amber 2       | 5                                                    | 0.63                                             | 10                                                   | 1.60                                             |
| Red           | 20                                                   | 1.60                                             | 30                                                   | 3.10                                             |

**Notes:**

1. The worst-case ground gas regime identified on the site, either methane or carbon dioxide, at the worst-case temporal conditions that the site may be expected to encounter will be the decoder as to what Traffic Light is allocated;
2. Borehole Gas Volume Flow Rate, in litres per hour as defined in Wilson and Card (1999), is the borehole flow rate multiplied by the concentration in the air stream of the particular gas being considered;
3. The Typical Maximum Concentration can be exceeded in certain circumstances should the Conceptual Site Model indicate it is safe to do so;
4. The Gas Screening Value thresholds should not generally be exceeded without the completion of a detailed ground gas risk assessment taking into account site-specific conditions.

**Table 8.7 from CIRIA C665 - NHBC Traffic light system for 150 mm void**

Dependant on the outcome of the assessment of risk posed by ground gas it is determined whether gas protection measures are required for the proposed development, and or whether a detailed quantitative risk assessment is required for the site.

### Selection & Design of Protective Measures

Table 8.6 and Box 8.4 of CIRIA C665 contain information on the detailed design of protection measures and were initially intended for the purposes of determining then level of protection measures a development requires. These tables and related text include some useful information on the design of gas protection measures, however BS8485:2007, which supersedes the guidance included within CIRIA C665, is used for selection of gas protection measures.

BS8485: 2007 uses a scoring system dependant on the Characteristic Situation / NHBC Traffic Light and proposed end use of the site. The scoring system is summarised in BS8485:2015 Table 2 as presented hereunder:

| Characteristic gas situation, CS | NHBC traffic light | Required gas protection                   |                     |                      |                          |
|----------------------------------|--------------------|-------------------------------------------|---------------------|----------------------|--------------------------|
|                                  |                    | Non-managed property e.g. private housing | Public building (a) | Commercial buildings | Industrial buildings (b) |
| 1                                | Green              | 0                                         | 0                   | 0                    | 0                        |
| 2                                | Amber 1            | 3                                         | 3                   | 2                    | 1 (c)                    |
| 3                                | Amber 2            | 4                                         | 3                   | 2                    | 2                        |
| 4                                | Red                | 6 (d)                                     | 5(d)                | 4                    | 3                        |
| 5                                |                    |                                           | 6(e)                | 5                    | 4                        |
| 6                                |                    |                                           |                     | 7                    | 6                        |

**NOTE** Traffic light indications are taken from NHBC Report no.:10627-RO1 (04) and are mainly applicable to low-rise residential housing<sup>1</sup>. These are for comparative purposes but the boundaries between the traffic light indications and CS values do not coincide.

a) Public buildings include, for example, managed apartments, schools and hospitals.  
b) Industrial buildings are generally open and well ventilated. However, areas such as office pods might require a separate assessment and may be classified as commercial buildings and require a different scope of gas protection to the main building.  
c) Maximum methane concentration 20% otherwise consider and increase to CS3.  
d) Residential building on higher traffic light/CS sites is not recommended unless the type of construction or site circumstances allow additional levels of protection to be incorporated, e.g. high-performance ventilation or pathway intervention measures, and an associated sustainable system of management of maintenance of the gas control system, e.g. in institutional and/or fully serviced contractual situations.  
e) Consideration of issues such as ease of evacuation and how false alarms will be handled are needed when completing the design specification of any gas protection scheme

<sup>1</sup> The NHBC guidance and CIRIA C665 guidance refers to low rise housing (which is up to three storeys without lifts) that is constructed with a 150mm ventilated sub-floor void.

**BS8485:2007 Table 2 Required gas protection by characteristic gas situation and type of building**

Once a score is assigned, a combination of protection systems / elements is chosen from BS8485:2007 Table 3 shown below:  
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| PROTECTION ELEMENT /SYSTEM                                                                                                                                                                                                                |                                                     | SCORE | COMMENTS                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a) Venting/dilution (See Annex A BS8485)                                                                                                                                                                                                  |                                                     |       |                                                                                                                                                                                                                                                |
| Passive sub floor ventilation (venting layer can be a clear void or formed using gravel, geocomposites, polystyrene void formers, etc.) <sup>A</sup>                                                                                      | Very good performance                               | 2.5   | Ventilation performance in accordance with Annex A (BS8485)                                                                                                                                                                                    |
|                                                                                                                                                                                                                                           | Good performance                                    | 1     | If passive ventilation is poor this is generally unacceptable and some form of active system will be required.                                                                                                                                 |
|                                                                                                                                                                                                                                           |                                                     | 2.5   | There have to be robust management systems in place to ensure the continued maintenance of any ventilation system. Active ventilation can always be designed to meet good performance.                                                         |
| Subfloor ventilation with active abstraction/pressurization (venting layer can be a clear void or formed using gravel, geocomposites, polystyrene void formers, etc.) <sup>A</sup>                                                        |                                                     | 2.5   | Active ventilation can always be designed to meet good performance.                                                                                                                                                                            |
| Ventilated car park (basement or undercroft)                                                                                                                                                                                              |                                                     | 4     | Mechanically assisted systems come in two forms: extraction and positive pressurization.                                                                                                                                                       |
| b) Barriers                                                                                                                                                                                                                               |                                                     |       |                                                                                                                                                                                                                                                |
| Floor slabs                                                                                                                                                                                                                               |                                                     |       |                                                                                                                                                                                                                                                |
| Block and beam floor slab                                                                                                                                                                                                                 |                                                     | 0     | It is good practice to install ventilation in all foundation systems to effect pressure relief as a minimum. Breaches in floor slabs such as joints have to be effectively sealed against gas ingress in order to maintain these performances. |
| Reinforced concrete ground bearing slab                                                                                                                                                                                                   |                                                     | 0.5   |                                                                                                                                                                                                                                                |
| Reinforced concrete ground bearing foundation raft with limited service penetrations that are cast into slab                                                                                                                              |                                                     | 1.5   |                                                                                                                                                                                                                                                |
| Reinforced concrete cast in situ suspended floor slab with minimal service penetrations and water bars around all slab penetrations and at joints                                                                                         |                                                     | 1.5   |                                                                                                                                                                                                                                                |
| Fully tanked basement                                                                                                                                                                                                                     |                                                     | 2     |                                                                                                                                                                                                                                                |
| c) Membranes                                                                                                                                                                                                                              |                                                     |       |                                                                                                                                                                                                                                                |
| Taped and sealed membrane to reasonable levels of workmanship/in line with current good practice with validation <sup>B,C</sup>                                                                                                           |                                                     | 0.5   | The performance of membranes is heavily dependent on the quality of design of the installation, resistance to damage after installation, and the integrity of joints.                                                                          |
| Proprietary gas resistant membrane to reasonable levels of workmanship /in line with good practice under independent inspection (CQA) <sup>B,C</sup>                                                                                      |                                                     | 1     |                                                                                                                                                                                                                                                |
| Proprietary gas resistant membrane installed to reasonable levels of workmanship/in line with current good practice under CQA with integrity testing and independent validation                                                           |                                                     | 2     |                                                                                                                                                                                                                                                |
| d) Monitoring and detection (not applicable to non-managed property, or in isolation)                                                                                                                                                     |                                                     |       |                                                                                                                                                                                                                                                |
| Intermittent monitoring using hand held equipment                                                                                                                                                                                         |                                                     | 0.5   | Where fitted, permanent monitoring systems ought to be installed in the underfloor venting/dilution system in the first instance but can also be provided within the occupied space as a fail safe.                                            |
| Permanent monitoring and alarm system <sup>A</sup>                                                                                                                                                                                        | Installed in the underfloor venting/dilution system | 2     |                                                                                                                                                                                                                                                |
|                                                                                                                                                                                                                                           | Installed in the building                           | 1     |                                                                                                                                                                                                                                                |
| e) Pathway Intervention                                                                                                                                                                                                                   |                                                     |       |                                                                                                                                                                                                                                                |
| Pathway intervention                                                                                                                                                                                                                      |                                                     | -     | This can consist of site protection measures for off-site or on-site sources (see Annex A, BS8485)                                                                                                                                             |
| NOTE In practice the choice of materials might well rely on factors such as construction method and the risk of damage after installation. It is important to ensure that the chosen combination gives an appropriate level of protection |                                                     |       |                                                                                                                                                                                                                                                |
| A) It is possible to test ventilation systems by installing monitoring probes for post installation validation.                                                                                                                           |                                                     |       |                                                                                                                                                                                                                                                |
| B) If a 1 200g DPM material is to function as a gas barrier it should be installed according to BRE 212 /BRE 414 being taped and sealed to all penetrations                                                                               |                                                     |       |                                                                                                                                                                                                                                                |
| C) Polymeric Materials> 1200 g (proportional to thickness) but their physical properties mean that they are more robust and resistant to damage.                                                                                          |                                                     |       |                                                                                                                                                                                                                                                |

#### BS8485:2007 Table 3 Solution Scores

Where the gas situation is 4 or more (and for NHBC Red situations) the site requires a comprehensive risk assessment to confirm the scope of protection measures. These are higher risk sites and reliance on Table 2 and 3 alone is not sufficient.

For a site which is impacted by migratory gases from an off site source, the development may be protected by imposing pathway intervention methods, which if successfully validated, could also remove the need for further analysis. It is essential that the gas regime in these circumstances has been fully characterised and that the only source impacting the site is located off site and that the pathway is clearly defined and its interception equally proven before construction commences. Pathway intervention methods may include vertical membrane installations, venting trenches, rows of stone columns, activated trenches and various proprietary systems. These systems are particularly relevant to domestic housing where there is limited scope for foundation type solutions.

## **CURRENT GUIDANCE ON REMEDIATION**

When risk assessment of the site has been completed and it indicates that remedial works are required, the main guidance in managing this process is set out in the DEFRA/EA publication CLR11 (2004) "Model Procedures for the Management of Land Contamination." The stages of managing remediation are as follows:

- (a) Options Appraisal and develop Remediation Strategy;
- (b) Develop Implementation Plan and Verification Plan;
- (c) Remediation, Verification and Monitoring.

The Remediation Strategy sets out the remediation targets, identifies technically feasible remedial solutions and presents an evaluation of the options so that these can be assessed enabling that the most suitable solution is adopted. An outline of the proposed remedial method should be presented. Agreement should be sought of the appropriate statutory bodies for the Remediation Strategy before proceeding to the next stage.

The Implementation Plan is a detailed method statement setting out how the remediation is to be carried out including stating how the site will be managed, welfare procedures, health and safety considerations together with practical measures such as details of temporary works, programme of works, waste management licences and regulatory consents required. Agreement should again be sought of the appropriate statutory bodies for this Plan.

The Verification Plan sets out the requirements for gathering data to demonstrate that the remediation has met the required remediation objectives and criteria. The Verification Plan presents the requirements for a wide range of issues including the level of supervision, sampling and testing regimes for treated materials, waste and imported materials, required monitoring works during and post remediation, how compliance with all licenses and consents will be checked etc. Agreement should again be sought of the appropriate statutory bodies for the Verification Plan. On completion of the remediation a Verification Report should be produced to provide a complete record of all remediation activities on site and the data collected as required in the Verification Plan. The Verification Report should demonstrate that the remediation has met the remedial targets to show that the site is suitable for the proposed use.

**APPENDIX J: NOTES ON LIMITATIONS**

## **Standard Terms and Conditions of Engagement**

### **Notes on Limitations For Geoenvironmental and Geotechnical Consultancy Services**

#### **General**

CC GEOTECHNICAL LTD has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from CC GEOTECHNICAL LTD and a charge may be levied against such approval.

CC GEOTECHNICAL LTD accepts no responsibility or liability for:

the consequences of this document being used for any purpose or project other than for which it was commissioned and/or

the consequences of use of this document by any party with whom an agreement has not been executed.

#### **Phase I Environmental Audits / Desk Studies**

The work undertaken to provide the basis of a Phase 1 Desk Study report comprises a study of available documented information from a variety of sources (including the client), together with (where appropriate) a walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties. The opinions given in a Desk Study report have been dictated by finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in the report, CC GEOTECHNICAL LTD reserves the right to review such information and to modify the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

#### **Phase II Environmental Audits**

The investigation of the site has been carried out with the intention of providing sufficient information concerning the type and degree of contamination, and ground and groundwater conditions to allow a reasonable risk assessment to be made. The objectives of the investigation have been limited to establishing the risks associated to potential human targets, building materials, the environment (including adjacent land), and surface and groundwater.

The amount of exploratory work and chemical testing undertaken may have been restricted by the timescale available, and the locations of the exploratory holes may have been restricted to areas unoccupied by the building(s) on the site, and further restricted by the existence of buried services. A more comprehensive investigation may be required if the site is to be redeveloped as, in addition to risk assessment, a number of important engineering and environmental issues may need to be resolved.

For those reasons, if costs have been included in relation to site remediation these must be considered as tentative only and must, in any event, be confirmed by a qualified quantity surveyor.

The exploratory holes undertaken, investigate only a small volume of the ground in relation to the size of the site, and can only provide a general indication of site conditions. The number of sampling points and the methods of sampling and testing do not preclude the existence of localised "hotspots" of contamination where concentrations may be significantly higher than those actually encountered.

#### **Geoenvironmental Ground Investigations**

The investigation of the site has been carried out to provide sufficient information within the agreed scope of the investigation, under the general headings of type and degree of contamination, geotechnical characteristics, and ground and groundwater conditions, to provide a reasonable assessment of the environmental risks together with engineering and development implications.

If costs have been included in relation to the site remediation, these must be confirmed by a qualified quantity surveyor.

The exploratory holes undertaken, investigate only a small volume of the ground in relation to the size of the site, and can only provide a general indication of the site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site of each of the exploratory holes. There may be ground conditions present on the site which have not been disclosed by this investigation, and which have therefore not been taken into account in this report.

The comments made on groundwater conditions are based on observations made at the time that site work was carried out. It should be noted that groundwater levels will vary owing to seasonal, tidal, weather, or other effects.

The risk assessment and opinions provided, inter alia, take into consideration currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.